

# U.S. TSUBAKI ENGINEERING CHAIN DIVISION ENGINEERING CLASS CHAINS

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# Drive Chains

## ENGINEERING CLASS DRIVE CHAIN

### Keep Your Operation Moving with Union Chain

Union Drive Chains are designed to exceed the listed ultimate strength ratings. These ratings are very significant. Chains with greater ultimate strength have higher actual yield and greater fatigue strength. With Union chains, you get extra reserve strength to withstand high shock loads.

#### **Precision Manufacturing Means Greater Fatigue Strength**

Union Engineering Class Drive Chains are built to withstand the most rugged conditions. We use the latest manufacturing and heat-treating techniques to manufacture every component. Each component is carefully machined to close tolerances to ensure precise pitch control for smooth sprocket/chain interaction. That means longer service life for chain and sprockets.

#### **Add the Power of Alloy**

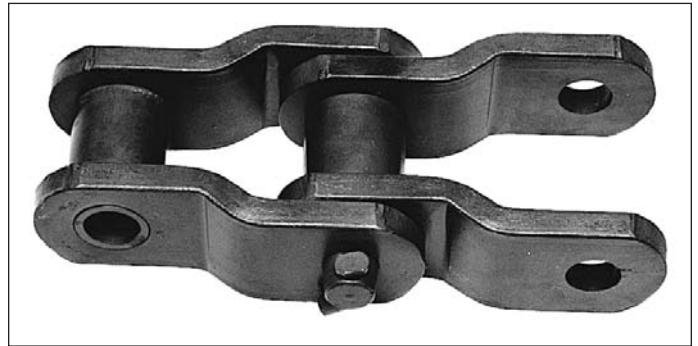
When parts require extra hardness, we use alloy steel to make the components. This provides more uniform core strength, which is particularly important for heavy duty applications. Every Union Drive Chain with an ultimate strength rating higher than 112,000 pounds is made entirely of alloy steel. All Union Drive Chains are furnished with alloy steel pins.

#### **Reduce Maintenance Costs and Downtime**

Union Drive Chains stand up to the toughest environments for hour after hour of uninterrupted service.

- Optimum strength
- Fatigue resistant
- Pre-tested
- Alloy steel parts
- Press fit construction
- Accurate pitch control

***Your equipment is on the line. Count on Union Chain.***



## Quality Components

### High-Strength Sidebars

Sidebars for Union Drive Chains with an ultimate strength rating higher than 112,000 pounds are manufactured from alloy steel and are through-hardened. This adds strength and extends the service life of the chain. In addition, our advanced manufacturing techniques ensure accurate hole size and precise pitch control, distributing the load equally and providing smooth sprocket interaction.



### Alloy Steel Induction Hardened Pins

All Drive Chain pins are made from alloy steel and are through-hardened for toughness and strength. In addition, chains designed for heavy duty power shovel applications have ground bearing surfaces and full round induction hardening. This provides the best combination of high yield strength and superior wear resistance.



### Precision Machined Bushings

Bushings for Drive Chain are precision machined to provide smooth bearing surfaces—that means less resistance on-line. They are through-hardened or case hardened to meet your application. The result is smooth riding bushings that last.



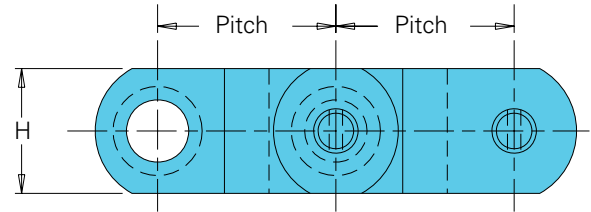
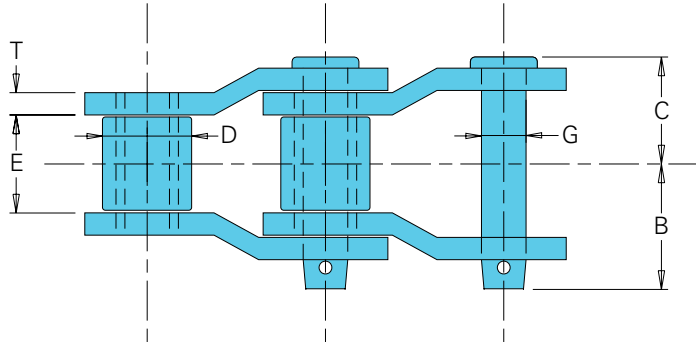
### Shock-Resistant Rollers

Our rollers are made from a high quality material for use when critical tolerances and superior finish are required. Then they are through-hardened to withstand high shock loads. For chains with high ultimate strength ratings, rollers are typically made from alloy steel.

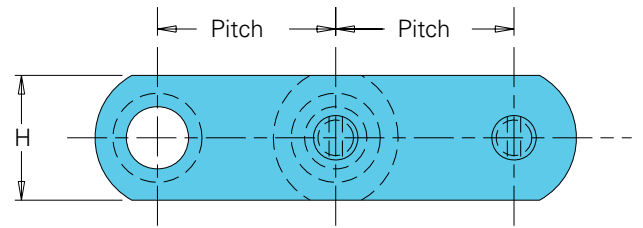
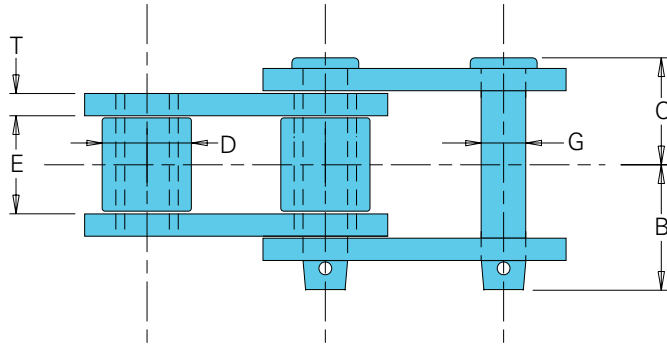


**Drive Chain**

**offset sidebar style**



**straight sidebar style**



**Drive Chain Specifications**

All dimensions are in inches unless otherwise indicated.

Chain No.	Pitch	Sty. <sup>1</sup>	ANSI No.	Pin						Roller		Sidebar			Bushing		Stocked Lengths		Avg. Ult. Stgth. (lbs.)	Max. Work Load (lbs.)	Approx. Wgt. (lbs./ft.)
				Pin End to CL	Pin Head to CL	In-side Wdth.	Dia.	Sty. <sup>2</sup>	Matl. <sup>3</sup>	Dia.	Matl. <sup>3</sup>	Hgt.	Th.	Matl. <sup>3</sup>	Dia.	Matl. <sup>3</sup>	Pitches	Feet			
				B	C	E	G			D		H	T								
US-2065	2.000	O		1.66	1.44	1.27	.59	K	AHT	1.13	AHT	1.63	.31	AHT	.81	ACH	60	10.00	65,000	4,000	7.6
RO-3140	1.750	O		1.34	1.12	1.00	.48	K	AHT	1.00	AHT	1.70	.22	AHT	.70	ACH	69	10.00	52,800	2,500	5.2
RO-3160	2.000	O		1.53	1.31	1.25	.54	K	AHT	1.13	AHT	1.94	.25	AHT	.80	ACH	60	10.00	67,300	3,450	6.7
RO-3180	2.250	O		1.72	1.47	1.43	.69	K	AHT	1.41	AHT	2.13	.28	AHT	1.00	CHT	53	10.00	80,000	4,800	9.6
RO-25H	2.500	O		1.95	1.70	1.50	.65	K	AHTIH	1.25	AHT	1.63	.38	AHT	.91	ACH	48	10.00	87,000	4,900	9.2
520RX	2.563	O		1.44	1.22	1.06	.50	A	CHT	1.13	CHT	1.25	.25	CHT	.75	CCH	47	10.00	25,000	2,800	4.8
US-882	2.609	O		1.44	1.25	1.13	.44	K	CHT	.88	AHT	1.13	.25	CHT	.64	CCH	46	10.00	26,000	2,500	3.6
US-3011	3.067	O	2512	2.13	1.72	1.56	.75	K	AHTIH	1.63	AHT	2.25	.38	AHT	1.13	ACH	39	10.00	110,000	6,100	12.0
US-1030	3.075	O		1.88	1.56	1.50	.63	K	AHT	1.25	AHT	1.50	.31	HC	.91	ACH	39	10.00	28,000	4,650	7.0
US-1031	3.075	O		1.88	1.59	1.50	.63	K	AHT	1.25	AHT	1.50	.31	CHT	.91	ACH	39	10.00	48,000	4,650	7.0
US-3075	3.075	O		2.00	1.68	1.50	.65	K	AHT	1.25	AHT	1.75	.38	AHT	.91	ACH	39	10.00	75,000	5,100	9.6
US-3514	3.500	O	2814	2.34	1.97	1.50	.88	K	AHT	1.75	AHT	2.25	.50	AHT	1.25	ACH	34	9.90	140,000	7,700	16.1
US-1241	4.063	O		2.59	2.19	1.94	.88	K	AHTIH	1.75	AHT	2.25	.50	CHT	1.25	CCH	30	10.20	112,000	9,000	16.3
US-1242	4.063	O		2.56	2.19	1.94	.88	K	AHTIH	1.75	AHT	2.25	.50	AHT	1.25	ACH	30	10.20	140,000	9,000	16.1
US-1245	4.073	O	3315	2.75	2.38	1.94	.94	K	AHTIH	1.78	AHT	2.38	.56	AHT	1.31	ACH	30	10.20	170,000	10,100	18.0
US-4121	4.090	O		2.75	2.38	1.94	1.00	K	AHTIH	1.88	AHT	2.75	.56	AHT	1.49	AHT	30	10.20	210,000	10,700	13.6
US-4122	4.090	O		2.75	2.38	1.94	1.00	K	AHTIH	2.00	AHT	2.75	.56	AHT	1.49	AHT	30	10.20	210,000	10,700	14.0
US-4522	4.500	O	3618	2.88	2.44	2.06	1.10	K	AHTIH	2.25	AHT	3.00	.56	AHT	1.62	AHT	27	10.10	220,000	12,300	25.4
US-5031	5.000	O	4020	3.38	3.06	2.75	1.25	K	AHTIH	2.50	AHT	3.50	.63	AHT	1.75	AHT	24	10.00	310,000	17,500	34.0
US-5035	5.000	O		3.50	3.06	2.56	1.38	K	AHTIH	2.50	AHT	3.50	.75	AHT	1.88	AHT	24	10.00	350,000	19,600	38.1
US-5542	5.500	O		3.88	3.40	3.00	1.50	K	AHTIH	3.00	AHT	4.00	.75	AHT	2.00	AHT	62	28.40	420,000	23,600	49.1
US-5738	5.750	O		3.69	3.31	3.00	1.50	K	AHTIH	3.00	AHT	4.00	.69	AHT	2.00	AHT	21	10.10	380,000	23,000	46.0
US-6042	6.000	O	4824	3.88	3.40	3.00	1.50	K	AHTIH	3.00	AHT	4.00	.75	AHT	2.00	AHT	20	10.00	420,000	23,600	45.0
US-6066	6.000	O		3.88	3.38	3.00	1.75	K	AHTIH	—	—	4.75	.75	AHT	3.00	AHT	57	28.50	600,000	27,600	51.7
US-64S	2.500	S		2.00	1.69	1.50	.88	K	AHT	1.56	AHT	2.13	.38	AHT	1.19	ACH	48	10.00	125,000	6,900	13.1
344SXX	3.000	S		2.75	2.38	1.94	.94	K	AHTIH	1.78	AHT	2.38	.56	AHT	1.31	AHT	40	10.00	170,000	10,050	22.0
US-4031	4.000	S		3.38	2.91	2.75	1.25	K	AHTIH	2.50	AHT	3.50	.63	AHT	1.75	AHT	30	10.00	310,000	17,500	40.0
US-1353	4.090	S		3.13	2.69	2.25	1.31	K	AHTIH	2.63	AHT	3.50	.63	AHT	1.88	ACH	30	10.20	210,000	16,000	37.6
US-5042	5.000	S		3.88	3.40	3.00	1.50	K	AHTIH	3.00	AHT	4.00	.75	AHT	2.00	AHT	24	10.00	420,000	23,600	53.0
US-6566	6.500	S		4.38	3.95	3.25	1.75	K	AHTIH	3.50	AHT	6.00	.88	AHT	2.44	AHT	36	19.50	600,000	30,600	71.1
US-7080	7.000	S		4.19	3.81	3.25	2.13	K	AHTIH	4.50	AHT	6.00	.88	AHT	3.13	AHT	24	14.00	800,000	37,150	89.6

  Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Style: O= offset sidebar; S= straight sidebar

<sup>2</sup>Pin style: K = Full round; A = Double flat.

<sup>3</sup>Material: HC = High carbon; CHT = Carbon heat-treated; AHT = Alloy heat-treated; AHTIH = Alloy heat-treated and induction hardened; CCH = Carbon case hardened; ACH = Alloy case hardened.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



## SELECTION GUIDELINES

There are two methods to determine the right drive chain for your application: Standard and Working Load. To determine the suggested chain, follow Steps 1-10 of the **Standard Selection Procedure** on pages A-5 through A-7. An example procedure is shown on page A-15.

Each selection procedure is intended to be used for Engineering Class Drive Chain (ASME/ANSI Standard B29.10).

## STANDARD SELECTION PROCEDURE

### Step 1: Determine Class of Driven Load

From the Application Classifications Table 1 determine the class of the driven load: uniform load, moderate shock, heavy shock.

**Table 1 — Application Classifications**

Application	Load Class <sup>1</sup>	Application	Load Class <sup>1</sup>	Application	Load Class <sup>1</sup>	Application	Load Class <sup>1</sup>
<b>Agitators</b>		<b>Conveyors – Uniformly Loaded or Fed (Continued)</b>		<b>Dry Dock Cranes (Continued)</b>		<b>Laundry Washers</b>	
Pure Liquids . . . . .	U	Oven . . . . .	U	Rotating (Swing or Slew) . . . . .	M	Reversing . . . . .	M
Liquids and Solids . . . . .	M	Screw . . . . .	U	Tracking (Drive Wheels) . . . . .	H	<b>Laundry Tumblers</b> . . . . .	M
Liquids – Variable Density . . . . .	M			<b>Elevators</b>		<b>Line Shafts</b>	
<b>Blowers</b>		<b>Conveyors – Heavy Duty Not Uniformly Fed</b>		Bucket – Uniform Load . . . . .	U	Driving Processing Equipment . . . . .	M
Centrifugal . . . . .	U	Apron . . . . .	M	Bucket – Heavy Load . . . . .	M	Light . . . . .	U
Lobe . . . . .	M	Assembly . . . . .	M	Bucket – Cont. Centrifugal Discharge . . . . .	U	Other Line Shafts . . . . .	U
Vane . . . . .	U	Belt . . . . .	M	Escalators . . . . .	U	<b>Lumber Industry</b>	
<b>Brewing and Distilling</b>		Bucket . . . . .	M	Freight . . . . .	M	Barkers – Hydraulic, Mechanical . . . . .	M
Bottling Machinery . . . . .	U	Chain . . . . .	M	Gravity Discharge . . . . .	U	Burner Conveyor . . . . .	M
Brew Kettles – Cont. Duty . . . . .	U	Flight . . . . .	M	Man Lifts . . . . .	H	Chain Saw and Drag Saw . . . . .	H
Cookers – Cont. Duty . . . . .	U	Live Roll . . . . .	M	Passenger . . . . .	H	Chain Transfer . . . . .	H
Mash Tubs – Cont. Duty . . . . .	U	Oven . . . . .	M	<b>Fans</b>		Craneway Transfer . . . . .	H
Scale Hopper, Freq. Starts . . . . .	M	Reciprocating . . . . .	H	Centrifugal . . . . .	U	De-barking Drum . . . . .	H
<b>Can Filling Machines</b> . . . . .	U	Screw . . . . .	M	Cooling Towers – Induced Draft . . . . .	U	Edger Feed . . . . .	M
<b>Cane Knives</b> . . . . .	M	Shaker . . . . .	H	Cooling Towers – Forced Draft . . . . .	U	Gang Feed . . . . .	M
<b>Car Dumpers</b> . . . . .	H	<b>Cranes</b>		Induced Draft . . . . .	M	Green Chain . . . . .	M
<b>Car Pullers</b> . . . . .	M	Main Hoists . . . . .	U	Large (Mine, etc.) . . . . .	M	Live Rolls . . . . .	H
<b>Clarifiers</b> . . . . .	U	Bridge Travel . . . . .	M	Large (Industrial) . . . . .	M	Log Deck . . . . .	H
<b>Classifiers</b> . . . . .	M	Trolley Travel . . . . .	M	Light (Small Diameter) . . . . .	U	Log Haul – Incline . . . . .	H
<b>Clay Working Machinery</b>		<b>Crusher</b>		<b>Feeders</b>		Log Haul – Well Type . . . . .	H
Brick Press . . . . .	H	Ore . . . . .	H	Apron . . . . .	M	Log Turning Device . . . . .	H
Briquette Machine . . . . .	H	Stone . . . . .	H	Belt . . . . .	M	Main Log Conveyor . . . . .	H
Clay Working Machinery . . . . .	M	Sugar . . . . .	M	Disc . . . . .	U	Off Bearing Rolls . . . . .	M
Pub Mill . . . . .	M	<b>Dredges</b>		Reciprocating . . . . .	H	Planer Feed Chains . . . . .	M
<b>Compressors</b>		Cable Reels . . . . .	M	Screw . . . . .	M	Planer Floor Chains . . . . .	M
Centrifugal . . . . .	U	<b>Conveyors</b>		<b>Food Industry</b>		Planer Tilting Hoist . . . . .	M
Lobe . . . . .	M	Cutter Head Drives . . . . .	H	Beet Slicer . . . . .	M	Re-saw Merry-go-round Conveyor . . . . .	M
Reciprocating, Multi-Cylinder . . . . .	M	Jig Drives . . . . .	H	Cereal Cooker . . . . .	U	Roll Cases . . . . .	H
Reciprocating, Single-Cylinder . . . . .	H	Maneuvering Winches . . . . .	M	Dough Mixer . . . . .	M	Slab Conveyor . . . . .	H
<b>Conveyors – Uniformly Loaded or Fed</b>		Pumps . . . . .	M	Meat Grinders . . . . .	M	Small Waste Conveyor – Belt . . . . .	U
Apron . . . . .	U	Screen Drive . . . . .	H	<b>Generators (Not Welding)</b> . . . . .	U	Small Waste Conveyor – Chain . . . . .	M
Assembly . . . . .	U	Stackers . . . . .	M	<b>Hammer Mills</b>		Sorting Table . . . . .	M
Belt . . . . .	U	Utility Winches . . . . .	M	<b>Hoists</b>		Tipple Hoist Conveyor . . . . .	M
Bucket . . . . .	U	<b>Dry Dock Cranes</b>		Heavy Duty . . . . .	H	Tipple Hoist Drive . . . . .	M
Chain . . . . .	U	Main Hoist, Auxiliary Hoist, Boom (Luffing) . . . . .	U	Medium Duty . . . . .	M	Transfer Conveyors . . . . .	M
Flight . . . . .	U			Skip Hoist . . . . .	M		

<sup>1</sup>U = Uniform load; M = Moderate shock; H = Heavy shock.

**Required Information for Drive Selection**

- Type of input horsepower (electric motor, internal combustion engine, etc.).
- Type of equipment to be driven.
- Horsepower to be transmitted.
- Full load speed of the fastest running shaft (RPM).
- Desired speed of the slow speed shaft (RPM).  
*Note: If speeds are variable, determine maximum and minimum speed and HP to be transmitted at each speed.*
- Diameters of the driving and driven shafts.
- Center to center distance of shafts.  
*Note: If this dimension is adjustable, determine amount of adjustment.*
- Position of drive and space limitations, if any.
- Proposed method of lubrication.
- Conditions of drive. Drives with more than two sprockets, idlers, or unusual conditions such as severely abrasive or corrosive atmosphere, extremely high or low temperatures, severely fluctuating loads, frequent stops and starts, etc., require special consideration. It is advisable to consult Union engineers for selections of this nature.

**Table 1 — Application Classifications (Continued)**

Application	Load Class <sup>1</sup>	Application	Load Class <sup>1</sup>	Application	Load Class <sup>1</sup>	Application	Load Class <sup>1</sup>
<b>Lumber Industry (Continued)</b>		<b>Mixers</b>		<b>Printing Presses</b> . . . . .U		<b>Sewage Disposal Equipment (Continued)</b>	
Transfer Rolls . . . . .M		Concrete Mixers – Cont. . . . .M		<b>Pullers</b>		Slow or Rapid Mixers . . . . .M	
Tray Drive . . . . .M		Concrete Mixers – Intermittent .M		Barge Haul . . . . .H		Thickeners . . . . .M	
Trimmer Feed . . . . .M		Constant Density . . . . .U		<b>Pumps</b>		Vacuum Filters . . . . .M	
Waste Conveyor . . . . .M		Variable Density . . . . .M		Centrifugal . . . . .U		<b>Screens</b>	
<b>Machine Tools</b>		<b>Oil Industry</b>		Proportioning . . . . .M		Air Washing . . . . .U	
Bending Roll . . . . .M		Chillers . . . . .M		Reciprocating – Single Acting,		Rotary – Stone or Gravel . . . . .M	
Punch Press – Gear Driven . . .H		Oil Well Pumping . . . . .H		Three or more Cylinders . . . . .M		Traveling Water Intake . . . . .U	
Notching Press – Belt Driven . .H		Paraffin Filter Press . . . . .M		Reciprocating – Double Acting,		<b>Slab Pushers</b> . . . . .M	
Plate Planers . . . . .H		Rotary Kilns . . . . .M		Two or more Cylinders . . . . .M		<b>Steering Gear</b> . . . . .H	
Tapping Machine . . . . .H		<b>Paper Mills</b>		Reciprocating – Single Acting,		<b>Stokers</b> . . . . .U	
Other Machine Tools –		Agitators (Mixers) . . . . .M		One or Two Cylinders . . . . .M		<b>Sugar Industry</b>	
Main Drives . . . . .M		Barker – Auxiliaries – Hydraulic .M		Reciprocating – Double Acting,		Cane Knives . . . . .M	
Other Machine Tools –		Barker – Mechanical . . . . .M		Single Cylinder . . . . .M		Crushers . . . . .M	
Auxiliary Drives . . . . .U		Barking Drum . . . . .H		Reciprocating –		Mills . . . . .H	
<b>Metal Mills</b>		Beater and Pulper . . . . .M		Rotary – Gear Type . . . . .U		<b>Textile Industry</b>	
Draw Bench Carriage		Bleacher . . . . .U		Rotary – Lobe, Vane . . . . .U		Batchers . . . . .M	
and Main Drive . . . . .M		Calendars . . . . .H		<b>Rubber and Plastics Industries</b>		Calendars . . . . .M	
Pinch, Dryer and Scrubber		Calendars – Super . . . . .H		Crackers . . . . .H		Cards . . . . .M	
Rolls, Reversing . . . . .H		Converting Machine,		Laboratory Equipment . . . . .M		Dry Cans . . . . .M	
Slitters . . . . .M		Except Cutters, Platers . . . . .M		Mixing Mills . . . . .H		Dryers . . . . .M	
Table Conveyors – Non-		Conveyors . . . . .U		Refiners . . . . .M		Dyeing Machinery . . . . .M	
Reversing Group Drives . . . . .M		Couch . . . . .M		Rubber Calendars . . . . .M		Knitting Machines . . . . .M	
Table Conveyors – Non-		Cutters – Platers . . . . .H		Rubber Mill (Two on Line) . . . . .M		Looms . . . . .M	
Reversing Individual Drives . . .H		Cylinders . . . . .M		Rubber Mill (Three on Line) . . .M		Mangles . . . . .M	
Table Conveyors – Reversing . .H		Dryers . . . . .M		Sheeter . . . . .M		Nappers . . . . .M	
Wire Drawing and		Felt Stretcher . . . . .M		Tire Building Machines . . . . .M		Pads . . . . .M	
Flattening Machine . . . . .M		Felt Whipper . . . . .H		Tire and Tube Press Openers . .M		Range Drives . . . . .M	
Wire Winding Machine . . . . .M		Jordans . . . . .H		Tubers and Strainers . . . . .M		Slashers . . . . .M	
<b>Mills, Rotary Type</b>		Log Haul . . . . .H		Warming Mills . . . . .M		Soapers . . . . .M	
Ball . . . . .M		Presses . . . . .U		<b>Sand Muller</b> . . . . .M		Spinners . . . . .M	
Cement Kilns . . . . .M		Pulp Machine Reel . . . . .M		<b>Sewage Disposal Equipment</b>		Tenter Frames . . . . .M	
Dryers and Coolers . . . . .M		Stock Chests . . . . .U		Bar Screens . . . . .U		Washers . . . . .M	
Kilns . . . . .M		Suction Roll . . . . .U		Chemical Feeders . . . . .U		Winders . . . . .M	
Pebble . . . . .M		Washers and Thickeners . . . . .M		Collectors . . . . .U		<b>Windless</b> . . . . .M	
Rod, Plane and Wedge Bar . . .M		Winders . . . . .U		Dewatering Screws . . . . .M			
Tumbling Barrels . . . . .H				Scum Breakers . . . . .M			

<sup>1</sup>U = Uniform load; M = Moderate shock; H = Heavy shock.



## Step 2: Select Service Factor

From the Service Factors Table 2 below, select the number under the type of input power and opposite the class of driven load that most closely relates to the application.

**Table 2 — Service Factors**

Type of Driven Load	Type of Input Power		
	Internal Combustion Engine with Hydraulic Drive	Electric Motor or Turbine	Internal Combustion Engine with Mechanical Drive
Uniform	1.0	1.0	1.2
Moderate Shock	1.2	1.3	1.4
Heavy Shock	1.4	1.5	1.7

## Step 3: Calculate Design Horsepower

Design Horsepower = HP x Service Factor.

The Design Horsepower equals the Horsepower to be transmitted multiplied by the Service Factor selected in Step 2.

## Step 4: Select Chain Pitch

Use the Quick Selection Chart (page A-10), to find chain pitch, as follows:

- Locate the design horsepower from Step 4 on the vertical axis.
- Locate the RPM of the small sprocket on the horizontal axis.
- The intersection of the two lines (design horsepower and RPM) will be in an area designated with the suggested chain pitch. If the intersection is near the borderline of the pitch area, the pitches on both sides of the line should be evaluated to obtain the most suitable selection.
- If the chain is not listed in the Quick Selection Chart, go to the Working Load Selection Guidelines.

## Step 5: Select Number of Teeth in Small Sprocket

Horsepower Table Ratings for single strand chains are given on pages A-11 ~ A-14 for each chain pitch. Turn to the page giving the chain pitch obtained in Step 4 and select the number of teeth in the small sprocket:

- Read down the column in the Horsepower Ratings Table under the RPM of the small sprocket until the requested HP Table Rating is located. Read across the table to the first column (Number of Teeth Small Sprocket). This is the smallest number of teeth to specify for this application.
- Note the lubrication type specification in the table for this chain. This type of lubrication must be used to obtain reasonable service life.

## Step 6: Determine Number of Teeth in Large Sprocket

$$N = \frac{rn}{R}$$

The number of teeth in the large sprocket equals the RPM of the small sprocket times the number of teeth in the small sprocket divided by the RPM of the large sprocket. Note: Hardened teeth are suggested for sprockets with less than 15 teeth, speeds greater than 600 RPM, ratios over 4:1, or in heavy loading or abrasive environments.

## Step 7: Determine Suggested Minimum Center Distance; C = Chain Pitches

$$C = \frac{2N + n}{6}$$

This formula is to be used as a guide to MINIMUM center distances only. The final selection may vary slightly to suit clearance dimensions.

## Step 8: Check Final Drive Design

Be sure that the sprockets and chain will fit into the available space.

## Step 9: Specify Sprockets

Specify the sprockets selected. See Sprocket section in this catalog. Also, refer to Section C for standard keyway and set screw dimensions.

## Step 10: Calculate Chain Length

To order the proper length of chain, use the following calculation:

$$\text{Chain Length in Pitches} = \frac{S}{2} + 2C + \frac{K}{C}$$

- Add number of teeth in small sprocket and number of teeth in large sprocket to obtain S.
- Subtract number of teeth in small sprocket from number of teeth in large sprocket to obtain value D. Find D in Table 3, and note corresponding value K.
- Divide center distance in inches by pitch of chain, obtaining C.
- Using these values, solve the formula above.

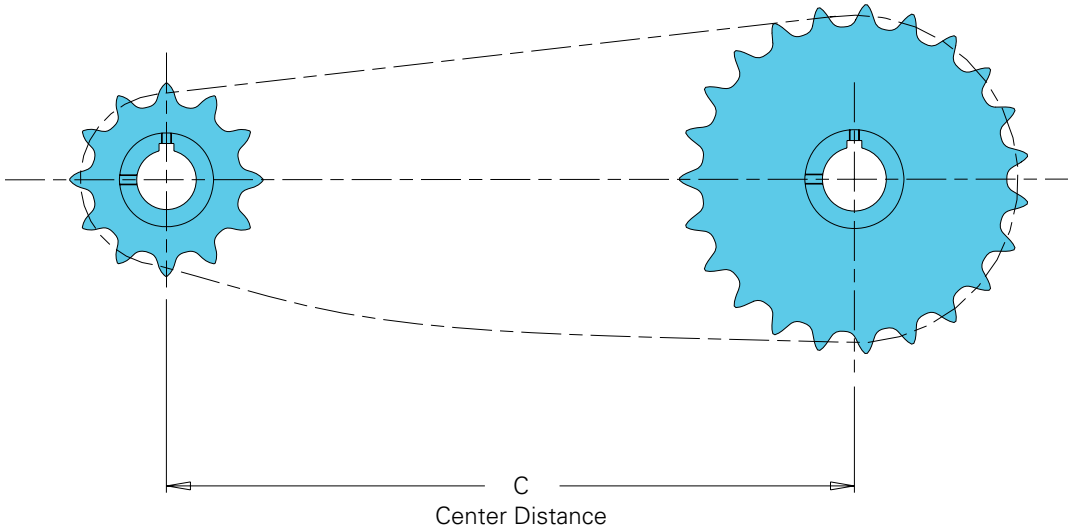
$$\text{Chain Length in Feet} = \frac{\text{Length in Pitches} \times \text{Pitch in Inches}}{12}$$

A chain cannot contain a fractional part of a pitch. If the chain length obtained contains a fractional part of a pitch, use the next higher whole number.

## Glossary

- N = Number of teeth in large sprocket
- n = Number of teeth in small sprocket
- R = RPM large sprocket
- r = RPM small sprocket
- C = Shaft center distance in pitches
- S = N + n
- D = N - n





**Table 3 — K Values<sup>1</sup>**

D	K	D	K	D	K	D	K	D	K	D	K
1	.03	32	25.94	63	100.54	94	223.82	125	395.79	156	616.44
2	.10	33	27.58	64	103.75	95	228.61	126	402.14	157	624.37
3	.23	34	29.28	65	107.02	96	233.44	127	408.55	158	632.35
4	.41	35	31.03	66	110.34	97	238.33	128	415.01	159	640.38
5	.63	36	32.83	67	113.71	98	243.27	129	421.52	160	648.46
6	.91	37	34.68	68	117.13	99	248.26	130	428.08	161	656.59
7	1.24	38	36.58	69	120.60	100	253.30	131	434.69	162	664.77
8	1.62	39	38.53	70	124.12	101	258.39	132	441.36	163	673.00
9	2.05	40	40.53	71	127.69	102	263.54	133	448.07	164	681.28
10	2.53	41	42.58	72	131.31	103	268.73	134	454.83	165	689.62
11	3.06	42	44.68	73	134.99	104	273.97	135	461.64	166	698.00
12	3.65	43	46.84	74	138.71	105	279.27	136	468.51	167	706.44
13	4.28	44	49.04	75	142.48	106	284.67	137	475.42	168	714.92
14	4.96	45	51.29	76	146.31	107	290.01	138	482.39	169	723.46
15	5.70	46	53.60	77	150.18	108	295.45	139	489.41	170	732.05
16	6.48	47	55.95	78	154.11	109	300.95	140	496.47	171	740.68
17	7.32	48	58.36	79	158.09	110	306.50	141	503.59	172	749.37
18	8.21	49	60.82	80	162.11	111	312.09	142	510.76	173	758.11
19	9.14	50	63.33	81	166.19	112	317.74	143	517.98	174	766.90
20	10.13	51	65.88	82	170.32	113	323.44	144	525.25	175	775.74
21	11.17	52	68.49	83	174.50	114	329.19	145	532.57	176	784.63
22	12.26	53	71.15	84	178.73	115	334.99	146	539.94	177	793.57
23	13.40	54	73.86	85	183.01	116	340.84	147	547.36	178	802.57
24	14.59	55	76.62	86	187.34	117	346.75	148	554.83	179	811.61
25	15.83	56	79.44	87	191.73	118	352.70	149	562.36	180	820.70
26	17.12	57	82.30	88	196.16	119	358.70	150	569.93	181	829.85
27	18.47	58	85.21	89	200.64	120	364.76	151	577.56	182	839.04
28	19.86	59	88.17	90	205.18	121	370.86	152	585.23	183	848.29
29	21.30	60	91.19	91	209.76	122	377.02	153	592.96	184	857.58
30	22.80	61	94.25	92	214.40	123	383.22	154	600.73	185	866.93
31	24.34	62	97.37	93	219.08	124	389.48	155	608.56		

<sup>1</sup>Used to calculate chain length. See Step 10 on page A-7.

## Alternate Working Load Selection Guidelines

Selection of drive chains not listed in the Quick Selection Chart by the Working Load method:

To use a chain that is not listed in the Quick Selection Chart, the proper chain can be selected from the working load values given in the chain listings. The working load required can be determined from the following:

### Working Load

$$\frac{(HP) \times (396,000) \times (E) \times (V)}{(CP) \times (T) \times (RPM)}$$

Where:

HP = Actual horsepower required. (Use motor HP if actual is not known.)

CP = Chain pitch (inches)

T = Number of teeth in smaller sprocket. (12T are suggested.)

RPM = Speed of smaller sprocket.

E = Speed factor (from Speed Correction Factors Table 11 on page A-50. A 12T sprocket is suggested.)

V = Service factor (obtain from Service Factors Table 10 on page A-50.)

This Working Load formula is not to be compared with the selection tables since the tables involve other considerations in addition to working load. **This formula is intended only to supplement the selection tables for those cases where a chain other than the ones listed in the selection procedure is required.**

When the Working Load has been determined, select a chain which has a rated working load equal to or greater than the working load value.

## Calculation of Shaft Centers

Use the following formula to determine the approximate centers in pitches for chain lengths in pitches already determined. Consult Union Chain Division for fixed center drives.

$$C = \frac{L - \frac{N+n}{2} + \sqrt{\left(L - \frac{N+n}{2}\right)^2 - 8 \frac{(N-n)^2}{4\pi^2}}}{4}$$

Where:

C = Shaft center distance in pitches.

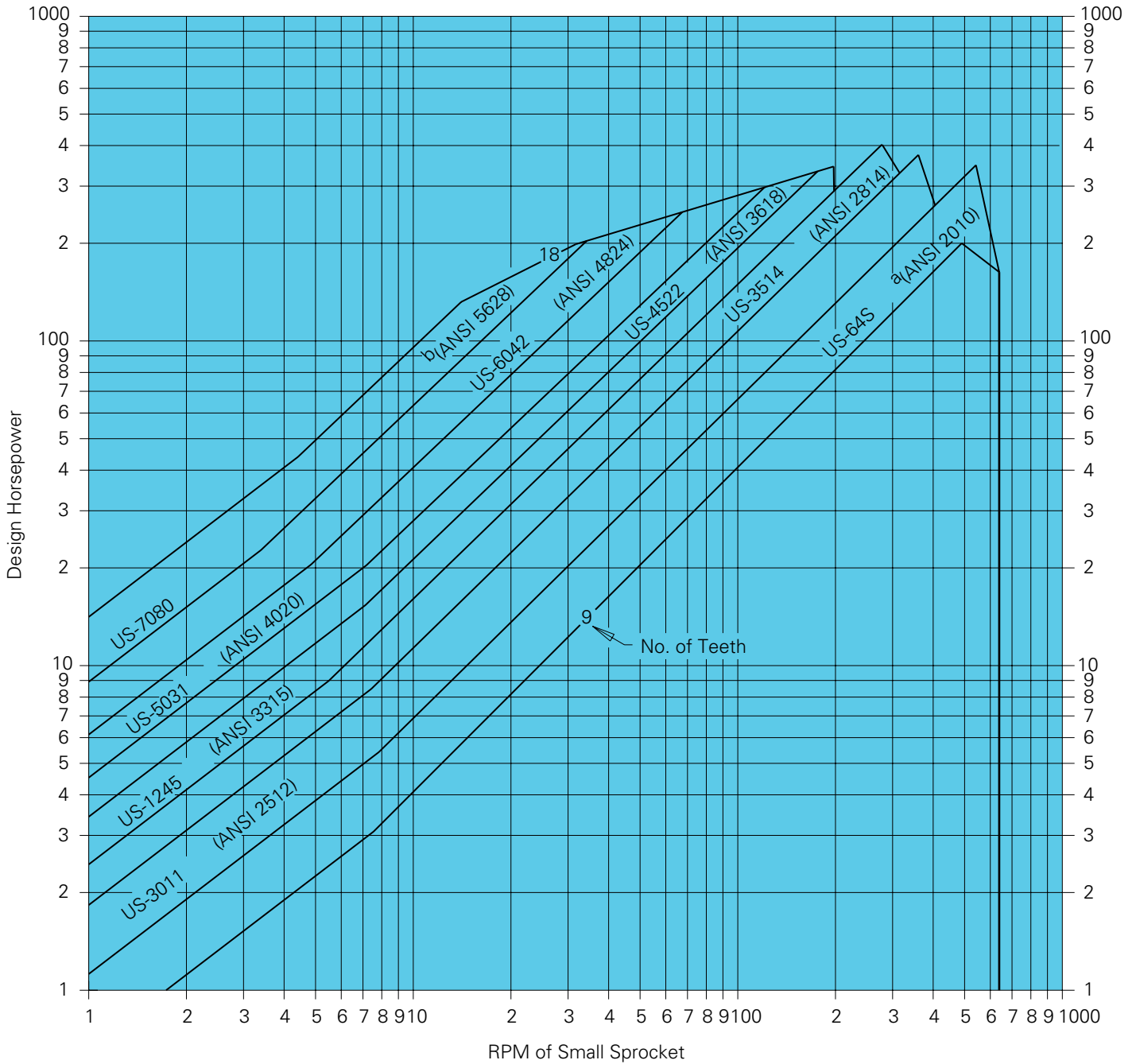
L = Length of chain in pitches.

N = Number of teeth in larger sprocket.

n = Number of teeth in smaller sprocket.

$\pi$  = 3.1416.

**Quick Selection Chart**



a. This chain has straight sidebars. No. 2010 ANSI standard chain has been assigned. (US-64S does not run on 2010 (US-2570) sprockets.)

b. This chain has straight sidebars. No. 5628 ANSI standard chain has been assigned. (US-7080 does not run on 5628 (US-7060) sprockets.)

Lower line is for 9 tooth US-64S. Top line is for 18 tooth US-7080. Intermediate lines are approximate mid-points for sprocket tooth range shown in HP charts, pages A-11 ~ A-14. Where the horsepower-RPM intersection lands near a line, both chains on each side should be checked on the charts.

The horsepower ratings in the following pages apply to lubricated single strand Engineering Drive Chains operating on cut tooth sprockets.



# UNION CHAIN DIVISION - DRIVE CHAINS

A - ENGINEERING CLASS CHAINS

## Horsepower Ratings US-64S

### Heavy Duty Straight Sidebar Power Transmission Chain

2.500" Pitch

Teeth	Horsepower Capacity RPM														
	2	3	7	10	20	30	40	100	200	250	350	450	600	700	
9	1.1	1.4	2.7	3.9	7.7	11.6	15.4	38.6	77.2	96.5	135.1	100.1	65.0	—	
10	1.1	1.5	3.0	4.3	8.6	12.9	17.2	42.9	85.8	107.3	150.2	117.2	76.1	—	
11	1.2	1.7	3.3	4.7	9.4	14.2	18.9	47.2	94.4	118.0	165.2	135.2	87.8	—	
12	1.3	1.8	3.6	5.1	10.3	15.4	20.6	51.5	103.0	128.7	180.2	154.1	100.1	—	
13	1.4	1.9	3.9	5.6	11.2	16.7	22.3	55.8	111.5	139.4	195.2	173.7	112.8	—	
14	1.5	2.0	4.2	6.0	12.0	18.0	24.0	60.1	120.1	150.2	210.2	194.2	126.1	—	
15	1.5	2.1	4.5	6.4	12.9	19.3	25.7	64.4	128.7	160.9	225.2	215.3	139.9	—	
16	1.6	2.2	4.8	6.9	13.7	20.6	27.5	68.6	137.3	171.6	240.3	237.2	154.1	—	
17	1.7	2.3	5.1	7.3	14.6	21.9	29.2	72.9	145.9	182.3	255.3	259.8	168.8	—	
18	1.8	2.4	5.4	7.7	15.4	23.2	30.9	77.2	154.5	193.1	270.3	283.1	183.9	—	
19	1.9	2.5	5.7	8.2	16.3	24.5	32.6	81.5	163.0	203.8	285.3	307.0	—	—	
20	1.9	2.6	6.0	8.6	17.2	25.7	34.3	85.8	171.6	214.5	300.3	331.5	—	—	
21	2.0	2.7	6.3	9.0	18.0	27.0	36.0	90.1	180.2	225.2	315.3	356.7	—	—	
22	2.1	2.8	6.6	9.4	18.9	28.3	37.8	94.4	188.8	236.0	330.4	382.5	—	—	
23	2.1	3.0	6.9	9.9	19.7	29.6	39.5	98.7	197.4	246.7	345.4	405.3	—	—	
24	2.2	3.1	7.2	10.3	20.6	30.9	41.2	103.0	205.9	257.4	360.4	414.4	—	—	
	Manual Lubrication						Oil Bath			Oil Stream Lubrication					

## Horsepower Ratings US-3011

### Heavy Duty Offset Sidebar Power Transmission Chain

3.067" Pitch

Teeth	Horsepower Capacity RPM														
	1	3	6	10	20	40	100	150	200	250	300	350	400	450	
9	1.0	2.4	4.0	6.4	12.7	25.5	63.7	95.6	127.4	159.3	191.1	171.8	140.6	—	
10	1.1	2.6	4.3	7.1	14.2	28.3	70.8	106.2	141.6	177.0	212.4	198.9	164.7	—	
11	1.2	2.7	4.7	7.8	15.6	31.1	77.9	116.8	155.7	194.7	231.3	215.5	190.0	—	
12	1.3	2.9	5.1	8.5	17.0	34.0	85.0	127.4	169.9	212.4	248.6	231.5	216.5	—	
13	1.4	3.1	5.5	9.2	18.4	36.8	92.0	138.0	184.1	230.1	265.3	247.0	232.3	—	
14	1.4	3.3	5.9	9.9	19.8	39.6	99.1	148.7	198.2	247.8	281.4	262.1	246.4	—	
15	1.5	3.5	6.4	10.6	21.2	42.5	106.2	159.3	212.4	265.5	296.9	276.6	260.0	—	
16	1.6	3.7	6.8	11.3	22.7	45.3	113.3	169.9	226.5	283.2	312.0	290.6	273.2	—	
17	1.7	3.8	7.2	12.0	24.1	48.1	120.3	180.5	240.7	300.9	326.5	304.1	285.9	—	
18	1.7	4.0	7.6	12.7	25.5	51.0	127.4	191.1	245.9	318.6	340.5	317.1	—	—	
19	1.8	4.2	8.1	13.5	26.9	53.8	134.5	201.8	269.0	336.3	354.0	329.7	—	—	
20	1.9	4.3	8.5	14.2	28.3	56.6	141.6	212.4	283.2	354.0	367.1	341.9	—	—	
21	1.9	4.5	8.9	14.9	29.7	59.5	148.7	233.0	297.3	371.7	379.6	353.6	—	—	
22	2.0	4.7	9.3	15.6	31.1	62.3	155.7	233.6	311.5	389.4	391.7	364.8	—	—	
23	2.1	4.9	9.8	16.3	32.6	65.1	162.8	244.2	325.6	407.1	403.4	375.7	—	—	
24	2.2	5.1	10.2	17.0	34.0	68.0	169.9	254.9	339.8	424.8	414.6	386.1	—	—	
	Manual Lubrication						Oil Bath			Oil Stream Lubrication					

For continuous operation in the highlighted area, some galling of the live bearing surfaces of the chain joints may be expected even though lubrication is as suggested.

The ratings shown on these charts are based on chain which operates over machine cut tooth sprockets.

**Horsepower Ratings US-3514**

**Heavy Duty Offset Sidebar Power Transmission Chain**

**3.500" Pitch**

Teeth	Horsepower Capacity RPM														
	1	3	6	10	20	35	80	100	125	150	200	250	300	325	
9	1.4	3.3	5.5	8.8	17.6	30.8	52.8	88.1	110.1	132.1	176.1	178.7	170.8	—	
10	1.5	3.5	6.0	9.8	19.6	34.2	58.7	97.8	122.3	146.8	195.7	196.1	187.4	—	
11	1.6	3.8	6.5	10.8	21.5	37.7	64.6	107.6	134.5	161.4	215.2	213.0	203.6	—	
12	1.8	4.1	7.0	11.7	23.5	41.1	70.4	117.4	146.8	176.1	234.8	229.5	219.4	—	
13	1.9	4.3	7.6	12.7	25.4	44.5	76.3	127.2	159.0	190.8	254.4	245.6	234.7	—	
14	2.0	4.6	8.2	13.7	27.4	47.9	82.2	137.0	171.2	205.5	273.9	261.2	249.6	—	
15	2.1	4.8	8.8	14.7	29.4	51.4	88.1	146.8	183.4	220.1	292.1	276.3	264.1	—	
16	2.2	5.1	9.4	15.7	31.3	54.8	93.9	156.5	195.7	234.8	307.7	291.1	278.2	—	
17	2.3	5.3	10.0	16.6	33.3	58.2	99.8	166.3	207.9	249.5	322.8	305.5	—	—	
18	2.4	5.5	10.6	17.6	35.2	61.6	105.7	176.1	220.1	264.2	337.6	319.4	—	—	
19	2.5	5.8	11.2	18.6	37.2	65.1	111.5	185.9	232.4	278.8	351.9	333.0	—	—	
20	2.6	6.0	11.7	19.6	39.1	68.5	117.4	195.7	244.6	293.5	365.8	346.1	—	—	
21	2.7	6.2	12.3	20.5	41.1	71.9	123.3	205.5	256.8	308.2	379.3	358.9	—	—	
	<b>Manual Lubrication</b>						<b>Oil Bath</b>			<b>Oil Stream Lubrication</b>					

**Horsepower Ratings US-1245**

**Heavy Duty Offset Sidebar Power Transmission Chain**

**4.073" Pitch**

Teeth	Horsepower Capacity RPM														
	1	3	6	10	20	30	40	65	80	100	125	150	200	225	
9	2.0	4.7	8.0	12.8	25.5	38.3	51.1	83.0	102.1	127.7	159.6	168.2	166.3	—	
10	2.2	5.1	8.7	14.2	28.4	42.6	56.7	92.2	113.5	141.8	177.3	185.0	182.9	—	
11	2.4	5.5	9.4	15.6	31.2	46.8	62.4	101.4	124.8	156.0	195.0	201.5	199.2	—	
12	2.5	5.9	10.2	17.0	34.0	51.1	68.1	110.6	136.2	170.2	212.8	217.6	215.1	—	
13	2.7	6.3	11.1	18.4	36.9	55.3	73.8	119.9	147.5	184.4	230.5	233.4	230.7	—	
14	2.9	6.6	11.9	19.9	39.7	59.6	79.4	129.1	158.9	198.6	248.2	248.8	246.0	—	
15	3.0	7.0	12.8	21.3	42.6	63.8	85.1	138.3	170.2	212.8	265.9	263.9	261.0	—	
16	3.2	7.3	13.6	22.7	45.4	68.1	90.8	147.5	181.6	227.0	280.7	278.7	275.6	—	
17	3.3	7.7	14.5	24.1	48.2	72.3	96.5	156.7	192.9	241.1	295.3	293.2	289.9	—	
18	3.5	8.0	15.3	25.5	51.1	76.6	102.1	166.0	204.3	255.3	309.6	307.3	303.9	—	
19	3.6	8.4	16.2	27.0	53.9	80.9	107.8	175.2	215.6	269.5	323.5	321.2	317.6	—	
20	3.8	8.7	17.0	28.4	56.7	85.1	113.5	184.4	227.0	283.7	337.1	334.7	—	—	
21	3.9	9.0	17.9	29.8	59.6	89.4	119.2	193.6	238.3	297.9	350.5	347.9	—	—	
	<b>Manual Lubrication</b>						<b>Oil Bath</b>			<b>Oil Stream Lubrication</b>					

For continuous operation in the highlighted area, some galling of the live bearing surfaces of the chain joints may be expected even though lubrication is as suggested.

The ratings shown on these charts are based on chain which operates over machine cut tooth sprockets.



# UNION CHAIN DIVISION - DRIVE CHAINS

A - ENGINEERING CLASS CHAINS

## Horsepower Ratings US-4522

### Heavy Duty Offset Sidebar Power Transmission Chain

4.500" Pitch

Teeth	Horsepower Capacity RPM														
	1	3	6	10	20	30	35	50	65	80	100	125	150	175	
9	2.6	6.0	10.2	16.3	32.6	48.9	57.0	81.5	105.9	130.4	153.8	156.6	158.8	—	
10	2.8	6.5	11.1	18.1	36.2	54.3	63.4	90.5	117.7	144.9	169.5	172.5	175.0	—	
11	3.0	7.0	12.0	19.9	39.8	59.8	69.7	99.6	129.5	159.4	184.8	188.1	190.8	—	
12	3.3	7.5	13.0	21.7	43.5	65.2	76.1	108.7	141.3	173.9	199.8	203.4	206.3	—	
13	3.5	8.0	14.1	23.5	47.1	70.6	82.4	117.7	153.0	188.3	214.6	218.4	221.6	—	
14	3.7	8.5	15.2	25.4	50.7	76.1	88.7	126.8	164.8	202.8	229.1	233.2	236.6	—	
15	3.9	8.9	16.3	27.2	54.3	81.5	95.1	135.8	176.6	217.3	243.4	247.7	251.3	—	
16	4.1	9.4	17.4	29.0	58.0	86.9	101.4	144.9	188.3	231.8	257.4	261.9	265.7	—	
17	4.2	9.8	18.5	30.8	61.6	92.4	107.8	153.9	200.1	246.3	271.1	275.9	279.9	—	
18	4.4	10.2	19.6	32.6	65.2	97.8	114.1	163.0	211.9	260.8	284.6	289.6	293.8	—	
19	4.6	10.7	20.6	34.4	68.8	103.2	120.4	172.0	223.7	275.3	297.8	303.1	307.5	—	
20	4.8	11.1	21.7	36.2	72.4	108.7	126.8	181.1	235.4	289.8	310.7	316.3	320.9	—	
21	5.0	11.5	22.8	38.0	76.1	114.1	133.1	190.1	247.2	304.2	323.5	329.2	334.0	—	
	Manual Lubrication					Oil Bath					Oil Stream Lubrication				

## Horsepower Ratings US-5031

### Heavy Duty Offset Sidebar Power Transmission Chain

5.000" Pitch

Teeth	Horsepower Capacity RPM														
	.5	1	3	6	10	20	30	35	50	65	80	100	125	130	
9	2.0	3.4	7.8	13.3	21.1	42.2	63.3	73.8	105.5	133.9	139.3	145.3	151.6	—	
10	2.2	3.7	8.5	14.4	23.4	46.9	70.3	82.0	117.2	147.6	153.6	160.2	—	—	
11	2.3	3.9	9.1	15.5	25.8	51.6	77.4	90.3	128.9	161.2	167.7	174.9	—	—	
12	2.5	4.2	9.7	16.9	28.1	56.3	84.4	98.5	140.7	174.5	181.6	189.4	—	—	
13	2.6	4.5	10.3	18.3	30.5	61.0	91.4	106.7	152.4	187.7	195.2	203.7	—	—	
14	2.8	4.7	10.9	19.7	32.8	65.6	98.5	114.9	164.1	200.6	208.7	217.7	—	—	
15	2.9	5.0	11.5	21.1	35.2	70.3	105.5	123.1	175.8	213.4	222.0	231.6	—	—	
16	3.1	5.2	12.1	22.5	37.5	75.0	112.5	131.3	187.5	225.9	235.0	245.2	—	—	
17	3.2	5.5	12.7	23.9	39.9	79.7	119.6	139.5	199.3	238.2	247.8	258.6	—	—	
18	3.4	5.7	13.3	25.3	42.2	84.4	126.6	147.7	211.0	250.4	260.5	271.7	—	—	
	Manual Lubrication					Oil Bath					Oil Stream Lubrication				

For continuous operation in the highlighted area, some galling of the live bearing surfaces of the chain joints may be expected even though lubrication is as suggested.

The ratings shown on these charts are based on chain which operates over machine cut tooth sprockets.

**Horsepower Ratings US-6042**

**Heavy Duty Offset Sidebar Power Transmission Chain**

**6.000" Pitch**

Teeth	Horsepower Capacity RPM													
	.5	1	3	6	10	20	30	35	40	45	50	60	70	75
9	3.1	5.3	12.2	20.7	33.0	66.0	96.1	101.5	106.3	110.8	115.0	122.6	129.0	—
10	3.4	5.7	13.2	22.4	36.6	73.3	106.2	112.1	117.5	122.5	127.1	135.5	—	—
11	3.6	6.2	14.2	24.2	40.3	80.6	116.1	122.6	128.5	133.9	139.0	148.2	—	—
12	3.9	6.6	15.2	26.4	44.0	87.9	126.0	133.0	139.4	145.3	150.8	160.8	—	—
13	4.1	7.0	16.2	28.6	47.6	95.3	135.7	143.2	150.1	156.5	162.4	173.2	—	—
14	4.4	7.4	17.1	30.8	51.3	102.6	145.3	153.4	160.8	167.6	173.9	185.4	—	—
15	4.6	7.8	18.0	33.0	55.0	109.9	154.8	163.4	171.3	178.5	185.3	197.5	—	—
16	4.8	8.2	18.9	35.2	58.6	117.3	164.2	173.3	181.6	189.3	196.5	209.5	—	—
17	5.1	8.6	19.8	37.4	62.3	124.6	173.4	183.1	191.9	200.0	207.6	221.3	—	—
18	5.3	9.0	20.7	39.6	66.0	131.9	182.6	192.7	202.0	210.6	218.5	233.0	—	—
<b>Manual Lubrication</b>										<b>Oil Bath</b>			<b>Oil Stream Lubrication</b>	

**Horsepower Ratings US-7080**

**Heavy Duty Offset Sidebar Power Transmission Chain**

**7.000" Pitch**

Teeth	Horsepower Capacity RPM													
	.1	.5	1	2	4	6	10	15	20	25	30	35	40	45
9	1.3	4.6	7.7	13.1	22.2	30.2	48.1	67.1	76.7	85.0	92.5	99.4	105.7	—
10	1.4	4.9	8.4	14.2	24.0	32.7	53.5	74.2	84.8	94.0	102.3	109.9	—	—
11	1.6	5.3	9.0	15.2	25.9	35.3	58.8	81.2	92.8	103.0	112.0	120.3	—	—
12	1.7	5.7	9.6	16.3	27.6	38.5	64.2	88.2	100.8	111.8	121.7	130.7	—	—
13	1.8	6.0	10.2	17.3	29.4	41.7	69.5	95.1	108.7	120.6	131.2	140.9	—	—
14	1.9	6.4	10.8	18.3	31.1	44.9	74.8	102.0	116.5	129.2	140.6	151.1	—	—
15	2.0	6.7	11.4	19.3	32.7	48.1	80.2	108.8	124.3	137.8	150.0	161.1	—	—
16	2.1	7.1	12.0	20.3	34.4	51.3	85.5	115.5	132.0	146.4	159.3	171.1	—	—
17	2.2	7.4	12.5	21.2	36.4	54.5	90.9	122.2	139.6	154.8	168.5	180.9	—	—
18	2.3	7.7	13.1	22.2	38.5	57.7	96.2	128.8	147.1	163.2	177.5	190.7	—	—
<b>Manual Lubrication</b>														

For continuous operation in the highlighted area, some galling of the live bearing surfaces of the chain joints may be expected even though lubrication is as suggested.

The ratings shown on these charts are based on chain which operates over machine cut tooth sprockets.



## Standard Selection Procedure Example

### Engineering Class Drive Chain From Reducer to Apron Feeder Head Shaft

Select the proper Engineering Drive Chain to transmit power from a reducer to an apron feeder head shaft. The input power will be a 25 HP electric motor. The reducer output RPM will be 15 RPM and the head shaft RPM will be 5 RPM. Reducer shaft is 2 15/16" diameter. Head shaft is 3 15/16" diameter. The shaft centers should be minimum suggested.

#### Step 1: Determine Class of Driven Load

From Table 1 (Application Classifications), the load class for an apron feeder is M, representing moderate shock. (See Feeders, Apron.)

#### Step 2: Select Service Factor

From Table 2 (Service Factors), for electric motor and moderate shock is 1.3.

#### Step 3: Calculate Design Horsepower

Design horsepower equals the horsepower transmitted x service factor of  $25 \times 1.3 = 32.5$ .

#### Step 4: Select Chain Pitch

- From the Engineering Drive Chain Quick Selection Chart locate the vertical axis 32.5 design horsepower.
- Locate on the horizontal axis 15 RPM of the small sprocket.
- The intersection of the 32.5 design horsepower and 15 RPM of the small sprocket lines intersect in the area designating 4.5" pitch US-4522 Engineering Drive Chain as the appropriate selection.

#### Step 5: Select Number of Teeth in Small Sprocket

Interpolating the US-4522 rating table for 15 RPM, a 12-tooth sprocket will transmit 32.6 HP. **Hardened teeth suggested.** Required lubrication is Type I, manual.

#### Step 6: Determine Number of Teeth in Large Sprocket

$$\text{Number of teeth in large sprocket} = \frac{15 \times 12}{5} = 36$$

#### Step 7: Determine Suggested Minimum Center Distance

Approximate minimum center distance =

$$\frac{2(36) + 12}{6} = \frac{84}{6} = 14 \text{ Pitches}$$

#### Step 8: Check Final Drive Design

Check the final drive design.

#### Step 9: Specify Sprockets

12-Tooth Sprocket for US-4522 Chain. Hardened Steel, Type C Hub, 2 15/16" Diameter Bore, 3/4" x 3/8" KW, and 5/8" SS.

36 Tooth Sprocket for US-4522 Chain. Steel Type C Hub, 3 15/16" Diameter Bore, 1" x 1/2" KW, and 5/8" SS.

#### Step 10: Calculate Chain Length

$$\begin{aligned} \text{Chain length} &= \frac{S}{2} + 2C + \frac{K}{C} \\ &= \frac{36 + 12}{2} + 2(14) + \frac{14.6}{14} \\ &= 24 + 28 + 1 = 53 \text{ Pitches} \end{aligned}$$

Where:

$$S = N + n$$

C = Shaft center distance in pitches

K = Constant from Table 3, (page A-8)

# NOTES

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# Roller Conveyor Chains

## Reliable Performance for Your Operation

Protect your in-plant processes with high-quality Roller Conveyor Chain from Union. Union Chain is an expert in the manufacture of specialized conveyors and chain for all major industries.

## Performance Is Built In

Union Roller Conveyor Chain is backed by innovative engineering. Every step in the process is designed to deliver long-lasting Conveyor Chain for your application. You get better performance and longer service life from Union.

## High-Quality Materials

The steels used to make Union Roller Conveyor Chain are selected for optimum wear and performance. They are manufactured to fine grain practice to ensure greater strength and toughness. We use premium grades of carbon steels on heat-treated and non-heat-treated chains. That means high strength for long-term, reliable performance at your operation.

## Precision Manufacturing

Union uses sophisticated tooling to maximize precision. Our modern press tools pierce and then broach the holes in the sidebars to provide the best bearing area between the pin and sidebar. This careful attention to detail means longer wear life and greater fatigue strength.

## Exactng Assembly

Extreme force is required to set the round parts in sidebars to produce a high interference fit. Union has developed special, high-speed equipment to ensure accurate assembly.

**Count on Union to Deliver High-Quality Chain Quickly.**

## Stock Chain Items

Union conducted a survey of the marketplace and identified the most commonly used chains. We stock a large inventory of these chains—the largest in the industry. That means you get the chain you need faster than ever before.

### Stock Chain Numbers

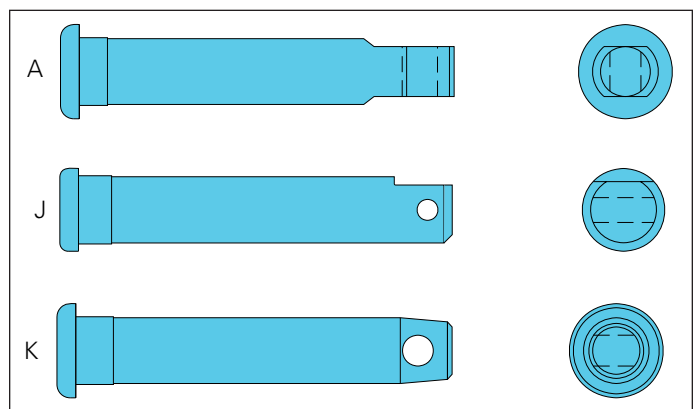
- 53R
- 95R
- 94R
- US-90R
- 89R
- US-196R
- 604R
- 607R
- 627R
- 614R

## Roller Conveyor Components

### Strong, Long-Lasting Pins

Pins for Union Conveyor Chains are produced from carbon or alloy steel to stand up to the most rugged conditions. Each is produced with the utmost care to ensure proper fit in the sidebars and a smooth bearing surface. Pins are available in through-hardened, case-hardened, and induction-hardened steel to extend the service life even more.

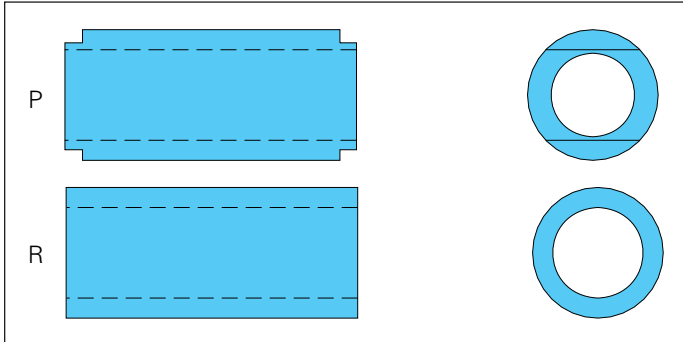
### Pin Styles



**Smooth Bushings**

Bushings are usually produced from carbon or alloy steels, then carburized and case hardened. This heat-treatment, using computer-controlled furnaces, produces high surface hardness for excellent wear with a tough core. Dimensions are carefully controlled to provide a uniform bearing surface and precise fit into the sidebars. Stainless steel bushings are available.

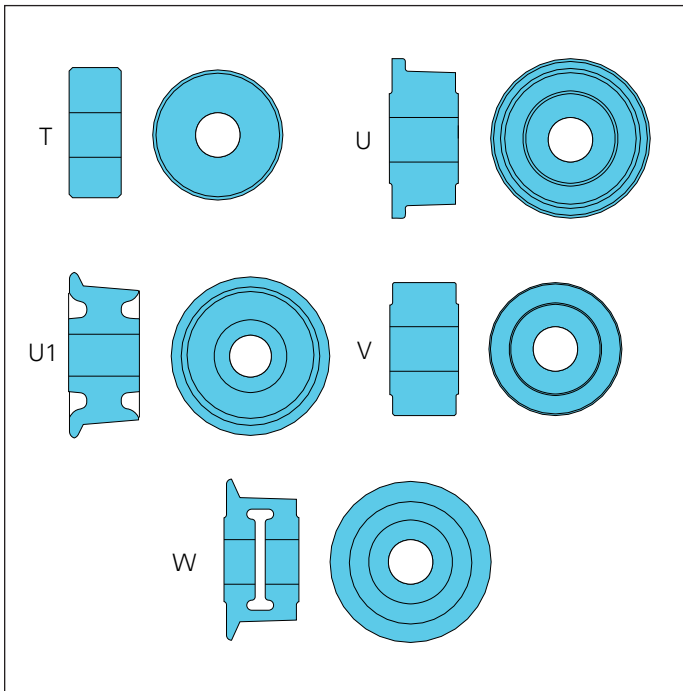
**Bushing Styles**



**Reliable Rollers**

Union offers a variety of steel grades and heat treatments for rollers. Our standard rollers are fabricated using carbon and alloy steels that are carburized and case hardened. They are heat-treated in computer-controlled furnaces to produce a hard bearing surface with a ductile core. Rollers are also available in stainless steels, various plastics, including Delrin and UHMW, and with plastic inserted sleeves on the rollers.

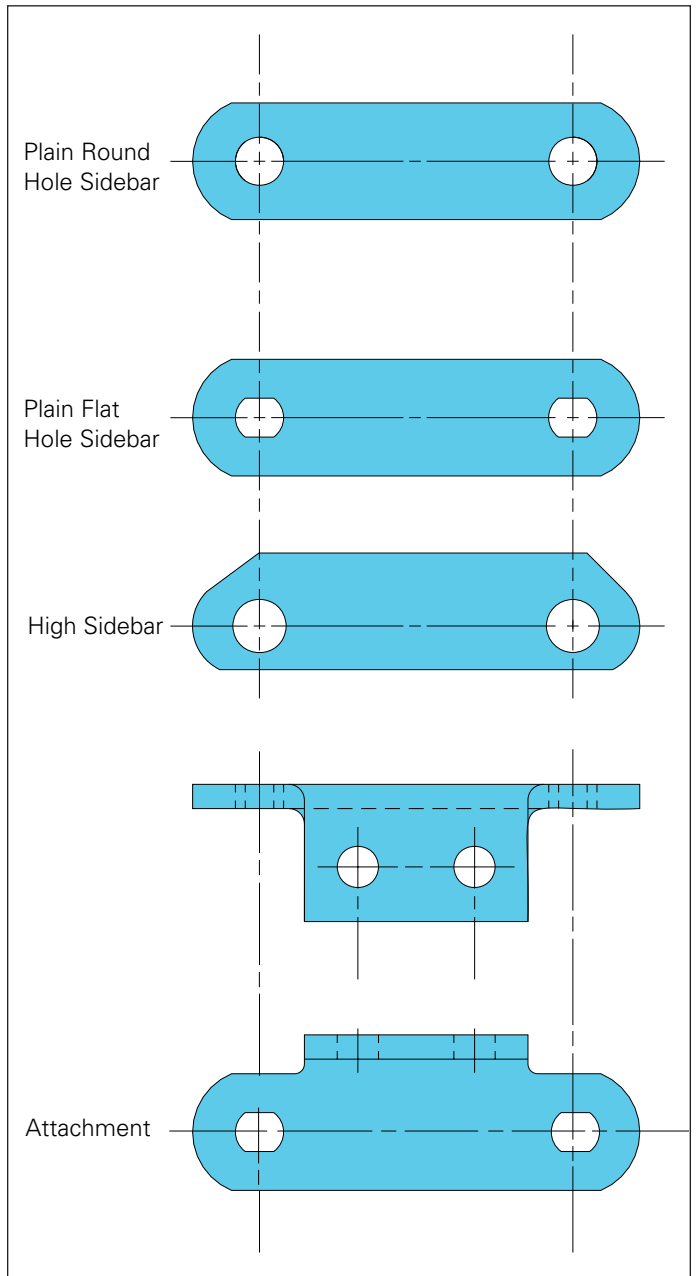
**Roller Styles**



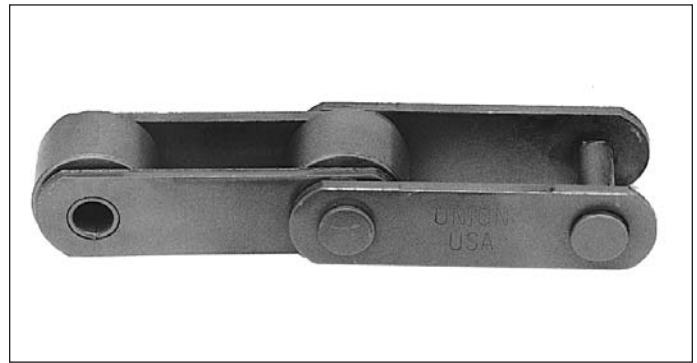
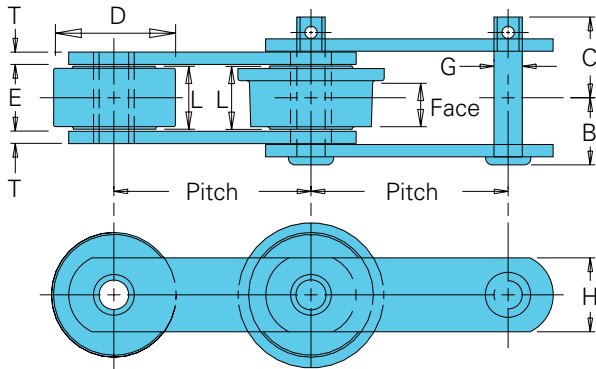
**Precision Manufactured Sidebars**

Standard sidebars are made from special grades of carbon or alloy steels to provide tough, long-lasting performance. Stainless steel sidebars are also available for corrosive and high-temperature environments. Pitch and hole size is carefully controlled to enable the chain to fit precisely with sprockets. This provides proper articulation, extending the life of the chain and the sprockets. Look for the "RX" suffix, which indicates heat-treated sidebars. That means even greater strength and toughness. Also, a wide variety of attachments are available.

**Sidebar Styles**



## Roller Conveyor Plain Chain



## Roller Conveyor Chain Specifications

All dimensions are in inches unless otherwise indicated.

Chain No.	Pitch	Width			Roller					Pin			Sidebar			Bushing	Bear- ing Area (in <sup>2</sup> )	Avg. Ult. Stgth. (lbs.)	Max. Work Load (lbs.)	Approx. Wgt. (lbs./ft.)
		Pin Head to CL	Pin End to CL	In- side	Dia.	Lgth.	Sty. <sup>1</sup>	Matl. <sup>2</sup>	Face Width	Dia.	Sty. <sup>1</sup>	Matl. <sup>2</sup>	Hgt.	Th.	Matl. <sup>2</sup>					
		B	C	E	D	L			G				H	T						
378R	1.654	1.03	1.25	1.00	.88	.97	T	AHT	.44	A	CHT	1.13	.19	HC	ACH	.61	13,000	2,100	3.7	
378RX	1.654	1.03	1.25	1.00	.88	.97	T	AHT	.44	A	CHT	1.13	.19	CHT	ACH	.60	20,000	2,100	3.7	
US-278R	2.609	1.13	1.31	1.13	.88	1.09	T	AHT	.44	J	CHT	1.13	.19	HC	CCH	.66	13,000	2,300	3.0	
81X	2.609	.91	1.16	1.06	.91	1.00	T	CCH	.44	K	CCH	1.13	.16	CHT	CCH	.61	15,000	2,150	2.5	
87R	2.609	1.20	1.45	1.13	.88	1.06	T	AHT	.44	A	CHT	1.13	.25	HC	CCH	.72	18,000	2,500	3.8	
53R	3.000	1.03	1.25	1.00	1.50	.97	T	PMHT	.44	A	CHT	1.13	.19	CRS	ACH	.61	13,000	2,100	3.9	
93R	3.000	1.28	1.47	1.25	1.50	1.19	T	CCH	.50	A	CHT	1.25	.25	HC	ACH	.88	20,000	3,000	4.8	
119R	3.075	1.59	1.84	1.50	1.25	1.44	T	AHT	.63	A	ACH	1.50	.31	HC	ACH	1.34	28,000	4,600	6.8	
119RX	3.075	1.59	1.84	1.50	1.25	1.44	T	AHT	.63	A	ACH	1.50	.31	CHT	ACH	1.34	48,000	4,600	6.8	
95R	4.000	1.03	1.25	1.00	1.50	.97	T	PMHT	.44	A	CHT	1.13	.19	CRS	ACH	.61	13,000	2,100	3.4	
1188R	4.000	1.13	1.28	1.13	1.75	1.06	T	CRS	.44	A	ACH	1.13	.19	CRS	CCH	.66	13,000	2,100	3.3	
94R	4.000	1.11	1.30	.88	1.50	.81	T	PMHT	.50	A	CHT	1.25	.25	CRS	ACH	.61	19,000	2,400	4.1	
97R	4.000	1.11	1.30	.88	1.75	.81	T	PMHT	.50	A	CHT	1.25	.25	CRS	ACH	.61	19,000	2,400	4.5	
US-90R	4.000	1.11	1.33	1.19	2.00	1.13	T	CCH	.44	A	CHT	1.25	.19	HC	ACH	.69	16,500	2,400	5.3	
83R	4.000	1.38	1.63	1.31	2.00	1.25	T	CCH	.63	A	CHT	1.50	.25	HC	CCH	1.14	22,000	3,650	6.6	
91R	4.000	1.50	1.75	1.31	1.75	1.25	T	CRS	.63	A	CHT	1.50	.31	HC	ACH	1.11	28,000	4,100	7.0	
89R	4.000	1.59	1.88	1.31	2.25	1.25	T	CCH	.63	A	CHT	1.50	.38	HC	CCH	1.10	28,000	4,500	10.6	
84R	4.000	2.08	2.44	2.31	2.25	2.25	T	CCH	.63	A	CHT	1.50	.38	HC	ACH	1.93	28,000	4,700	13.5	
1113R	4.040	1.50	1.75	1.31	2.00	1.25	T	CCH	.63	A	CHT	1.50	.31	HC	ACH	1.09	26,000	4,250	7.4	
50001	5.000	1.48	1.68	1.19	2.25	1.16	T	CCH	.63	A	ACH	1.50	.31	CHT	ACH	1.01	45,000	3,960	7.1	
6053R	6.000	1.03	1.25	1.00	1.50	.97	T	PMHT	.44	A	CHT	1.13	.19	HC	ACH	.61	13,000	2,100	3.1	
US-196R	6.000	1.20	1.45	1.13	2.00	1.06	T	CCH	.44	A	CHT	1.25	.25	HC	CCH	.72	18,000	2,500	5.0	
604R	6.000	1.33	1.58	1.31	2.00	1.25	T	CCH	.56	A	CHT	1.50	.25	HC	ACH	1.01	21,000	3,500	5.4	
607R	6.000	1.33	1.58	1.31	2.50	1.25	T	CCH	.56	A	CHT	1.50	.25	HC	ACH	1.01	21,000	3,500	6.5	
603R	6.000	1.33	1.58	1.31	2.50	1.25	U	AIHT	.88	.56	A	CHT	1.50	.25	HC	ACH	1.01	21,000	3,500	5.5
86R	6.000	1.38	1.63	1.31	2.00	1.25	V	AIHT	.63	A	CHT	1.50	.25	HC	CCH	1.14	22,000	3,600	5.4	
1604 <sup>3</sup>	6.000	1.22	1.44	1.06	3.00	.88	T	CCH	.50	A	ACH	1.25	.25	CHT	CCH	.78	24,000	2,750	5.4	
625R	6.000	1.56	1.81	1.69	3.00	1.63	U	AIHT	1.13	.63	A	CHT	2.00	.25	HC	CCH	1.38	25,000	4,750	9.8
627R	6.000	1.47	1.75	1.31	2.00	1.25	T	CCH	.63	A	CHT	1.50	.31	HC	ACH	1.22	26,000	4,250	6.6	
629R	6.000	1.59	1.84	1.50	3.00	1.44	V	CCH	1.31	.63	A	ACH	1.50	.31	HC	ACH	1.30	26,000	4,650	9.7
628R	6.000	1.59	1.88	1.31	2.25	1.25	T	CRS	.63	A	ACH	1.75	.38	HC	CCH	1.11	28,000	4,500	8.7	

Dimensions shown are nominal. Obtain certified prints for design and construction.

  Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Styles for rollers, pins, sidebars and bushings are shown on pages A-17 ~ A-18.

<sup>2</sup>Material: CHT = Carbon heat-treated; CCH = Carbon case hardened; AHT = Alloy heat-treated; CRS = Cold rolled steel; AIHT = Alloy iron heat-treated; ACH = Alloy case hardened; HC = High carbon; PMHT = Powdered metal heat-treated.

<sup>3</sup>Offset sidebar.

<sup>4</sup>CC5 is only provided in high sidebar design.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**Roller Conveyor Specifications (Continued)**

All dimensions are in inches unless otherwise indicated.

Chain No.	Pitch	Width			Roller					Pin			Sidebar			Bushing	Bear- ing Area (in. <sup>2</sup> )	Avg. Ult. Stgth. (lbs.)	Max. Work Load (lbs.)	Approx. Wgt. (lbs./ft.)
		Pin Head to CL	Pin End to CL	In-side	Dia.	Lgth.	Sty. <sup>1</sup>	Matl. <sup>2</sup>	Face Width	Dia.	Sty. <sup>1</sup>	Matl. <sup>2</sup>	Hgt.	Th.	Matl. <sup>2</sup>	Matl. <sup>2</sup>				
		<b>B</b>	<b>C</b>	<b>E</b>	<b>D</b>	<b>L</b>			<b>G</b>				<b>H</b>	<b>T</b>						
626R	6.000	1.59	1.88	1.31	3.00	1.25	V	CCH	1.13	.63	A	ACH	2.00	.38	HC	CCH	1.10	28,000	4,500	10.7
60001	6.000	1.39	1.68	1.19	2.50	1.16	T	CCH		.63	A	ACH	1.50	.31	CHT	ACH	1.01	45,000	3,960	7.4
1126R <sup>3</sup>	6.000	1.59	1.91	1.31	2.25	1.25	T	CRS		.63	A	ACH	1.50	.38	HC	CCH	1.10	28,000	4,500	8.0
1126RS <sup>3</sup>	6.000	1.59	1.91	1.31	3.00	1.25	T	CCH		.63	A	ACH	1.50	.38	HC	CCH	1.10	28,000	4,500	10.0
2130R <sup>3</sup>	6.000	1.72	2.00	1.31	2.50	1.25	T	CCH		.75	A	ACH	2.00	.38	HC	CCH	1.55	38,000	5,250	11.0
631R	6.000	1.63	2.03	1.38	3.00	1.31	T	CCH		.75	A	CHT	2.00	.38	HC	CCH	1.61	38,000	5,600	12.2
614R	6.000	1.63	2.03	1.38	2.50	1.31	T	CCH		.75	A	CHT	2.00	.38	HC	CCH	1.48	38,000	5,600	11.0
B-663R	6.000	1.94	2.38	2.00	3.00	1.94	U	AIHT	1.50	.75	A	CHT	2.00	.38	HC	ACH	2.07	41,000	7,200	14.0
1630R <sup>3</sup>	6.000	1.66	2.03	1.38	2.50	1.31	T	CCH		.88	A	ACH	2.00	.38	HC	ACH	1.66	43,000	6,500	11.0
2184R <sup>3</sup>	6.000	1.66	2.03	1.38	3.00	1.31	V	PMHT	1.18	.88	J	ACH	2.00	.38	HC	ACH	1.66	43,000	6,500	12.3
2184RX <sup>3</sup>	6.000	1.66	2.03	1.38	3.00	1.31	V	PMHT	1.18	.88	J	ACH	2.00	.38	CHT	ACH	1.66	75,000	6,500	12.0
CC5 <sup>4</sup>	6.000	1.50	1.69	1.38	2.50	1.31	T	CCH		.69	A	CCH	2.50	.31	HC	CCH	1.38	50,000	4,800	11.0
610R	6.000	1.78	2.19	1.69	2.75	1.63	T	CCH		.88	A	ACH	2.25	.38	HC	CCH	2.16	45,000	7,450	13.5
96R	6.000	1.69	2.09	1.50	2.75	1.44	T	CCH		.75	A	ACH	2.00	.38	HC	ACH	1.61	47,000	5,900	11.8
1131R	6.000	1.69	2.09	1.50	3.00	1.44	T	CCH		.75	A	ACH	2.00	.38	HC	ACH	1.61	47,000	5,900	12.5
96RX	6.000	1.69	2.09	1.50	2.75	1.44	T	CCH		.75	A	ACH	2.00	.38	CHT	ACH	1.61	70,000	5,900	11.8
2198RX	6.000	1.97	2.38	1.50	2.75	1.44	V	CCH	1.31	.88	A	AHT	2.25	.50	CHT	ACH	1.80	100,000	7,700	15.3
2178RX	6.000	1.72	2.09	1.50	2.75	1.44	V	CCH	1.31	.88	A	AHT	2.25	.38	CHT	ACH	2.00	85,000	6,900	13.1
800RX	8.000	2.19	2.63	1.81	3.50	1.75	V	CCH	1.63	1.00	K	ACH	3.00	.50	CHT	ACH	2.81	125,000	9,800	22.5
806R	8.000	2.22	2.63	1.81	3.00	1.75	T	CCH		1.00	K	AHT	2.50	.50	CHT	CCH	2.81	95,000	9,800	22.5
896R	8.000	1.69	2.09	1.50	3.50	1.44	V	CCH	1.31	.75	A	ACH	2.00	.38	HC	ACH	1.70	47,000	5,900	14.3
925R	9.000	1.56	1.84	1.69	3.00	1.63	U	AIHT	1.13	.63	A	CHT	2.00	.25	HC	CCH	1.38	25,000	4,150	8.2
B-912R	9.000	1.59	1.88	1.50	3.00	1.44	V	CCH	1.38	.63	A	ACH	2.00	.31	HC	ACH	1.34	47,000	4,650	8.6
B-963R	9.000	1.94	2.34	2.00	3.50	1.94	U	AIHT	1.25	.75	A	CHT	2.00	.38	HC	ACH	2.07	41,000	7,200	13.0
D-963R	9.000	1.94	2.34	2.00	3.50	1.94	V	CCH	1.81	.75	A	CHT	2.00	.38	HC	ACH	2.07	41,000	7,200	13.0
E-963R	9.000	1.94	2.34	2.00	4.00	1.94	W	AIHT	1.25	.75	A	CHT	2.00	.38	HC	ACH	2.07	41,000	7,200	14.0
961R <sup>3</sup>	9.000	2.25	2.69	1.91	1.75	1.91	T	AHT		.88	A	ACH	2.25	.50	HC	CCH	2.56	60,000	9,000	10.0
4004	9.000	2.63	3.03	2.63	3.00	2.56	T	CCH		1.00	K	AHTIH	2.50	.50	HC	ACH	3.63	75,000	12,700	18.0
973R	9.000	2.59	3.06	2.63	5.00	2.56	U1	AIHT	1.75	1.00	K	AHT	2.50	.50	HC	ACH	3.63	75,000	12,700	23.6
B-964R	9.000	2.09	2.47	2.25	4.00	2.19	W	AIHT	1.50	.88	J	CHT	2.50	.38	HC	ACH	2.65	70,000	9,200	17.0
965R	9.000	2.09	2.47	2.25	3.00	2.19	V	CCH	2.06	.88	J	CHT	2.50	.38	HC	ACH	2.65	70,000	9,200	16.5
4009	9.000	2.06	2.50	2.19	3.00	2.13	T	CCH		.88	K	AIH	2.50	.38	AHT	ACH	2.60	67,000	9,200	13.0
4065	9.000	3.06	3.38	3.06	4.25	3.00	V	CCH	2.88	1.25	K	AIH	3.50	.63	HC	CCH	5.40	148,000	18,900	35.7
B-1212R	12.000	1.59	1.88	1.50	3.00	1.44	V	CCH	1.38	.63	A	ACH	2.00	.31	HC	ACH	1.34	41,000	4,650	7.5
B-1263R	12.000	1.94	2.34	2.00	3.50	1.94	U	AIHT	1.25	.75	A	CHT	2.00	.38	HC	CCH	2.07	41,000	7,200	11.0
D-1263R	12.000	1.94	2.34	2.00	3.50	1.94	V	CCH	1.81	.75	A	CHT	2.00	.38	HC	ACH	2.07	41,000	7,200	11.0
E-1263R	12.000	1.94	2.34	2.00	4.00	1.94	W	AIHT	1.25	.75	A	CHT	2.00	.38	HC	ACH	2.07	41,000	7,200	12.0
B-1266R	12.000	1.88	2.16	1.63	3.25	1.56	V	CCH	1.38	.75	A	CHT	2.00	.38	HC	CCH	1.79	41,000	6,300	9.5
1276R	12.000	1.94	2.22	2.00	4.00	1.94	U	AIHT	1.25	.75	A	CHT	2.50	.31	HC	CCH	1.97	41,000	7,200	12.0
1273R	12.000	2.59	3.06	2.63	5.00	2.56	U1	AIHT	1.75	1.00	K	CHT	2.50	.50	HC	ACH	3.63	75,000	12,700	21.5
B-1264R	12.000	2.09	2.47	2.25	4.00	2.19	W	AIHT	1.50	.88	J	CHT	2.50	.38	HC	ACH	2.65	70,000	9,200	15.0
1265R	12.000	2.09	2.47	2.25	3.00	2.19	V	CCH	2.06	.88	J	CHT	2.50	.38	HC	ACH	2.65	70,000	10,000	12.7
1271R	12.000	2.66	3.06	2.75	5.00	2.69	W	AIHT	1.75	1.25	K	AHT	3.00	.50	HC	CCH	4.69	100,000	16,400	27.0
B-1863R	18.000	1.94	2.34	2.00	3.50	1.94	V	AIHT	1.81	.75	A	CHT	2.00	.38	HC	ACH	2.07	41,000	7,200	9.5
D-1863R	18.000	1.94	2.34	2.00	3.50	1.94	U	AIHT	1.25	.75	A	CHT	2.00	.38	HC	ACH	2.07	41,000	7,200	9.5
F-1863R	18.000	1.94	2.34	2.00	4.00	1.94	U1	AIHT	1.25	.75	A	CHT	2.00	.38	HC	ACH	2.07	41,000	7,200	10.0
B-1864R	18.000	2.09	2.47	2.25	4.00	2.19	W	AIHT	1.50	.88	J	CHT	2.50	.38	HC	ACH	2.65	70,000	9,200	12.0
G-1864R	18.000	2.09	2.47	2.25	4.00	2.19	V	CCH	2.00	.88	J	CHT	2.50	.38	HC	ACH	2.65	70,000	9,200	11.0
1873R	18.000	2.59	3.06	2.63	5.00	2.56	U1	AIHT	1.75	1.00	K	AHT	2.50	.50	HC	ACH	3.63	75,000	12,700	17.0
1871R	18.000	2.66	3.06	2.75	5.00	2.69	W	AIHT	1.75	1.25	K	AHT	3.00	.50	HC	ACH	4.69	100,000	16,400	21.0
1866R	18.000	3.03	3.47	2.75	6.00	2.69	U1	AIHT	1.88	1.25	K	CCH	3.00	.63	HC	CCH	5.01	115,000	17,500	26.5
1867R	18.000	3.28	3.59	3.00	6.00	2.94	U1	AIHT	1.88	1.50	K	CCH	3.50	.63	HC	CCH	6.39	150,000	22,300	31.5

Dimensions shown are nominal. Obtain certified prints for design and construction.

Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Styles for rollers, pins, sidebars, and bushings are shown on pages A-17 ~ A-18.

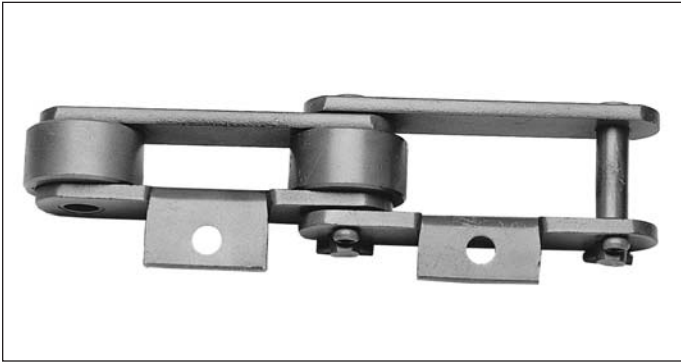
<sup>2</sup>Material: CHT = Carbon heat-treated; CCH = Carbon case hardened; AHT = Alloy heat-treated; CRS = Cold rolled steel; AIHT = Alloy iron heat-treated; ACH = Alloy case hardened; HC = High carbon; PMHT = Powdered metal heat-treated.

<sup>3</sup>Offset sidebar.

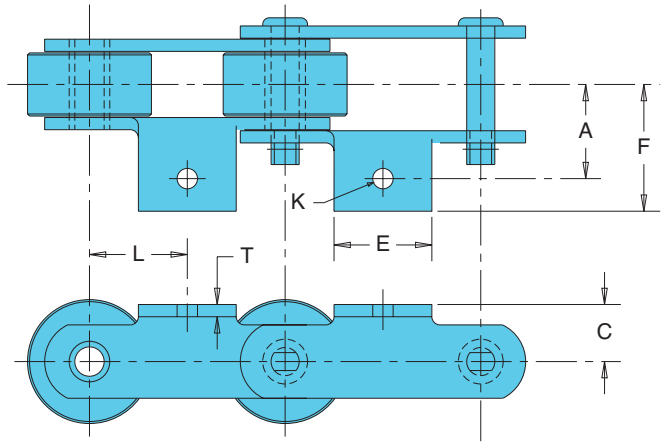
<sup>4</sup>CC5 is only provided in high sidebar design.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

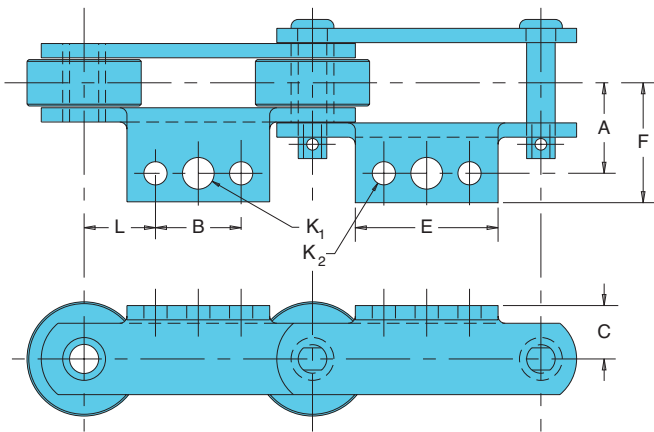
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



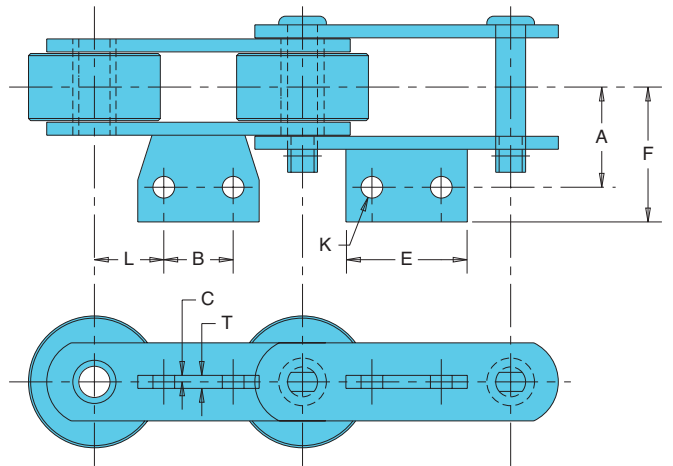
**A-1 Attachment**



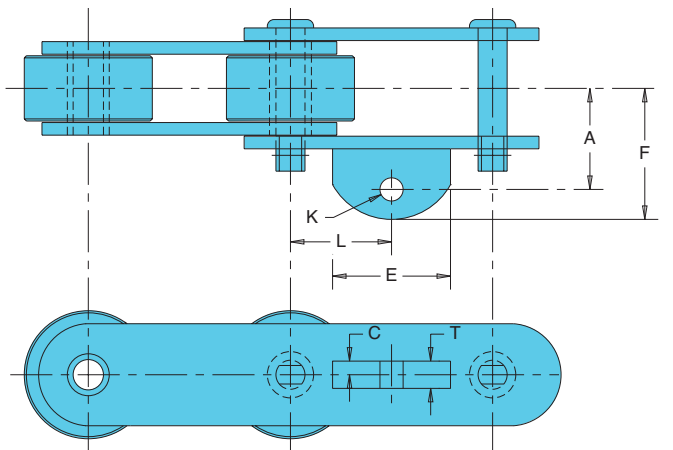
**A-1/A-2 Attachment**



**A-11 and A-63 Attachment**



**A-22 and A-42 Attachment**





### Roller Conveyor Chain Attachment Specifications

All dimensions are in inches unless otherwise indicated.

Attachment Number	Chain Number	A	B	C	E	F	Bolt Diameter		L	T	Approx. Weight (lbs./ft.)
							K <sub>1</sub>	K <sub>2</sub>			
A-1	53R	1.47		.81	2.00	2.16	.31		1.50	.19	4.4
	83R	2.00		1.00	2.00	2.84	.38		2.00	.25	8.1
	84R	2.66		1.25	2.00	3.66	.63		2.00	.38	18.0
	89R	2.00		1.25	2.00	3.17	.38		2.00	.38	11.0
	US-90R	2.00		1.13	3.13	2.63	.38		2.00	.19	6.3
	91R	1.81		1.06	2.88	2.47	.50		2.00	.31	7.9
	93R	1.88		1.00	1.63	2.69	.50		1.34	.25	5.5
	94R	1.38		.88	2.50	1.88	.38		2.00	.25	4.7
	95R	1.38		.81	2.63	2.16	.38		2.00	.19	3.9
	119R	2.09		1.06	2.88	2.80	.50		1.54	.31	7.9
	US-196R	2.00		1.25	3.50	2.63	.38		3.00	.25	6.6
	US-278R	1.91		.88	2.13	2.52	.38		1.30	.19	3.5
	378R	1.50		.88	.88	1.89	.31		.83	.19	4.4
	603R	2.00		1.13	3.50	2.70	.38		3.00	.25	8.8
	604R	2.00		1.13	3.50	2.72	.38		3.00	.25	6.3
	607R	2.00		1.13	3.50	2.70	.38		3.00	.25	7.4
	610R	2.56		1.50	4.00	3.33	.63		3.00	.38	15.4
	614R	2.13		1.63	2.50	3.08	.50		3.00	.38	13.0
	1188R	1.72		1.00	3.38	2.53	.38		2.00	.19	5.0
	50001	1.69		1.13	2.25	2.31	.50		2.50	.31	8.1
	A-1/A-2	53R	1.47	1.06	.81	2.00	2.16	.31	.25	.97	.19
US-90R		2.00	2.00	1.13	3.13	2.63	.38	.38	1.00	.19	6.3
94R		1.38	1.50	.88	2.50	1.88	.38	.38	1.25	.25	4.7
95R		1.38	1.19	.81	2.63	2.16	.31	.38	1.41	.19	3.9
A-11	53R	1.58	1.06	.09	2.00	1.94	.25		.97	.19	4.4
	94R	1.75	1.38	.13	2.50	2.50	.50		1.31	.25	5.2
	603R	2.56	2.25	.13	3.25	3.06	.25		1.88	.25	7.6
	604R	2.56	2.25	.13	3.25	3.06	.38		1.88	.25	7.6
	607R	2.56	2.25	.13	3.25	3.17	.38		1.88	.25	7.6
	614R	2.75	2.88	.19	4.50	3.56	.50		1.56	.38	12.5
	626R	2.19	2.25	.13	3.25	2.88	.38		1.88	.25	12.0
A-63	53R	1.63	.63	.09	1.50	2.09	.25		1.19	.19	4.4
A-22	94R	1.84		.19	1.25	2.44	.38		2.00	.38	4.5
	614R	2.25		.25	2.00	3.06	.50		3.00	.38	11.9
A-42	53R	1.56		.13	1.00	2.00	.38		1.50	.25	4.2
	86R	2.34		.19	2.00	3.16	.50		3.00	.38	6.4
	95R	1.63		.19	1.25	2.13	.38		2.00	.38	3.6
	119R	2.00		.25	1.38	2.69	.63		1.50	.50	7.5
	604R	2.34		.25	2.00	3.16	.63		3.00	.50	6.2
	614R	2.75		.25	2.00	3.75	.63		3.00	.50	12.3
	631R	2.75		.25	2.00	3.50	.63		3.00	.50	13.5
	1131R	2.84		.25	2.00	3.84	.63		3.00	.50	13.8
	1604R	2.31		.25	2.00	3.06	.63		3.00	.50	6.7
	2184RX	2.63		.25	2.00	3.63	.63		3.00	.50	13.6

Note: Some A-1 attachments are supplied with three holes. Use the center hole.

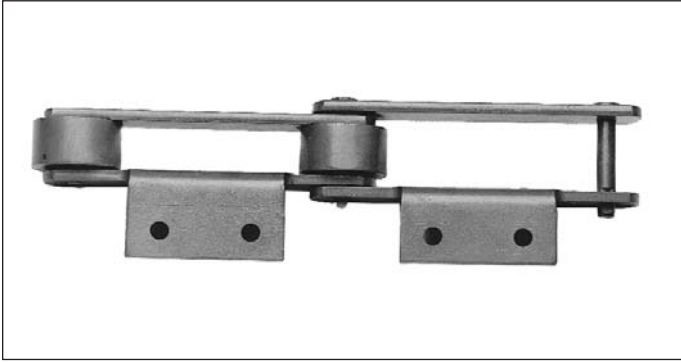
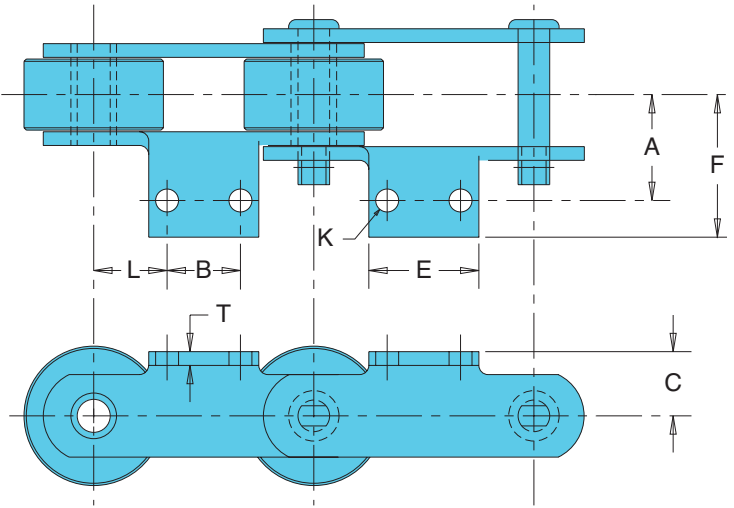
Indicates this chain is normally stocked. All others are made-to-order.

Style "A" attachments are furnished on the cotted side as standard. If requested, they can be furnished on the opposite side of the chain.

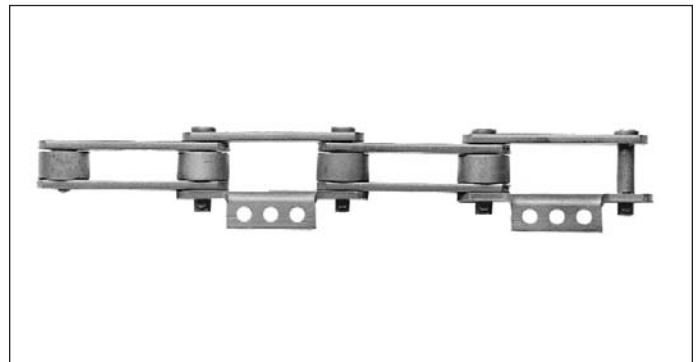
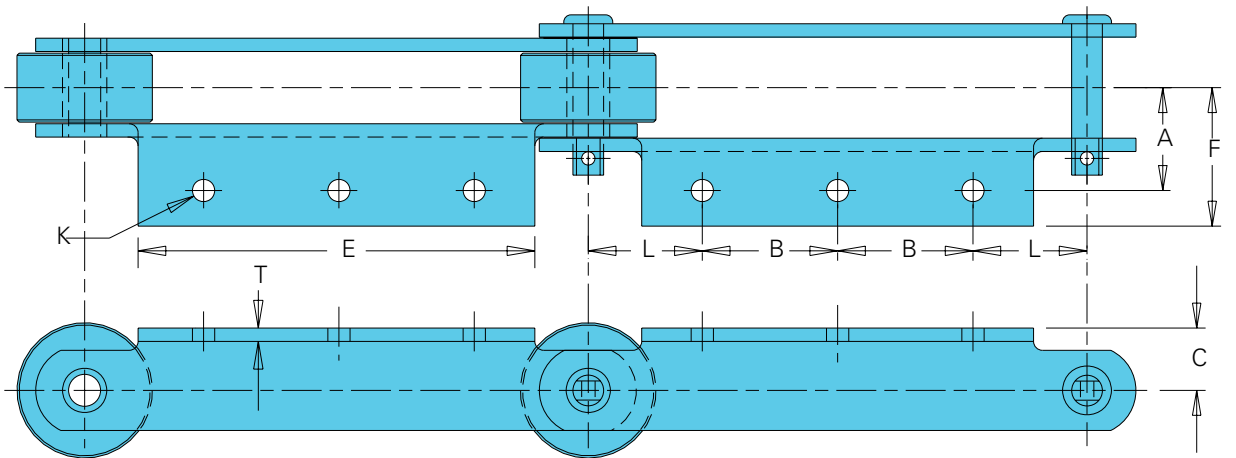
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**A-2 Attachment**



**A-3 Attachment**



**Roller Conveyor Chain Attachment Specifications (Continued)**

All dimensions are in inches unless otherwise indicated.

Attachment Number	Chain Number	A	B	C	E	F	Bolt Diameter	K	L	T	Approx. Weight (lbs./ft.)
A-2	53R	1.47	1.06	.81	2.00	2.16	.25	.97	.19	4.4	
	83R	2.00	1.75	1.00	2.88	2.84	.38	1.13	.25	8.1	
	84R	2.66	1.75	1.25	2.88	3.41	.38	1.13	.38	18.0	
	86R	2.00	2.00	1.13	3.50	2.72	.38	2.00	.25	6.2	
	87R	2.13	1.25	.81	2.13	2.63	.31	.68	.25	4.8	
	US-90R	2.00	2.00	1.13	3.13	2.63	.38	1.00	.19	6.3	
	91R	1.81	1.75	1.06	2.88	2.47	.50	1.13	.31	7.9	
	93R	1.88	1.25	1.00	2.00	2.69	.38	.88	.25	5.5	
	94R	1.38	1.50	.88	2.50	1.88	.38	1.25	.25	4.7	
	95R	1.38	1.19	.81	2.63	2.16	.31	1.41	.19	3.9	
	96R	2.19	3.00	1.63	5.50	3.00	.50	1.50	.38	13.7	
	119R	2.00	1.88	1.25	2.88	2.56	.31	.59	.31	7.9	
	US-196R	2.00	2.00	1.25	3.50	2.63	.38	2.00	.25	6.6	
	US-278R	2.09	1.25	.81	2.13	2.72	.31	.68	.19	3.9	
	603R	2.00	2.00	1.13	3.50	2.72	.38	2.00	.25	8.9	
	604R	2.00	2.00	1.13	3.50	2.72	.38	2.00	.25	6.0	
	607R	2.00	2.00	1.13	3.50	2.72	.38	2.00	.25	6.9	
	614R	2.13	2.63	1.63	5.50	2.92	.50	1.69	.38	13.0	
	625R	2.19	2.00	1.63	4.63	2.91	.38	2.00	.25	12.5	
	626R	2.19	2.00	1.63	3.50	3.05	.38	2.00	.38	12.7	
	627R	2.00	2.00	1.13	3.50	2.80	.38	2.00	.31	8.5	
	628R	2.36	2.00	1.63	3.50	3.25	.50	2.00	.38	10.2	
	629R	2.00	2.50	2.00	3.50	2.86	.38	1.75	.31	11.7	
	631R	2.13	2.63	1.63	5.50	2.92	.50	1.69	.38	14.2	
	60001	2.08	2.13	1.25	3.25	2.69	.38	1.94	.31	8.4	
	B-912R	2.56	3.50	1.75	5.50	3.91	.50	2.75	.25	11.1	
	925R	2.50	3.50	1.75	5.50	3.38	.50	2.75	.25	10.7	
	B-963R	2.88	3.50	2.50	5.50	4.28	.50	2.75	.25	14.6	
	C-963R	2.88	3.50	2.50	5.50	4.28	.50	2.75	.25	15.0	
	D-963R	2.88	3.50	2.50	5.50	4.28	.50	2.75	.25	13.9	
	E-963R	2.88	3.50	2.50	5.50	4.28	.50	2.75	.25	13.9	
	B-964R	3.00	3.50	2.88	5.50	4.41	.50	2.75	.31	19.4	
973R	3.75	3.50	3.63	5.50	4.88	.50	2.75	.38	26.0		
1113R	2.06	1.50	1.25	2.88	2.77	.38	1.27	.31	9.3		
1131R	3.00	2.63	1.63	5.50	3.75	.50	1.69	.38	15.5		
1188R	2.00	2.00	1.00	3.50	2.78	.38	1.00	.19	5.0		
B-1212R	2.56	6.00	1.75	8.00	3.56	.50	3.00	.25	9.5		
B-1263R	2.88	6.00	2.50	8.00	4.28	.50	3.00	.25	12.9		
D-1263R	2.88	6.00	2.50	8.00	4.28	.50	3.00	.25	13.1		
E-1263R	2.88	6.00	2.50	8.00	4.28	.50	3.00	.25	14.3		
B-1264R	3.00	6.00	2.88	8.00	4.41	.50	3.00	.31	17.1		
B-1266R	2.69	6.00	1.88	8.00	3.69	.50	3.00	.25	11.5		
1273R	3.75	6.00	3.63	8.00	5.34	.50	3.00	.38	25.8		
1276R	3.03	6.00	2.75	8.00	4.13	.50	3.00	.25	16.9		
A-3	B-1863R	2.88	5.50	2.50	14.00	4.28	.50	3.50	.25	11.4	
	D-1863R	2.88	5.50	2.50	14.00	4.28	.50	3.50	.25	11.9	
	F-1863R	2.88	5.50	2.50	14.00	4.28	.50	3.50	.25	12.3	
	B-1864R	3.00	11.00	2.88	14.00	4.00	.50	3.50	.31	15.1	
	G-1864R	3.00	11.00	2.88	14.00	4.00	.50	3.50	.31	14.9	
	1866R	4.00	11.00	4.13	13.50	5.17	.50	3.50	.38	32.0	
	1867R	4.13	10.00	4.13	13.00	5.28	.50	4.00	.38	37.0	
	1871R	3.75	11.00	3.63	14.00	4.91	.50	3.50	.38	26.3	
	1873R	3.75	11.00	3.63	14.00	4.84	.50	3.50	.38	22.3	

Note: Some A-2 attachments are supplied with three holes. Use the two outside holes.

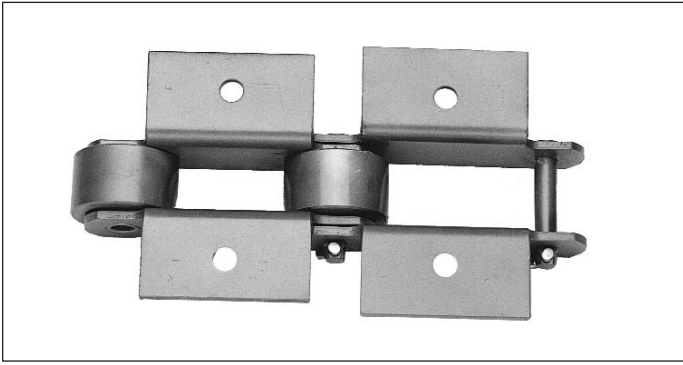
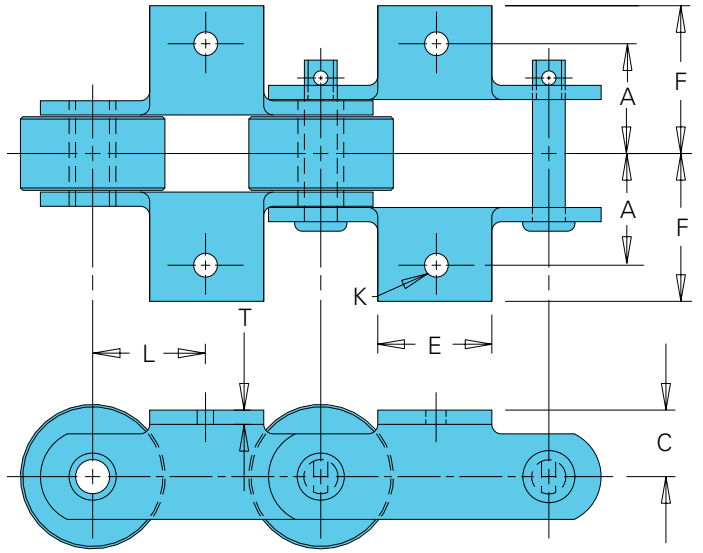
Indicates this chain is normally stocked. All others are made-to-order.

Style "A" attachments are furnished on the cotted side as standard. If requested, they can be furnished on the opposite side of the chain.

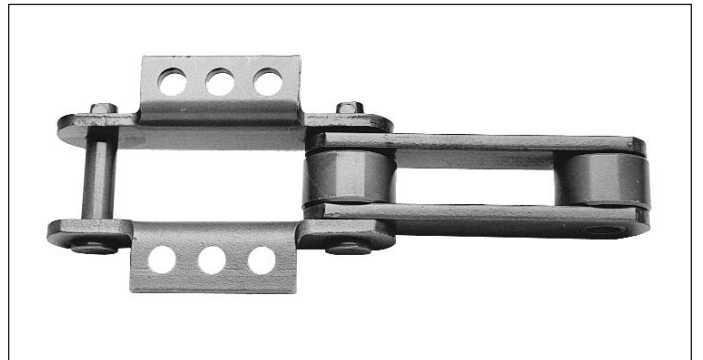
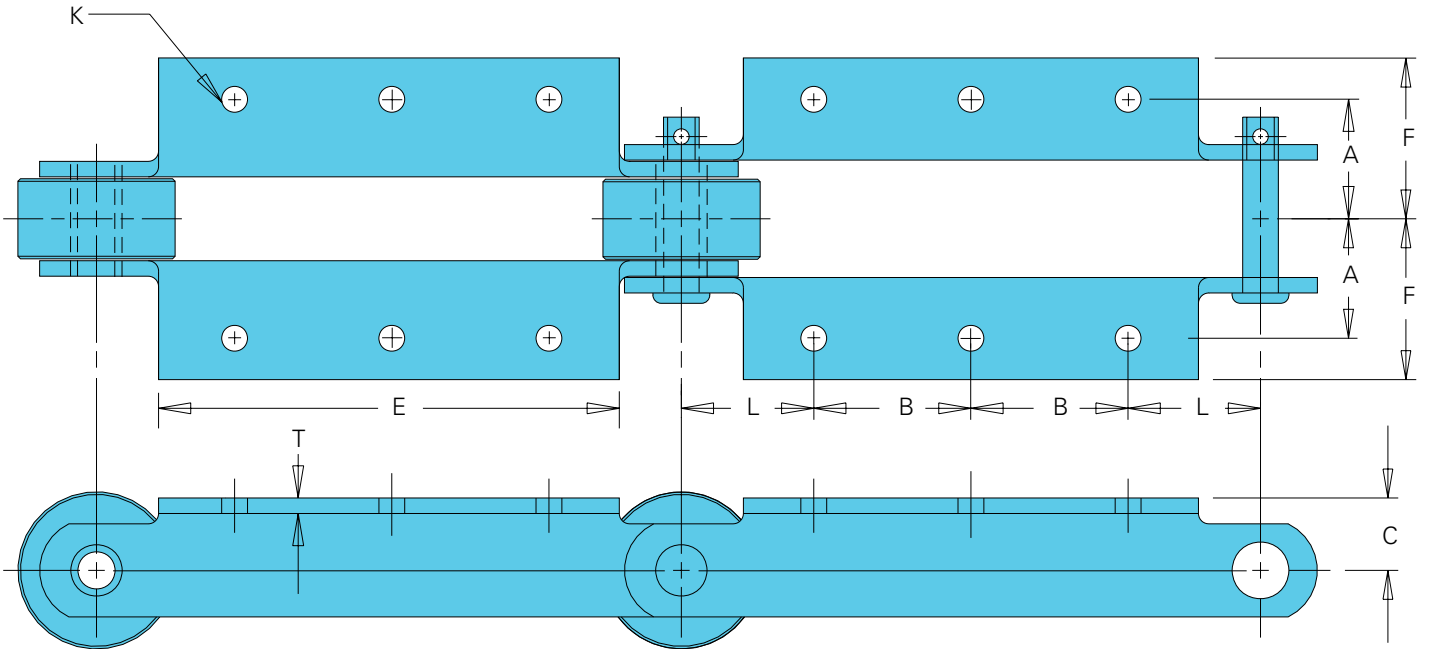
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**K-1 Attachment**



**K-3 Attachment**



**Roller Conveyor Chain Attachment Specifications (Continued)**

All dimensions are in inches unless otherwise indicated.

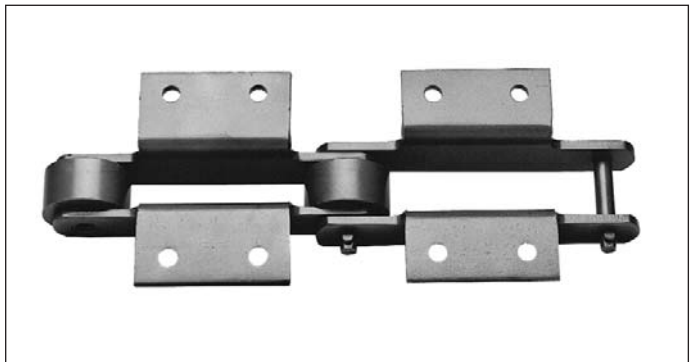
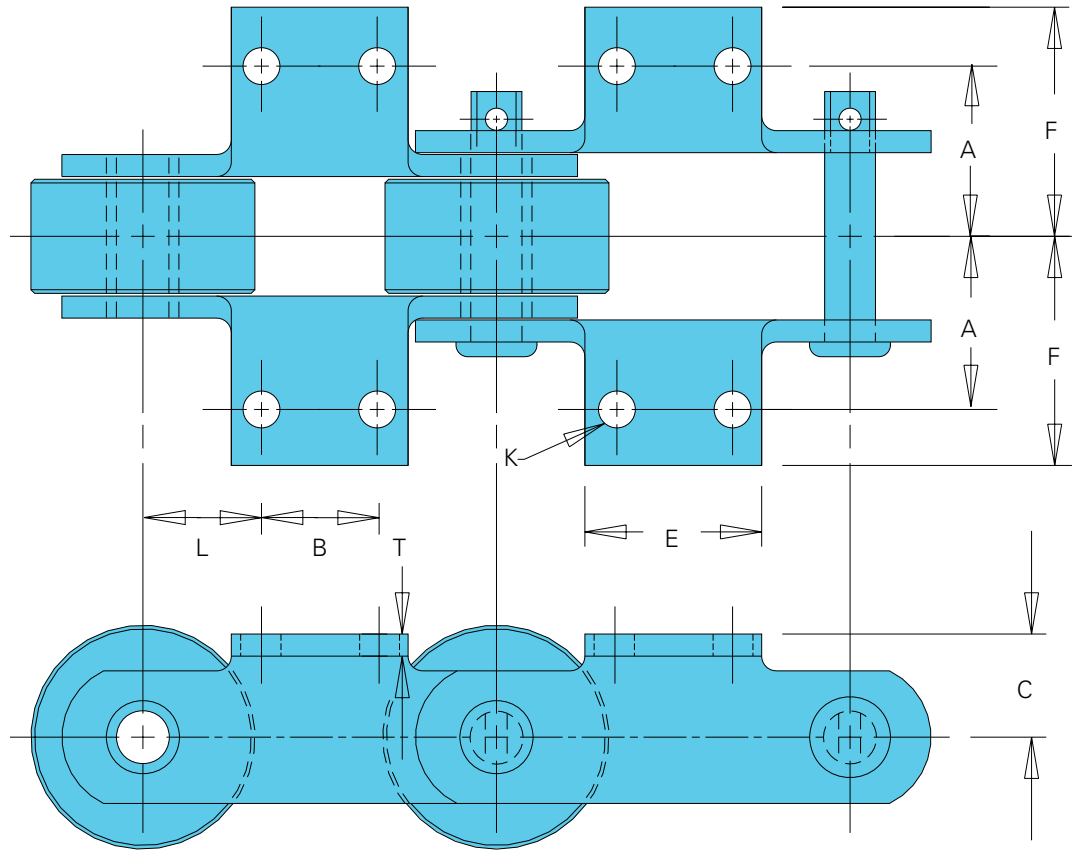
Attachment Number	Chain Number	A	B	C	E	F	Bolt Diameter	K	L	T	Approx. Weight (lbs./ft.)
K-1	53R	1.47		.81	2.00	2.16	.31	1.50	.19		4.9
	83R	2.00		1.00	2.00	2.84	.38	2.00	.25		9.4
	84R	2.66		1.25	2.00	3.66	.63	2.00	.38		20.7
	89R	2.00		1.25	2.00	3.17	.38	2.00	.38		13.0
	US-90R	2.00		1.13	3.13	2.63	.38	2.00	.19		7.3
	91R	1.81		1.06	2.88	2.47	.50	2.00	.31		8.8
	93R	1.88		1.00	1.63	2.69	.50	1.34	.25		6.0
	94R	1.38		.88	2.50	1.88	.38	2.00	.25		5.3
	95R	1.38		.81	2.63	2.16	.38	2.00	.19		4.4
	96R	2.19		1.63	5.50	2.89	.63	3.00	.38		15.8
	119R	2.09		1.06	2.88	2.80	.50	1.54	.31		9.0
	US-196R	2.00		1.25	3.50	2.63	.38	3.00	.25		7.5
	US-278R	1.91		.81	2.13	2.47	.38	1.30	.19		4.1
	378R	1.50		.88	.88	1.89	.31	.83	.19		5.1
	603R	2.00		1.13	3.50	2.72	.38	3.00	.25		9.7
	604R	2.00		1.13	3.50	2.72	.38	3.00	.25		7.2
	607R	2.00		1.13	3.50	2.78	.38	3.00	.25		8.3
	610R	2.56		1.50	4.00	3.32	.63	3.00	.38		17.3
	614R	2.13		1.63	2.50	3.08	.50	3.00	.38		15.0
	1188R	1.72		1.00	3.38	2.58	.38	2.00	.19		5.9
K-3	B-1863R	2.88	5.50	2.50	14.00	4.28	.50	3.50	.25		14.1
	D-1863R	2.88	5.50	2.50	14.00	4.28	.50	3.50	.25		14.6
	F-1863R	2.88	5.50	2.50	14.00	4.28	.50	3.50	.25		15.0
	B-1864R	3.00	5.50	2.88	14.00	4.00	.50	3.50	.31		17.3
	G-1864R	3.00	5.50	2.25	14.00	4.00	.50	3.50	.31		18.6
	1866R	4.00	5.50	4.13	13.50	5.16	.50	3.50	.38		37.7
	1867R	4.13	5.00	4.13	13.00	5.28	.50	4.00	.38		42.5
	1871R	3.75	5.50	3.63	14.00	4.91	.50	3.50	.38		31.7
	1873R	3.75	5.50	3.63	14.00	4.84	.50	3.50	.38		27.7

Note: Some K-1 attachments are supplied with three holes. Use the center hole.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## K-2 Attachment



## Roller Conveyor Chain Attachment Specifications (Continued)

All dimensions are in inches unless otherwise indicated.

Attachment Number	Chain Number	A	B	C	E	F	Bolt Diameter	K	L	T	Approx. Weight (lbs./ft.)
K-2	53R	1.47	1.06	.81	2.00	2.16	.25	.97	.19	4.9	
	83R	2.00	1.75	1.00	2.88	2.84	.38	1.13	.25	9.4	
	84R	2.66	1.75	1.25	2.88	3.41	.38	1.13	.38	20.7	
	87R	2.13	1.25	.81	2.13	2.63	.31	.68	.25	5.8	
	US-90R	2.00	2.00	1.13	3.25	2.63	.38	1.00	.19	7.3	
	91R	1.81	1.75	1.06	2.88	2.47	.50	1.13	.31	8.8	
	93R	1.88	1.25	1.00	2.00	2.69	.38	.88	.25	6.0	
	94R	1.38	1.50	.88	2.50	1.88	.38	1.25	.25	5.3	
	95R	1.38	1.19	.81	2.63	2.16	.31	1.41	.19	4.4	
	96R	2.19	3.00	1.63	5.50	3.00	.50	1.50	.38	15.8	
	96RX	2.19	3.00	1.63	5.50	2.93	.50	1.50	.38	15.8	
	119R	2.00	1.88	1.25	2.88	2.56	.31	.59	.31	9.0	
	US-196R	2.00	2.00	1.25	3.50	2.63	.38	2.00	.25	7.5	
	US-278R	2.09	1.25	.81	2.13	2.72	.31	.68	.19	4.1	
	603R	2.00	2.00	1.13	3.50	2.72	.38	2.00	.25	9.1	
	604R	2.00	2.00	1.13	3.50	2.72	.38	2.00	.25	7.0	
	607R	2.00	2.00	1.13	3.50	2.72	.38	2.00	.25	7.4	
	614R	2.13	2.63	1.63	5.50	2.92	.50	1.69	.38	15.0	
	625R	2.19	2.00	1.63	4.63	2.91	.38	2.00	.25	13.9	
	626R	2.19	2.00	1.63	3.50	3.05	.38	2.00	.38	14.7	
	627R	2.00	2.00	1.13	3.50	2.80	.38	2.00	.31	10.7	
	628R	2.38	2.00	1.63	3.50	3.25	.50	2.00	.38	11.7	
	629R	2.00	2.50	2.00	3.50	2.86	.38	1.75	.31	13.7	
	631R	2.13	2.63	1.63	5.50	2.92	.50	1.69	.38	16.4	
	800RX	2.59	4.50	2.19	7.00	3.55	.63	1.75	.50	26.1	
	806R	2.59	3.50	2.19	6.88	3.80	.63	2.25	.50	22.5	
	B-912R	2.56	3.50	1.75	5.50	3.91	.50	2.75	.25	13.1	
	925R	2.50	3.50	1.75	5.50	3.38	.50	2.75	.25	13.2	
	B-963R	2.88	3.50	2.50	5.50	4.28	.50	2.75	.25	16.6	
	D-963R	2.88	3.50	2.50	5.50	4.28	.50	2.75	.25	16.0	
	E-963R	2.88	3.50	2.50	5.50	4.28	.50	2.75	.25	18.5	
	B-964R	3.00	3.50	2.88	5.50	4.41	.50	2.75	.31	22.3	
	973R	3.00	3.00	3.00	5.00	4.00	.50	2.00	.38	30.0	
	1113R	2.06	1.50	1.25	2.88	2.77	.38	1.27	.31	11.0	
	1131R	3.00	2.63	1.63	5.50	3.75	.50	1.69	.38	18.4	
	1188R	2.00	2.00	1.00	3.50	2.78	.38	1.00	.19	5.9	
	B-1212R	2.56	6.00	1.75	8.00	3.56	.50	3.00	.25	11.7	
	B-1263R	2.88	6.00	2.50	8.00	4.28	.50	3.00	.25	15.2	
	D-1263R	2.88	6.00	2.50	8.00	4.28	.50	3.00	.25	15.4	
	E-1263R	2.88	6.00	2.50	8.00	4.28	.50	3.00	.25	16.6	
	B-1264R	3.00	6.00	2.88	8.00	4.41	.50	3.00	.31	20.3	
	B-1266R	2.69	6.00	1.88	8.00	3.69	.50	3.00	.25	14.0	
1273R	3.75	6.00	3.63	8.00	5.34	.50	3.00	.38	30.4		
1276R	3.03	6.00	2.75	8.00	4.13	.50	3.00	.25	19.2		
2178RX	2.19	3.00	1.63	4.50	3.02	.50	1.50	.38	15.3		
2198R	2.19	3.00	1.63	4.50	3.31	.50	1.50	.50	18.2		
2198RX	2.19	3.00	1.63	4.50	3.31	.50	1.50	.50	18.2		

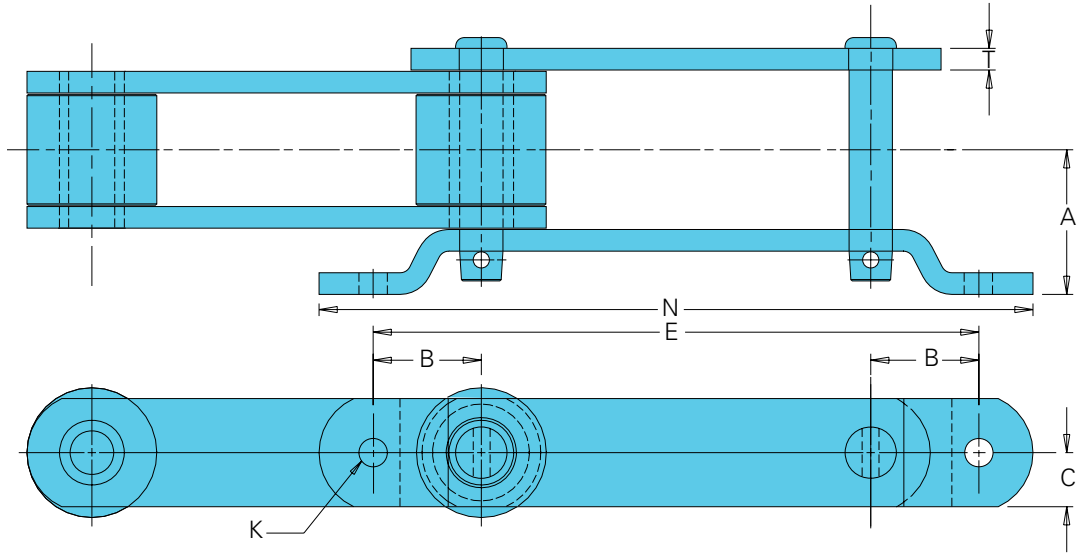
Note: Some K-2 attachments are supplied with three holes. Use the two outside holes.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

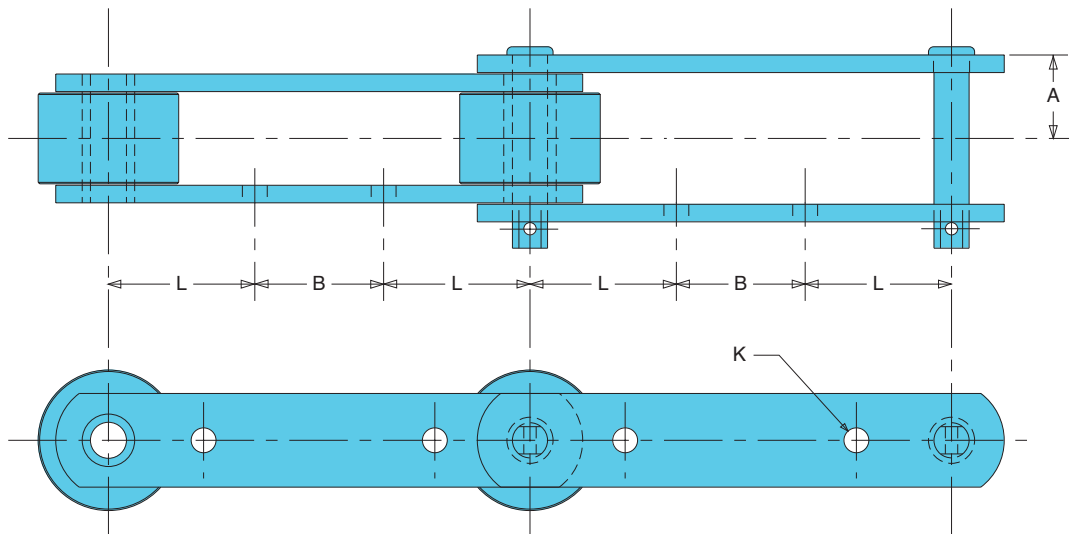
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



### G-5 Attachment



### G-6 Attachment



**Roller Conveyor Chain Attachment Specifications (Continued)**

All dimensions are in inches unless otherwise indicated.

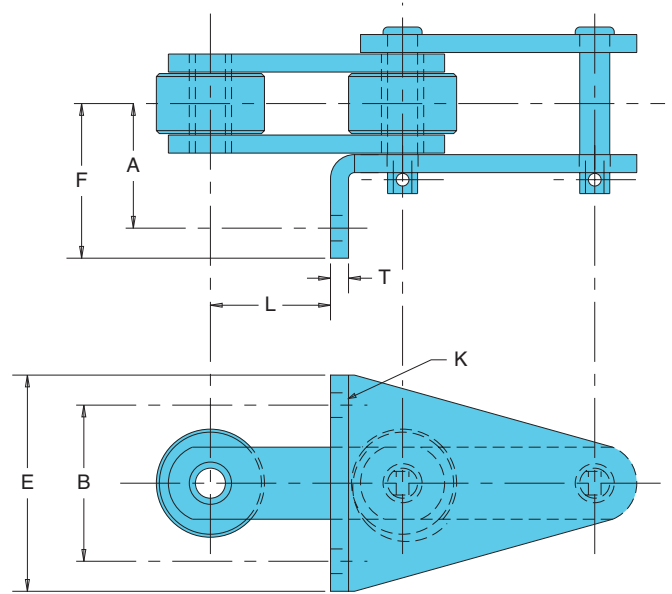
Attachment Number	Chain Number	A	B	C	E	Bolt Diameter	K	L	N	T	Approx. Weight (lbs./ft.)
G-5	4004	3.34	2.50	1.25	14.00	.63	—	—	16.50	.50	18.5
	4009	3.03	2.50	1.25	14.00	.63	—	—	16.50	.38	14.7
	4065	3.94	2.50	1.75	14.00	.63	—	—	16.50	.63	38.6
G-6	809R	1.53	2.75			.50		3.13			14.2
	B-912R	1.41	2.75			.50		3.13			10.0
	925R	1.38	2.75			.50		3.13			8.5
	B-963R	1.78	3.00			.50		3.00			13.9
	D-963R	1.78	3.00			.50		3.00			13.2
	E-963R	1.78	3.00			.50		3.00			15.8
	B-964R	1.91	2.50			.50		3.25			18.1
	973R	2.34	3.50			.63		2.75			25.5
	B-1212R	1.41	3.75			.50		4.13			8.2
	B-1263R	1.78	3.75			.50		4.13			11.6
	C-1263R	1.78	3.75			.50		4.13			11.9
	D-1263R	1.78	3.75			.50		4.13			11.8
	E-1263R	1.78	3.75			.50		4.13			13.0
	B-1264R	1.91	3.75			.50		4.13			15.4
	B-1266R	1.59	3.75			.50		4.13			10.1
	1273R	2.34	3.75			.63		4.13			23.2
	1276R	1.66	5.50			.50		3.25			20.6
	B-1863R	1.78	6.00			.50		6.00			9.9
	D-1863R	1.78	6.00			.50		6.00			10.4
	F-1863R	1.78	6.00			.50		6.00			10.8
	B-1864R	1.91	6.00			.63		6.00			12.8
	G-1864R	1.91	6.00			.63		6.00			12.6
	1867R	2.78	6.00			.63		6.00			34.9
	1871R	2.41	6.00			.63		6.00			23.3
1873R	2.34	6.00			.63		6.00			18.8	

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

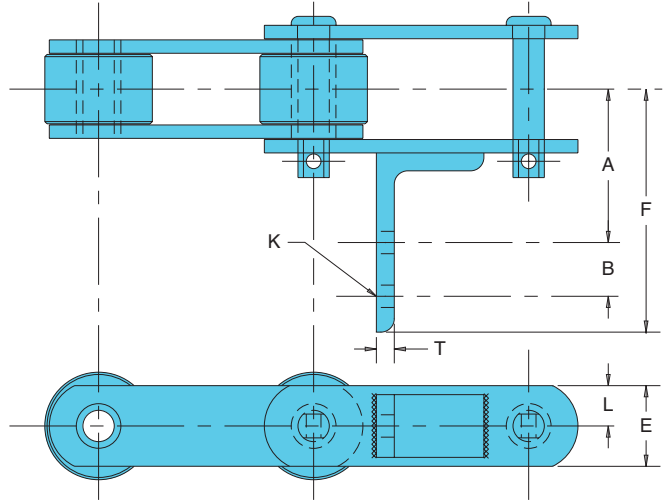
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



**G-19 Attachment**



**G-29 Attachment**



**Roller Conveyor Chain Attachment Specifications (Continued)**

All dimensions are in inches unless otherwise indicated.

Attachment Number	Chain Number	A	B	E	F	Bolt Diameter	K	L	T	Approx. Weight (lbs./ft.)
G-19	89R	2.63	3.25	4.50	3.44	.50	2.50	.38	11.7	
	89RX	2.63	3.25	4.50	3.24	.50	2.50	.38	11.7	
	925R	2.56	3.50	5.50	3.38	.50	2.63	.25	9.8	
	B-1263R	2.78	3.50	5.50	3.78	.50	2.63	.25	13.9	
	C-1263R	2.78	3.50	5.50	3.78	.50	2.63	.25	14.2	
	D-1263R	2.78	3.50	5.50	3.78	.50	2.63	.25	13.4	
	E-1263R	2.78	3.50	5.50	3.78	.50	2.63	.25	15.3	
	B-1264R	2.91	3.50	5.50	3.91	.50	2.63	.31	18.2	
	B-1266R	2.59	3.50	5.50	3.59	.50	2.63	.25	12.0	
	1273R	3.34	5.00	7.50	4.34	.50	2.63	.38	27.6	
	B-1863R	2.78	3.50	5.50	3.78	.50	5.63	.25	11.0	
	D-1863R	2.78	3.50	5.50	3.78	.50	5.63	.25	11.5	
	F-1863R	2.78	3.50	5.50	3.78	.50	5.63	.25	11.9	
	B-1864R	2.91	3.50	5.50	3.91	.50	5.63	.31	14.2	
	G-1864R	2.91	3.50	5.50	3.91	.50	5.63	.31	14.0	
	1867R	3.78	3.50	5.50	4.78	.50	5.63	.38	35.9	
	1871R	3.41	3.50	5.50	4.41	.50	5.63	.38	24.7	
1873R	3.34	5.00	7.50	4.34	.50	5.63	.38	21.2		
G-29	94R	1.84	1.13	1.25	3.69	.38	.63	.25	5.3	
	1131R	2.78	1.50	2.00	5.03	.44	1.00	.38	15.2	

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

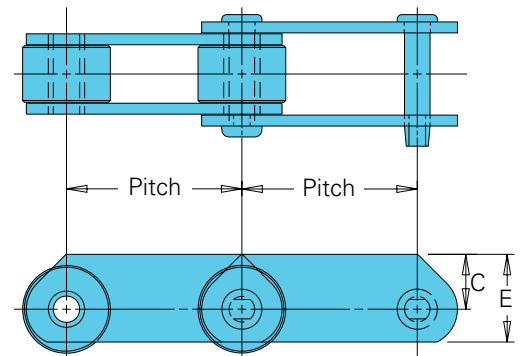
### Roller Conveyor Chain Attachment Specifications (Continued)

All dimensions are in inches unless otherwise indicated.

Attach. Number	Chain Number	Pitch			Approx. Weight (lbs./ft.)
			C	E	
High Side Bar Chains	53R	3.000	.94	1.50	5.0
	94R	4.000	.88	1.50	4.8
	95R	4.000	.94	1.50	4.1
	US-90R	4.000	1.25	2.00	7.0
	89R	4.000	1.25	2.00	11.9
	84R	4.000	1.50	2.25	16.4
	6053R	6.000	1.38	2.00	5.1
	627R	6.000	1.25	2.00	6.6
	CC5	6.000	1.50	2.50	11.0
	614R	6.000	2.00	3.00	14.7

Indicates this chain is normally stocked. All others are made-to-order.

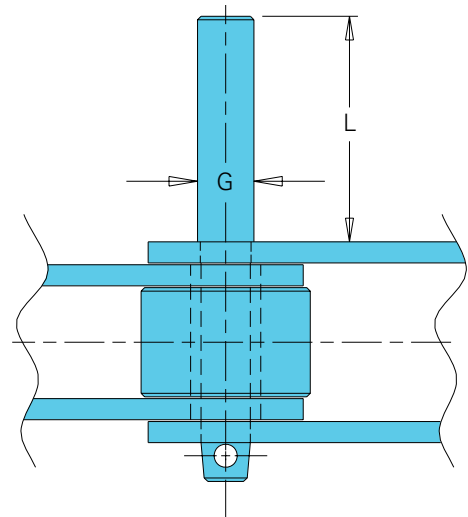
### High Sidebar Chains



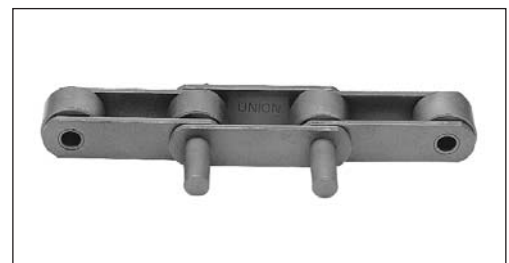
### D-1, D-5 Attachments

Chain Number	Diameter			Approx. Weight (lbs./ft.)
		G	L	
53R	.75	2.00	4.9	
94R	.75	2.00	4.8	
US-196R	.75	3.00	5.8	

### D-1 and D-5



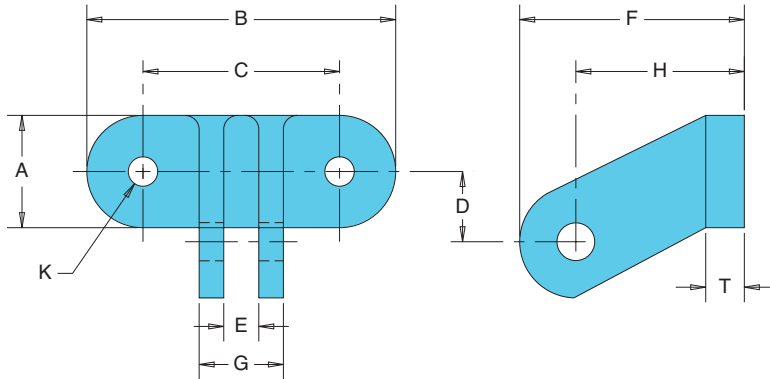
Extended pin attachments of any length can be furnished on all chains listed provided "G" dimension is the same as or exceeds the chain pin diameter.



To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

### Style C Attachment

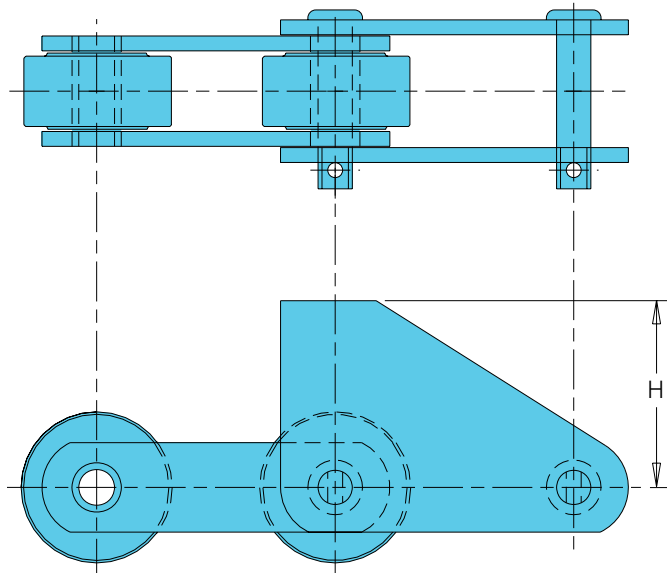


### Hinged Bucket and Scraper Flight Wing Attachment Specifications

All dimensions are in inches unless otherwise indicated.

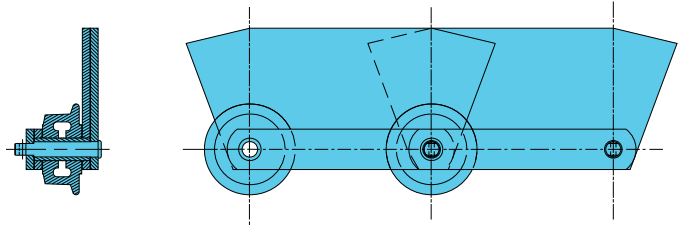
Bucket Wing Style	Attach. No.	Standard	A	B	C	D	E	F	G	H	K	L	T	Approx. Weight (lbs./ft.)
Style C	2C	X	2.00	5.13	3.50	1.00	.63	4.00	1.50	3.08	.50	.63	.69	2.8
	15C		1.75	3.50	2.50	.81	.44	1.81	1.00	1.13	.31	.38	.28	.7

### L-2 and S-1 Attachments



Attachments L-2 and S-1 can be furnished with any chain to suit special requirements provided height of dimension "H" does not exceed five inches from center line of chain.

### G-2 Attachment



Attachment G-2 is simply an extra height chain sidebar with attachment angle usually used as pan ends on style B and D apron conveyors as shown on page A-40. It can be furnished with any chain in any reasonable height to suit requirements. The attachment is designated by G-2 followed by a hyphen and number giving overall height in inches. For example, G-2-5 is a sidebar with overall height of 5". G-2-6 1/2 is a sidebar with overall height of 6 1/2".

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## APRON CONVEYORS

Move loose bulk materials like coal, lime, sand, stone, and sugar cane along horizontal or inclined conveyors. Apron Conveyors are especially useful as feeders to elevating systems, for picking tables and loading booms, and for long horizontal or inclined conveyors.

### Create Custom Solutions

Union engineers will help you create a complete apron conveyor system for your application, including the right attachments, rollers, and lubrication packages to meet your specific requirements.

### Apron Conveyors from Union

- Wide selection and styles.
- Customized for your application.
- Reliable, hassle-free operation.
- Cost-efficient value for your investment.

### Choosing Metal Thickness

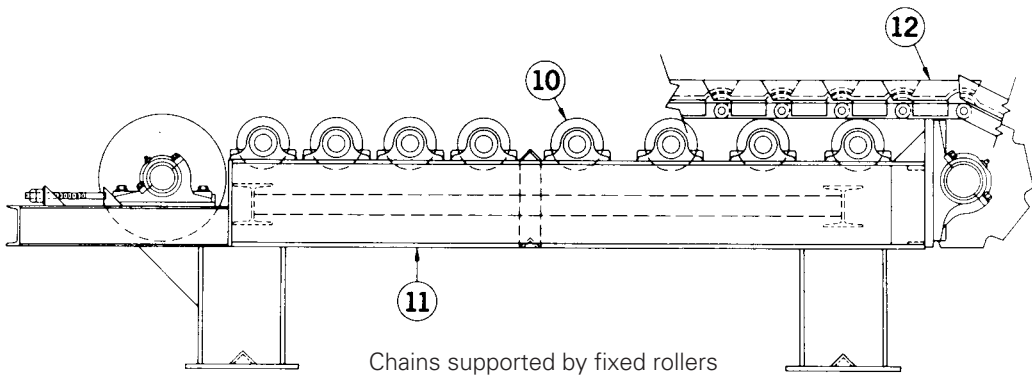
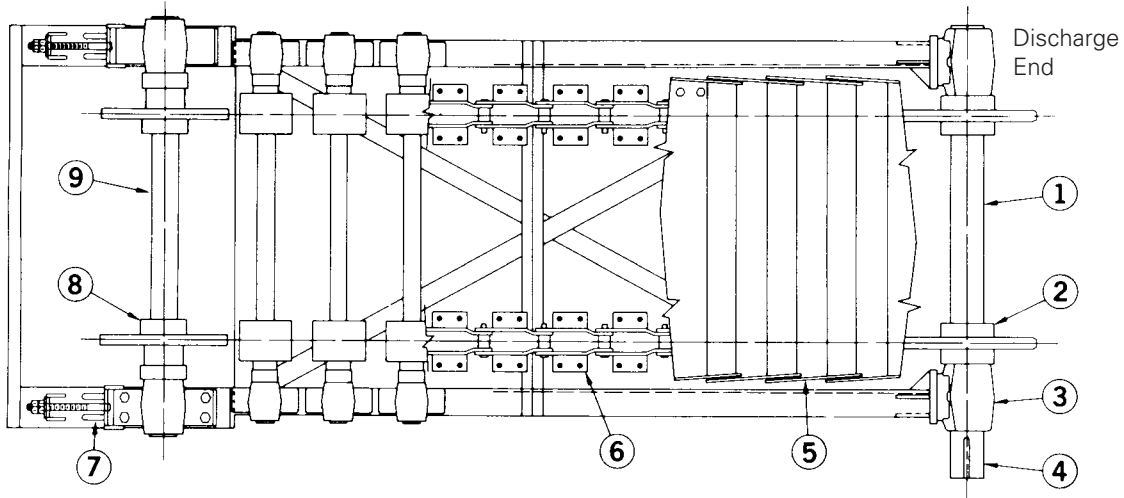
Experience is usually the best guideline for specifying the metal thickness for pans and aprons. Make sure you consider the following points.

1. Number of chain strands to be used.
2. Required service life.
3. Manufacturing restrictions.
4. Weight of each apron support. Deflection must be limited to prevent binding between overlapping pans.
5. Corrosive and abrasive properties of conveyed materials.

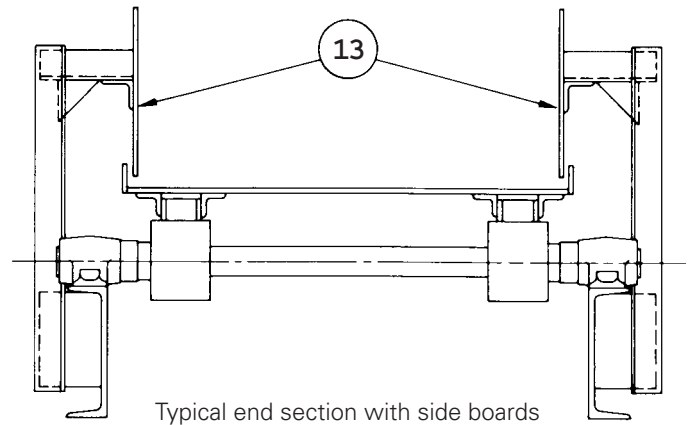
### Applications Chart

Pan/Apron Suggested Thickness (inches)	Service Conditions	Material Handled
3/8	Heavy	Highly abrasive, corrosive or large impact loads
1/4 - 5/16	Medium	Moderately corrosive, abrasive or impact loads
3/16	Light	Mildly abrasive, corrosive or impact loads

**Typical Arrangement—Apron Conveyors**

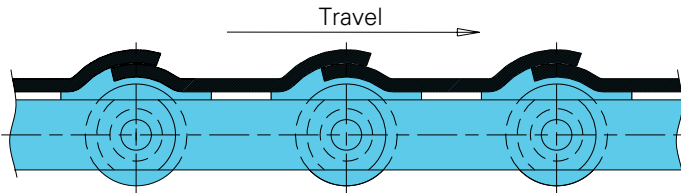
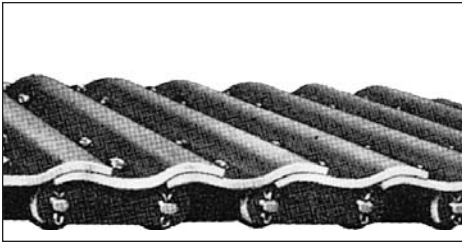


1. Head shaft — Discharge end.
2. Head shaft sprockets — Keyed to shaft.
3. Pillow blocks.
4. Drive end — Chain drive.
5. Apron assembly — Bolted to chain attachments.
6. Conveyor chain — Offset sidebar or straight sidebar (two or three strands normally used).
7. Take up — Normally located on tail shaft end.
8. Tail shaft sprockets — Only one keyed to shaft (other sprockets locked in place with collars).
9. Tail shaft.
10. Intermediate rollers — Supports chain sections when conveyor is heavily loaded.
11. Conveyor structure.
12. Pan ends — Welded to aprons.
13. Stationary sideboards — Offer additional capacity.





## Style A



### Uses

- Adaptable for any pitch conveyor.
- Most widely used style for horizontal or incline applications up to 35 degrees.

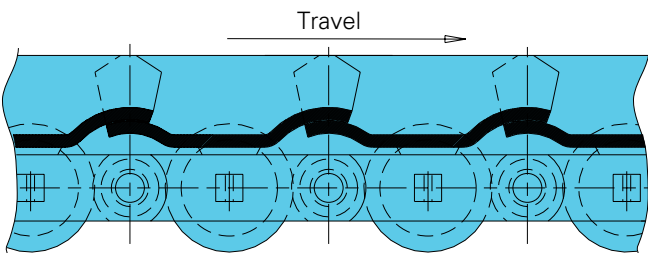
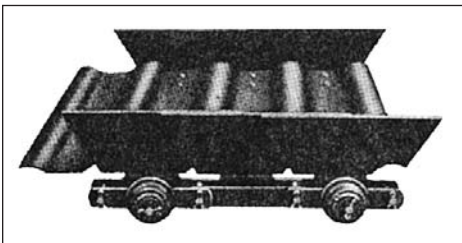
### Advantages

- More leakproof than other styles of apron conveyor.
- With K attachments, the load is distributed evenly on both chains.
- Pan ends, when needed, fasten directly to apron and not to chain.

### Attachments

- A attachments (one side of chain only) for long center distances.
- K attachments (both sides of chain) for short center distances.

## Style A — Outboard Roller Support (OBR)



### Uses

- Handles fine abrasive materials on incline applications up to 35 degrees.
- Longer pitch conveyors with two strands of chain mounted below and close to the ends of the pans.

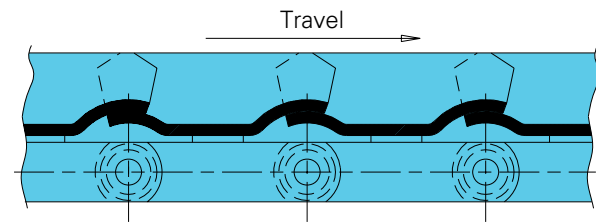
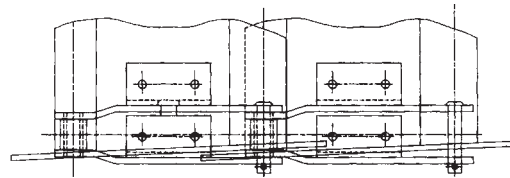
### Advantages

- Close-fitting members hold leakage to a minimum, protecting the conveyor and avoiding damage when handling abrasives.
- Reduced maintenance costs because outboard rollers may be removed for inspection or renewal without dismantling chains or pans.
- Conveyed load is carried on outboard rollers.
- Head shaft terminal load is carried on chain rollers.

### Attachments

- A-2, E-2, M-1 attachments are commonly used.

## Style A — Fixed Roller Support



### Uses

- Handles heavy conveyed materials.
- Withstands high-impact loads.

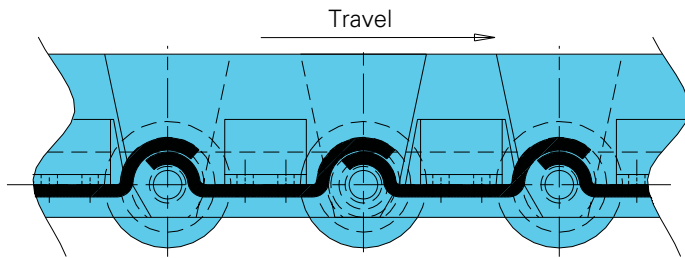
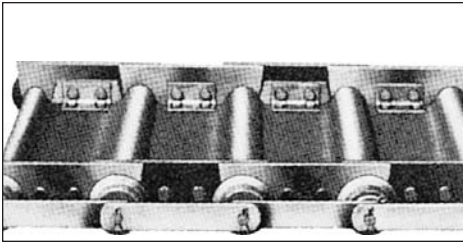
### Advantages

- Chain is supported under sidebars by fixed frame rolls that transfer load instead of chain joint rollers.
- The close-fitting members keep leakage to a minimum, protecting your equipment from abrasives.

### Attachments

- K attachments usually improve load distribution.
- K-1, K-2, A-1, A-2, E-2 attachments are commonly used.

### Style B



#### Uses

- Suitable for heaviest duty conditions; generally used in longer pitch conveyors.
- Adaptable to various service and operational conditions for horizontal or incline applications as much as 35 degrees.

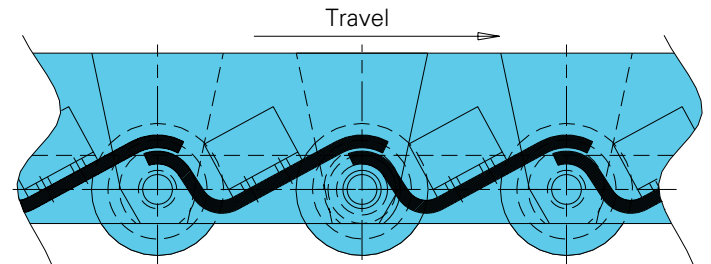
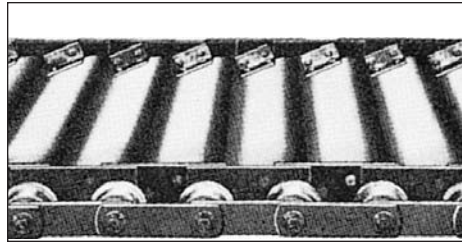
#### Advantages

- Deep beads form a rigid pan for heavy loads on wide conveyors.
- Chain rollers permit return strand to roll on a track.
- Through-rods and load deflection rail supports may be used to prevent excessive chain loading under heavy impact conditions.

#### Attachments

- G-2 attachments (high sidebars with angles) contain material, add strength, and function as moving pan ends.

### Style D



#### Uses

- Positive discharge aprons.
- Adaptable to various service and operating conditions for horizontal or incline applications as much as 35 degrees.

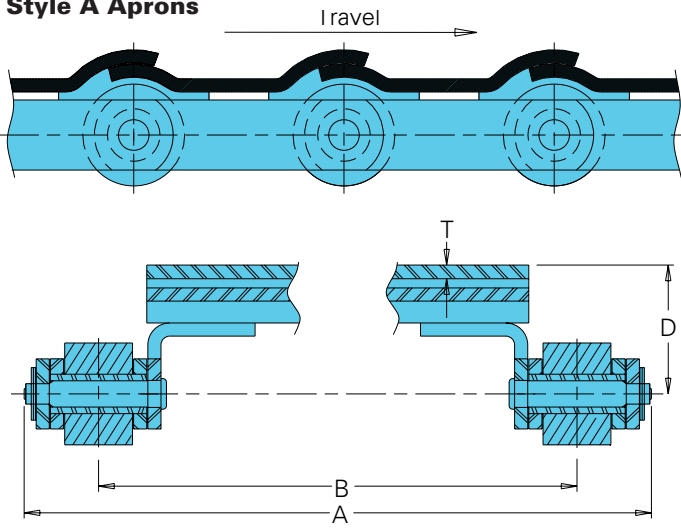
#### Advantages

- Higher angle of discharge reduces height of fall when unloading, reducing lump breakage.
- Angular mounting of apron on chain helps resist rollback motion of material on inclined conveyors.

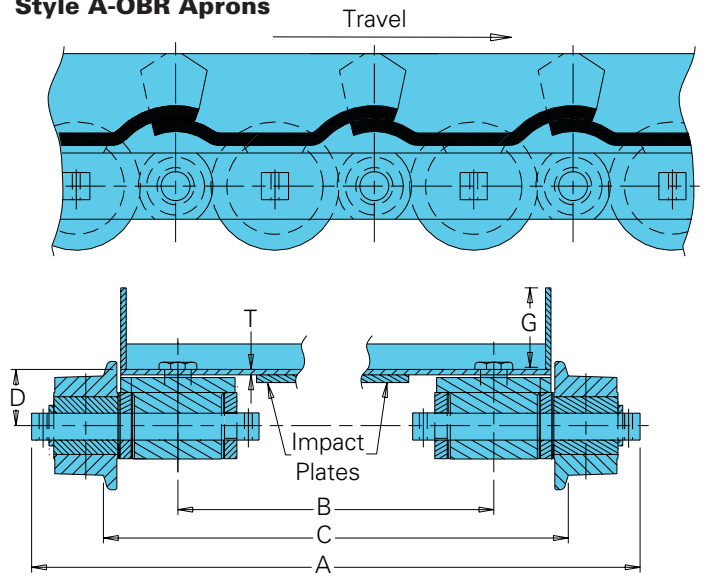
#### Attachments

- G-2 attachments (high sidebars with angles) contain material, add strength, and function as moving pan ends.

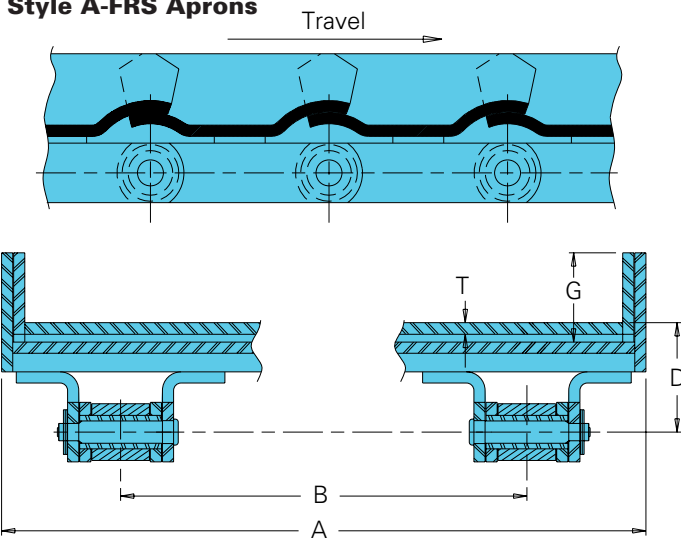
**Style A Aprons**



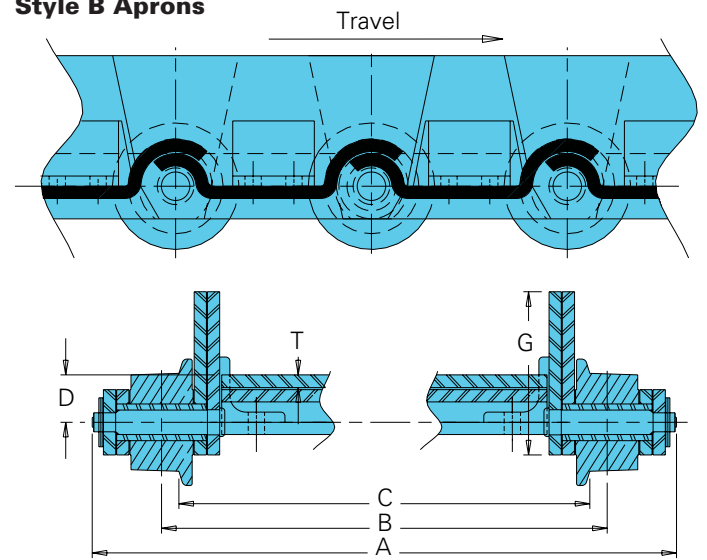
**Style A-OBR Aprons**



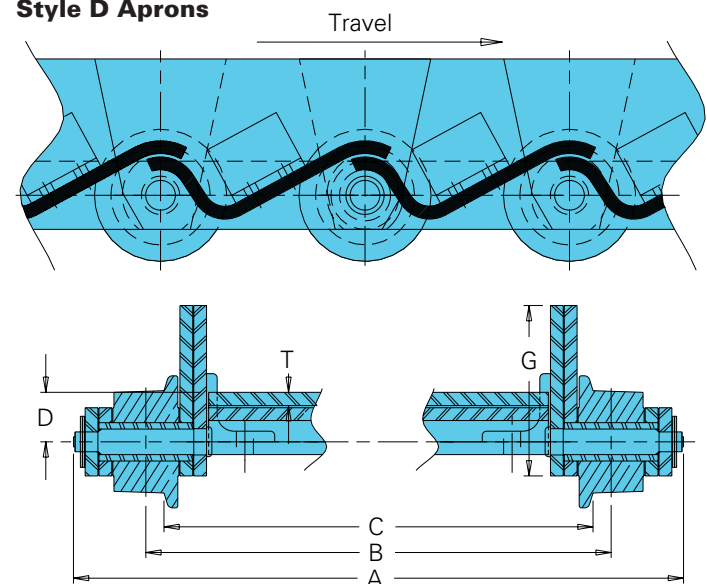
**Style A-FRS Aprons**



**Style B Aprons**



**Style D Aprons**



**Apron Conveyors**

All dimensions are in inches unless otherwise indicated.

Style	Chain Number	Pitch	Width <sup>1</sup>			Centerline Chain to Top of Pan Bead	Pan End Height	Pan Th.	Work Load (lbs.) <sup>2</sup>	Approximate Weight (lbs.)		
			Overall	Center to Center Sprocket	Track Gauge					Conveyor Weight (ft.) 18" Pan <sup>3</sup>	Approx. Wgt. Each 1" Added to Height	Weight Added Each 6" of Width
			<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>G</b>	<b>T</b>				
Style A Aprons	95R	4.000	21.88	19.38		2.00		.19	4,200	24.2		3.8
	US-90R	4.000	21.44	19.56		2.00		.19	4,800	28.0		3.8
	US-90R	4.000	21.44	19.56		2.06		.25	4,800	33.7		5.1
	89R	4.000	23.94	20.06		2.06		.25	9,000	44.3		5.1
	89R	4.000	23.94	20.06		2.31		.31	9,000	50.0		6.4
	89R	4.000	23.94	20.06		2.38		.38	9,000	55.7		7.7
	604R	6.000	23.00	19.81		2.19		.19	7,000	27.0		5.4
	631R	6.000	24.19	20.13		2.25		.25	11,200	43.0		7.2
	631R	6.000	24.19	20.13		2.31		.31	11,200	48.6		9.0
	610R	6.000	24.81	20.44		2.88		.38	14,900	59.6		10.8
Style A OBR Aprons <sup>4</sup>	961R	9.000	28.06	14.75	22.56	2.88	4.00	.25	18,000	115.2	2.9	8.3
	2397R	12.000	27.25	15.19	21.81	3.75	4.00	.25	18,400	92.5	2.6	7.5
	1706R	12.000	28.06	14.75	22.56	3.75	4.00	.25	28,000	108.7	2.6	7.5
	2614R	12.000	27.69	14.19	22.06	4.25	4.00	.25	35,000	157.1	2.6	7.5
	2614R	12.000	27.69	14.19	22.06	4.38	4.00	.38	35,000	172.4	4.0	11.3
Style A FRS	961R	9.000	19.25	14.75 max.		2.88	4.00	.25	18,000	61.5	2.9	8.3
	2614R	12.000	19.75	14.19 max.		4.38	4.00	.38	35,000	76.6	4.0	11.3
Style B Aprons	603R	6.000	23.69	20.75	20.13	1.06	3.50	.19	7,000	40.5	3.0	5.4
	625R	6.000	24.63	21.16	20.31	1.06	3.50	.19	8,300	43.4	3.0	5.4
	625R	6.000	24.63	21.16	20.31	1.13	3.50	.25	8,300	48.8	3.0	7.2
	625R	6.000	24.63	21.16	20.31	1.19	4.00	.31	8,300	55.6	3.0	9.0
	B-663R	6.000	26.38	22.13	21.13	1.13	3.50	.25	14,400	56.0	4.6	7.2
	B-663R	6.000	26.38	22.13	21.13	1.19	4.00	.31	14,400	63.2	4.6	9.0
	B-963R	9.000	26.38	22.13	21.13	1.38	4.00	.25	14,400	56.7	4.6	7.1
	B-963R	9.000	26.38	22.13	21.13	1.44	4.00	.31	14,400	60.0	4.6	8.2
	B-963R	9.000	26.38	22.13	21.13	1.75	4.00	.38	14,400	67.3	4.6	10.6
	B-964R	9.000	26.88	22.44	21.19	1.44	4.00	.31	18,400	66.7	4.2	8.2
	B-964R	9.000	26.88	22.44	21.19	1.75	5.00	.38	18,400	78.1	4.2	10.6
	B-1263R	12.000	26.38	22.13	21.13	1.38	4.00	.25	14,400	53.1	3.8	7.0
	B-1263R	12.000	26.38	22.13	21.13	1.44	4.00	.31	14,400	58.3	3.8	8.8
	B-1263R	12.000	26.38	22.13	21.13	1.75	4.00	.38	14,400	63.6	3.8	10.5
	B-1264R	12.000	26.88	22.44	21.19	1.44	4.00	.31	18,400	61.5	3.8	8.8
	B-1264R	12.000	26.88	22.44	21.19	1.75	5.00	.38	18,400	70.6	3.8	10.5
Style D Aprons	625R	6.000	24.63	21.16	20.31	1.06	3.50	.19	8,300	43.4	3.0	5.4
	625R	6.000	24.63	21.16	20.31	1.13	3.50	.25	8,300	48.8	3.0	7.2
	625R	6.000	24.63	21.16	20.31	1.19	4.00	.31	8,300	55.6	3.0	9.0
	B-963R	9.000	26.38	22.13	21.13	1.38	4.00	.25	14,400	56.7	4.6	7.1
	B-963R	9.000	26.38	22.13	21.13	1.44	4.00	.31	14,400	60.0	4.6	8.2
	B-963R	9.000	26.38	22.13	21.13	1.75	4.00	.38	14,400	67.3	4.6	10.6
	B-964R	9.000	26.88	22.44	21.19	1.44	4.00	.31	18,400	66.7	4.2	8.2
	B-964R	9.000	26.88	22.44	21.19	1.75	5.00	.38	18,400	78.1	4.2	10.6
	B-1263R	12.000	26.38	21.13	21.13	1.38	4.00	.25	14,400	53.1	3.8	7.0
	B-1263R	12.000	26.38	21.13	21.13	1.44	4.00	.31	14,400	58.3	3.8	8.8
	B-1263R	12.000	26.38	21.13	21.13	1.75	4.00	.38	14,400	63.6	3.8	10.5
	B-1264R	12.000	26.88	22.44	21.19	1.44	4.00	.31	18,400	61.5	3.8	8.8
	B-1264R	12.000	26.88	22.44	21.19	1.75	5.00	.38	18,400	70.6	3.8	10.5

<sup>1</sup>All widths and weights are based on 18" apron pan widths. For weight est. refer to "Approximate Weight (lbs.)" column for your specific conveyor width.

<sup>2</sup>Indicates working load for two strands of chain.

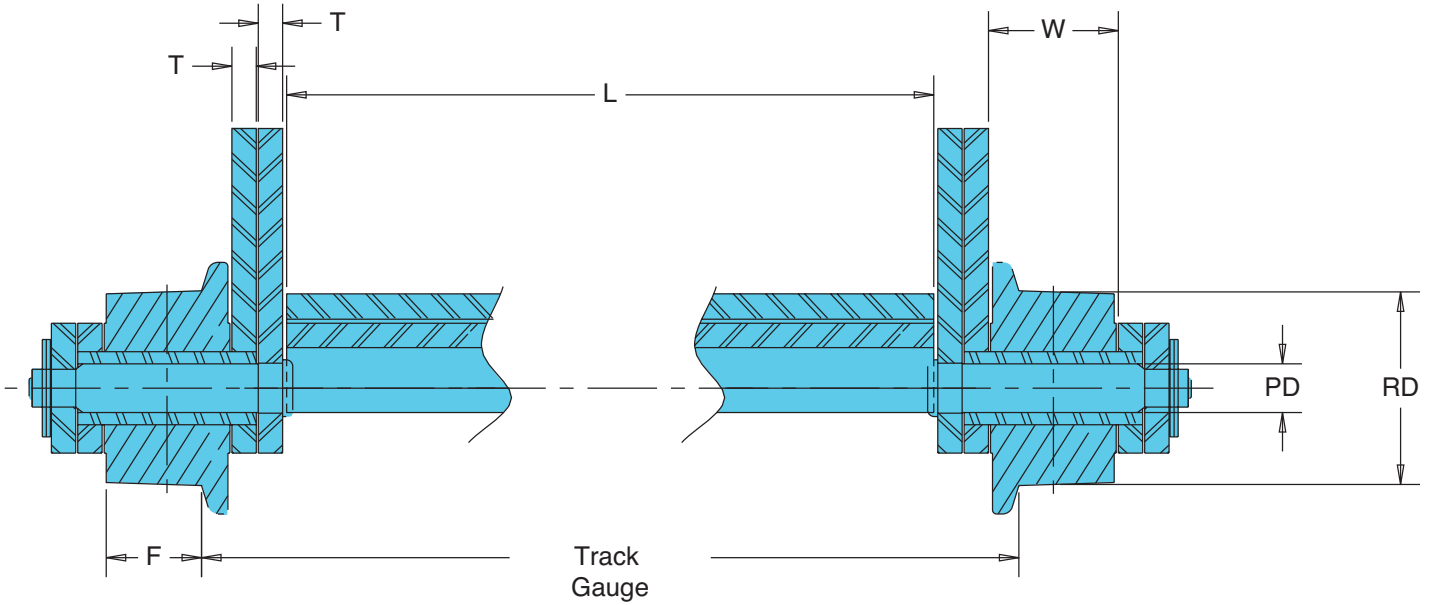
<sup>3</sup>Indicates without through-rods. Refer to page A-42 for rod weights.

<sup>4</sup>OBR style can be furnished stub shaft every pitch or every 2nd pitch depending on load criteria. All weights shown above are for OBR every pitch. Consult with Union engineers for selection assistance.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## Apron Conveyor Dimensions



### Apron Conveyor Dimensions for Chain with Single Flange Rollers Styles B & D Conveyors

Center to Center of chain =  $L + 4T + W + 3/16"$

Track Gauge =  $L + 4T + 2k + 1/2"$

Center to Center of sprocket =  $L + 4T + 2k + F + 1/4"$

Overall Width =  $L + 8T + 2W + 2c + 1/4"$

Where:

L = Length of apron

T = Thickness of sidebars (chain dimension)

W = Inside width (chain dimension)

F = Width or face of roller tread

k = Constant for diameter of roller

c = Constant for diameter of pin

### Values of F and k

Roller Diam. RD	F	k
2.50	.88	.31
3.00	1.09	.41
3.00	1.25	.31
3.50	1.25	.56
4.00	1.25	.59
4.00	1.50	.59
5.00	1.75	.66
5.00	1.75 <sup>1</sup>	.72
6.00	1.88	.69
6.00	1.88 <sup>1</sup>	.81

<sup>1</sup>Indicates heavier wheel of same width of roller tread.

### Values of c

Pin Diam. PD	c
.56	.41
.63	.47
.75	.56
.88	.56
1.00	.69
1.13	.69
1.25	.69
1.50	.81

### Apron Weights/Each Unassembled

All dimensions are in inches unless otherwise indicated.

Pitch	Thickness	Approximate Weight (lbs.)											
		18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
3.000 <sup>1</sup>	.19	4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.7	17.2	18.6	20.0
4.000 <sup>1</sup>	.19	5.8	7.7	9.6	11.5	13.4	15.3	17.3	19.2	21.1	23.0	24.9	26.8
4.000 <sup>1</sup>	.25	7.7	10.2	12.7	15.3	17.8	20.4	23.0	25.5	28.0	30.6	33.2	35.7
4.000 <sup>1</sup>	.31	9.6	12.8	16.0	19.2	22.4	25.6	28.8	31.9	35.1	38.3	41.5	44.7
4.000 <sup>1</sup>	.38	11.5	15.3	19.1	23.0	26.8	30.6	34.4	38.3	42.0	45.9	49.8	53.6
6.000	.19	8.1	10.8	13.5	16.4	19.0	21.7	24.4	27.1	29.8	32.5	35.2	38.0
6.000	.25	10.8	14.5	18.1	21.7	25.3	28.9	32.6	36.2	39.8	43.5	47.0	50.6
6.000	.31	13.6	18.1	22.6	27.1	31.6	36.2	40.7	45.2	49.7	54.2	58.8	63.3
6.000 <sup>1</sup>	.38	16.3	21.7	27.2	32.5	38.0	43.4	48.7	54.2	59.6	65.0	71.5	76.0
6.000 <sup>1</sup>	.50	21.7	28.9	36.1	43.4	50.6	57.9	65.0	72.3	79.4	86.6	93.9	101.0
9.000	.19	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	44.0	48.0	52.0	56.0
9.000	.25	16.0	21.2	26.6	31.9	37.2	42.5	47.9	53.2	58.5	63.8	69.0	74.5
9.000	.31	18.4	24.6	30.7	36.9	43.0	49.1	55.3	61.5	67.6	73.8	80.0	86.1
9.000	.38	23.9	31.9	39.8	47.8	55.8	63.7	71.7	79.7	87.7	95.7	103.6	111.6
12.000 <sup>2</sup>	.19	15.8	21.0	26.3	31.6	37.9	42.1	47.4	52.6	58.0	63.2	68.5	73.8
12.000 <sup>2</sup>	.25	21.1	28.1	35.1	42.1	49.1	56.1	63.1	70.1	77.1	84.1	91.1	98.1
12.000 <sup>2</sup>	.31	26.3	35.1	43.9	52.6	61.4	70.2	79.0	87.7	96.5	105.2	113.9	122.7
12.000 <sup>2</sup>	.38	31.6	42.2	52.7	63.2	73.8	84.4	94.8	105.2	115.9	126.3	136.9	147.5

<sup>1</sup>Style A aprons only.

<sup>2</sup>Style B aprons only.

### Steel Pan Ends

Separate Steel Pan Ends Approximate Weight (lbs.)						
Chain Pitch	Thick. of Ends	Unassembled Height of End Above Center Line of Chain				
		2"	3"	4"	5"	6"
3.000	.19	.7	.8	.9	1.0	1.3
4.000	.19	.6	.8	1.3	1.5	1.7
4.000	.25	.8	1.1	1.7	2.0	2.3
6.000	.19	1.0	1.3	1.8	2.1	2.4
6.000	.25	1.4	1.9	2.4	2.9	3.3

### Through-Rod Weights

Approximate Weight/Through-Rods (lbs.)								
Chain Pin Dia.	Distances Between Centers							
	18"	24"	30"	36"	42"	48"	54"	60"
.63	1.6	2.1	2.6	3.0	3.7	4.2	4.7	5.2
.75	2.3	3.0	3.8	4.5	5.3	6.0	6.8	7.5
.88	3.1	4.1	5.1	6.1	7.1	8.1	9.1	10.1
1.00	4.0	5.4	6.7	8.0	9.4	10.7	12.0	13.4
1.13	5.1	6.8	8.5	10.2	11.8	13.5	15.2	16.9
1.25	6.3	8.4	10.4	12.5	14.6	16.7	18.8	21.9
1.50	9.0	12.0	15.0	18.0	21.0	24.0	27.0	30.0

Note: Through-rods are made from high carbon steel. The portions of the ends that act as chain pins are heat-treated for wear resistance.

## SELECTION GUIDELINES

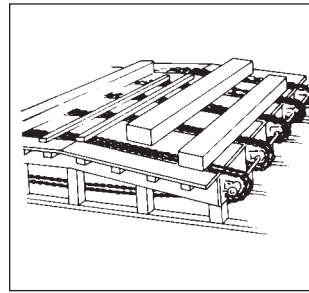
A wide variety of chains are available for the purpose of material handling, conveying, and elevating. An accurate assessment of the basic conditions in which the chain will function is essential for optimum performance. In general, the basic steps of conveyor chain selection are as follows:

- Select a conveyor type appropriate for the material being handled.
- Choose the chain type best suited for the conveyor style selected and the material being handled.
- Select the specific chain size necessary to successfully handle the loading conditions of the conveyor, attachment spacing, space limitations, and other service conditions that are encountered.

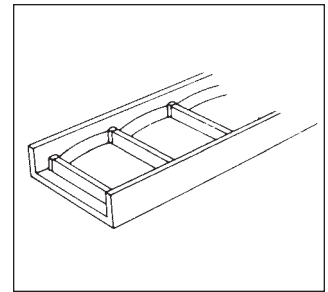
Union Chain Division Conveying and Elevating Chains are built to withstand challenging operating conditions including shock loadings and exposure to environments conducive to abrasive wear and/or corrosion. In some more severe applications, special materials or heat treatments are required for successful performance. If you have any questions, contact Union engineering for assistance in making the best choice for your conveying application.

## Conveyor Types

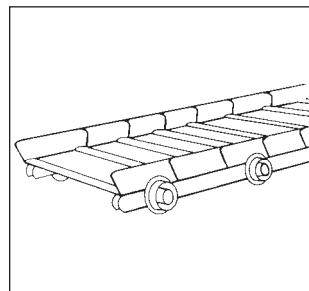
There are, in general, nine types of chain conveyors. The material being handled and the service environment typically determine which type is chosen.



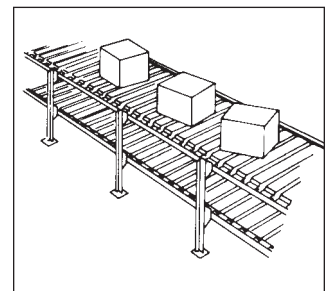
**Plain Chain**  
The chain runs in tracks and the load is carried directly on the chain.



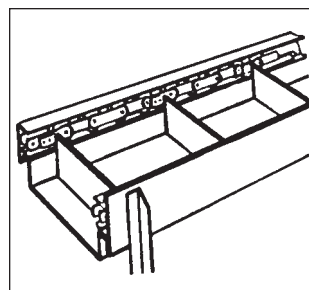
**Drag Conveyors**  
One or more endless strands with or without integral flights moves material in a trough or pan.



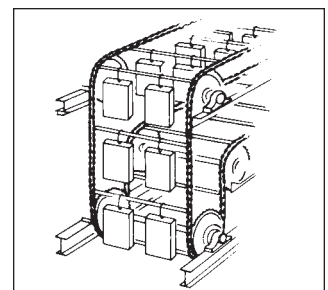
**Apron Conveyors**  
Die formed steel plates or pans mounted on two or more strands of chain. They are good for impact, abrasion and high temperature applications.



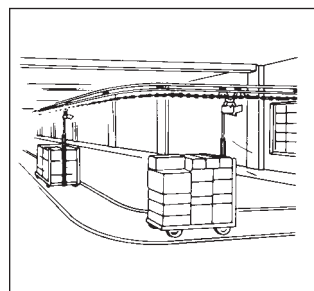
**Slat Conveyors**  
Two or more strands of chain with slats attached at intervals. This is used primarily for unit handling.



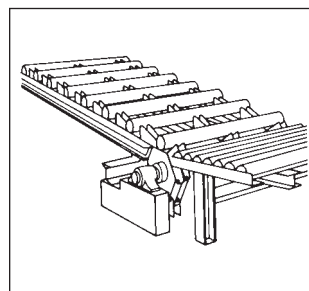
**Scraper Flight**  
One or two endless chains with flights attached to push material in a trough.



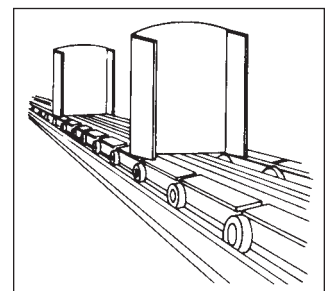
**Cross Bar**  
Two strands of chain connected by cross-bars, which can be arranged in paths from inclined to serpentine.



**Trolley and Tow**  
An endless strand of chain is suspended from an overhead track with carrying attachments at intervals. Tow conveyors have pickups to engage truck masts.



**Pusher Chain**  
One or more strands of endless chain are utilized with attachments to push the load. Load slides or rolls on rails. The chain does not carry the load.



**Carrier Chain**  
Attachments are connected to part of the chain and form a carrying surface for an individual part on a continuous surface.



## Material Classifications

- Bulk materials (example: limestone)
- Unit materials (example: TV sets)

**Table 1 — Typical Material Classifications of Conveyor Types**

Conveyor Type	Bulk <sup>1</sup>	Unit <sup>2</sup>
Plain Chain		X
Drag Conveyors	X	
Apron Conveyors	X	
Slat Conveyors		X
Scraper Flight	X	
Cross Bar		X
Trolley and Tow		X
Pusher Chain		X
Carrier Chain		X

<sup>1</sup>Bulk material capacities are typically given as tons per hour (TPH).

<sup>2</sup>Unit material capacities are typically given as pieces (or units) per hour (pcs./hr.)

## General Conveyor Chain Types

- Roller Conveyor Chains
- Steel Bushed Rollerless
- Welded Steel Mill Chain
- Welded Steel Drag Chain
- Cast Combination Chain
- Drop Forged Rivetless Chain
- Bar/Pin Chain

**Table 2 — Typical Chain Types for Conveyor Service**

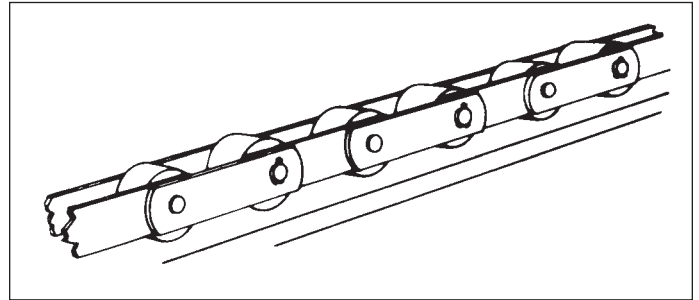
Conveyor Types	Conveyor Chain Types						
	Roller Conveyor	Steel Bushed	Welded Steel	Welded Drag	Cast Combination	Drop Forged	Bar/Pin
Plain Chain	X	X	X	X	X		X
Drag Conveyors		X	X	X	X		
Apron Conveyors	X						
Slat Conveyors	X						
Scraper Flight	X	X	X		X	X	X
Cross Bar	X						
Trolley and Tow						X	X
Pusher Chain	X	X	X	X	X		X
Carrier Chain	X						



**Table 3 — General Characteristics of Conveyor Chain Types**

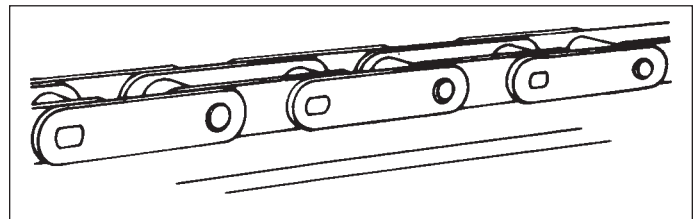
Chain Type	Pitch Range (in.)	Weight Range (lbs./ft.)	Working Loads (lbs.)	Operating Speeds (fpm)	Wear Life Rating
Roller Conveyor	1.654 to 24.0	3.7 to 35.0	2,100 to 22,300	10 to 200	A
Steel Bushed	2.609 to 7.0	3.8 to 67.0	2,750 to 21,800	10 to 150	B
Welded Steel	2.609 to 6.05	4.0 to 30.0	3,000 to 15,300	10 to 100	C
Welded Drag	5.0 to 8.0	12.0 to 29.0	8,500 to 15,000	10 to 100	C
Cast Combination	2.609 to 6.05	3.6 to 16.3	2,340 to 10,400	10 to 75	D
Drop Forged	3.031 to 9.031	2.2 to 10.0	1,100 to 21,600	10 to 75	C
Bar/Pin	4.0 to 12.0 (Avg.)	5.2 to 33.0	—	10 to 50	C

### Chain Rolling or Sliding



#### Chain Rolling

- Best suited when chain carries materials.
- Smoother operation, less pulsation.
- Less friction — allows longer centers, smaller motors, and lower operating costs.
- Less horsepower required.
- Not suited for “dirty” applications where foreign materials can jam rollers.



#### Chain Sliding

- Best suited when conveyor deck supports materials and chains carry, push, drag or scrape.
- Rugged construction — ideal for impact loadings.
- Greater horsepower required.
- Works well in “dirty” applications because this chain has fewer moving parts.

## Friction Coefficients

**Table 4 — Sliding Friction Coefficients ( $f_s$ )**

	Dry	Lubricated
Chains on Steel Rail	.33	.20
Chains on Bronze	—	.15
Chains on Hardwood	.35	.25
Chains on UHMW Plastic	.25	.15
Cast Iron on Steel	.50	.30

**Table 5—Sliding Friction of Materials on Steel Troughs ( $f_s$ )**

Material	Friction	Material	Friction	Material	Friction
Aluminum	.40	Coal, Bituminous, Run of Mine	.60	Lime, Ground	.40
Ashes Dry < 3"	.50	Coal, Bituminous, Slack, Dry	.50	Lime, Pebble	.50
Ashes Wet < 3"	.60	Coal, Bituminous, Slack, Wet	.70	Sand, Dry	.60
Bagasse	.40	Coke, Sized	.40	Sand, Foundry, Shakeout	.70
Beans, Whole	.35	Coke, Mixed	.60	Sand, Foundry, Tempered	.85
Cement, Portland	.65	Coke, Breeze	.65	Sawdust	.40
Cement, Clinker	.70	Cottonseed	.35	Stonedust	.50
Coal, Anthracite	.30	Grains	.40	Stone, Screened Lumps	.60
Coal, Anthracite, Run of Mine	.40	Gravel, Dry, Screened	.45	Stone Lumps and Fines	.65
Coal, Anthracite, Pea	.45	Gravel, Run of Bank	.60	Wood Chips	.40
Coal, Anthracite, Buckwheat	.55	Ice, Crushed	.20		
Coal, Bituminous, Sized	.55	Ice Cakes	.10		

**Table 6 — Approximate Rolling Friction Coefficients ( $f_r$ )**

Roller O.D.	Dry	Lubricated
1 1/2	.22	.16
2	.20	.15
2 1/2	.16	.12
3	.14	.09
4	.12	.08
5	.11	.07
6	.10	.06

Roller Bearing  $f_r = .05$

Ball Bearing with hardened race  $f_r = .03$

### Specific Rolling Friction Coefficients ( $f_r$ )

$$f_r = \frac{d}{D} f_s$$

Where:

D = O.D. of chain roller (in.)

d = O.D. of chain bushing (in.)

$f_s$  = Sliding friction coefficient from Table 4

**Table 7 — Maximum Speeds of Conveyor Chains (fpm)**

All dimensions are in inches unless otherwise indicated.

Number of Teeth	Pitch				
	4	6	9	12	18
6	180	145	120	105	85
7	210	170	140	120	100
8	240	195	160	140	115
9	270	220	180	155	125
10	300	245	200	175	140
11	330	270	220	190	155
12	360	295	240	205	170
13	390	320	260	225	185
14	420	345	280	240	200
15	450	365	300	260	210

For economical speeds when conveyors are heavily loaded and the load is carried over the terminal sprockets use 75% of above values.

**Table 8 — Allowable Roller and Bushing Bearing Pressures**

Roller and Bushing Materials	Allowable Bearing Pressure (PSI)	
	Dry	Lubricated
Case Hardened Steel and Case Hardened Steel	700	1,400
Case Hardened Steel and Through-Hardened Steel	700	1,400
Case Hardened Steel and Untreated Steel	500	1,200
Case Hardened Steel and Chrome Iron	500	1,100
Case Hardened Steel and Chilled Iron	600	1,000
Case Hardened Steel and Bronze	200	400
Case Hardened Steel or Stainless Steel on Plastic	100	150

Engineering Formulas	Horsepower (HP)
<p><b>Material Weight per ft. on Conveyor (M) for Bulk Materials (lbs./ft.)</b></p> <p>Where:</p> $M = \frac{(33.3) (Q)}{S}$ <p>Q = Capacity (tons/hr.) S = Chain speed (ft./min.)</p> $M = \frac{(CFM) (d)}{S}$ <p>CFM = Capacity or conveyed material flow rate (ft.<sup>3</sup>/min.) d = Material density (lbs./ft.<sup>3</sup>)</p>	<p>Where:</p> $HP = \frac{(t) (rpm) (1.1)}{63,025}$ <p>t = Torque transmitted by headshaft (in./lb.)</p> $HP = \frac{(T) (rpm) (1.1)}{5,252}$ <p>T = Torque transmitted by headshaft (ft./lb.) rpm = Speed of headshaft</p> $HP = \frac{(P) (S) (1.1)}{33,000}$ <p>P = Total conveyor pull (lbs.) S = Chain Speed (ft./min.) (Note: 1.1 compensates for motor efficiency.)</p>
<p><b>Chain Speed (S)</b></p> <p>Where:</p> $S = \frac{(P) (N) (RPM)}{12}$ <p>S = Speed (ft./min.) P = Chain pitch (in.) N = Number of teeth in sprocket RPM = Rotational speed of sprocket</p>	<p><b>Estimated Chain Weight for Selection (lbs./ft.*)</b></p> <p>Where:</p> <ul style="list-style-type: none"> <li>For Chain Rolling: Chain Weight = (.002) (M) (C)</li> <li>For Chain Sliding: Chain Weight = (.004) (M) (C)</li> </ul> <p>M = Weight of material being conveyed on conveyor (lbs./ft.) C = Center distance between sprockets * = Weight of each strand without slats</p>

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

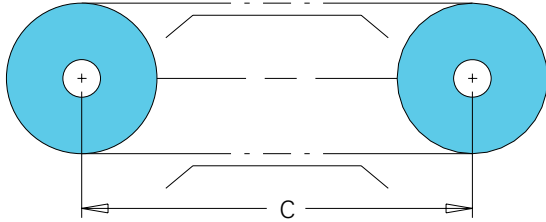
**Conveyor Chain Pull Formulas**

**Horizontal**

Material Carried:  $P = (2.1W + M) f_r C$   
(Slat or Apron Conv.)

Material Sliding:  $P = (2.1Wf_s + Mf_s) C + J$   
(Drag or Scraper Conv.)

**Horizontal**



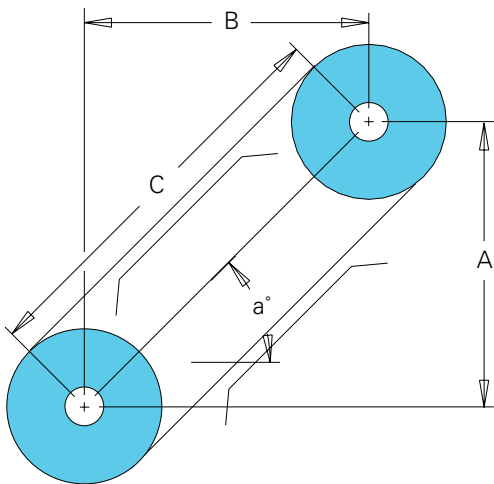
**Inclined**

Material Carried:  $P = [(M + W) f_r \cos a + (M + W) \sin a] C + (Wf_r \cos a - W \sin a) C + J$   
(Slat or Apron Conv.)

Material Sliding:  $P = [(Mf_s + Wf_s) \cos a + (M + W) \sin a] C + J$   
(Scraper Conv.)

*Note: When  $(Wf_r \cos a - W \sin a) C$  is positive, multiply quantity by 1.1 to account for tail shaft friction.*

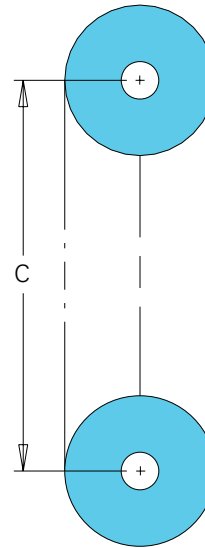
**Inclined**



**Vertical**

Material Carried:  $P = (M + W) C + \frac{P_1}{2}$

**Vertical**



**Glossary**

$P$  = Total Conveyor Pull (lbs.)

$P_1$  = Take-up Force (lbs.)

$W$  = Weight of chains, attachments, slats, etc., and other moving elements of the conveyor per ft. (lbs./ft.)

$M$  = Weight of material per ft. on the conveyor (lbs./ft.)

$f_r$  = Friction coefficient of chain rolling on support rail (Table 6)

$f_s$  = Sliding friction coefficient of material or chain sliding (Tables 4 and 5)

$C$  = Center distance (ft.)

$J$  = Pull (lbs.) caused by sideboard sliding friction (Table 9)

**Table 9 — Additional Pull on Conveyor (J)  
Material Sliding Against Sideboards**

Material	R
Coal	14.0
Coke	35.0
Limestone	7.5
Gravel	7.0
Sand	5.5
Ashes	14.0
Wood	48.0

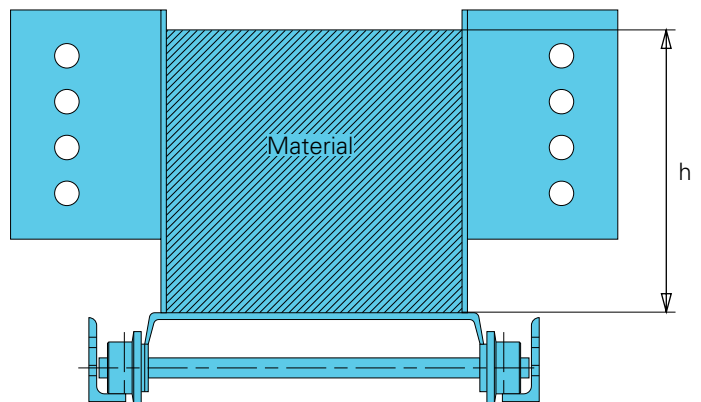
$$J = \frac{Ch^2}{R}$$

Where:

$h$  = Height of material in inches

$R$  = Variable factor for different materials

$C$  = Length of conveyor in feet



## Selection Procedure

### Step 1: Determine the Conveyor's Basic Requirements

- Type of conveyor to be used and layout of its dimensions (C, a, etc.).
- Type of chain including attachments.
- Determine weight of conveyed material (M) on the conveyor (lbs./ft.).
- Estimate weight of chain, attachments, and other moving parts of conveyor (W) (lbs./ft.).
- Friction Coefficients (Tables 4–6).
- Conveyor speed (S) (ft./min.).
- Determine pull due to sideboard friction (J).
- Determine service factor (V) from Table 10.

### Step 2: Calculate Conveyor Pull

Use the appropriate formula from page A-48 to determine conveyor pull (P).

### Step 3: Select Sprocket Size

Using Table 11, under conveyor speed read down to the number nearest 1.00 (this will be in the vicinity of the heavy dividing line). Read across to the left to obtain the optimum sprocket size. If space limitations require using smaller sprockets read across from the right from the number of teeth to the column under conveyor speed — obtain the Speed Correction Factor (E).

### Step 4: Calculate Design Conveyor Pull (DP)

$$DP = (P) (V) (E)$$

### Step 5: Calculate Chain Tensions (T)

- Single strand conveyor  $T = DP$
- Double strand conveyor  $T = (DP) (1.2) / 2$
- Triple strand conveyor  $T = (DP) (1.2) / 3$
- More than three strands Consult Union Engineering

### Step 6: Select Chain Size

Choose a chain that has a maximum allowable load rating greater than the calculated chain tension of Step 5.

### Step 7: Recalculate Actual Chain Tension

Repeat Steps 2–5 using actual chain weights. For roller conveyor chains, specific rolling friction coefficient values can be obtained from Table 6 on page A-46.

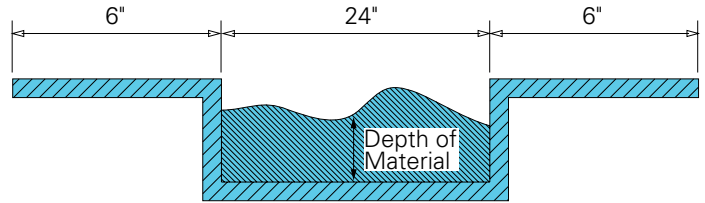
### Step 8: Check Roller/Bushing Bearing Pressure (Roller Conveyor Chain Only)

Calculate bearing pressure from:

$$\text{Bearing Pressure} = \frac{\text{Maximum Load per Roller (lbs.)}}{\text{Bushing OD (in.)} \times \text{Roller Length (in.)}}$$

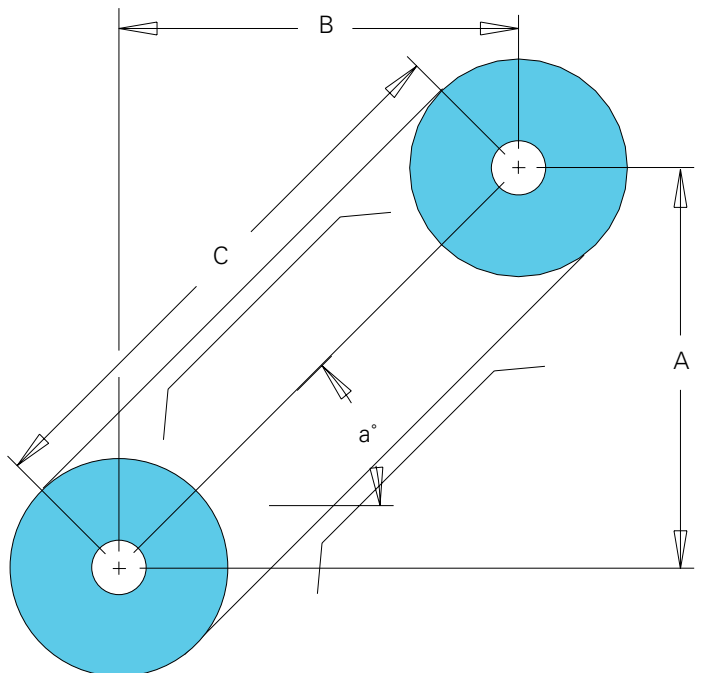
This value should be less than that shown in Table 8.

## Selection Example



An incline scraper conveyor has been tentatively selected to handle bituminous coal. The sketch above shows the steel trough; other details are given below:

- Operating capacity:  $Q = 150$  ton/hr.
- Operating speed:  $S = 100$  ft./mn.
- Depth of material:  $d = 6$ "
- Total lift:  $A = 30$  ft.
- Total horizontal run:  $B = 40$  ft.
- Sprocket centers:  $C = 50$  ft.
- Infrequent moderate shock
- 24-hour operation—"Dirty" conditions
- Scraper paddle:  $5/16$ " x  $12$ " x  $23$ "—22.8 lbs. each, spaced every 12".
- Use roller conveyor chain



## Selection Chain Pull Factors

**Table 10 — Service Factors (V)**

Frequency of Shock	Character of Conveyor Loading	Conditions of Operation	Daily Operating Period
Infrequent (1)	Uniform or Steady (1)	Relatively clean and moderate room temperature (1)	8–10 hours (1) <sup>1</sup>
Frequent (1.2) <sup>1</sup>	Moderate Shock (1.2) <sup>1</sup> Heavy Shock (1.5)	Moderately dusty (1.2) Unprotected from weather, dirty corrosive conditions or unusual temperatures within permissible operating range (1.4) <sup>1</sup>	24 Hours (1.2)

<sup>1</sup>Example V = 1.2 x 1.2 x 1.4 x 1.0 = 2.02

**Table 11 — Speed Correction Factors (E)**

All dimensions are in inches unless otherwise indicated.

Teeth	Conveyor Speed (ft./min.)														
	10	25	50	75	100	125	150	175	200	225	250	275	300	400	500
6	.92	1.09	1.37	1.68	2.00	2.40	2.91	3.57	4.41	5.65	7.35	10.60	16.70		
7	.86	.97	1.13	1.27	1.44	1.61	1.81	2.04	2.29	2.60	2.96	3.42	3.95	8.62	
8	.81	.91	1.04	1.16	1.26	1.37	1.49	1.63	1.76	1.93	2.10	2.29	2.48	3.62	6.21
9	.79	.87	.98	1.07	1.17	1.26	1.36	1.45	1.55	1.65	1.76	1.88	2.00	2.56	2.94
10	.78	.84	.94	1.02	1.09	1.16	1.24	1.31	1.37	1.45	1.53	1.61	1.68	2.03	2.41
11	.76	.82	.90	.97	1.03	1.09	1.15	1.22	1.28	1.34	1.40	1.46	1.52	1.78	2.05
12	.74	.79	.86	.93	.99	1.05	1.10	1.16	1.21	1.26	1.32	1.37	1.42	1.63	1.84
14	.74	.77	.83	.89	.94	.98	1.02	1.07	1.11	1.15	1.19	1.24	1.28	1.47	1.61
16	.73	.76	.81	.86	.89	.94	.97	1.01	1.05	1.08	1.12	1.16	1.19	1.34	1.48
18	.72	.75	.80	.83	.88	.91	.94	.98	1.01	1.04	1.08	1.11	1.14	1.27	1.40
20	.72	.75	.79	.83	.86	.89	.92	.95	.98	1.01	1.04	1.07	1.10	1.22	1.34
24	.71	.74	.77	.80	.82	.85	.88	.90	.94	.96	.98	1.01	1.04	1.15	1.26

## Conveyor Selection Example

### Step 1: Determine the Conveyor's Basic Requirements

- Incline scraper conveyor
- Roller conveyor chain with attachment for flight every 12".
- Determine (M) from formula on page A-47.

$$M = \frac{33.3 (Q)}{S} = \frac{33.3 (150)}{100}$$

$$M = 50 \text{ lbs./ft.}$$

- Determine W:

$$W = (CW) (N) + Ws$$

$$CW = \text{Wt. of Chain (lbs./ft.)}$$

$$N = \text{No. of chain strands} = 2$$

$$Ws = \text{Wt. of slats} = 22.8 \text{ lbs./ft.}$$

From formula on page A-47.

#### For Chain Rolling

$$CW = .002 (M) (C)$$

$$CW = .002 (50) (50)$$

$$CW = 5.00 \text{ lbs./ft.}$$

(very light duty rolling)

#### For Chain Sliding

$$CW = .004 (M) (C)$$

$$CW = .004 (50) (50)$$

$$CW = 10.00 \text{ lbs./ft. (sliding)}$$

From Table 3 note that minimum chain weight = 3.70 lbs./ft., so use the 5.00 value rather than the 3.70 (lbs./ft.)

#### For Chain Rolling

$$W = (5.00) (2) + 22.8$$

$$W = 32.8 \text{ lbs./ft. (rolling)}$$

#### For Chain Sliding

$$W = 10.00 (2) + 22.8$$

$$W = 42.8 \text{ lbs./ft. (slide)}$$

Friction Coefficients

From Table 5:

$$f_s = .55 \text{ (Sliding Coal)}$$

From Table 6:

$$f_r = .20 \text{ (Rolling Chain)}$$

- Conveyor Speed:

$$(s) = 100 \text{ ft./min.}$$

- Determine Sideboard Friction (J) from Table 9:

$$J = \frac{Ch^2}{R}$$

$$J = \frac{50 (6)^2}{14}$$

$$J = 128 \text{ lbs.}$$

- Determine Service Factor (V) from Table 10:

$$V = (1.0) (1.2) (1.4) (1.2)$$

$$V = 2.02$$

### Step 2: Calculate Conveyor Pull (P)

From formula on page A-48.

#### For Chain Rolling

$$P = [(Mf_s + Wf_r) \text{ COS} \alpha + (M + W) \text{ SIN} \alpha] C + (Wf_r \text{ COS} \alpha - W \text{ SIN} \alpha) C$$

$$P = [(50 (.55) + (32.8) (.2)) .8 + (50 + 32.8) .6] 50 + [(32.8) (.2) (.8) - 32.8 (.6)] 50$$

$$P = 3,850 \text{ lbs.} - 720 \text{ lbs.}$$

$$P = 3,130 \text{ lbs. (rolling)}$$

#### For Chain Sliding

$$P = [(Mf_s + Wf_s) \text{ COS} \alpha + (M + W) \text{ SIN} \alpha] C + (Wf_s \text{ COS} \alpha - W \text{ SIN} \alpha) C$$

$$P = [(50 (.55) + (42.8) (.33)) .8 + (50 + 42.8) .6] 50 + [(42.8) (.33) (.8) - 42.8 (.6)] 50$$

$$P = 4,450 \text{ lbs.} - 720 \text{ lbs.}$$

$$P = 3,730 \text{ lbs. (sliding)}$$

### Step 3: Select Sprocket Size

From Table 11 we obtain 12-tooth sprocket as best selection choice.

$$E = .990$$

### Step 4: Calculate Design Conveyor Pull (DP)

#### For Chain Rolling

$$DP = (P) (V) (E)$$

$$DP = (3130) (2.02) (.99)$$

$$DP = 6,260 \text{ lbs. (rolling)}$$

#### For Chain Sliding

$$DP = (P) (V) (E)$$

$$DP = (3,730) (2.02) (.99)$$

$$DP = 7,460 \text{ lbs. (sliding)}$$

### Step 5: Calculate Chain Tension

#### For Chain Rolling

$$T = (DP) (1.2)/2$$

$$T = (6,260) (1.2)/2$$

$$T = 3,760 \text{ lbs. (rolling)}$$

#### For Chain Sliding

$$T = (DP) (1.2)/2$$

$$T = (7,460) (1.2)/2$$

$$T = 4,480 \text{ lbs. (sliding)}$$

### Step 6: Select Chain Size

#### For Chain Rolling

Referring to page A-32, G-29 or G-19 attachments are convenient for bolting scraper flights. Since attachment spacing is every 12", choose either 4", 6", or 12" pitch chain.

Select 1131R with G-29 every 2nd pitch.

#### For Chain Sliding

Note that chain U-3945 with K-3 attachments every 3rd pitch could suit this application. In addition, mining industry chains should be considered. Choose the chain that offers the best overall economy.

Select U-3945 with K-3 attachments every third pitch. (See Asphalt Batch Plants and Finishing in the Selected Industry Applications Section.)

**Step 7: Recalculate Chain Tension**For Chain Rolling

$$W = 22.8 + 13.9$$

$$W = 36.7 \text{ lbs./ft.}$$

$$f_r = .33 (1.125/3)$$

$$f_r = .12$$

$$DP = 2,960 (2.02) (.99)$$

$$DP = 5,920 \text{ lbs.}$$

$$T = 5,920 \text{ lbs. } (1.2)/2$$

$$T = 3,550 \text{ lbs./strand (rolling)}$$

Since the maximum allowable working load rating of 1131R is 5,900 lbs., the selection is satisfactory. We could, however, economize by selecting a smaller chain (for example, 627R). To do this, recalculate chain tension by repeating Steps 2, 3, 4, and 5.

For Chain Sliding

$$W = 22.8 + 9.8$$

$$W = 32.6$$

$$f_s = .33 \text{ (Sliding Steel)}$$

$$f_s = .55 \text{ (Sliding Coal)}$$

$$DP = 3,720 (2.02) (.99)$$

$$DP = 7,440 \text{ lbs.}$$

$$T = 7,440 \text{ lbs. } (1.2)/2$$

$$T = 4,460 \text{ lbs./strand (sliding)}$$

Since the maximum allowable working load rating of U-3945 is 5,740 lbs., the selection is satisfactory. If bolted flight attachments are not necessary, mining industry chain could be considered.



# Steel Bushed Chains

Union Steel Bushed Chains are specially designed and manufactured to provide excellent service in severe working conditions. Our chains are manufactured to close tolerances with the most modern equipment in the industry.

Each component is made from high-quality steels and then specially heat-treated to provide maximum performance and long wear life. Joint parts are hardened to provide greater strength and wear resistance. Sidebars are hardened to achieve ultra-high strength throughout.

Specify Union Steel Bushed Chains when the system operates under gritty or abrasive conditions, such as bucket elevators and other challenging conveyor applications. Union Steel Bushed Chains are also used to replace combination chains when installations are modified to handle heavier loads or operating conditions become more severe.

## Steel Bushed Chain Components

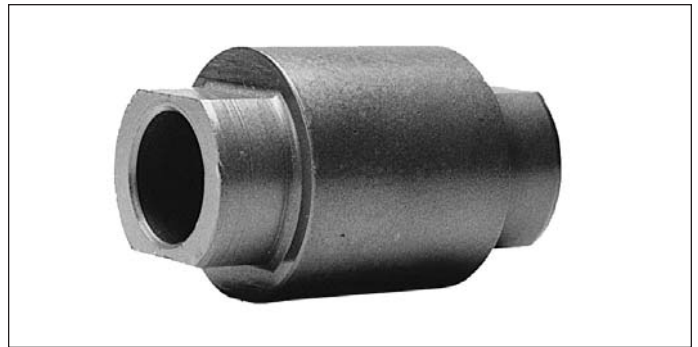
### Strong, Tough Pins

Pins are made of select alloy steel or high-quality carbon steel. They are hardened to achieve superior strength and extend wear life. This creates the ideal combination of surface hardness for wear resistance and core toughness to resist impact.



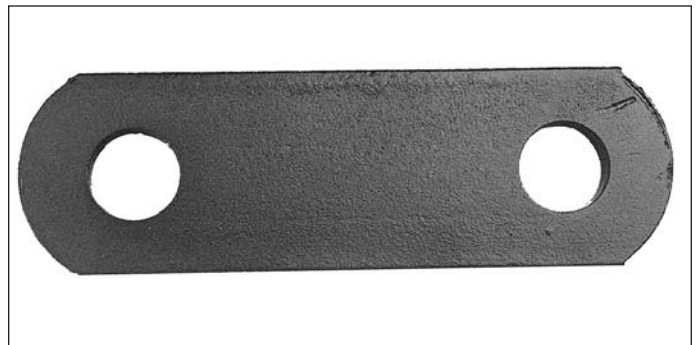
### Long-Wearing Bushings

Bushings are manufactured to rigid specifications for optimum wear resistance and strength. Select steels are precision machined to maintain consistently high sidebar interference. This results in positive sidebar hold and favorable residual stress to resist fatigue. Bushings are case-hardened and heat-treated to extend the wear life.

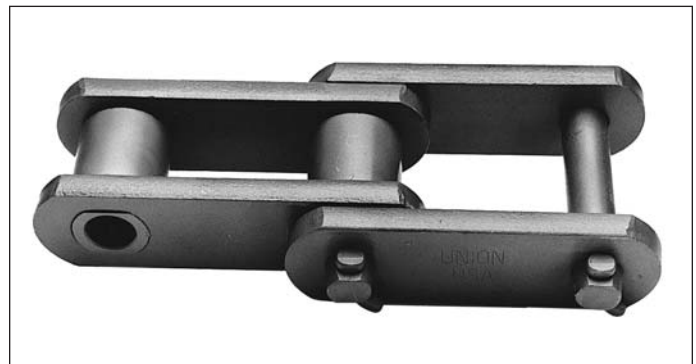
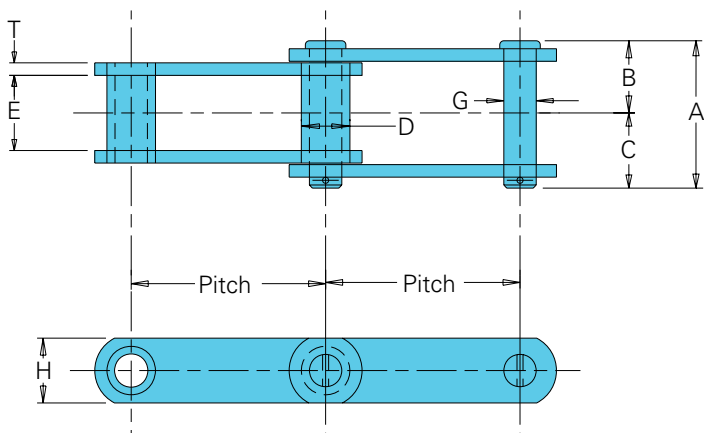


### Fatigue-Resistant Sidebars

Sidebars are through-hardened to achieve ultra-high strength. This keeps the chain hanging failure-free, ensuring consistent service life. Union has developed superior techniques to ensure hole quality and pitch control. The result is fatigue resistance and premium performance.



### Steel Bushed Plain Chain



### Steel Bushed Plain Chain Specifications

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Width				Bushing			Pin			Sidebar			Average Ultimate Strength (lbs.)	Max. Work Load (lbs.)	Approx. Wgt. (lbs./ft.)
		Overall	Pin Head to CL	Pin End to CL	Inside	Dia.	Sty. <sup>1</sup>	Matl. <sup>2</sup>	Dia.	Sty. <sup>3</sup>	Matl. <sup>2</sup>	Height	Thick.	Matl. <sup>2</sup>			
		A	B	C	E	D			G			H	T				
188	2.609	2.69	1.25	1.44	1.06	.88	P	CCH	.50	A	CHT	1.13	.25	CHT	25,000	2,750	3.8
131	3.075	3.53	1.66	1.88	1.31	1.25	P	CCH	.63	A	CHT	1.50	.38	CHT	40,000	4,500	7.5
102B	4.000	4.31	2.03	2.28	2.13	1.00	P	ACH	.63	A	ACH	1.50	.38	CHT	40,000	6,300	6.9
102-1/2	4.040	4.75	2.25	2.50	2.25	1.38	P	CCH	.75	A	ACH	1.75	.38	CHT	50,000	8,850	9.4
111	4.760	5.06	2.38	2.69	2.63	1.44	P	CCH	.75	A	ACH	2.00	.38	CHT	50,000	8,850	10.2
111SP	4.760	5.06	2.38	2.69	2.63	1.44	P	CCH	.75	A	ACH	2.00	.38	CHT	50,000	8,850	8.8
	& 7.240																
110	6.000	4.31	2.03	2.28	2.13	1.25	P	CCH	.63	A	ACH	1.50	.38	CHT	40,000	6,300	6.3
4856	6.000	6.13	2.88	3.22	3.00	1.75	R	ACH	1.00	K	AHTIH	2.50	.50	AHT	145,000	14,000	16.5
4857	6.000	6.13	2.88	3.22	3.00	1.75	R	ACH	1.00	K	AHTIH	3.25	.50	AHT	175,000	14,000	21.0
4859	6.000	7.38	3.56	3.81	3.75	2.38	R	ACH	1.25	K	AHTIH	4.00	.63	AHT	275,000	21,800	34.0
150X	6.050	6.41	3.03	3.38	3.31	1.75	P	ACH	1.00	A	ACH	2.50	.50	CHT	100,000	15,100	16.6
4864	7.000	7.38	3.56	3.81	3.75	2.38	R	ACH	1.25	K	AHTIH	4.00	.63	AHT	275,000	21,800	31.0

<sup>1</sup>Bushing style: P = Double-flat; R = Full-round.

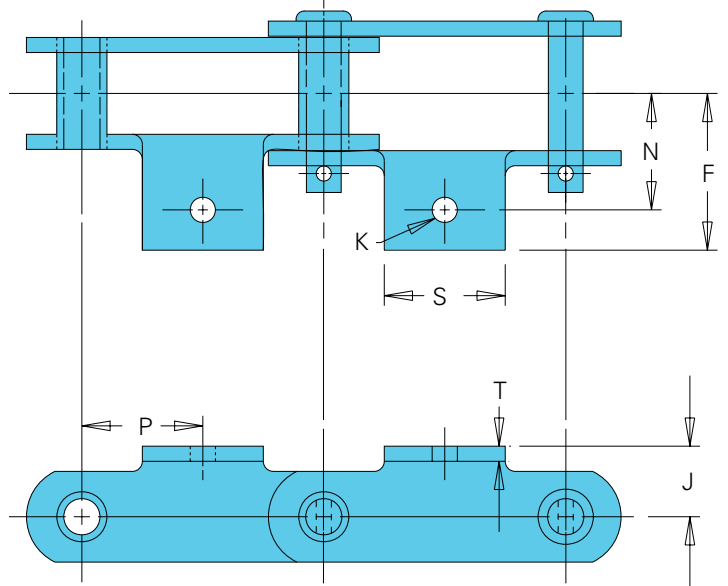
<sup>2</sup>Material: CHT = Carbon heat-treated; CCH = Carbon case hardened; AHT = Alloy heat-treated; ACH = Alloy case-hardened; AHTIH = Alloy heat-treated induction hardened.

<sup>3</sup>Pin style: K = Full round; A = Double flat.

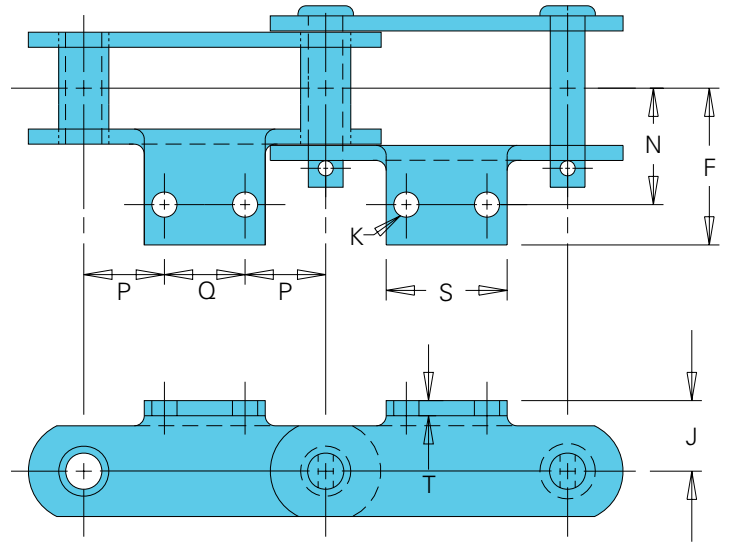
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

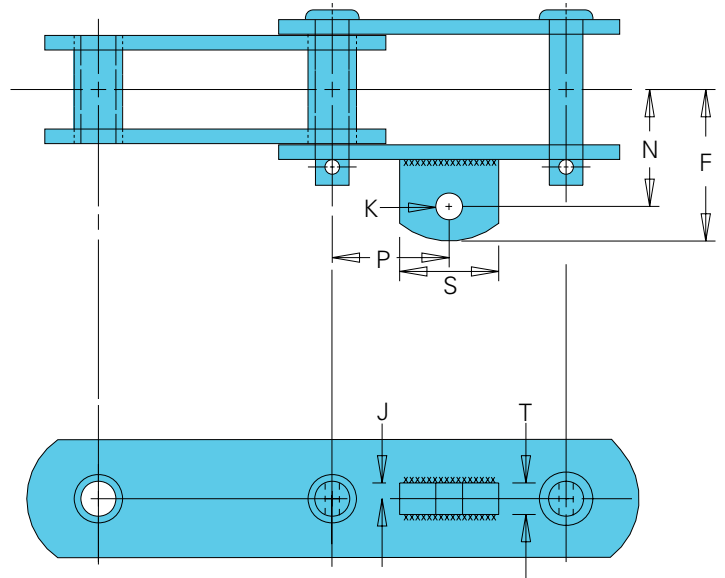
**A-1 Attachment**



**A-2 Attachment**



**A-22 and A-42 Attachment**



### Steel Bushed Attachment Specifications

All dimensions are in inches unless otherwise indicated.

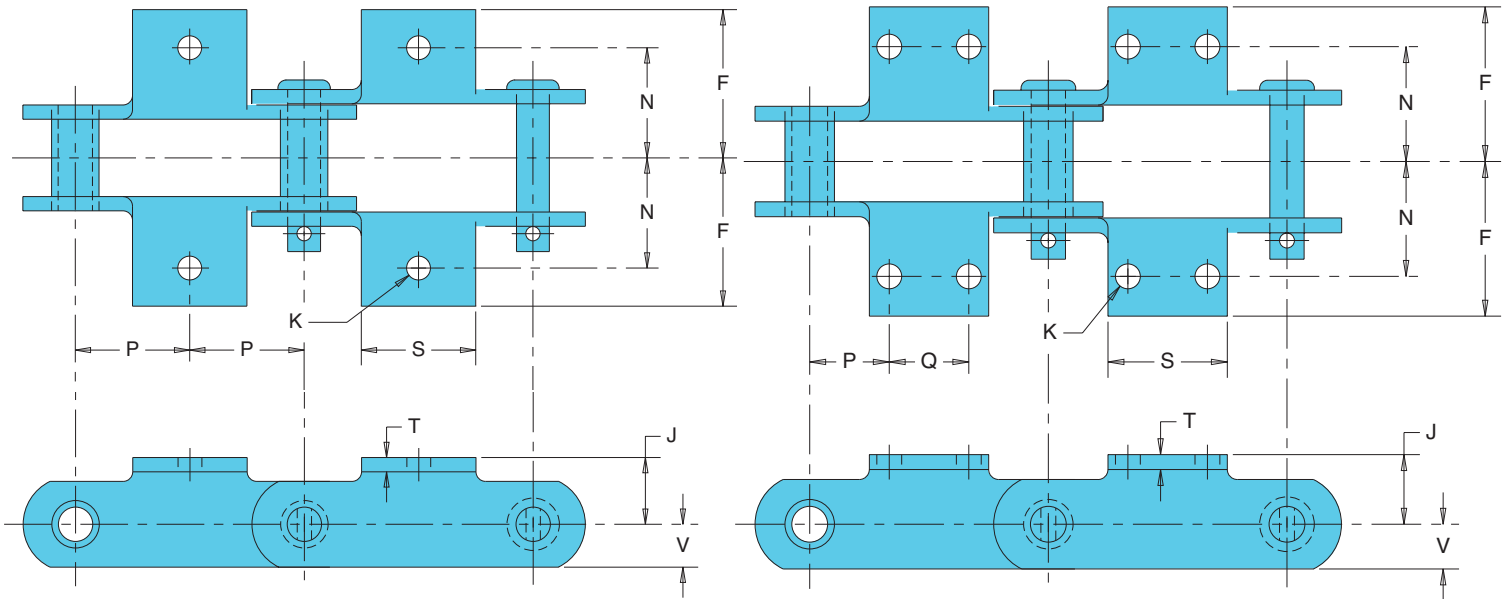
Attach. Number	Chain Number	N	Q	J	S	F	P	Bolt Diameter	K	T	Approx. Weight (lbs./ft.)
A-1	188	1.88		.81	2.13	2.61	1.30	.38		.25	4.8
	131	2.06		1.00	1.31	3.02	1.54	.50		.38	8.9
	102B	2.38		1.00	2.81	3.34	2.00	.38		.38	8.9
	111	3.13		1.50	3.63	3.75	2.38	.50		.38	12.7
	110	2.66		1.00	2.81	3.53	3.00	.38		.38	8.6
A-2	188	2.09	1.25	.81	2.13	2.61	.68	.31		.25	4.8
	131	2.06	1.50	1.13	2.88	2.91	.78	.50		.38	8.9
	102B	2.66	1.75	1.00	2.81	3.34	1.13	.38		.38	8.0
	111	3.13	2.31	1.50	3.63	4.13	1.22	.38		.38	12.4
	110	2.66	1.75	1.00	2.89	3.32	2.13	.38		.38	7.5
A-22 & A-42	188	1.78		.19	1.25	2.38	1.19	.38		.38	4.8
	131	2.63		.16	1.25	3.50	1.53	.38		.38	8.4
	102B	3.13	1.75	.16	1.25	3.88	2.00	.38		.31	7.8
	111	3.38		.19	1.25	4.13	2.38	.50		.38	10.8
	110	3.13		.19	2.00	4.13	3.00	.50		.38	7.1

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## K-1 Attachment

## K-2 and K-22 Attachment



### Steel Bushed Attachment Specifications (Continued)

All dimensions are in inches unless otherwise indicated.

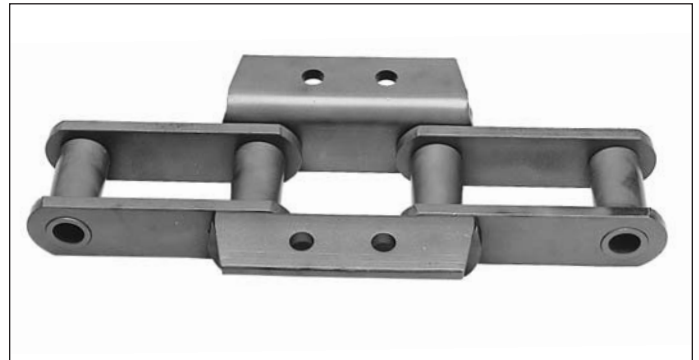
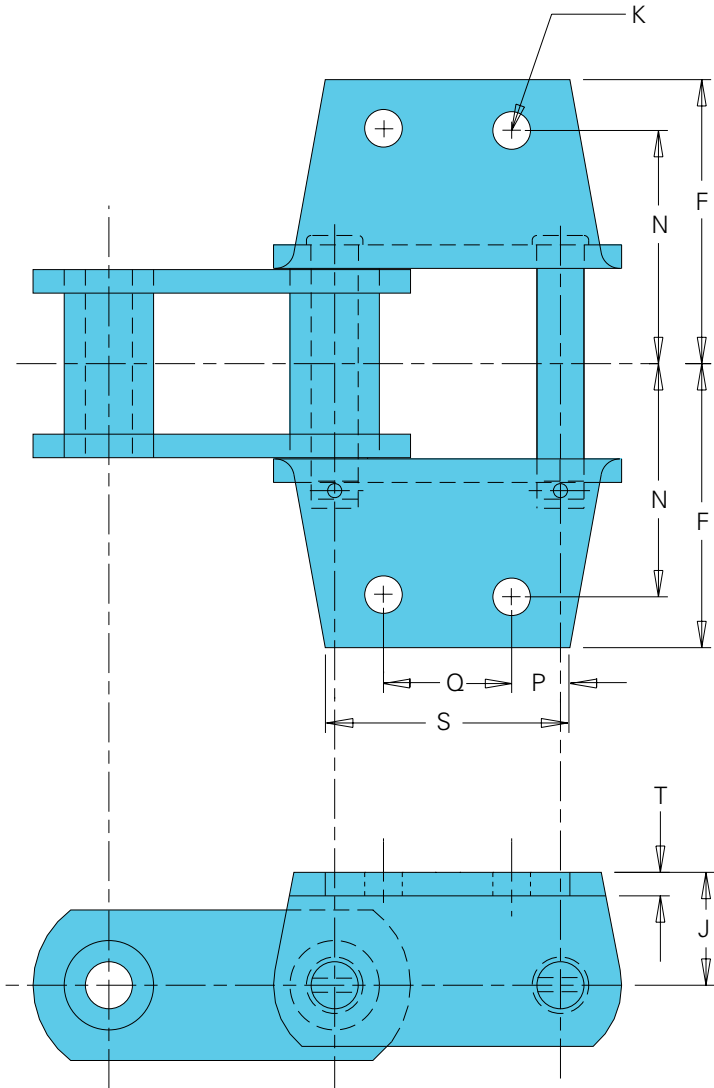
Attach. Number	Chain Number	N	M	R	F	L	Q	S	P	Bolt Dia.	K	J	T	V	Approx. Weight (lbs./ft.)
K-1	188	1.88			2.61			2.13	1.30	.38	.81	.25	.56	5.8	
	131	2.06			3.02			1.31	1.54	.50	1.00	.38	.75	10.2	
	102B	2.38			3.34			2.81	2.00	.38	1.00	.38	.75	9.0	
	111	3.13			3.75			3.63	2.38	.38	1.50	.38	1.00	15.2	
K-2	188	2.09			2.61		1.25	2.13	.68	.31	.81	.25	.56	5.8	
	131	2.06			2.91		1.50	2.88	.78	.50	1.13	.38	.75	10.2	
	102B	2.66			3.34		1.75	2.81	1.13	.38	1.00	.38	.75	9.0	
	110	2.66			3.32		1.75	2.88	2.13	.38	1.00	.38	.75	8.6	
	111	3.13			4.13		2.31	3.63	1.22	.38	1.50	.38	1.00	15.2	
	111SP	3.13			4.13		2.31	3.63	1.22	.50	1.50	.38	1.00	15.2	
	150X	3.75			4.91		2.75	4.25	1.66	.50	1.88	.50	1.25	23.0	
4856	3.31			4.41		2.25	4.25	1.88	.50	1.88	.50	1.25	23.0		
K-22	102-1/2	2.66			3.27		1.75	3.13	1.16	.50	1.13	.38	.88	24.0	
	111	3.13			4.13		2.31	3.63	1.23	.38	1.50	.38	1.00	15.2	
	4856	3.16			4.25		2.25	4.25	1.88	.63	1.88	.50	1.25	23.0	

  Indicates this chain is normally stocked. All others are made-to-order.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**K-24 Attachment**



**Steel Bushed Attachment Specifications (Continued)**

All dimensions are in inches unless otherwise indicated.

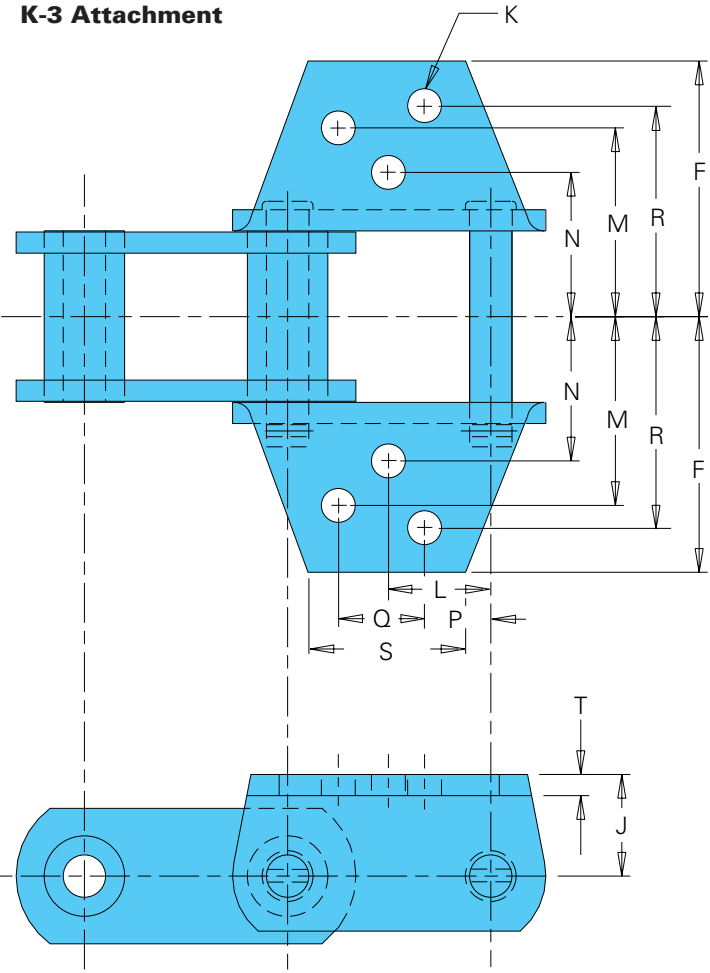
Attach. Number	Chain Number	N	M	R	F	L	Q	S	P	Bolt Dia.	K	J	T	V	Approx. Weight (lbs./ft.)
K-24	4856	3.63			4.75		2.50	7.25	1.75	.63	1.88	.50			27.5

   Indicates this chain is normally stocked. All others are made-to-order.

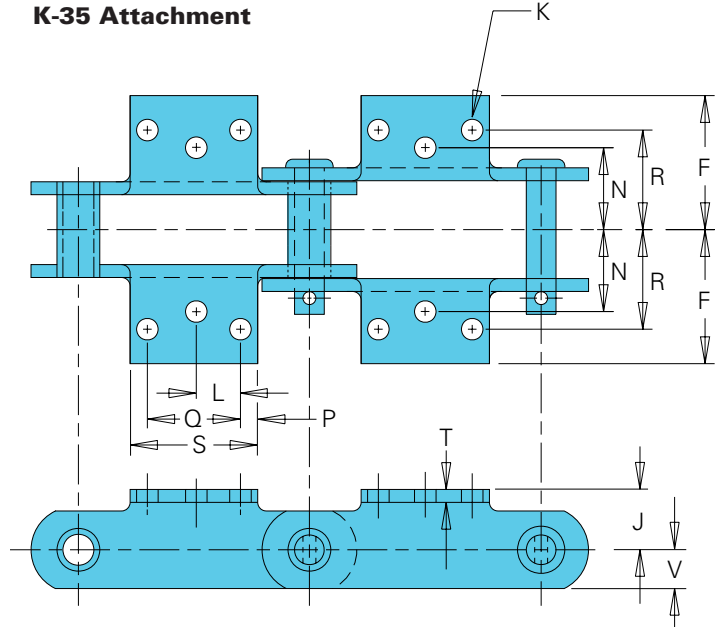
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**K-3 Attachment**



**K-35 Attachment**



**Steel Bushed Attachment Specifications (Continued)**

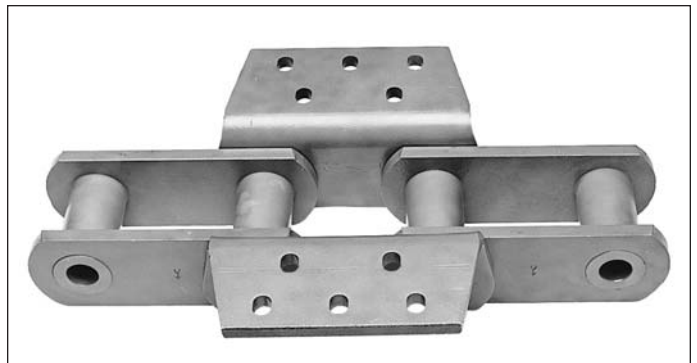
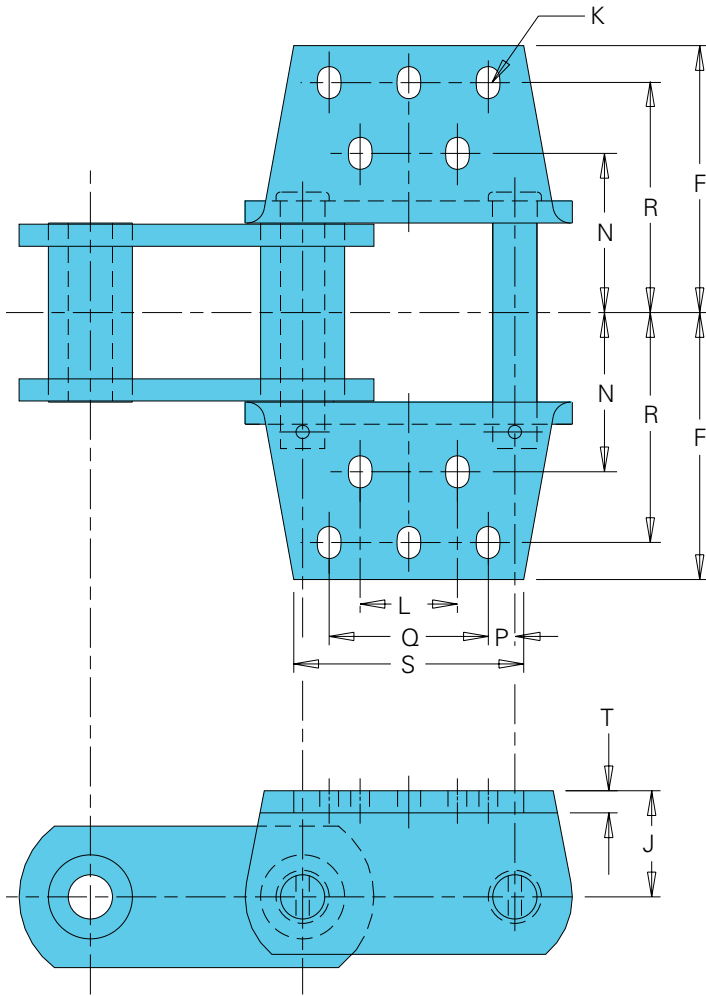
All dimensions are in inches unless otherwise indicated.

Attach. Number	Chain Number	N	M	R	F	L	Q	S	P	Bolt Dia.	K	J	T	V	Approx. Weight (lbs./ft.)
K-3	150X	3.75		5.75	6.53	3.02	2.75	4.25	1.66	.50	1.88	.50			26.9
	4856	3.28	5.47	6.03	6.75	3.00	2.75	4.25	1.63	.50	1.88	.50			27.5
K-35	4856	3.63		6.13	6.75	1.25	2.50	6.44	1.75	.63	1.88	.50	1.25		27.5

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**K-44 and K-443 Attachment**



**Steel Bushed Attachment Specifications (Continued)**

All dimensions are in inches unless otherwise indicated.

Attach. Number	Chain Number	N	M	R	F	L	Q	S	P	Bolt Dia.	K	J	T	V	Approx. Weight (lbs./ft.)
K-44	4857	3.50		6.00	7.25	3.50	3.50	6.56	1.25	.50	2.50	.50			42.0
	4859	4.50		6.50	7.55	2.75	4.50	6.50	.75	.63	3.00	.63			67.0
K-443	4864	4.50		6.50	7.55	3.75	5.50	8.56	.75	.63	3.00	.63			53.0

■ Indicates this chain is normally stocked. All others are made-to-order.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.





# Cast Combination Chains

When your conveyor system demands a tough, abrasion-resistant, moderate cost chain to move heavy materials, Cast Combination Chain from Union is the answer. The sanitation, chemical, paper, fertilizer, and mining industries are just some of the places where this versatile chain is commonly used to move a wide variety of materials.

## Long-Wearing, High-Quality Construction

Cast Combination Chain is made of special pearlitic malleable iron block links and medium carbon steel sidebars and pins. Pearlitic malleable iron is 35% stronger than standard malleable iron, which means longer service life even in the most severe conditions. Holes in the iron block links are accurately sized to provide smooth bearing areas for the pins. Holes in the sidebars are smooth to permit accurate pin fit.

## Cost-Effective Service Life

Excellent service life is achieved by controlling exposure to abrasives through low bearing pressures and by using hard, abrasion-resistant pearlitic iron. This is important if your operation moves materials that can be harsh on metal conveyor parts. Select Union Cast Combination Chain to keep your lines running.

## Cast Combination Components

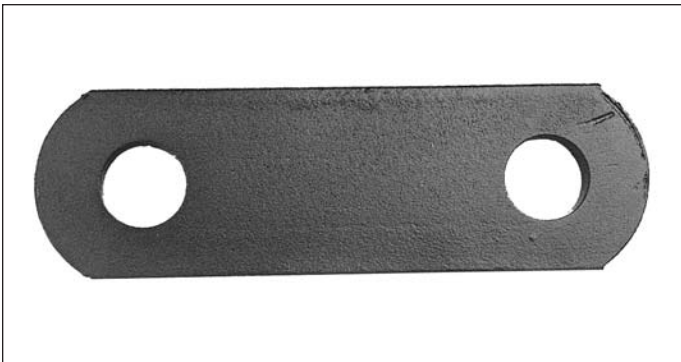
### Wear-Resistant Pins

Pins are made of select steel and through-hardened heat-treated to achieve superior strength. The hardening process creates the ideal combination of high strength and wear resistance. You get economical, effective performance.



### Trouble-Free Sidebars

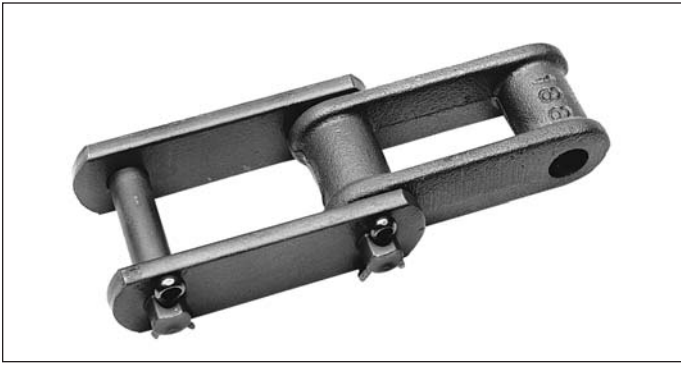
Sidebars are constructed of medium carbon steel, which meet and exceed strength requirements. This extra strength is especially important to keep the chain running at maximum capacity throughout its service life. Sidebar pitch holes are pierced to exacting specifications to achieve a quality interference fit with pins. This provides rigid pin-link construction for long wear life.



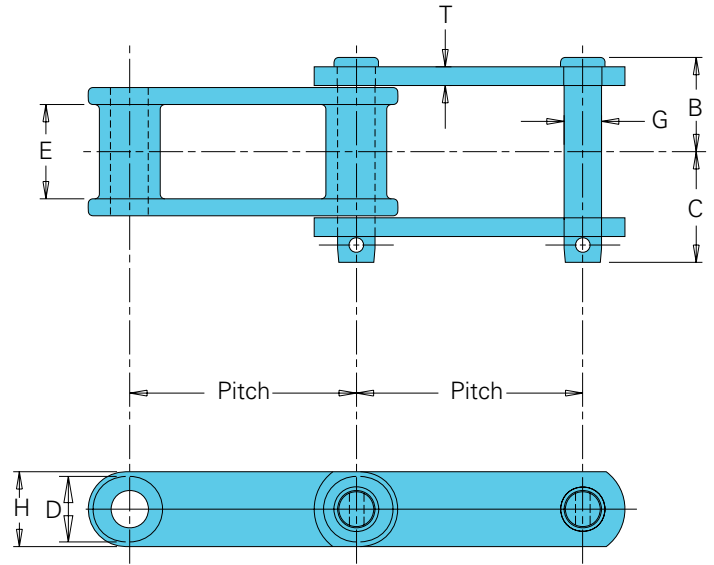
### Tough, Long-Lasting Block Links

Cast Combination Chain block links are constructed of special grade pearlitic malleable iron. Pearlitic malleable iron is selected to provide the proper balance of wear resistance and toughness.





**Cast Combination Plain Chain**



**Cast Combination Chain Specifications**

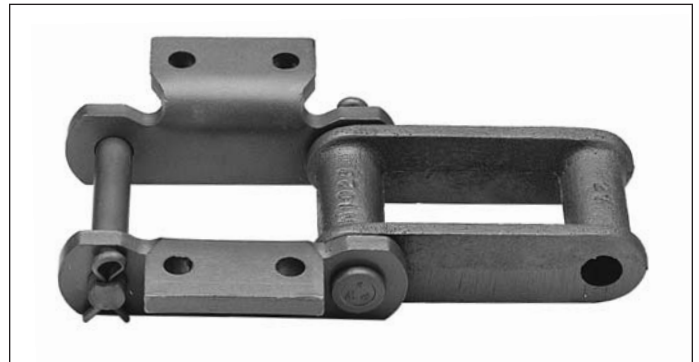
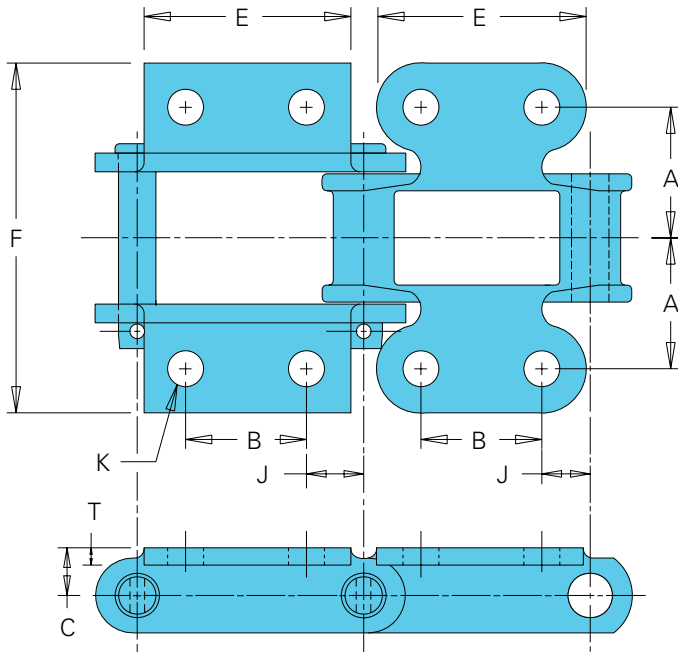
All dimensions are in inches unless otherwise indicated.

Chain Number	Average Ultimate Strength	Working Load	Pitch	Links in Approx. 10 ft.	Dimensions							Approx. Weight (lbs./ft.)
					Pin Head to CL	Pin End to CL	Maximum Allowable Sprocket Face	Pin Dia.	Sidebar Height	Sidebar Thick.	Barrel Dia. Size	
					<b>B</b>	<b>C</b>	<b>E</b>	<b>G</b>	<b>H</b>	<b>T</b>	<b>D</b>	
C-188	17,500	2,340	2.609	46	1.34	1.44	.94	.50	1.13	.25	.88	3.6
C-131	30,000	3,750	3.075	40	1.81	1.88	1.13	.63	1.50	.38	1.25	6.5
C-102B	30,000	5,000	4.000	30	2.19	2.30	2.00	.63	1.50	.38	1.00	6.8
C-111	45,000	7,500	4.760	26	2.59	2.66	2.38	.75	1.75	.38	1.44	9.8
C-110	30,000	5,000	6.000	20	2.19	2.30	1.94	.63	1.50	.38	1.25	6.0
C-132	62,500	10,400	6.050	20	3.22	3.16	3.13	1.00	2.00	.50	1.75	14.5

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**K-2 Attachment**



**Specifications with K-2 Attachments**

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Dimensions								Approx. Weight <sup>1</sup> (lbs./ft.)
		A	J	E <sup>2</sup>	B	C	F <sup>2</sup>	T	Bolt Diameter K	
C-188	2.609	2.09	.69	2.13	1.25	.81	5.06	.25	.31	4.3/5.4
C-131	3.075	2.06	.78	2.63	1.50	1.06	5.50	.31	.50	7.4/8.7
C-102B	4.000	2.66	1.13	2.75	1.75	1.06	6.63	.25	.38	7.8/9.1
C-111	4.760	3.13	1.22	3.63	2.31	1.13	7.50	.31	.50	11.3/12.7
C-110	6.000	2.66	2.13	3.00	1.75	1.06	6.50	.25	.38	7.3/8.4
C-132	6.050	3.75	1.66	4.13	2.75	1.25	9.06	.38	.50	16.1/17.9

<sup>1</sup>Figure on left represents weight for chain with attachment on sidebar only.  
Figure on right represents weight for chain with attachment on sidebar and center block.

<sup>2</sup>Block link attachment dimensions.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



# Welded Steel Chains

Welded Steel Chain from Union is designed and manufactured to offer strength, precision, impact resistance, and wear resistance. This versatile chain is built to withstand punishing shock loads and abrasive conditions. Each component is engineered to close tolerances. It is found throughout the world in lumber mills, paper pulp mills, and any industry where severe applications require strength and reliability.

Welded Steel Mill and Drag Chains are available with a variety of attachments and are ideally suited for field welding.

## Greater Strength

Union's oversized rivet head outlasts conventional rivet heads. That means longer wear life and less downtime in your plant.

## Cost-Effective Operation

We use the best technology to accurately control hole size and pitch. That means longer wear life for chains and sprockets, reducing your operating costs.

## Long-Lasting Construction

One-piece construction means bushings are stronger and last longer. You get more mileage from Union Chain.

## Built to Last

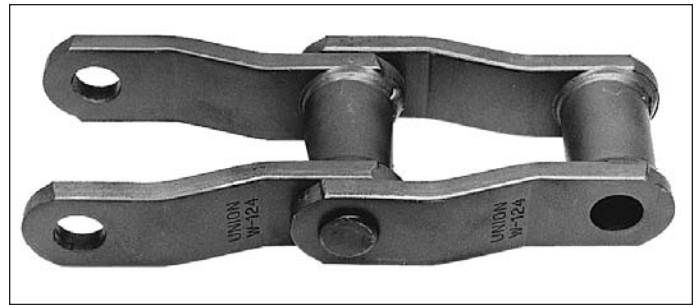
Our Welded Steel Chains are built to exacting Union specifications using heat-treated alloy-grade steel. Barrels are hand-welded to sidebars to create the highest fatigue resistance in the industry.

## Easy to Assemble

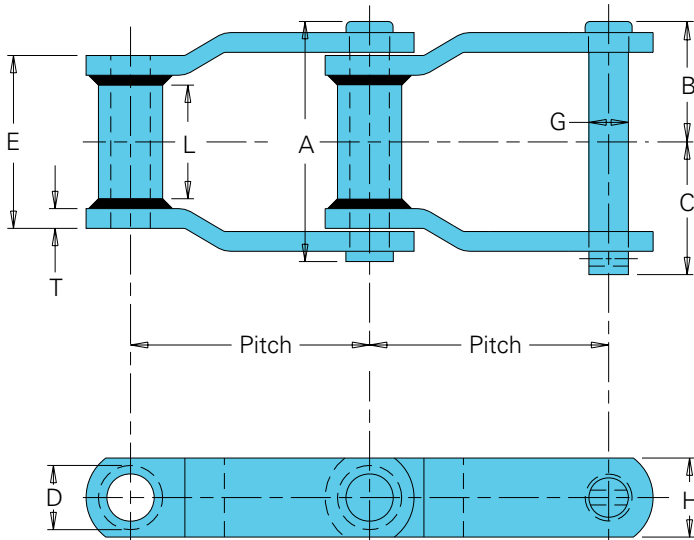
Chain pins are manufactured from high quality steels and through-hardened for maximum strength. Special design considerations include enlarged shoulders for tight press fit in the sidebars and tapered construction for rapid assembly.

### Welded Steel Mill Chain

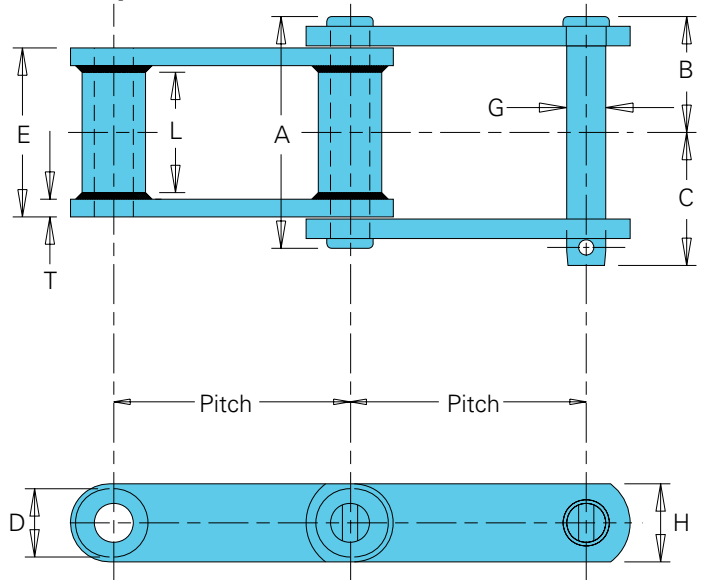
Union offers a line of Welded Steel Mill Chains for most conveying, driving and elevating applications where high strength rollerless chains are required. They are available with a full line of attachments which makes them easily adaptable to a wide variety of applications.



#### Offset Sidebar



#### WCH-Style Chain



### Welded Steel Mill Chain Specifications

All dimensions are in inches unless otherwise indicated.

Chain No.	Pitch	Chain Width				Barrel		Pin	Sidebars			Average Ult. Strength (lbs.)	Maximum Work Load (lbs.)	Approx. Weight (lbs./ft.)
		Overall	Pin Head to CL	Pin End to CL	Lgth. of Bearing	D	L	Dia.	Thick.	Height				
		A	B	C	E	D	L	G	T	H				
WH-78	2.609	3.00	1.44	1.56	2.00	.88	1.13	.50	.25	1.13	33,000	3,500	4.0	
WH-82	3.075	3.25	1.56	1.69	2.25	1.06	1.25	.56	.25	1.25	36,000	4,400	4.8	
WH-124 <sup>1</sup>	4.000	4.25	2.03	2.22	2.75	1.25	1.63	.75	.38	1.50	60,000	7,350	8.3	
WH-124H	4.063	4.75	2.28	2.47	3.00	1.63	1.44	1.00	.50	2.00	100,000	10,500	14.7	
WH-111	4.760	4.88	2.34	2.54	3.38	1.38	2.38	.75	.38	1.75	60,000	8,850	9.5	
WH-106	6.000	4.25	2.03	2.31	2.75	1.25	1.63	.75	.38	1.50	60,000	7,200	7.0	
WH-132 <sup>1</sup>	6.050	6.25	3.00	3.40	4.38	1.75	2.88	1.00	.50	2.00	100,000	15,300	14.2	
WH-150	6.050	6.25	3.00	3.25	4.38	1.75	2.88	1.00	.50	2.50	100,000	15,300	16.8	
WH-155	6.050	6.91	3.25	3.66	4.63	1.75	3.00	1.13	.63	2.50	184,000	20,000	20.0	
WCH-132	6.050	6.25	3.00	3.25	4.38	1.75	2.88	1.00	.50	2.00	100,000	15,300	14.2	

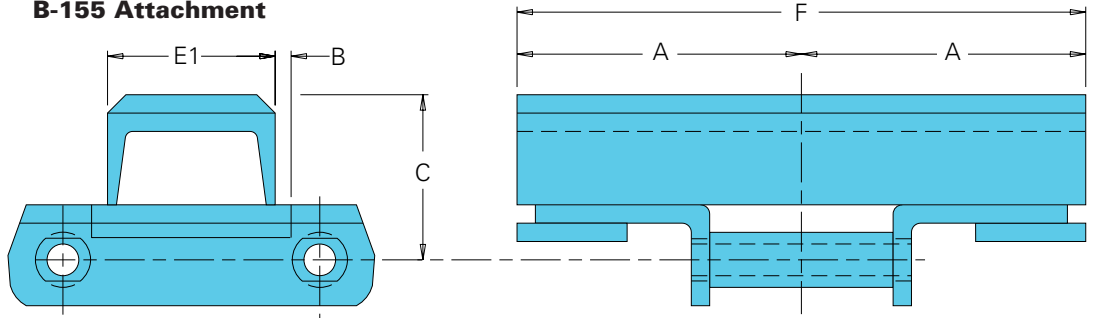
Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Chain numbers WH-124 and WH-132 are also stocked in stainless steel with riveted and cottered construction.

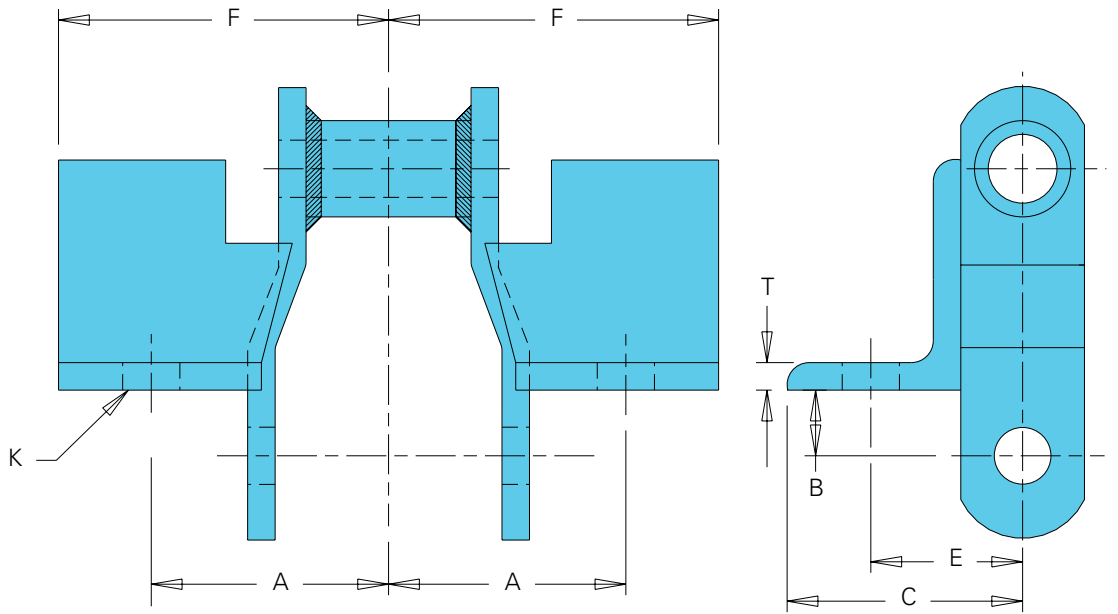
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

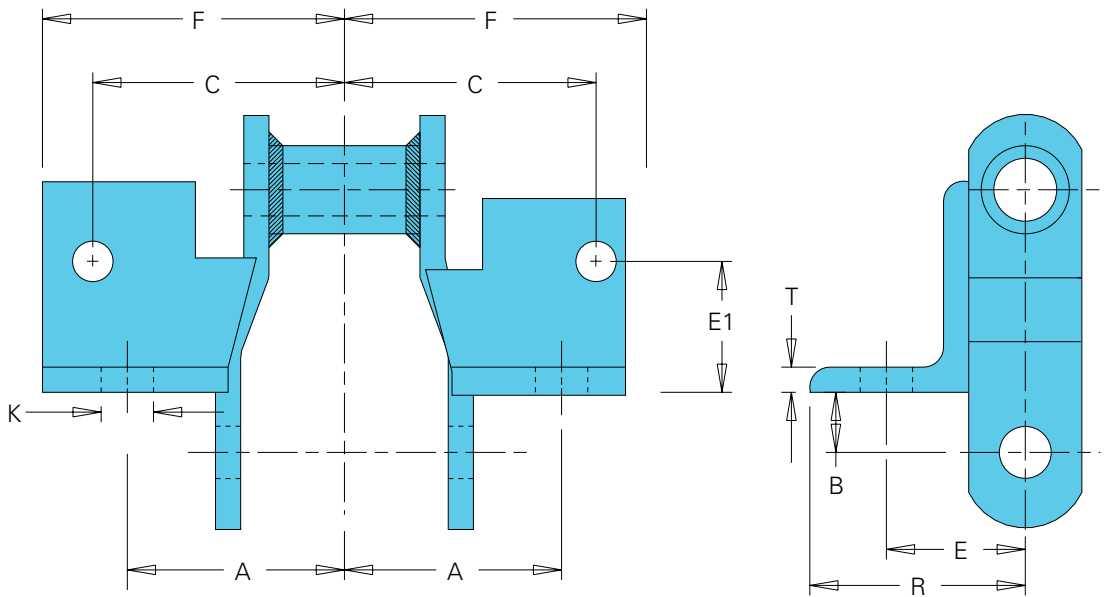
**B-155 Attachment**

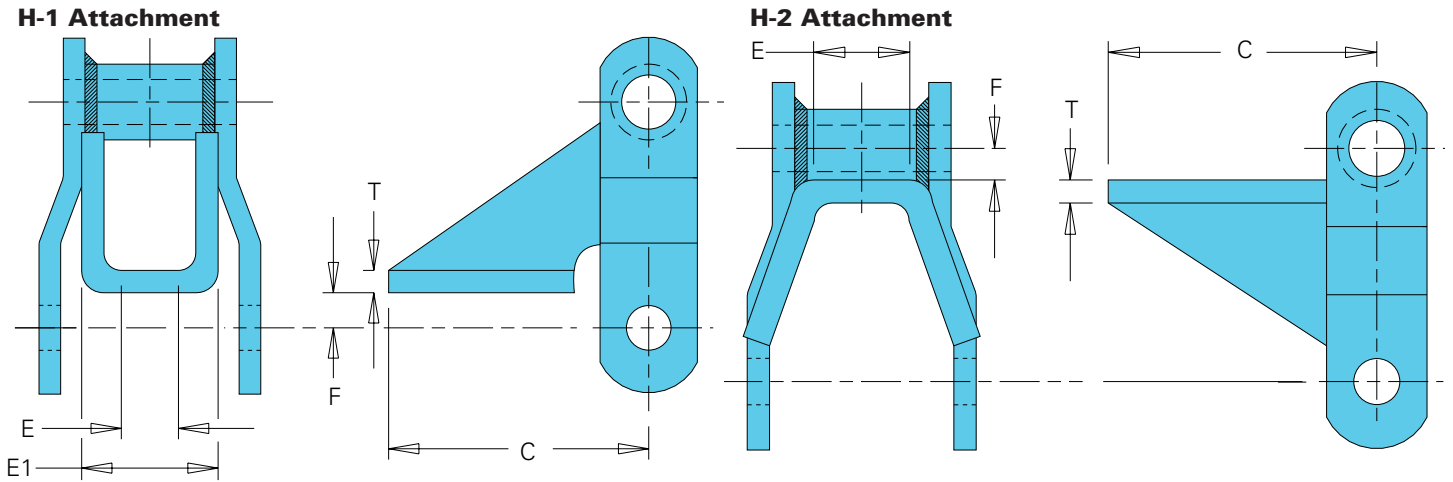


**F-2 Attachment**



**F-4 Attachment**





**Welded Steel Mill Chain Attachments**

All dimensions are in inches unless otherwise indicated.

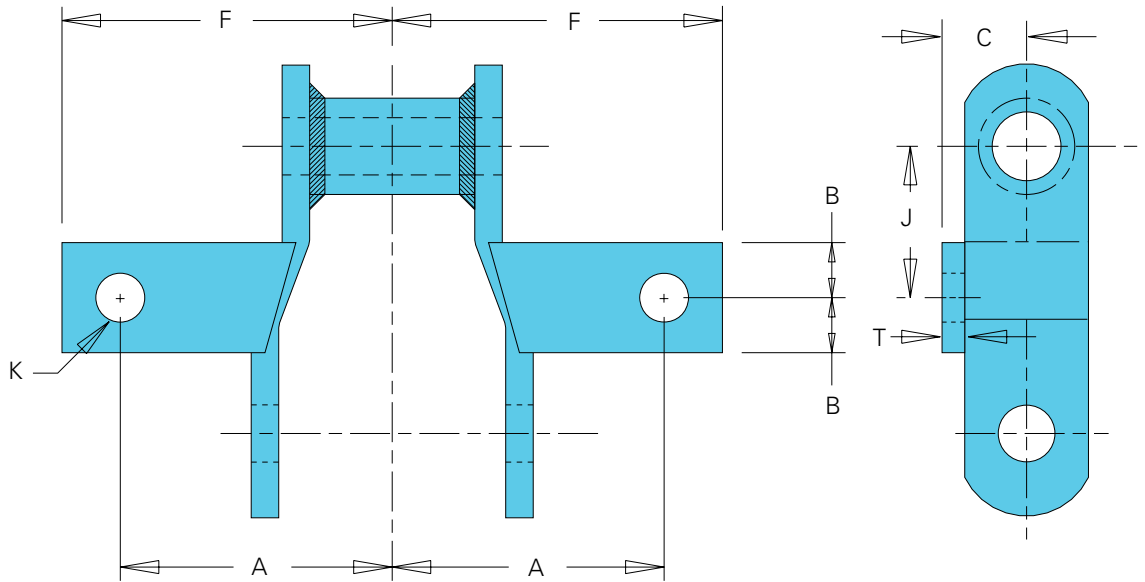
Attach. Number	Chain Number	A	B	C	E	E1	F	Bolt Diameter	T	R	Approx Weight (lbs./ft.)
								K			
B-155	WH-132	7.00	1.03	4.25		4.00	14.00				49.6
	WH-150	7.00	1.03	4.50		4.00	14.00				54.6
	WH-155	7.00	1.03	4.50		4.00	14.00				56.6
F-2	WH-78	1.88	.69	2.06	1.44		2.69	.38	.25		6.0
F-4	WH-78	1.88	.69	2.25	1.44	1.25	2.75	.38	.25	2.06	6.1
	WH-82	2.06	.75	2.50	1.50	1.13	2.97	.38	.25	2.38	8.9
	WH-124	2.19	.88	2.63	2.06	1.44	3.09	.38	.39	2.75	11.6
H-1	WH-78			3.56	.88	1.75	.50		.25		8.3
	WH-82			3.63	1.13	2.00	.63		.25		9.9
H-2	WH-78			3.56	.81		.31		.25		7.5
	WH-82			3.63	1.03		.38		.25		8.8

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

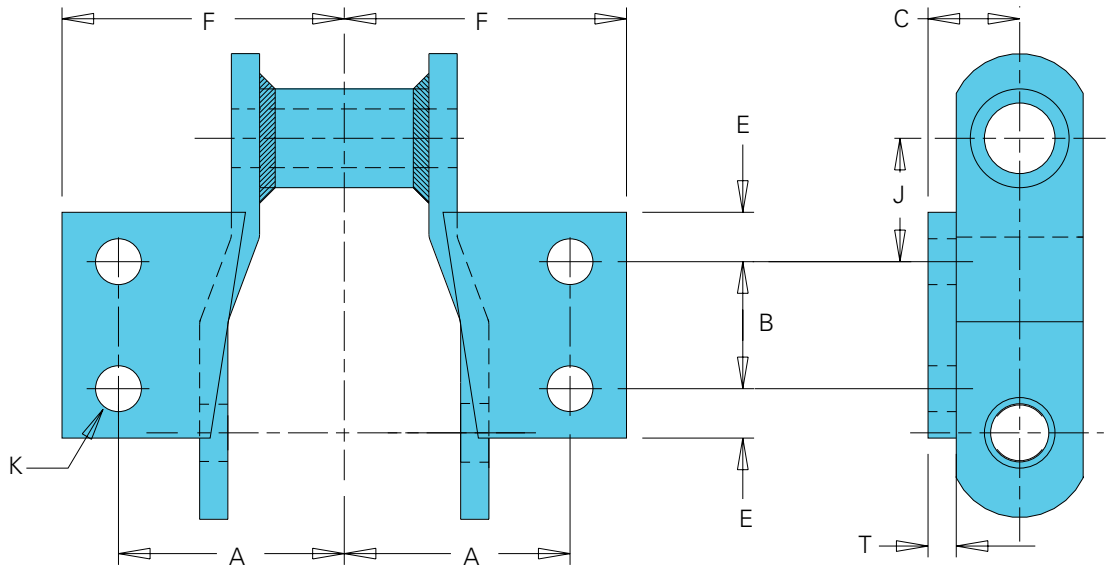
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



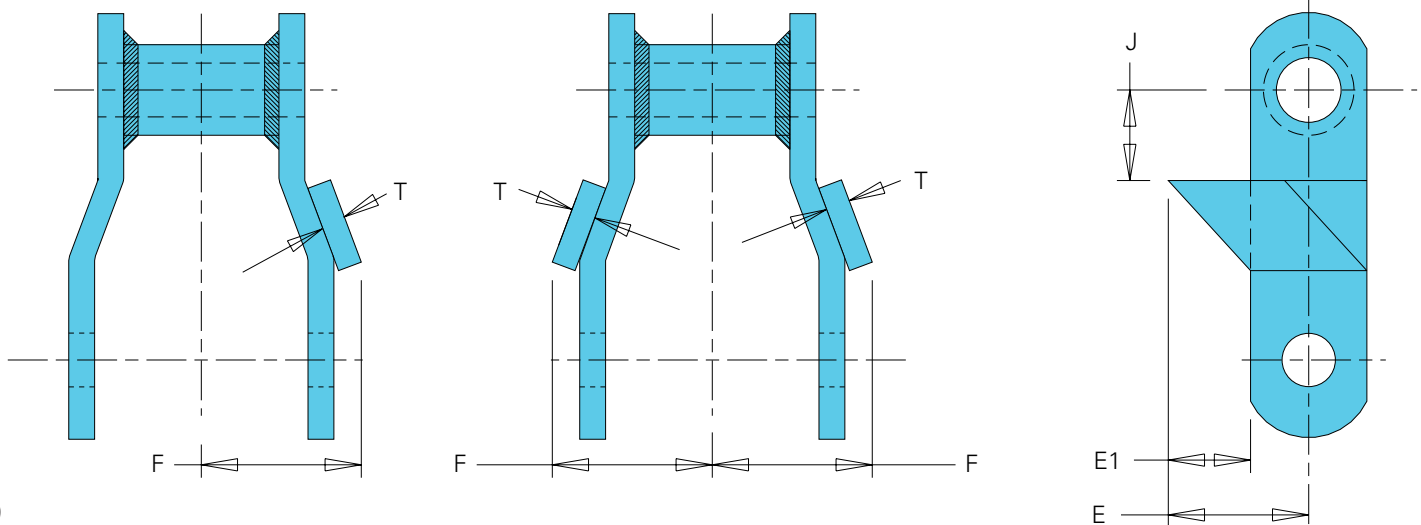
**K-1 Attachment**



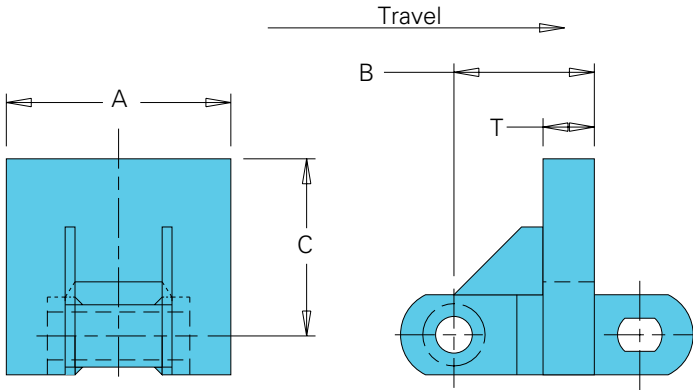
**K-2 Attachment**



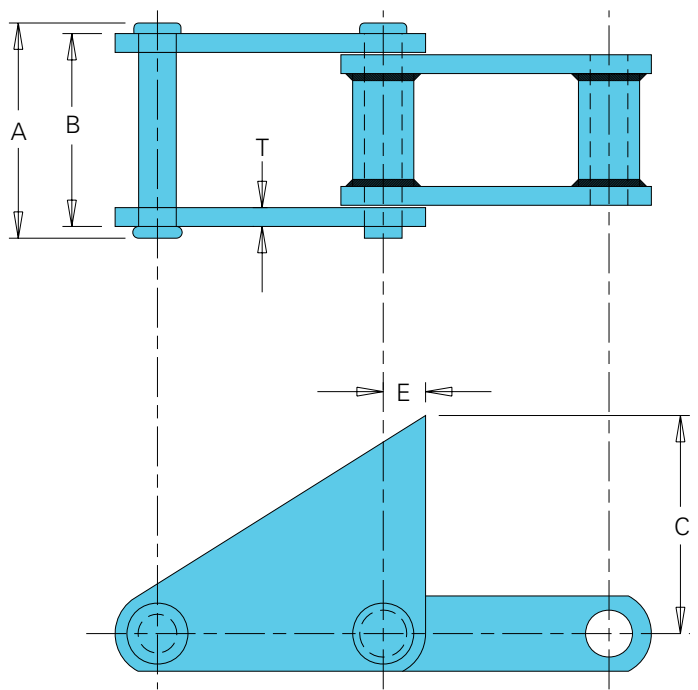
**R-1, R-1-1/2, RR Attachment**



**RF-12 Attachment**



**S-1 Attachment**



**Welded Steel Mill Chain Attachments (Continued)**

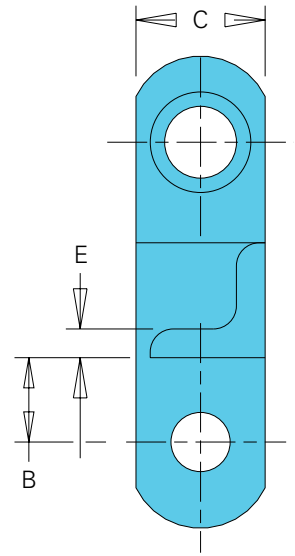
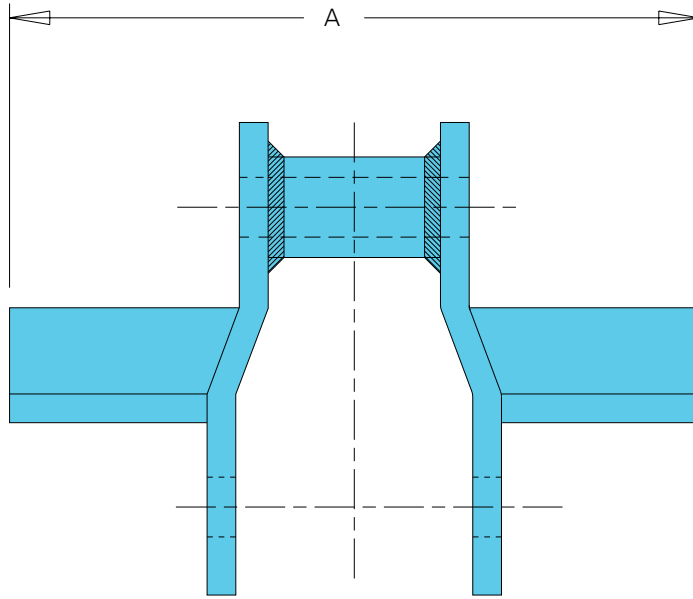
All dimensions are in inches unless otherwise indicated.

Attach. Number	Chain Number	A	B	C	E	E1	F	Bolt Diameter	K	J	T	Approx. Weight (lbs./ft.)
K-1	WH-78	2.00	.63	.81			2.50	.38	1.38	.25	.25	5.5
	WH-82	2.13	.88	.88			2.75	.38	1.56	.25	.25	7.2
K-2	WH-78	2.00	1.13	.81	.43		2.50	.38	1.09	.25	.25	6.3
	WH-82	2.13	1.31	.88	.47		2.75	.38		.25	.25	7.6
	WH-124	2.63	1.94	1.13	.53		3.50	.38		.38	.38	11.7
	WH-124H	2.63	1.94	1.50	.53		3.50	.50		.50	.50	18.4
	WH-132	3.75	2.75	1.38	.63		4.38	.50	1.66	.50	.50	18.0
	WCH-132	3.75	2.75	1.38	.63		4.38	.50	1.66	.50	.50	18.0
R-1	WH-78				1.56	1.00	1.56			.75	.25	4.7
	WH-82				1.88	1.25	1.69			.88	.25	6.1
	WH-124				1.88	1.13	2.16			1.28	.38	9.4
R-1-1/2	WH-78				2.06	1.50	1.56			.75	.25	4.9
RR	WH-78				1.56	1.00	3.13			.75	.25	5.2
	WH-82				1.88	1.25	3.38			.88	.25	6.7
	WH-124				1.88	1.13	4.25			1.25	.38	10.4
	WH-124H				2.13	1.13	4.88			1.25	.50	17.6
RF-12	WH-132	12.00	4.56	5.25							1.00	55.0
	WH-150	12.00	4.56	5.50							1.00	58.0
	WH-155	12.00	4.56	5.50							1.00	63.0
S-1	WCH-132	6.00	5.44	5.00	1.28						.50	18.1

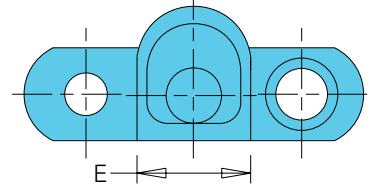
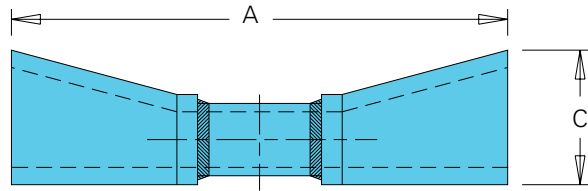
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

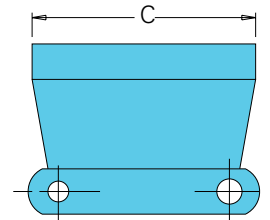
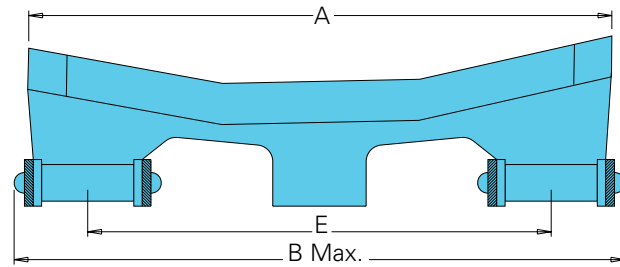
**Wing**



**Log Cradle**



**Double Strand Log Cradle**



**Welded Steel Mill Chain Attachments** (Continued)

All dimensions are in inches unless otherwise indicated.

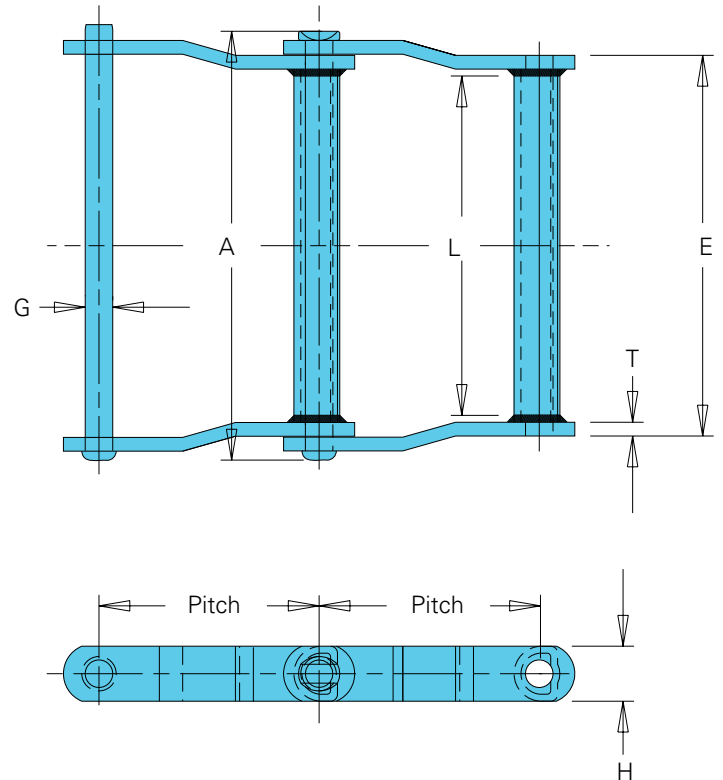
Attachment Number	Chain Number	A	B	C	E	Approximate Weight (lbs./ft.)
Wing	WH-78	6.00	.75	1.00	.25	7.3
	WH-82	6.50	.81	1.25	.25	8.6
	WH-124	8.50	1.19	1.50	.25	14.2
	WH-132	12.38	1.44	2.00	.38	21.0
	WCH-132	12.38	1.44	2.00	.38	21.0
	WH-124H	8.50	1.38	2.00	.50	19.1
Log Cradle	WH-132	11.13		3.00	3.50	29.2
	WH-132	13.00		3.00	3.50	32.2
	WCH-132	11.13		3.00	3.50	29.2
	WCH-132	13.00		3.00	3.50	32.2
Double Strand Log Cradle	WH-132	16.00	17.50	6.00	12.00	96.0
	WCH-132	16.00	17.50	6.00	12.00	96.0

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



**Drag Chain**



**Welded Steel Drag Chain**

All dimensions are in inches unless otherwise indicated.

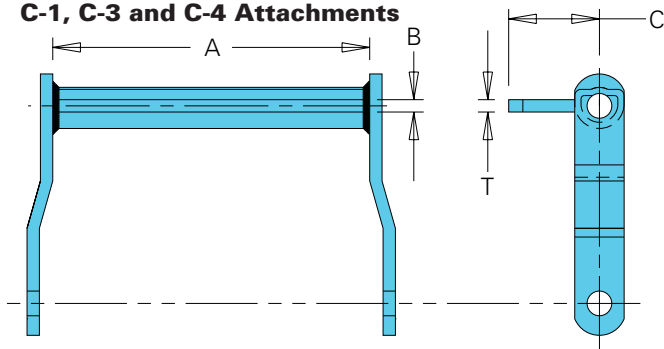
Chain Number	Pitch	Chain Width		Barrel L	Pin Diameter G	Sidebars		Average Ultimate Strength (lbs.)	Maximum Working Load (lbs.)	Approx. Weight (lbs./ft.)
		Overall A	Length of Bearing E			Thickness T	Height H			
WDH-102	5.000	9.25	7.75	6.38	.75	.38	1.50	60,000	10,000	11.8
WDH-104	6.000	6.88	5.38	4.13	.75	.38	1.50	60,000	10,000	8.7
WDH-110	6.000	11.88	10.38	9.00	.75	.38	1.50	60,000	10,000	12.0
WDH-113	6.000	12.50	10.63	9.00	.88	.50	1.50	68,000	11,700	15.0
WDH-112	8.000	11.88	10.38	9.00	.75	.38	1.50	60,000	10,000	9.8
WDH-116	8.000	15.38	14.13	12.75	.75	.38	1.75	80,000	11,500	14.5
WDH-480	8.000	14.63	12.75	11.00	.88	.50	2.00	90,000	15,000	18.1

Indicates this chain is normally stocked. All others are made-to-order.

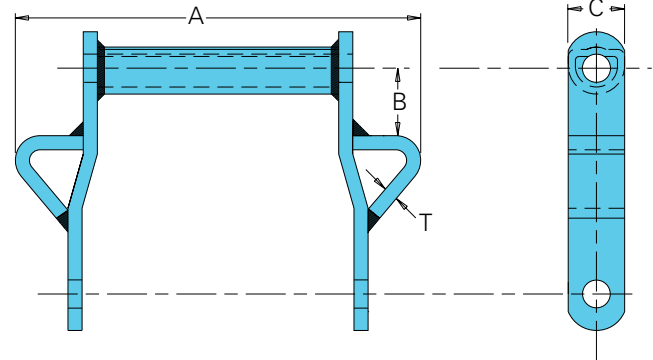
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

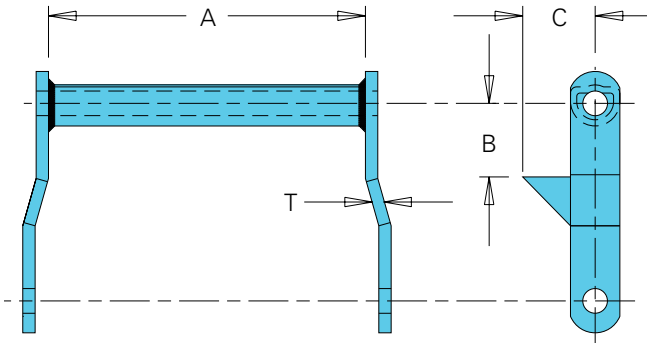
**C-1, C-3 and C-4 Attachments**



**Folded Wing Attachment**



**RR Attachment**



**Welded Steel Drag Chain Attachments**

All dimensions are in inches unless otherwise indicated.

Attachment Number	Chain Number					Approx. Weight (lbs./ft.)
		A	B	C	T	
C-1	WDH-102	7.00	.38	2.38	.38	14.4
	WDH-104	5.00	.38	2.38	.38	10.1
	WDH-110	10.00	.38	2.38	.38	15.5
	WDH-112	10.00	.38	2.38	.38	12.6
	WDH-116	13.00	.38	2.56	.38	18.4
C-3	WDH-113	10.00	.50	2.25	.50	17.3
	WDH-480	12.00	.50	3.00	.50	25.8
Folded Wing	WDH-102	14.25	1.75	1.50	.38	17.1
	WDH-104	11.50	2.75	1.50	.38	12.5
	WDH-110	17.00	2.63	1.50	.38	17.8
	WDH-112	17.00	3.25	1.50	.38	14.6
	WDH-113	17.00	2.25	1.50	.50	22.2
	WDH-116	22.00	3.25	1.75	.38	21.2
C-4	WDH-102	7.00	.38	3.75	.38	17.1
	WDH-104	5.00	.38	3.75	.38	11.7
	WDH-110	10.00	.38	3.75	.38	18.7
	WDH-112	10.00	.38	3.75	.38	15.1
	WDH-113	10.00	.50	4.75	.50	20.9
	WDH-116	13.00	.38	4.81	.38	23.5
RR	WDH-102	8.50	1.75	2.50	.38	12.0
	WDH-104	6.25	3.00	2.50	.38	8.9
	WDH-112	11.25	3.00	2.50	.38	10.3
	WDH-113	11.63	2.25	2.50	.38	16.0
	WDH-116	14.88	3.25	3.00	.38	15.2
	WDH-480	13.75	3.00	3.25	.50	20.8

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



# Drop Forged Rivetless Chains

## Features of Drop Forged Rivetless Chain from U.S. Tsubaki

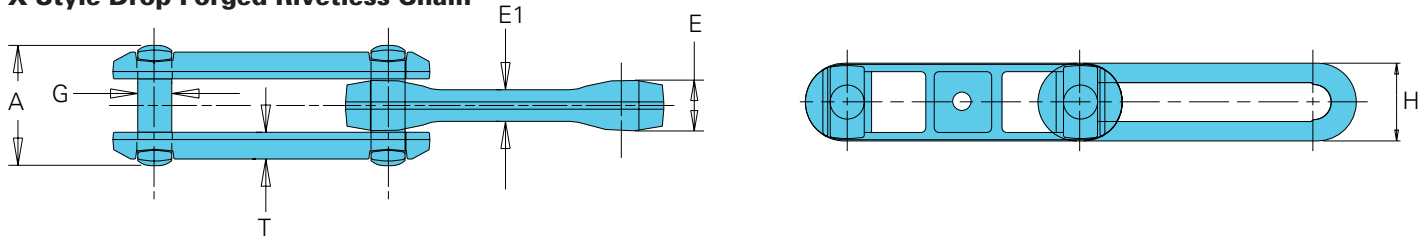
- Precise pitch control provides consistency and reliability, especially for automated systems.
- Smooth bearing areas extend the wear life of the chain.
- Heat-treated parts provide hardness where it matters and reduce the chance of line break.
- Simple design permits quick assembly or dismantling without tools.

Drop Forged Rivetless Chains from the Union Chain Division are available in a range of alloy materials or standard carbon steel. Links can be matched and tagged, magnafluxed, and plated to precise specifications, either as parts or assembled into chains of any length. Union also offers a full line of attachments, matching sprockets, and caterpillar drive chains for all forged rivetless chains.

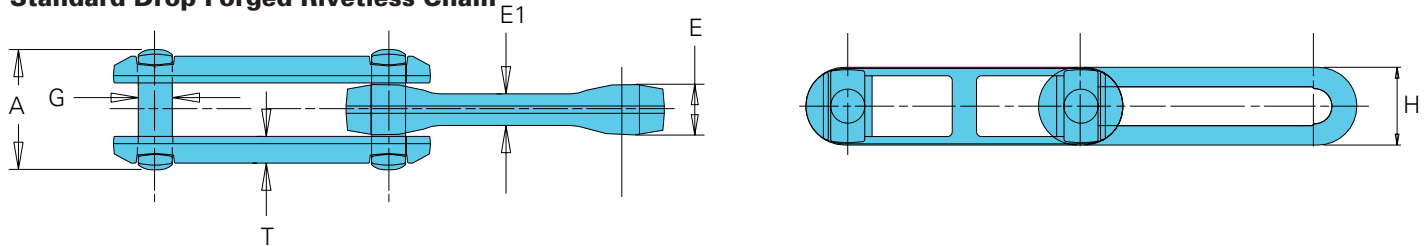
Specify Union Drop Forged Rivetless Chain whenever dependable material handling is required: Power and free units, multi-lane operations, trolley conveyors and overhead handling systems.



**X-Style Drop Forged Rivetless Chain**



**Standard Drop Forged Rivetless Chain**



**X-Style and Standard Drop Forged Rivetless Chain**

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Chain Width			Pin Diameter	Sidebars		Min. Side Flex Radius (in.)	Average Ultimate Strength (lbs.)		Max. Work Load (lbs.)		Avg. Pitches (ft.)	Approx. Weight (lbs./ft.)
		Overall	Inside			Thick.	Height		Alloy Heat-Treated <sup>1</sup>	Heat-Treated	Normal	Freq. Flex.		
			A	E	E1									
X-348 <sup>2</sup>	3.015	1.73	.75	.50	.50	.41	1.09	10.0	24,000		2,600	1,200	3.95	2.2
X-458 <sup>2</sup>	4.031	2.19	1.00	.63	.63	.47	1.38	24.0	60,000	48,000	4,000	1,900	2.98	3.2
468	4.031	3.19	1.59	1.13	.75	.41	1.88		70,000			2,98	7.5	
X-658 <sup>2</sup>	6.031	2.19	1.00	.63	.63	.47	1.38		48,000			1,99	2.7	
X-678 <sup>2</sup>	6.031	3.03	1.28	.81	.88	.72	2.00	35.0	100,000	85,000	7,100	3,300	1.99	6.7
698	6.031	3.75	1.56	1.00	1.13	.56	2.56		150,000	130,000	10,800	5,200	1.99	11.4
998	9.031	3.75	1.56	1.00	1.13	.63	2.53		150,000	130,000	10,800	5,200	1.33	9.0

Indicates this chain is normally stocked. All others are made-to-order.

Note: Magna-flux inspected chain is available.

Component hardness: BHN 344 (Nom.) = Carbon steel chains; BHN 380 (Nom.) = Alloy steel chains.

<sup>1</sup>ANSI/SAE 8642

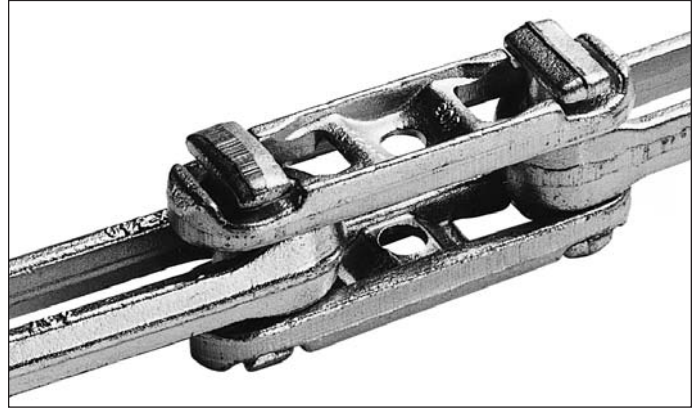
<sup>2</sup>The prefix "X" designates a design proportioned to flex transversely on a shorter radius. The outside bars are made with a mid-pitch panel that strengthens the sidebar and prevents material from falling through the link. X-Styles are used on overhead conveyors and other special applications. Attachments shown on the following pages fit both Standard and X-Style Chain.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



## UWL Drop Forged Rivetless Chain



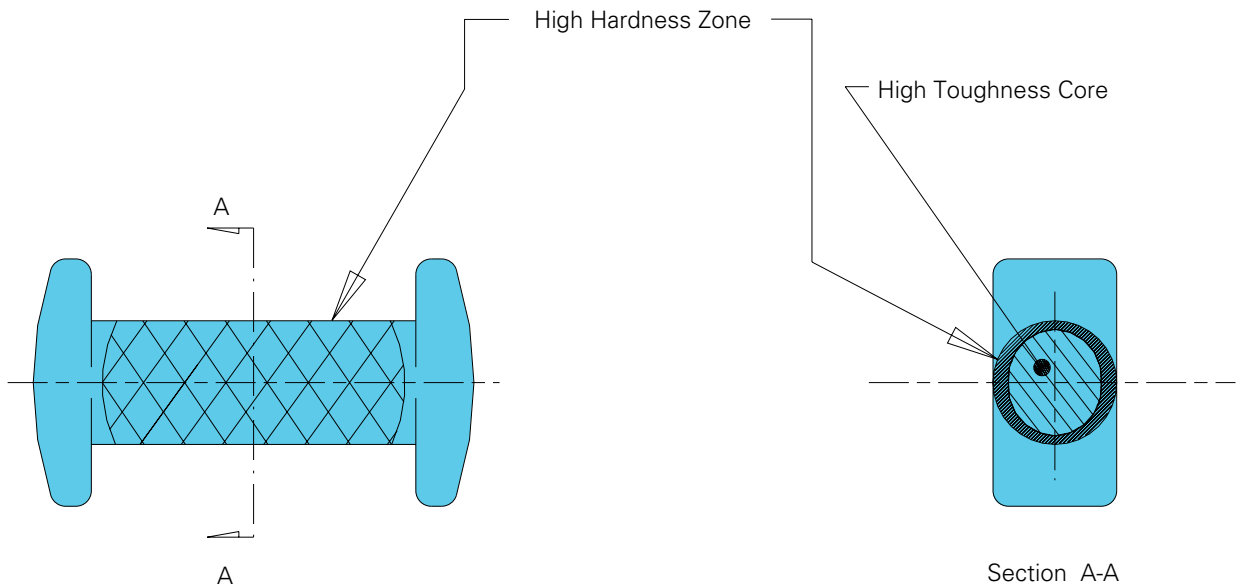
### UWL (Ultra Wear Life) Drop Forged Rivetless Chains

Ultra Wear Life Drop Forged Rivetless Chain extends wear life of rivetless chain. Tests under real-life conditions have proven that UWL chain lasts 40 to 50 percent longer than ordinary rivetless chain.

This extraordinary performance has been achieved with special steels and a proprietary pin hardening process. Since pin wear is the major limiting factor with rivetless chain, Union's specially produced pins greatly increase the chain's wear life.

UWL Drop Forged Rivetless Chain is available in X-348, X-458, X-678, 698 and barloop styles.

### Higher Hardness Pin for "Ultra Wear Life" Performance



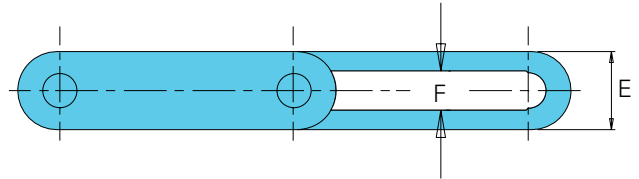
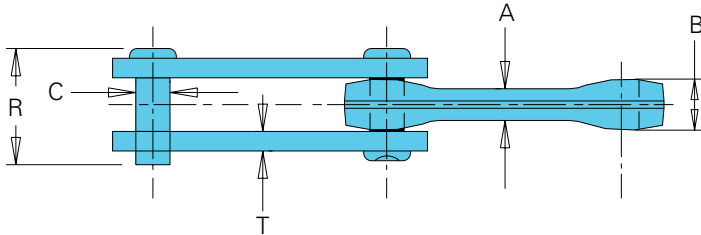
## Barloop Chains

Barloop Chains consist of a standard forged rivetless inside block, fabricated steel sidebars, and cold drawn steel pins.

Barloop Chain offers the advantage of a flat sidebar for welding attachments. The pin is securely locked in the sidebars

eliminating both the wear between the pin and sidebar and the possibility of the chain coming apart when slack exists.

Union offers Barloop Chain with a nut and bolt assembly that rotates. This permits easy assembly and quick replacement.



## Barloop (Bar Link) Chains

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Dimensions							Average Ultimate Stgth.(lbs.)	Average Pitches per Foot	Approx. Weight (lbs./ft.)
		A	B	C	E	F	T	R			
S-348 <sup>1</sup>	3.015	.50	.75	.50	1.06	.53	.25	1.75	24,000	3.95	2.4
S-458	4.031	.63	1.02	.63	1.38	.69	.31	2.06	48,000	2.98	3.5
S-678	6.031	.81	1.31	.88	2.00	1.00	.50	3.00	85,000	1.99	8.6
S-698	6.031	1.00	1.56	1.13	2.69	1.25	.50	3.13	130,000	1.33	13.2
S-998	9.031	1.00	1.56	1.13	2.69	1.25	.50	3.13	130,000	1.33	10.4

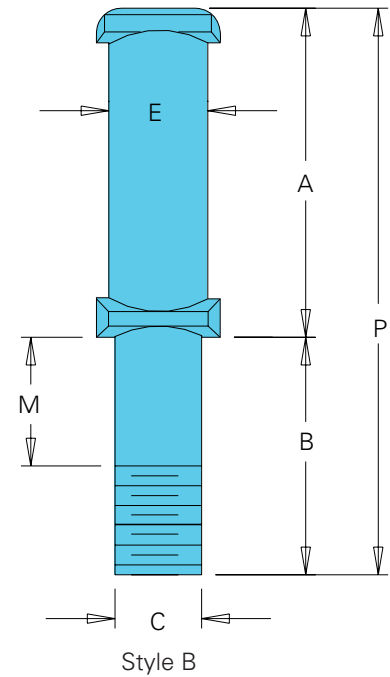
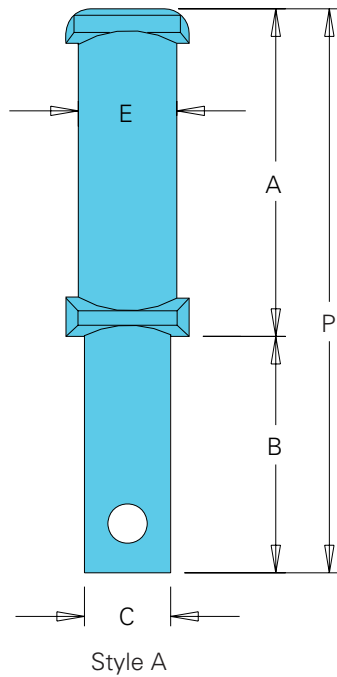
  Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Standard chain inventory features nut and bolt construction.

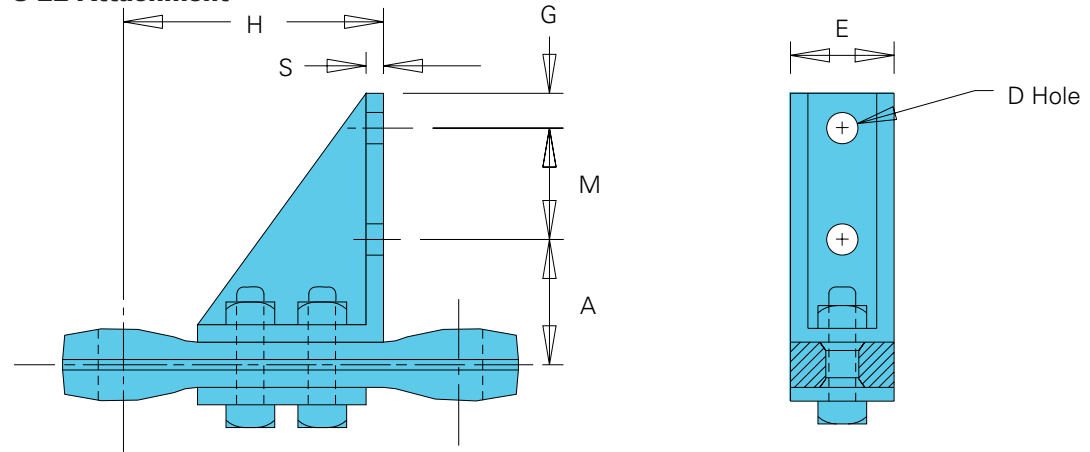
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

### Extended Pin



### S-22 Attachment



### Drop Forged Rivetless Chain Attachments

All dimensions are in inches unless otherwise indicated.

Attach. Number	Chain Number	A	B	C	D	E	G	H	M	P	S	Approx. Weight (lbs./ft.)
Extended Pin <sup>1</sup>	X-458	2.25	1.13	.50		.63			.31	3.38		.3
	X-678	3.13	1.50	.75		.88			.19	4.63		1.5
	X-678	3.13	1.50	.88		.88			.19	4.63		1.6
	998	3.88	1.75	.75		1.13			.38	5.63		1.9
S-22	X-458	2.25			.56	1.38	.63	3.18	2.00		.31	2.0
	X-678	2.88			.68	1.81	.88	4.75	2.25		.31	4.7

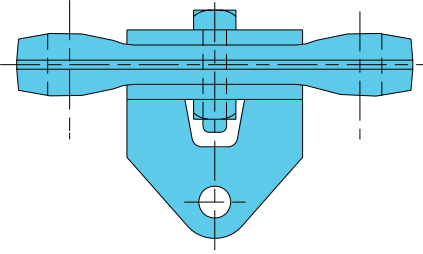
<sup>1</sup>Attachment pins also available with hexnut and lock washer.  
Attachments other than those shown available upon request.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

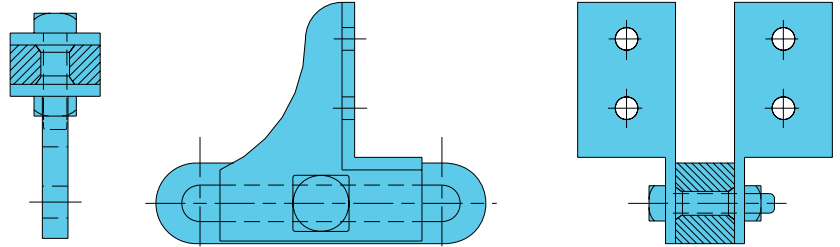
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

The following are examples of additional attachments available with Drop Forged Rivetless Chain. Attachments are also available for special applications.

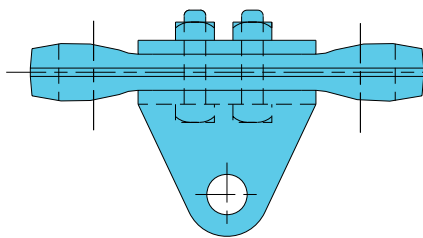
**A-22 Attachment**



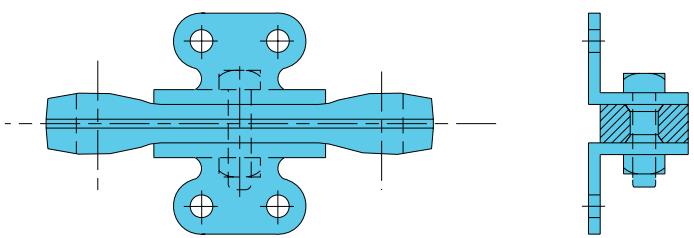
**F-2 Attachment**



**A-53 Attachment**



**K-2 Attachment**

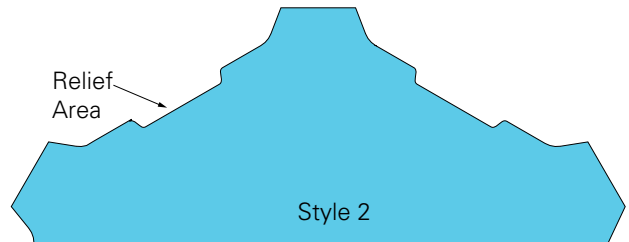
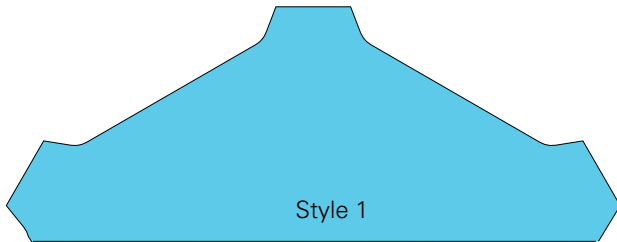


**Sprockets for Drop Forged Rivetless Chain**

Drop Forged Rivetless Sprockets are designed to work with the chain and attachments. Some setups, such as slider attachments on overhead slaughter house lines, require extra clearance that is not part of standard sprocket construction (Style 1).

Our specially developed sprocket (Style 2) has a "relief area". This keeps the chain from riding out of the sprocket pocket and reduces premature joint wear.

Select the right sprocket for your application. Contact Union Chain if you have any questions.



Standard sprockets are not designed for some applications like overhead slaughter house lines where the attachment requires extra clearance.

Drop Forged Rivetless Sprockets from Union have a "relief area" that allows for attachment protrusion. This means better articulation and longer wear life.

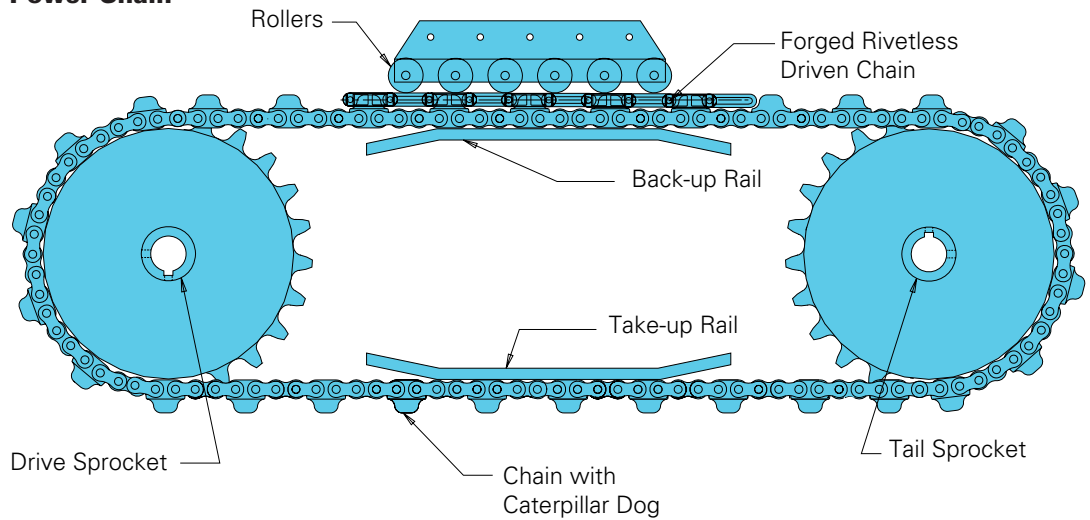


## Caterpillar Drive (Power) Chains

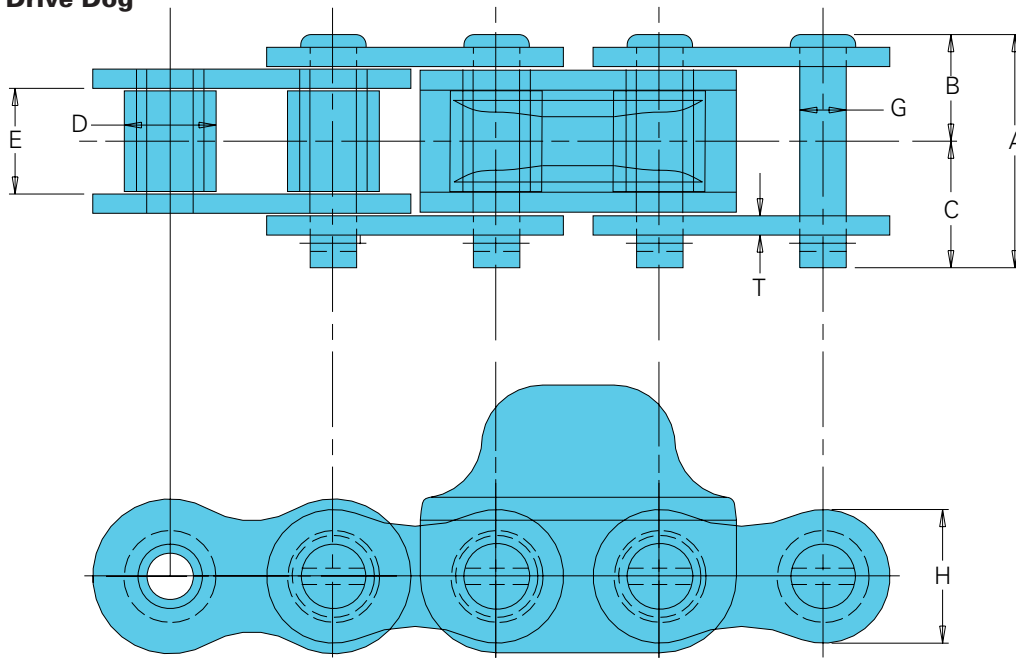
Caterpillar Drive Chains are vital in driving drop forged chain conveyors, so they must deliver fatigue-free operation. The Union Caterpillar Drive Chain features high-quality roller chain with drive dogs made of one-piece forged, induction-hardened steel. The entire assembly is designed to operate flawlessly in combination with our forged rivetless chain. Our chain also meets ANSI standards.



### Power Chain



**Drive Dog**



**Caterpillar Drive Chain**

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Chain Width				Diameter		Sidebars		Drive Dog Pitch Spacing	Avg. Ult. Strength (lbs.)	Approx. Weight (lbs./ft.)
		Overall	Pin Head to CL	Pin End to CL	Inside Width	Roller	Pin	Thickness	Height			
		A	B	C	E	D	G	T	H			
160/348	2.000	2.64	1.23	1.41	1.25	1.13	.56	.25	1.90	6	58,000	8.3
160/458	2.000	2.64	1.23	1.41	1.25	1.13	.56	.25	1.90	4 or 6	58,000	8.3 or 10.0
160/678	2.000	2.64	1.23	1.41	1.25	1.13	.56	.25	1.90	6	58,000	9.8

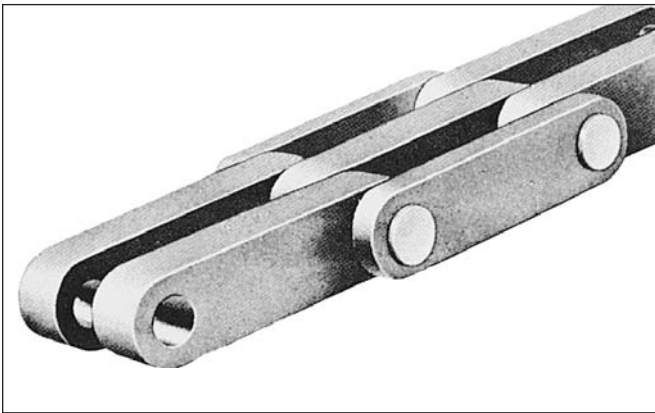
Indicates this chain is normally stocked. All others are made-to-order.

Note: Power chains are available with "cam yokes" (normally every 4th pitch) or outboard rollers (normally every 6th pitch).

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

# Bar and Pin Chains



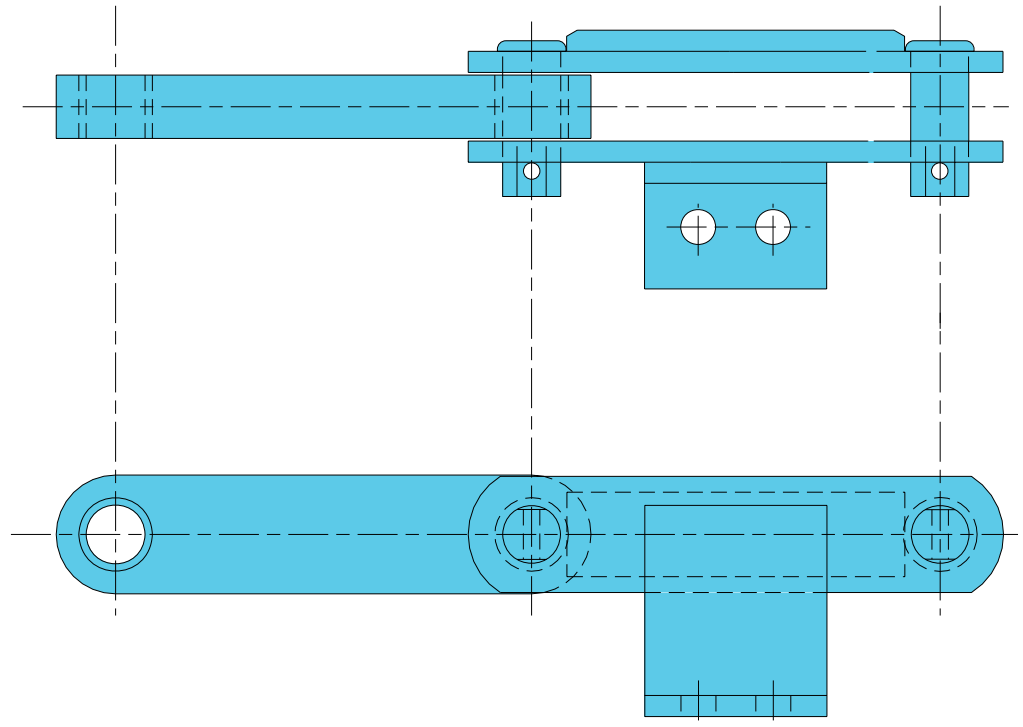
## Bar and Pin Chains

Bar and pin chains are used in a variety of applications, from conveyors to tension linkages. They are utilized for economical installations where the speed is relatively slow and/or the lifting of enormous load is required.

Bar and pin chains consist of plain link bars assembled on, and bearing directly against, the chain pin. This type of chain does not utilize bushings or rollers.

A few standard styles are illustrated. The bar and pin chains are normally manufactured on a made-to-order basis. Our engineering and design services provide maximum flexibility, allowing us to create the right chain with the right attachments for your application.

**Bar and Pin Type Scraper Reclaimer Chain with A-2 Attachment**



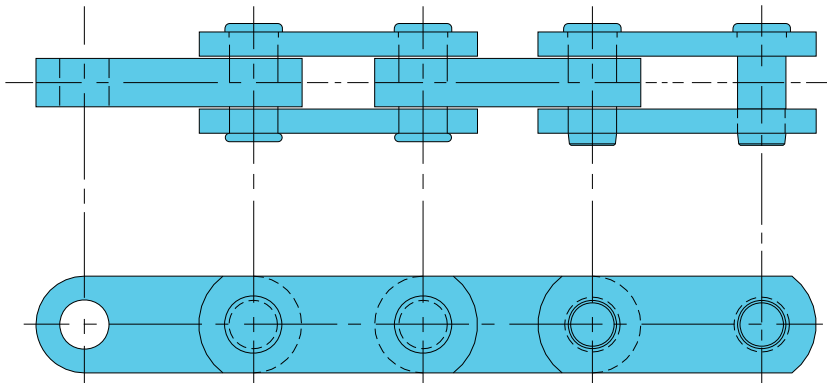


## Draw Bench Chains

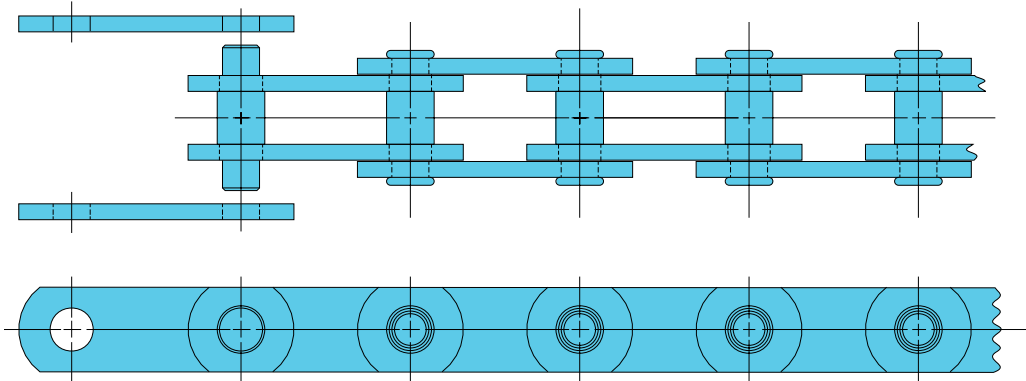
The primary metals and steel industries rely on draw bench chain to meet their specific metal drawing requirements. Union manufactures a wide range of sizes, materials, and ultimate strength ratings up to 1,000,000 pounds.

Union Draw Bench Chains are manufactured on a made-to-order basis. Our engineers work closely with you to select and design the draw bench chain that meets the requirements of your specific application.

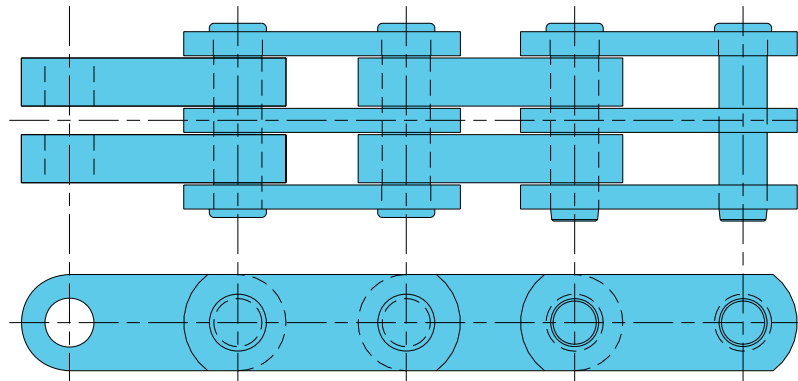
### Style 1



### Style 2



### Style 3



## Double Flex Chains

Double Flex Chain rotates on two planes, making it an ideal choice for a wide variety of applications. The pin bearing surfaces and selected sliding surfaces are induction hardened for extended wear life.

The Double Flex Chain offers a large sliding area to decrease shear on the chain and the sliding surface because design allows maximum flexibility for both horizontal and vertical movement.

This versatility allows compact layouts and economical cost. The mechanically designed cupped shape of the outer link plates of DF-3500 and DF-3910 eases side flex movement and protects rivet ends. This feature also prevents pin wear at the ends. DF-3498 offers flexibility with straight outer link plates.

The drawings shown are examples of just a few double flex chain styles. Many additional styles and configurations are available on a made-to-order basis. Sprockets are also available — split, solid, or bronze bushed.

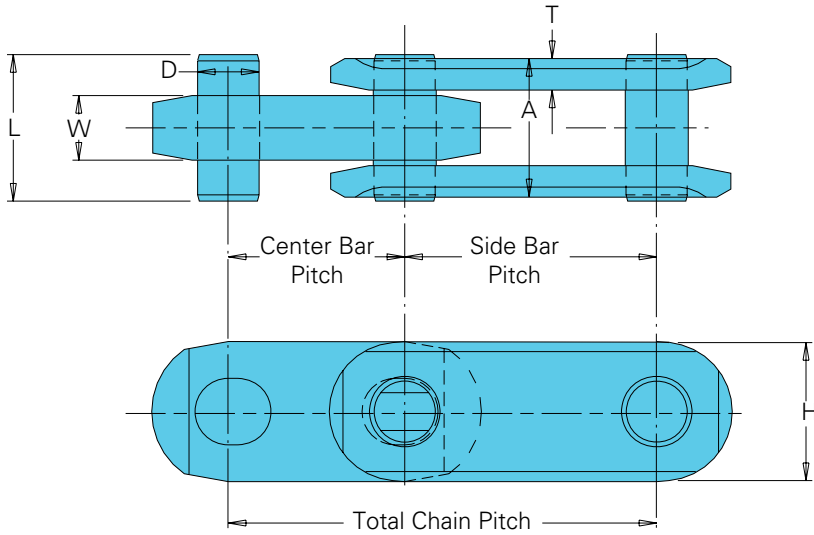


**Table 1 — Double Flex Chain**

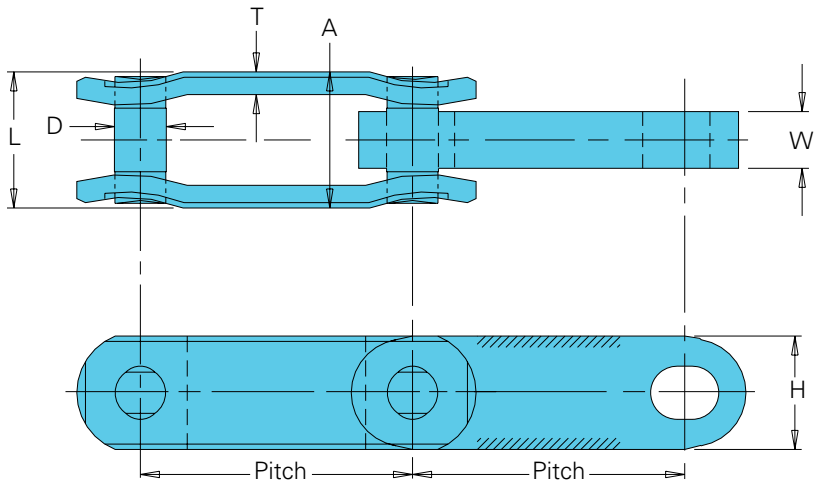
Ratio of Chain Speed (FPM) to Conveyor Length (ft.)	Maximum Allowable Working Load (lbs.)
0.1–0.6	4,000
1.0	3,400
1.5	2,900
2.0	2,600
2.5	2,300
3.0	2,100
3.0–15.0	2,100

For ratios less than 0.1 or more than 15.0, consult Union for suggested working load.

**DF-3498**



**DF-3500 and DF-3910**



Note: Hatching shows induction hardened area.

**Double Flex Chain**

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Chain Width		Link Plate		Pin		Minimum Flex Radius	Average Tensile Stgth.(lbs.)	Maximum Allowable Work Load <sup>1</sup> (lbs.)	Approx. Weight (lbs./ft.)
		Overall	Inside Link								
		A	W	T	H	D	L				
DF-3498	1.750 2.500	1.45	.64	.31	1.40	.63	1.45	18.00	50,000	4,000	3.9
DF-3500	2.500 3.000	1.50	.63	.25	1.25	.57	1.46	20.00	48,000	4,000	3.3
DF-3910	3.000 3.000	1.50	.63	.25	1.25	.57	1.46	22.00	48,000	4,000	3.3

Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Working load for speed length ratio V/S up to 0.6., where V = chain speed (ft./min.) and S = conveyor length (ft.). For other speed length ratios, see Table 1.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



# Specialty Chains

## Solve Special Material Handling Problems

Union is proud to offer Specialty Conveyor Chains from U.S. Tsubaki for conveying applications that run in extreme conditions. Sanitation systems; flow conveyors; grain, cement, or adhesive powder conveyors; and auto assembly plants are just a few of the operations that require special chains. Our Specialty Conveyor Chains are designed and manufactured to meet the needs of a variety of continuous and intermittent material handling applications when belt, screw, or pneumatic conveyors are not appropriate.

Specialty Conveyor Chains provide high strength, accurate handling, and minimal wear elongation. In fact, they are superior to any other kind of conveyor equipment.

## Conveyor Chains for Special Applications

Smooth and stable flow of material depends on the performance of your conveyor chain. Even a simple conveying system will not run smoothly and provide stable on-line loads

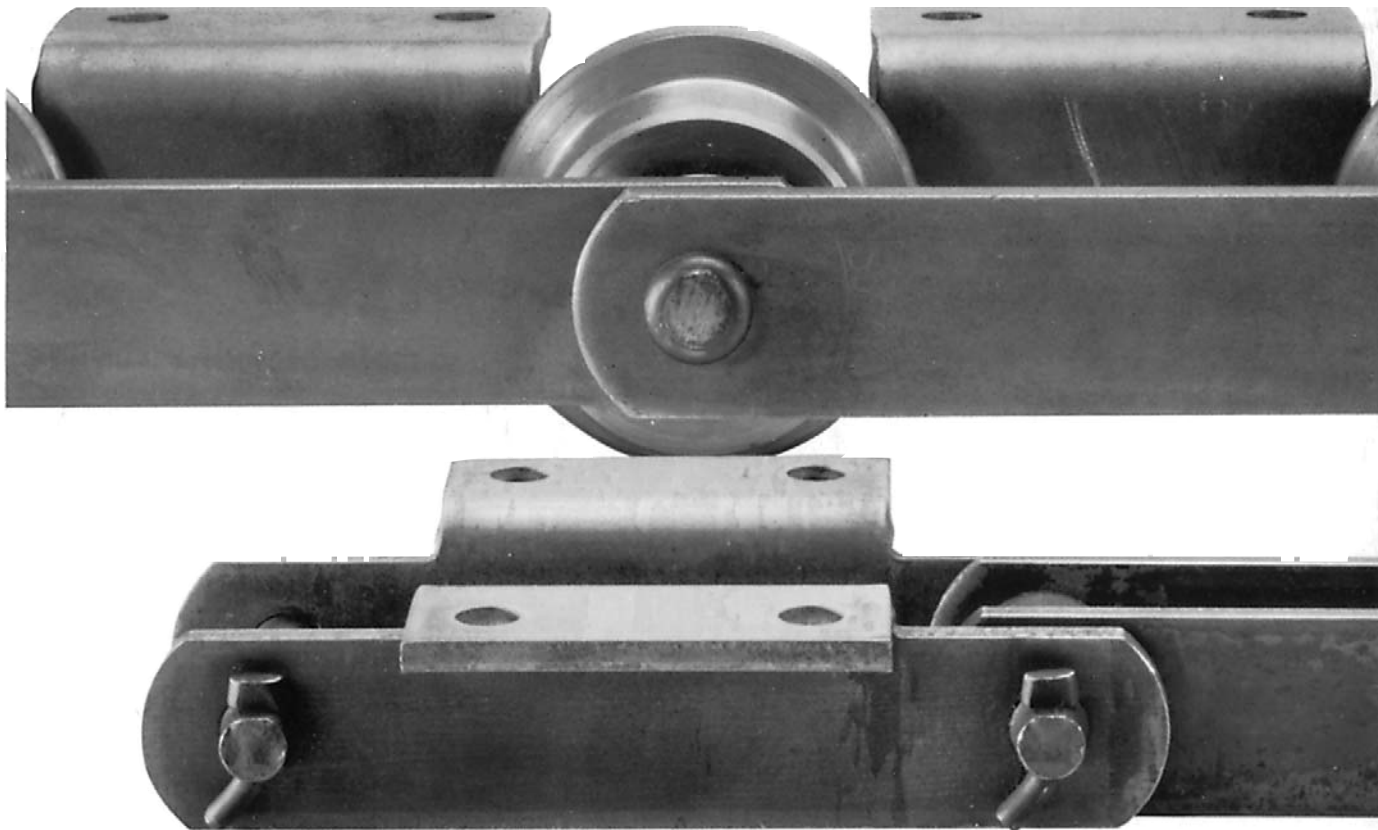
without the proper chain. To move raw materials or heavy bulk items or to operate in extreme conditions, rely on Specialty Conveyor Chains to get the job done.

## Built to Work in Your Applications

Specialty Conveyor Chains are built to last in the most challenging conditions. In fact, we build the quality into every step.

- Materials are selected to stand up to extreme temperatures and shock loads.
- Each chain is manufactured to tight tolerances to ensure the highest standards.
- Components are finely finished and accurately assembled to provide high wear resistance and top performance for long periods.

When the going is tough—choose Specialty Conveyor Chains from U.S. Tsubaki.



## Types of Specialty Conveyor Chains

### DT (Basic) Series

The pins and bushings are heat-treated and hardened for high wear resistance. The link plates are made of carbon steel and can be welded to attachments easily. The chains in this series are suitable for handling a wide variety of materials. DT (Basic) Series chain offers versatility and economy for your operation.

### AT Series

All parts, mainly produced from special alloy steels, are heat-treated for higher tensile strength and better wear resistance. Average tensile strength of AT Series chain is about twice as high as the DT (Basic) Series. Link plates are all heat-treated and hardened.

AT Series chain is suggested for compact conveyor designs and when high wear resistance of link plates and long chain service are required.

### PT Series

All parts are made of ANSI 400 Series stainless steel and are heat-treated and hardened. PT Series chain is suggested for corrosive or abrasive applications.

### ST Series

All parts are made of 18-8 stainless steel (ANSI 300 Series). This chain is suggested for strong acid/alkali applications and very hot or sub-zero environments.

### CT Series

CT Series chain is ideal for handling hard abrasive materials such as cement.

### BT Series

BT Series chain has higher tensile strength than CT Series. The wear resistance of BT Series chains is much greater than that of the AT Series.

### Other

We offer a wide variety of made-to-order combinations of steel materials and heat-treatments to create the chain you need for your application. Contact Union Chain for details.

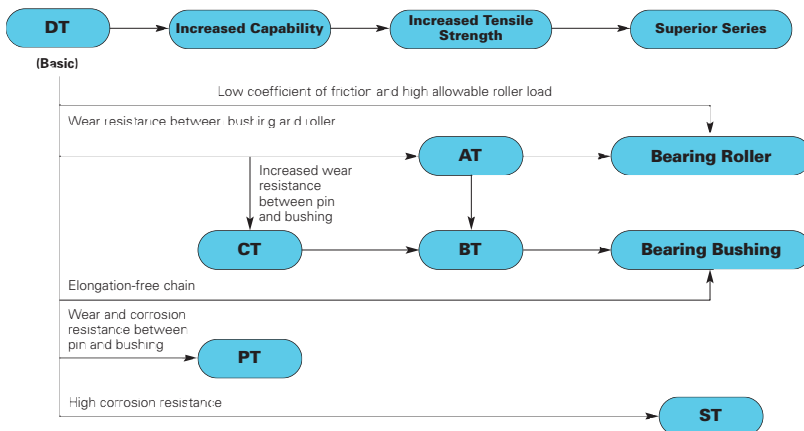
## Component Parts

Chain Series	Component Parts <sup>1</sup>					
	Link Plate	Pin	Bushing	"R" Roller	"F" Roller	"S" Roller
DT (Basic)	Car	Aly-TH	Car-CH Aly-TH	Car CI	Car CI	Car-CH Aly-TH
AT	Aly-TH	Aly-TH	Aly-CH Aly-TH	Aly-TH Car-IH	Aly-TH Car-IH	Aly-TH
PT	S4-TH	S4-TH	S4-TH	S4-TH	S4-TH	S4-TH
ST	S3	S3	S3	S3	S3	S3
CT	Car	Aly-CH Aly-TH-IH	Car-CH Aly-TH	Aly-TH Car-IH	Aly-TH Car-IH	Car-CH Aly-TH
BT	Aly-TH	Aly-CH Aly-TH-IH	Aly-CH Aly-TH	Aly-TH Car-IH	Aly-TH Car-IH	Aly-TH

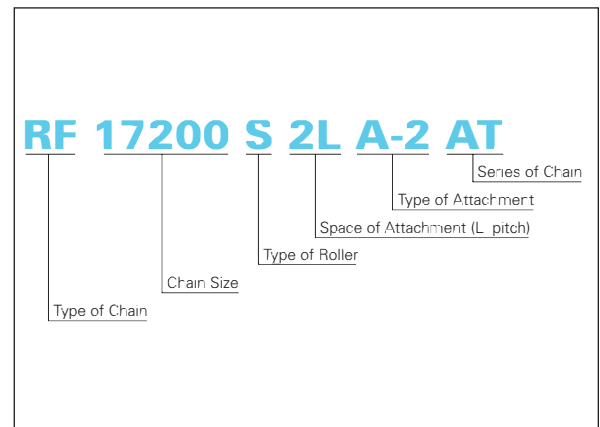
<sup>1</sup>Materials: Car = Carbon steel; Aly = Alloy steel; CI = Cast iron; S3 = 300 Series stainless steel; S4 = 400 Series stainless steel.

Heat-Treatments: TH = Through-hardened; CH = Case-hardened; IH = Induction-hardened.

## Feature Diagram for RF Conveyor Chain Series



## Model Identification

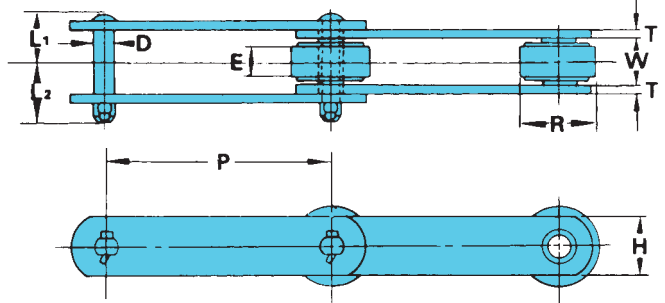


To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

# RF Conveyor Chain Basic Metric Series

"R" Roller Type

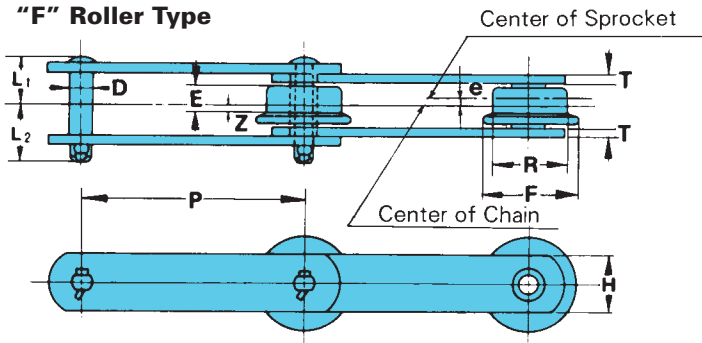


Chain Number	Roller Type	Average Tensile Strength (lbs.)	Pitch	Roller									Width Between Roller Link Plates
				"R" Roller		"F" Roller				"S" Roller	"M" Roller	"N" Roller	
				R	E	R	F	E	e	Z	R		
RF03075	R•F•S	6,600	2.953	1.252	.610	1.252	1.654	.472	.071	.169	.626	—	.634
RF03100	R•F•S	6,600	3.937	1.252	.610	1.252	1.654	.472	.071	.169	.626	—	.634
RF430	R• S	12,000	4.000	1.500	.748	—	—	—	—	—	.791	—	.890
RF05075	S	15,500	2.953	1.575	.748	1.575	1.969	.551	.098	.177	.874	—	.866
RF05100	R•F•S	15,500	3.937	1.575	.748	1.575	1.969	.551	.098	.177	.874	—	.866
RF05150	R•F•S	15,500	5.906	1.575	.748	1.575	1.969	.551	.098	.177	.874	—	.866
RF204	S	17,500	2.609	—	—	—	—	—	—	—	.874	—	1.063
RF450	R•F•S•M	17,500	4.000	1.752	.906	1.752	2.165	.709	.098	.256	.874	1.000	1.063
RF08150	R•F•S•M	17,500	5.906	1.752	.906	1.752	2.165	.709	.098	.256	.874	1.000	1.063
RF650	R•F•S•M	17,500	6.000	2.000	1.024	2.000	2.559	.787	.118	.276	1.016	1.252	1.189
RF10100	R• S•M	25,500	3.937	2.000	1.063	—	—	—	—	—	1.142	1.252	1.181
RF10150	R•F•S•M	25,500	5.906	2.000	1.063	2.000	2.559	.787	.118	.276	1.142	1.252	1.181
RF214	R• S•M	28,500	4.000	1.752	1.063	—	—	—	—	—	1.252	1.374	1.244
RF205	S	28,500	3.075	—	—	—	—	—	—	1.252	—	1.461	—
RF6205	R•F•S•M	42,000	6.000	2.252	1.260	2.252	2.756	.984	.138	.354	1.374	1.500	1.461
RF12200	R•F•S•M	42,000	7.874	2.559	1.260	2.559	3.150	.945	.157	.315	1.374	1.500	1.461
RF12250	R•F•S•M	42,000	9.843	2.559	1.260	2.559	3.150	.945	.157	.315	1.374	1.500	1.461
RF212	R• S•M	55,000	6.000	2.752	1.280	—	—	—	—	—	1.579	1.748	1.461
RF17200	R•F•S•M	55,000	7.874	3.150	1.732	3.150	3.937	1.339	.197	.472	1.579	1.752	2.024
RF17250	R•F•S•M	55,000	9.843	3.150	1.732	3.150	3.937	1.339	.197	.472	1.579	1.752	2.024
RF17300	R•F•S•M	55,000	11.811	3.150	1.732	3.150	3.937	1.339	.197	.472	1.579	1.752	2.024
RF26200	S•M	70,500	7.874	—	—	—	—	—	—	—	1.752	2.000	2.252
RF26250	R•F•S•M	70,500	9.843	3.937	1.969	3.937	4.921	1.496	.236	.512	1.752	2.000	2.252
RF26300	R•F•S•M	70,500	11.811	3.937	1.969	3.937	4.921	1.496	.236	.512	1.752	2.000	2.252
RF26450	R•F•S•M	70,500	17.717	3.937	1.969	3.937	4.921	1.496	.236	.512	1.752	2.000	2.252
RF36250	S•M	107,000	9.843	—	—	—	—	—	—	—	2.000	2.252	2.626
RF36300	R•F•S•M	107,000	11.811	4.921	2.205	4.921	5.906	1.654	.276	.551	2.000	2.252	2.626
RF36450	R•F•S•M	107,000	17.717	4.921	2.205	4.921	5.906	1.654	.276	.551	2.000	2.252	2.626
RF36600	R•F•S•M	107,000	23.622	4.921	2.205	4.921	5.906	1.654	.276	.551	2.000	2.252	2.626
RF52300	R•F•S	112,500	11.811	5.512	2.559	5.512	6.693	1.929	.315	.650	2.252	—	3.031
RF52450	R•F•S	112,500	17.717	5.512	2.559	5.512	6.693	1.929	.315	.650	2.252	—	3.031
RF52600	R•F•S	112,500	23.622	5.512	2.559	5.512	6.693	1.929	.315	.650	2.252	—	3.031
RF60300	R•F• N	112,500	11.811	5.512	2.667	5.512	6.693	1.929	.315	.650	—	2.756	3.031
RF60350	R•F• N	112,500	13.780	5.512	2.667	5.512	6.693	1.929	.315	.650	—	2.756	3.031
RF60400	R•F• N	112,500	15.748	5.512	2.667	5.512	6.693	1.929	.315	.650	—	2.756	3.031
RF90350	N	177,500	13.780	—	—	—	—	—	—	—	—	3.346	3.465
RF90400	R•F• N	177,500	15.748	6.693	2.992	6.693	8.071	2.205	.394	.709	—	3.346	3.465
RF90500	R•F• N	177,500	19.685	6.693	2.992	6.693	8.071	2.205	.394	.709	—	3.346	3.465
RF120400	R• N	249,000	15.748	7.784	3.425	—	—	—	—	—	—	3.937	3.937
RF120600	R•F• N	249,000	23.622	7.784	3.425	7.784	9.449	2.520	.453	.807	—	3.937	3.937

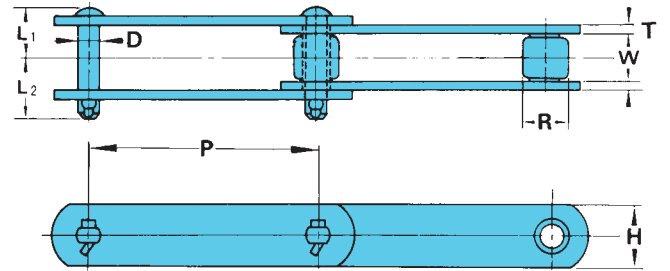
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**"F" Roller Type**



**"S", "M" and "N" Roller Type**



All dimensions are in inches unless otherwise indicated.

Link Plate		Pin				Approximate Weight				Attachment Type						
H	T	D	L <sub>1</sub> & L <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>	"R" Rlr.	"F" Rlr.	"S" Rlr.	"M" Rlr.	A-1 K-1	A-2 K-2	A-2 (Welded)	A-3 (Welded)	SA-2 SK-2	G-2	G-4
						(lbs./ft.)	(lbs./ft.)	(lbs./ft.)	(lbs./ft.)							
.866	.126	.315	1.496	.709	.787	1.81	1.88	1.28	—	R•F•S	R•F•S			R• S		
.866	.126	.315	1.496	.709	.787	1.55	1.61	1.14	—	R•F•S	R•F•S			R• S		
1.000	.189(.197)	.382	2.165	1.004	1.161	2.89	—	2.02	—	R• S	R• S			R• S		
1.260	.177	.445	2.106	.984	1.122	—	—	2.82	—	S	S					
1.260	.177	.445	2.106	.984	1.122	3.36	3.49	2.49	—	R•F•S	R•F•S			R• S	R• S	
1.260	.177	.445	2.106	.984	1.122	2.76	2.82	2.15	—	R•F•S	R•F•S			R• S	R•F•S	
1.126	.248(.236)	.445	2.579	1.220	1.358	—	—	3.76	—	S	S					
1.126	.248(.236)	.445	2.579	1.220	1.358	4.50	4.70	3.09	3.23	R•F•S•M	R•F•S•M			R• S•M		
1.126	.248(.236)	.445	2.579	1.220	1.358	3.70	3.76	2.69	2.82	R•F•S•M	R•F•S•M			R• S•M		
1.500	.248(.236)	.445	2.717	1.280	1.437	5.17	5.38	3.76	4.03	R•F•S•M	R•F•S•M			R• S•M	R•F•S•M	S•M
1.500	.248(.236)	.571	2.717	1.299	1.417	6.59	—	4.57	4.77	R• S•M	R• S•M			R• S•M	S•M	
1.500	.248(.236)	.571	2.717	1.299	1.417	5.31	5.44	3.96	4.10	R•F•S•M	R•F•S•M			R• S•M	R•F•S•M	S•M
1.500	.311	.626	3.051	1.476	1.575	6.99	—	5.85	6.12	R• S•M	R• S•M			R• S•M		
1.500	.311	.626	3.287	1.594	1.693	—	—	6.99	—	S	S					
1.752	.311	.626	3.287	1.594	1.693	8.13	8.33	6.25	6.45	R•F•S•M	R•F•S•M			R• S•M	R•F•S•M	S•M
1.752	.311	.626	3.287	1.594	1.693	7.66	8.00	5.64	5.85	R•F•S•M	R•F•S•M			R• S•M	R•F•S•M	S•M
1.752	.311	.626	3.287	1.594	1.693	6.92	7.12	5.24	5.38	R•F•S•M	R•F•S•M			R• S•M	R•F•S•M	S•M
2.000	.374(.394)	.752	3.760	1.752	2.008	11.49	—	8.47	8.80	R• S•M	R• S•M			R• S•M		
2.000	.374(.394)	.752	4.311	2.028	2.283	12.63	13.31	8.06	8.47	R•F•S•M	R•F•S•M			R• S•M	R•F•S•M	S•M
2.000	.374(.394)	.752	4.311	2.028	2.283	11.09	11.63	7.46	7.80	R•F•S•M	R•F•S•M			R• S•M	R•F•S•M	S•M
2.000	.374(.394)	.752	4.311	2.028	2.283	10.08	10.55	7.06	7.32			R•F•S•M		R• S•M	R•F•S•M	S•M
2.500	.374(.394)	.874	4.587	2.185	2.402	—	—	10.75	11.42							S•M
2.500	.374(.394)	.874	4.587	2.185	2.402	17.00	17.61	9.88	10.42							S•M
2.500	.374(.394)	.874	4.587	2.185	2.402	14.99	15.86	9.27	9.74			R•F•S•M			R•F•S•M	S•M
2.500	.374(.394)	.874	4.587	2.185	2.402	12.10	12.70	8.33	8.67				R•F•S•M		R•F•S•M	S•M
3.000	.500	1.000	5.748	2.677	3.071	—	—	16.40	17.14							S•M
3.000	.500	1.000	5.748	2.677	3.071	26.21	26.95	15.39	15.99							S•M
3.000	.500	1.000	5.748	2.677	3.071	20.63	21.44	13.57	13.98				R•F•S•M		R•F•S•M	S•M
3.000	.500	1.000	5.748	2.677	3.071	18.08	18.68	12.77	13.10				R•F•S•M		R•F•S•M	S•M
3.000	.630	1.252	6.772	3.228	3.543	34.94	36.69	19.96	—	R•F•S						
3.000	.630	1.252	6.772	3.228	3.543	27.62	28.76	17.61	—	R•F•S						
3.000	.630	1.252	6.772	3.228	3.543	23.92	24.80	16.40	—	R•F•S						
3.543	.500	1.378	6.319	3.031	3.287	34.61	36.36	—	21.10	R•F• N						
3.543	.500	1.378	6.319	3.031	3.287	31.38	32.86	—	19.82							
3.543	.500	1.378	6.319	3.031	3.287	28.96	30.24	—	18.82				R•F• N		R•F• N	
4.331	.630	1.654	7.461	3.524	3.937	—	—	—	31.99							
4.331	.630	1.654	7.461	3.524	3.937	44.96	45.00	—	30.31	R•F• N						
4.331	.630	1.654	7.461	3.524	3.937	41.87	43.68	—	27.96				R•F• N		R•F• N	
5.118	.748	1.969	8.602	4.154	4.449	71.70	—	—	44.02	R• N						
5.118	.748	1.969	8.602	4.154	4.449	56.45	58.80	—	38.04				R•F• N		R•F• N	

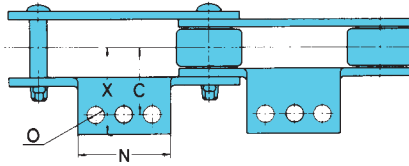
<sup>1</sup>Thickness of link plate "T" in ( ) is for ANSI 300 Series stainless steel.

<sup>2</sup>"R", "F", "S", "M" and "N" in "attachment type" column indicates rollers available for the attachment.

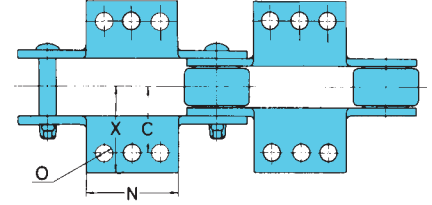
<sup>3</sup>Please refer to pages A-91 and A-92 for attachment dimensions.

## RF CONVEYOR CHAIN ATTACHMENTS

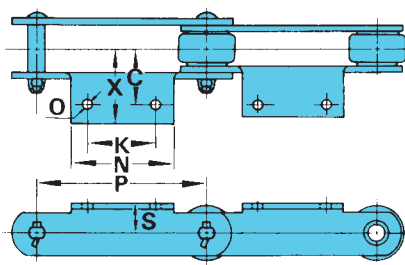
**A-1 Attachment\***



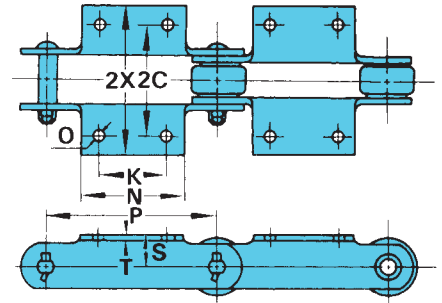
**K-1 Attachment\***



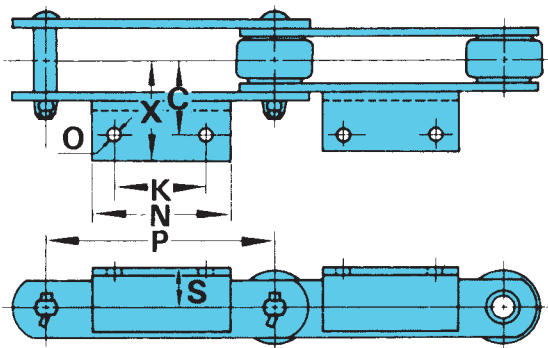
**A-2 Attachment**



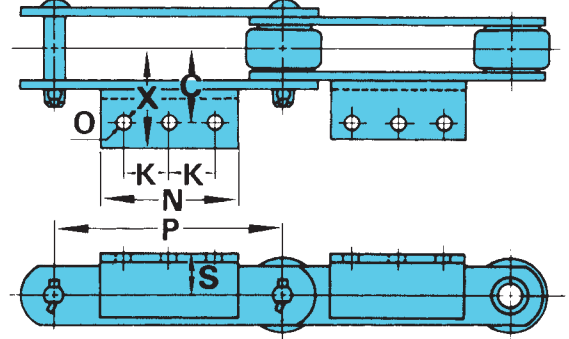
**K-2 Attachment**



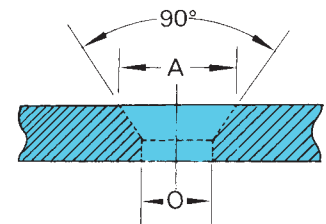
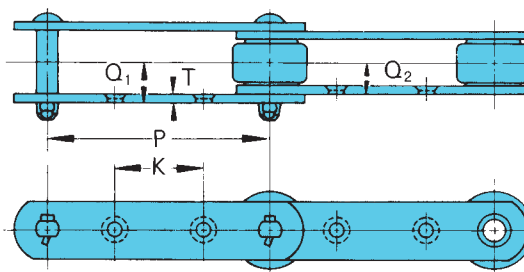
**A-2 Attachment**



**A-3 Attachment**



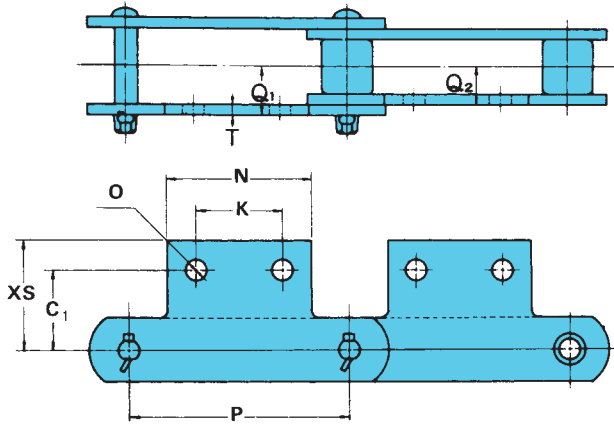
**G-2 Attachment**



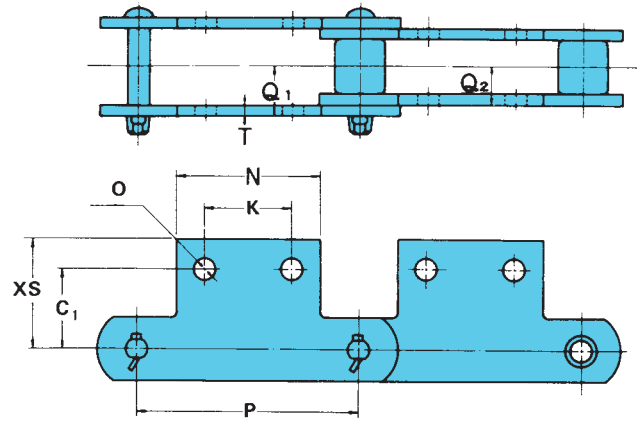
\*For DT (Basic Series) A-1 (K-1) attachment is supplied with three holes, unless otherwise specified.



**SA-2 Attachment**



**SK-2 Attachment**



All dimensions are in inches unless otherwise indicated.

Chain Number	Roller Type	Pitch	Attachment									Add'l. Weight per "A" Attach. (lbs./att.) <sup>1</sup>
			P	S	C	2C	X	2X	K	N	T <sup>2</sup>	
RF03075	R•F•S	2.953	.787	1.181	2.362	1.811	3.622	1.181	2.165	.126	.394	.11
RF03100	R•F•S	3.937	.787	1.181	2.362	1.811	3.622	1.575	2.560	.126	.394	.13
RF430	R• S	4.000	.866	1.575	3.150	2.126	4.252	1.575	2.756	.189(.197)	.472	.24
RF05075	S	2.953	.866	1.378	2.756	2.047	4.094	1.811	2.165	.177	.394	.15
RF05100	R•F•S	3.937	.866	1.378	2.756	2.047	4.094	1.575	2.560	.177	.394	.18
RF05150	R•F•S	5.906	.866	1.378	2.756	2.047	4.094	2.362	3.346	.177	.394	.22
RF204	S	2.609	.945	1.772	3.543	2.323	4.646	—	2.165	.248(.236)	.472	.24
RF450	R•F•S•M	4.000	1.102	1.969	3.937	2.520	5.039	1.575	2.756	.248(.236)	.472	.40
RF08150	R•F•S•M	5.906	1.102	1.969	3.937	2.520	5.039	2.362	3.543	.248(.236)	.472	.49
RF650	R•F•S•M	6.000	1.260	1.969	3.937	2.520	5.039	2.362	3.543	.248(.236)	.472	.49
RF10100	R• S•M	3.937	1.102	1.969	3.937	2.559	5.118	1.575	2.756	.248(.236)	.472	.35
RF10150	R•F•S•M	5.906	1.102	1.969	3.937	2.559	5.118	2.362	3.543	.248(.236)	.472	.44
RF214	R• S•M	4.000	1.378	2.165	4.331	2.874	5.748	1.575	3.150	.311	.591	.62
RF205	S	3.075	1.378	2.362	4.724	2.953	5.906	1.811	2.560	.311	.472	.51
RF6205	R•F•S•M	6.000	1.496	2.362	4.724	3.110	6.220	2.362	3.937	.311	.591	.82
RF12200	R•F•S•M	7.874	1.496	2.362	4.724	3.110	6.220	3.150	4.724	.311	.591	.99
RF12250	R•F•S•M	9.843	1.496	2.362	4.724	3.110	6.220	4.921	6.693	.311	.591	1.34
RF212	R• S•M	6.000	1.772	2.559	5.118	3.268	6.535	2.362	3.937	.374(.394)	.591	1.08
RF17200	R•F•S•M	7.874	1.772	2.953	5.906	3.858	7.717	3.150	4.724	.374(.394)	.591	1.46
RF17250	R•F•S•M	9.843	1.772	2.953	5.906	3.858	7.717	4.921	6.693	.374(.394)	.591	1.94

<sup>1</sup>"K" attachment is twice as heavy as "A" attachment.

<sup>2</sup>Thickness of attachment "T" in ( ) is for ANSI 300 Series stainless steel.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

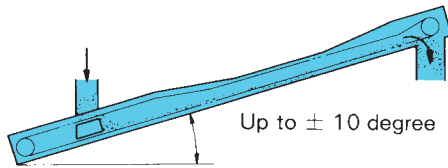
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

# Flow Conveyor Chains

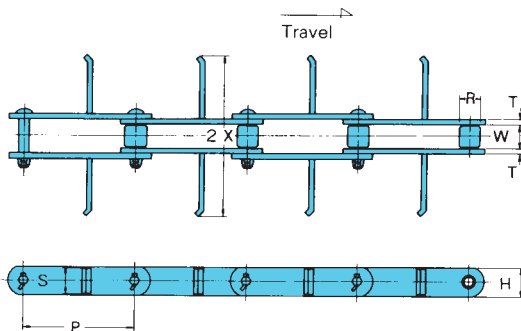
This chain is based on standard conveyor chain. Various types of standardized attachments are available for suitability with the conveyed material. The materials of the standard chain are identical to the DT (Basic) Series or AT Series, but other series are also available upon request.

Attachment	Application
L	Conveying grain or cement
KL	Conveying adhesive powder
B (round)	Conveying powdered material like flour or cements at higher conveying efficiency than L attachment
B (square)	Conveying massive, powdered, or adhesive materials that are hard to convey with B (round) attachment
U <sub>2</sub> V (round)	A larger conveyor than L, KL, B, or for an upgrade
U <sub>2</sub> V (square)	Conveying massive, powdered, or adhesive materials that are hard to convey with U <sub>2</sub> V (round)

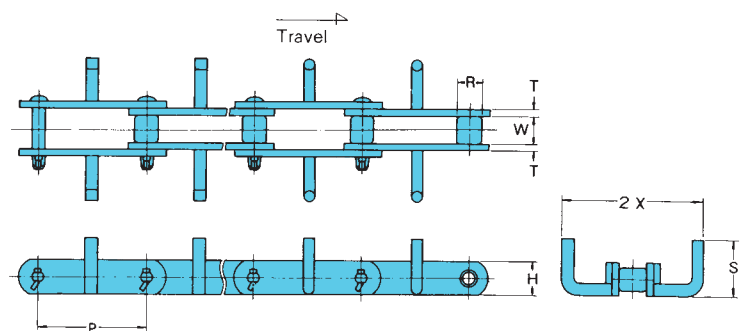
## RF Conveyor Chain for FC Type Horizontal Flow Conveyor



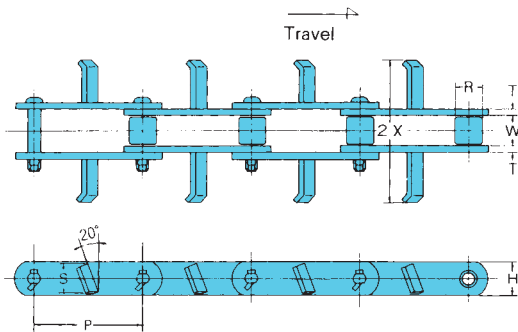
### "L" Attachment



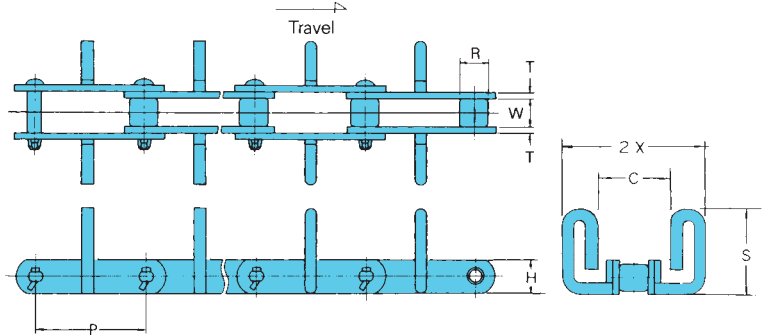
### "B" (square) and "B" (round) Attachments



**"KL" Attachment**



**"U<sub>2</sub>V" (square) and "U<sub>2</sub>V" (round) Attachments**



**RF Flow Conveyor Specifications**

All dimensions are in inches unless otherwise indicated.

Chain Number	Former Chain Number	Flow Model Number	Pitch	Roller Diameter	Width Between Roller Link Plates	Link Plate		Attachment
						H	T	
			P	R	W	H	T	2X
RF10125-M	F6, FA6	FC200	4.921	1.252	1.181	1.500	.248	7.283
RF10150-M		FC270	5.905	1.252	1.181	1.500	.248	9.843
RF6205-M		FC270	6.000	1.500	1.461	1.752	.311	9.843
RF12200-M		FC350	7.874	1.500	1.461	1.752	.311	12.992
RF17200-M		FC350	7.874	1.752	2.024	2.000	.374	12.992
RF17250-M	F8, FA8	FC450	9.842	1.752	2.024	2.000	.374	16.929
RF26200-M		FC410	7.874	2.000	2.252	2.500	.374	15.354
RF26250-N		FC450	9.842	2.000	2.252	2.500	.374	16.929
RF26300-N		FC580	11.811	2.000	2.252	2.500	.374	15.354
RF36300-M	F12	FC580	11.811	2.252	2.626	3.000	.500	22.047
RF36300-N	FA12	FC580	11.811	2.252	2.626	3.000	.500	22.047

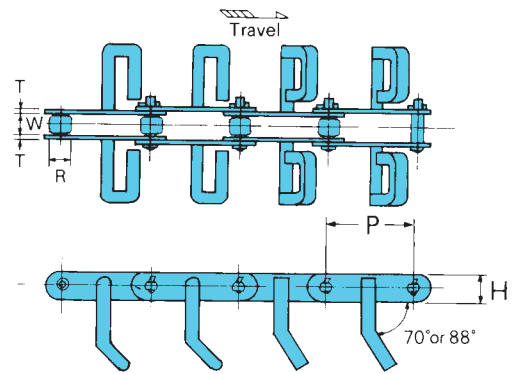
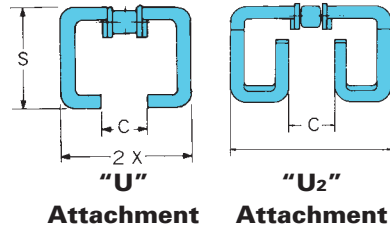
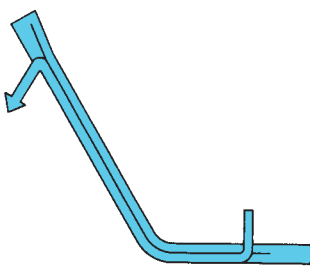
**RF Flow Conveyor Attachment Specifications**

Chain Number	L Attachment		KL Attachment		B Attachment		U <sub>2</sub> V Attachment			Avg. Tensile Stgth.	
	S	Approx. Weight (lbs./ft.)	S	Approx. Weight (lbs./ft.)	S	Approx. Weight (lbs./ft.)	S	C	Approx. Weight (lbs./ft.)	DT (Basic) Series (lbs.)	AT Series (lbs.)
RF10125-M	1.339	5.44	1.339	5.44	3.150	5.98	4.528	3.346	6.92	25,300	50,600
RF10150-M	1.339	5.44	1.339	5.44	3.937	6.59	5.512	4.134	8.53	25,300	50,600
RF6205-M	1.575	8.06	1.575	8.06	3.937	8.33	5.512	4.134	10.48	41,800	62,700
RF12200-M	1.575	8.06	1.575	8.06	4.921	9.14	7.283	5.118	12.36	41,800	62,700
RF17200-M	1.811	11.42	1.811	11.42	4.921	11.76	7.283	5.118	14.99	55,000	86,900
RF17250-M	1.811	10.95	1.811	10.95	6.299	12.63	9.055	5.315	15.93	55,000	86,900
RF26200-M	2.283	18.81	2.283	18.81	5.906	16.80	9.173	3.937	22.85	70,400	116,600
RF26250-N	2.283	14.11	2.283	14.11	6.299	15.05	9.055	5.315	19.82	67,100	126,500
RF26300-N	2.283	15.46	2.283	15.46	7.874	18.14	11.417	6.299	28.22	67,100	126,500
RF36300-M	2.756	22.85	2.756	22.85	7.874	24.33	11.417	6.299	33.94	106,700	152,900
RF36300-N	2.756	22.85	2.756	22.85	7.874	24.33	11.417	6.299	33.94	—	194,700

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## RF Conveyor Chain for LC Type Inclined Flow Conveyor



Attachment	Application	Attachment	Application
U (round steel bar)	for conveying general powdered materials	U2 (round steel bar)	for conveying material at higher efficiency than U (round)
U (square steel bar)	for conveying massive, powdered, or adhesive materials	U2 (square steel bar)	for conveying material at higher efficiency than U (square)

### Specifications

All dimensions are in inches unless otherwise indicated.

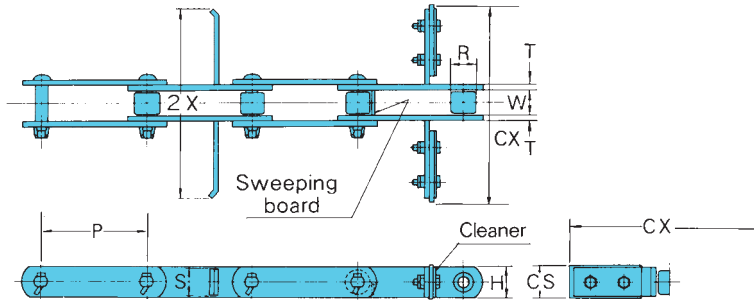
Chain Number	Former Chain No.	Flow Model No.	Pitch	Roller Dia.	Width Between Roller Link Plates	Link Plate		"U" Attachment			"U2" Attachment		Avg. Tensile Stgth.			
						H	T	2X	S	C	S	C	"DT" (Basic) Series (lbs.)	"AT" Series (lbs.)		
RF450W-M	F4,FW4	1/8" 160	4.000	1.000	1.063	1.252	.248	5.709	4.331	1.969	5.78	4.331	1.969	6.45	24,200	31,900
RF10125-M		1/8" 240	4.921	1.252	1.811	1.500	.248	8.858	5.512	2.559	8.74	5.512	2.559	9.95	25,300	50,600
RF6205-M	F6,FA6	1/8" 320	6.000	1.500	1.461	1.752	.311	11.811	6.890	3.150	13.10	6.890	3.150	15.05	42,000	62,700
RF17200-M		1/8" 410	7.874	1.752	2.024	2.000	.374	15.354	8.661	3.937	17.81	8.661	3.937	20.36	55,000	86,900
RF26200-M	F8,FA8	1/8" 410	7.874	2.000	2.252	2.500	.374	15.354	8.661	3.937	20.50	8.611	3.937	22.78	70,400	116,600
RF26200-N	F8,FA8	1/8" 410	7.874	2.000	2.252	2.500	.374	15.354	8.661	3.937	20.50	8.661	3.937	22.78	67,100	126,500
RF36300-M	F12	1/8" 500	11.811	2.252	2.626	3.000	.500	18.898	10.236	4.724	28.56	10.236	4.724	31.58	106,700	—
RF36300-M	F12	1/8" 600	11.811	2.252	2.626	3.000	.500	22.835	12.008	5.512	31.72	12.008	5.512	35.62	106,700	—
RF36300-N	FA12	1/8" 500	11.811	2.252	2.626	3.000	.500	18.898	10.236	4.724	28.56	10.236	4.724	31.58	—	194,700
RF36300-N	FA12	1/8" 600	11.811	2.252	2.626	3.000	.500	22.835	12.008	5.512	31.72	12.008	5.512	35.62	—	194,700

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## RF Conveyor Chain for FK Type Flow Conveyor for Grain

This chain is specially designed for horizontal flow conveyors (upgrade or downgrade 10°) that handle grain. The sweeping board prevents material on the rail from being crushed and the cleaner sweeps the material off the case.



### Specifications

All dimensions are in inches unless otherwise indicated.

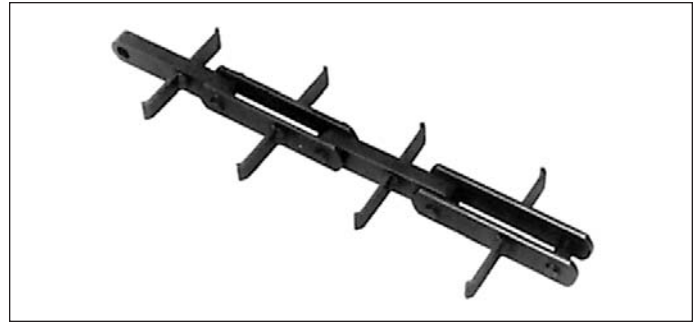
Chain Number	Flow Model No.	Pitch	Roller Dia.	Width Between Roller Link Plates	Link Plate		Attachment		Cleaner		Approx. Weight (lbs./ft.)	Average Tensile Strength (lbs./ft.)
					H	T	2X	S	CX	CS		
RF03075-S	FK110	2.952	.626	.634	.866	.126	3.740	.787	4.134	1.102	1.41	6,600
RF430-S	FK150	4.000	.791	.890	1.000	.189	5.315	.866	5.709	1.260	2.28	12,100
RF450-S	FK150	4.000	.874	1.063	1.126	.248	5.315	.984	5.709	1.339	3.36	17,600
RF08125-S	FK200	4.921	.874	1.063	1.126	.248	7.283	.984	7.677	1.339	3.36	17,600
RF10125-S	FK200	4.921	1.142	1.181	1.500	.248	7.283	1.339	7.677	1.850	4.84	25,300
RF10125-S	FK240	4.921	1.142	1.181	1.500	.248	8.858	1.339	9.252	1.850	5.04	25,300
RF10150-S	FK270	5.905	1.142	1.181	1.500	.248	9.843	1.339	10.433	1.850	4.64	25,300
RF10150-S	FK320	5.905	1.142	1.181	1.500	.248	11.811	1.339	12.402	1.850	4.84	25,300
RF6205-S	FK270	6.000	1.374	1.461	1.752	.311	9.843	1.575	10.433	2.087	7.06	41,800
RF12200-S	FK350	7.874	1.374	1.461	1.752	.311	12.992	1.575	13.583	2.087	6.92	41,800
RF17200-S	FK350	7.874	1.579	2.024	2.000	.374	12.992	1.811	13.583	2.283	9.74	55,000
RF17200-S	FK450	7.874	1.579	2.024	2.000	.374	16.929	1.811	17.520	2.283	10.21	55,000
RF26200-S	FK450	7.874	1.752	2.252	2.500	.374	16.929	2.283	17.520	2.677	13.44	70,400

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

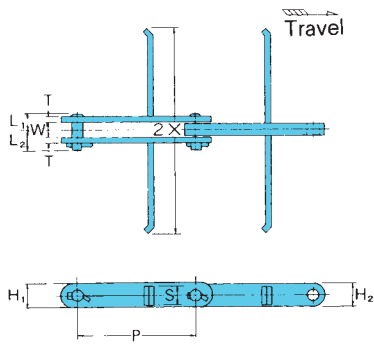
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## NF Block Chain for Flow Conveyor

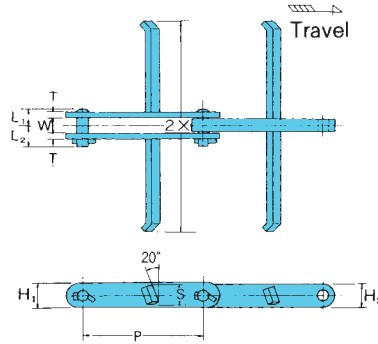
Special alloy steel provides greater tensile strength and this chain's simple construction provides greater allowable wear. This chain is ideal for conveying material that is abrasive, wet, or hot. The base chain consists of outer link plates, inner link plates, and pins. Attachments can be welded onto the base chain.



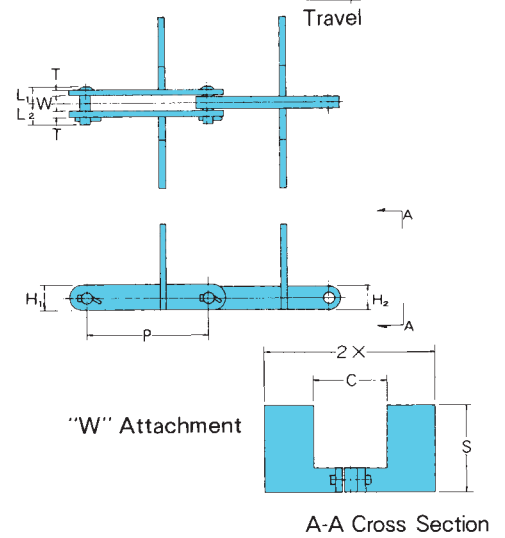
**"L" Attachment**



**"KL" Attachment**



**"W" Attachment**



**NF Block Chain Specifications**

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Width Between Outer Link Plates	Link Plate			Pin		Approx. Weight (lbs./ft.)	Average Tensile Strength (lbs./ft.)
			H <sub>1</sub>	H <sub>2</sub>	T	L <sub>1</sub>	L <sub>2</sub>		
	P	W	H <sub>1</sub>	H <sub>2</sub>	T	L <sub>1</sub>	L <sub>2</sub>		
NF30150	5.905	.917	1.752	1.500	.311	.925	1.260	5.31	69,300
NF30200	7.874	.917	1.752	1.500	.311	.925	1.260	5.11	69,300
NF56200	7.874	1.161	2.500	2.126	.374	1.122	1.555	9.88	124,300
NF56250	9.842	1.161	2.500	2.126	.374	1.122	1.555	9.74	124,300

**NF Block Chain Attachment Specifications**

Chain No.	Flow Model No.	"L" Attachment			"KL" Attachment			"W" Attachment			
		2X	S	Additional Weight per Att. (lbs./att.)	2X	S	Additional Weight per Att. (lbs./att.)	2X	S	C	Additional Weight per Att. (lbs./att.)
NF30150	FC150	5.315	1.339	.40	5.315	1.339	.40	5.315	3.150	3.150	.70
NF30150	FC200	7.283	1.339	.57	7.283	1.339	.57	7.283	4.528	3.346	1.50
NF30150	FC270	9.843	1.339	.79	9.843	1.339	.79	9.843	5.512	4.134	2.46
NF30150	FC350	12.992	1.339	1.63	12.992	1.339	1.63	12.992	7.283	5.118	6.47
NF30150	FC450	16.929	1.339	2.16	16.929	1.339	2.16	16.929	9.055	5.315	11.31
NF30200	FC150	5.315	1.339	.40	5.315	1.339	.40	5.315	3.150	3.150	.70
NF30200	FC200	7.283	1.339	.57	7.283	1.339	.57	7.283	4.528	3.346	1.50
NF30200	FC270	9.843	1.339	.79	9.843	1.339	.79	9.843	5.512	4.134	2.46
NF30200	FC350	12.992	1.339	1.63	12.992	1.339	1.63	12.992	7.283	5.118	6.47
NF30200	FC450	16.929	1.339	2.16	16.929	1.339	2.16	16.929	9.055	5.315	11.31
NF56200	FC410	15.354	2.008	2.86	15.354	2.008	2.86	15.354	9.173	3.937	11.00
NF56200	FC450	16.929	2.008	3.17	16.929	2.008	3.17	16.929	9.055	5.315	11.44
NF56200	FC580	22.047	2.008	4.22	22.047	2.008	4.22	22.047	11.417	6.299	18.92
NF56250	FC410	15.354	2.008	2.86	15.354	2.008	2.86	15.354	9.173	3.937	11.00
NF56250	FC450	16.929	2.008	3.17	16.929	2.008	3.17	16.929	9.055	5.315	11.44
NF56250	FC580	22.047	2.008	4.22	22.047	2.008	4.22	22.047	11.417	6.299	18.92

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

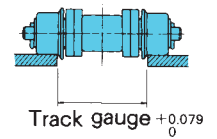
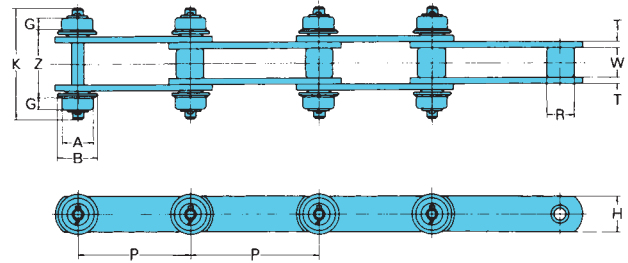
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

# Outboard Roller Conveyor Chains

This chain is based on the standard S roller type conveyor chain. The pins have been extended to produce flanged outboard rollers on both sides. The sprockets engage the standard S roller at the chain center. The outboard rollers are for running and supporting the load. When ordering, specify the series name (DT Basic Series, AT, or BT) and the required interval spacing of the outboard rollers.

### Applications

- Installing special attachments such as pushers or tilting dogs.
- Supporting heavy loads
- Installing guides for return strand of chain since special attachments interfere with the return guide.



### Model Identification

**RF6205-S - DT - SRF - N**

Non Heat Treatment  
 Heat Treatment

Side Roller

Series of Chain

Base Chain No.

### RF Conveyor Chain with Outboard Roller Specifications

All dimensions are in inches unless otherwise indicated.

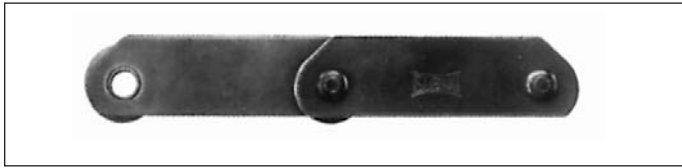
Base Chain Number	Pitch	Roller Dia.	Width Between Roller Link Plates	Link Plate		Outboard Roller					Track Gauge	Wgt. of Outboard Rollers per Pitch (lbs.)	Allowable Load on a Pair of Outboard Rollers	
				H	T	A	B	G	K	Z			Non Heat-Treated (lbs.)	Heat-Treated (lbs.)
RF03075-S	2.952	.626	.634	.866	.126	1.252	1.654	.472	2.992	1.496	1.575	.66	154	242
RF03100-S	3.937	.626	.634	.866	.126	1.252	1.654	.472	2.992	1.496	1.575	.66	154	242
RF05075-S	2.952	.874	.866	1.260	.177	1.575	1.969	.551	4.016	2.165	2.244	1.10	264	440
RF05100-S	3.937	.874	.866	1.260	.177	1.575	1.969	.551	4.016	2.165	2.244	1.10	264	440
RF05150-S	5.905	.874	.866	1.260	.177	1.575	1.969	.551	4.016	2.165	2.244	1.10	264	440
RF10100-S	3.937	1.142	1.181	1.500	.248	2.000	2.559	.787	5.354	2.874	2.953	2.20	440	726
RF10150-S	5.905	1.142	1.181	1.500	.248	2.000	2.559	.787	5.354	2.874	2.953	2.20	440	726
RF12200-S	7.874	1.374	1.461	1.752	.311	2.559	3.150	.945	6.575	3.642	3.720	3.96	616	1,034
RF12250-S	9.842	1.374	1.461	1.752	.311	2.559	3.150	.945	6.575	3.642	3.720	3.96	616	1,034
RF17200-S	7.874	1.579	2.024	2.000	.374	2.559	3.150	.945	7.559	4.429	4.508	8.36	704	1,188
RF17250-S	9.842	1.579	2.024	2.000	.374	2.559	3.150	.945	7.559	4.429	4.508	8.36	704	1,188
RF17300-S	11.811	1.579	2.024	2.000	.374	2.559	3.150	.945	7.559	4.429	4.508	8.36	704	1,188
RF26200-S	7.874	1.752	2.252	2.500	.374	3.150	3.937	1.339	9.016	4.962	4.980	15.18	1,100	1,892
RF26250-S	9.842	1.752	2.252	2.500	.374	3.150	3.937	1.339	9.016	4.962	4.980	15.18	1,100	1,892
RF26300-S	11.811	1.752	2.252	2.500	.374	3.150	3.937	1.339	9.016	4.962	4.980	15.18	1,100	1,892
RF36250-S	9.842	2.000	2.626	3.000	.500	3.937	4.921	1.496	10.551	5.945	6.024	25.74	1,474	2,486
RF36300-S	11.811	2.000	2.626	3.000	.500	3.937	4.921	1.496	10.551	5.945	6.024	25.74	1,474	2,486
RF36450-S	17.716	2.000	2.626	3.000	.500	3.937	4.921	1.496	10.551	5.945	6.024	25.74	1,474	2,486

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.  
 Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



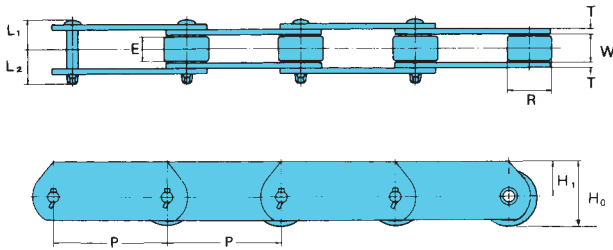
## RFD Deep Link Chains

This type of chain allows solid contact between the chain and material to be conveyed. There is less friction due to roller rotation over the chain guide rail.



### Applications

- Conveyor lines of thick plate or section steel in steel mills.
- Automobile or container assembly lines.



### RFD Deep Link Chain Specifications

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Roller		Width Between Roller Link Plates	Chain Height	Link Plate		Pin		Average Tensile Stgth. ("DT" Basic series) (lbs.)	Approx. Weight (lbs./ft.)
		R	E			H <sub>0</sub>	T	L <sub>1</sub>	L <sub>2</sub>		
	P	R	E	W	H <sub>0</sub>	H <sub>1</sub>	T	L <sub>1</sub>	L <sub>2</sub>		
RFD03100-R	3.937	1.252	.610	.634	1.453	.827	.126	.709	.787	6,600	1.88
RFD05100-R	3.937	1.575	.748	.866	1.732	.945	.177	.984	1.122	15,500	3.96
RFD05150-R	5.905	1.575	.748	.866	1.732	.945	.177	.984	1.122	15,500	3.29
RFD10150-R	5.905	2.000	1.063	1.181	2.260	1.260	.248	1.299	1.417	25,300	6.52
RFD10200-R	7.874	2.000	1.063	1.181	2.260	1.260	.248	1.299	1.417	25,300	5.71
RFD12200-R	7.874	2.559	1.260	1.461	2.894	1.614	.311	1.594	1.693	41,800	10.01
RFD12250-R	9.842	2.559	1.260	1.461	2.894	1.614	.311	1.594	1.693	41,800	9.07
RFD17250-R	9.842	3.150	1.732	2.024	3.543	1.969	.374	2.028	2.283	55,000	15.12
RFD17300-R	11.811	3.150	1.732	2.024	3.543	1.969	.374	2.028	2.283	55,000	14.45
RFD26300-R	11.811	3.346 <sup>1</sup>	1.969	2.264	3.760	2.087	.374	2.185	2.402	70,400	16.33
RFD36300-R	11.811	3.937 <sup>1</sup>	2.205	2.626	4.409	2.441	.500	2.677	3.071	106,700	26.21
RFD36400-R	15.748	3.937 <sup>1</sup>	2.205	2.626	4.409	2.441	.500	2.677	3.071	106,700	22.98
RFD52450-R	17.716	4.331 <sup>1</sup>	2.205	3.031	4.921	2.756	.630	3.228	3.543	112,200	30.91

<sup>1</sup>Roller diameter is different from the roller diameter of standard conveyor chain.

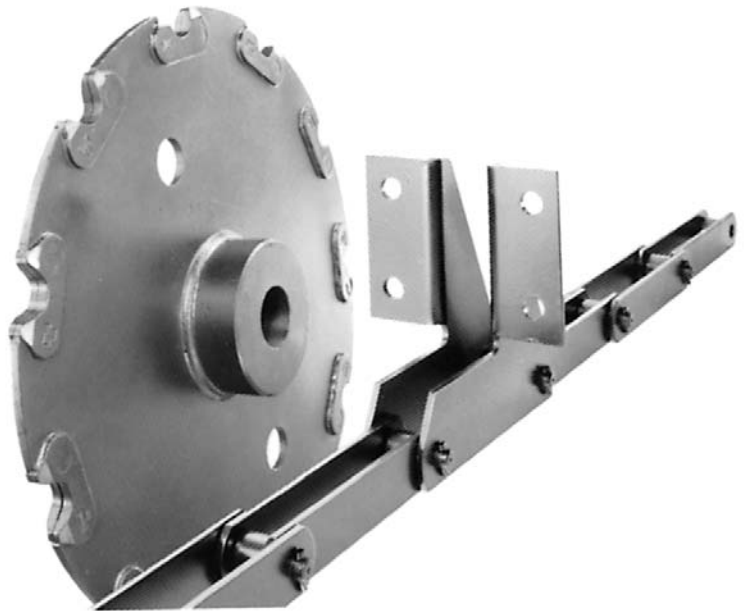
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.  
 Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

# Sanitation Chains

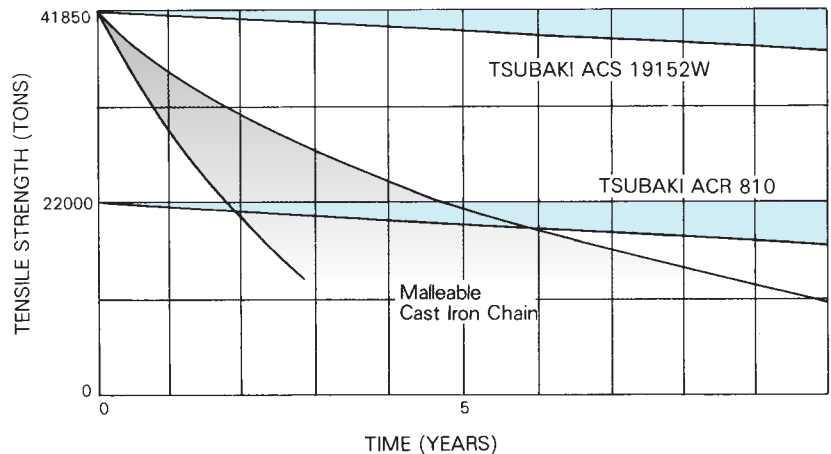
Sanitation Chains are the ideal replacement for conventional pintle type and combination chains used in sewage disposal systems. They reduce operation and maintenance costs.

### Advantages of Stainless Steel Chains

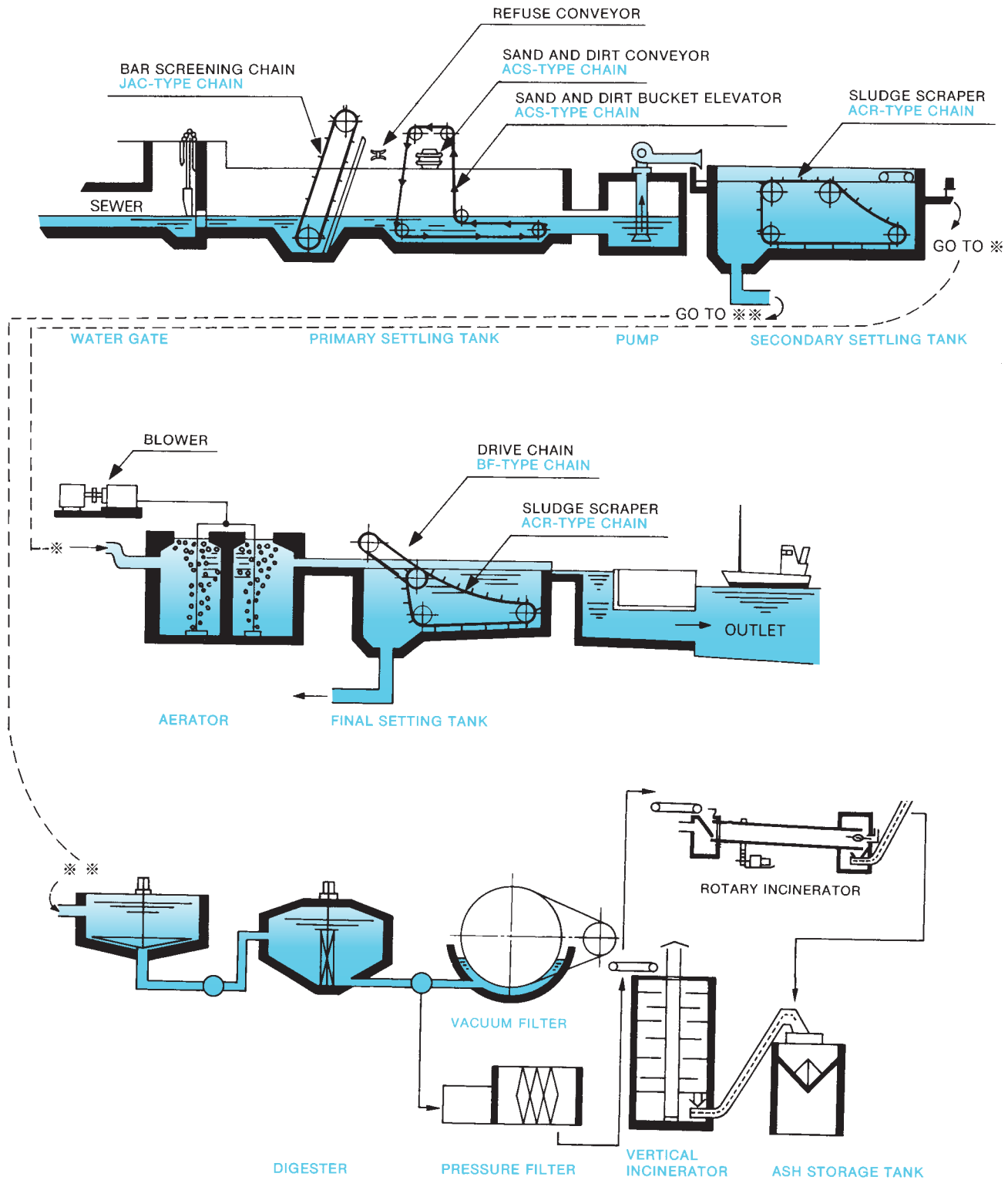
- Long-lasting strength
- Light weight
- Superior anti-corrosive properties
- Accurate chain pitch
- High wear resistance and improved durability
- Cost-efficient
- Less shoe wear



Comparison of Tensile Strengths



**Sewage Disposal Process**



# ACR 810 Collector Tank Chains

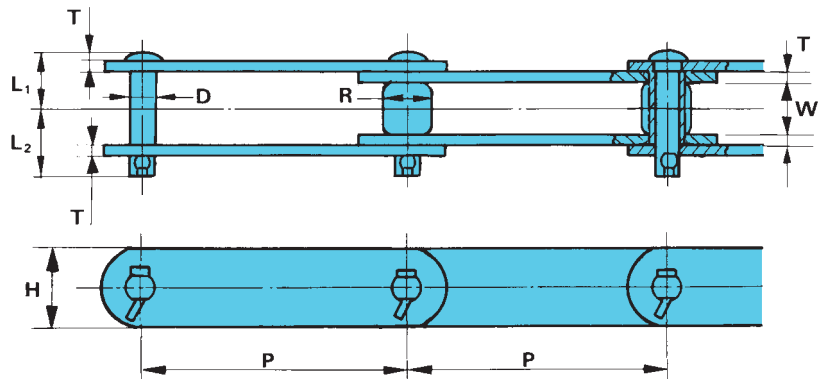
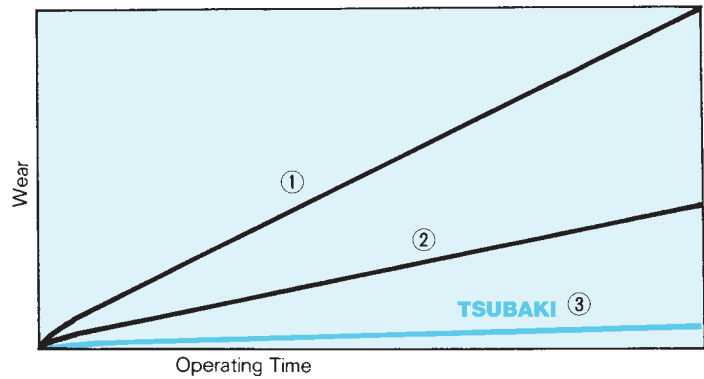
Specially designed ACR Type Chains for sludge scrapers create real cost savings. This chain is one-third the weight of conventional pintle type chains. That means a reduction in both initial and operating costs, not to mention easy maintenance and less shoe wear.

The key to superior anti-corrosive performance is heat-treated stainless steel. ACR Type Chains provide the protection against corrosive sewage conditions that sanitation chains require. Stainless steel components minimize corrosion wear, the primary cause of chain failure.

### Combination of Chain and Sprocket

- ① Malleable Cast Iron Chain + Ductile Cast Iron Sprocket
- ② Stainless Steel Chain + Ductile Cast Iron Sprocket
- ③ U.S. Tsubaki Sanitation Chain + U.S. Tsubaki Insert Tooth Sprocket

### Relative Wear Life of Chain



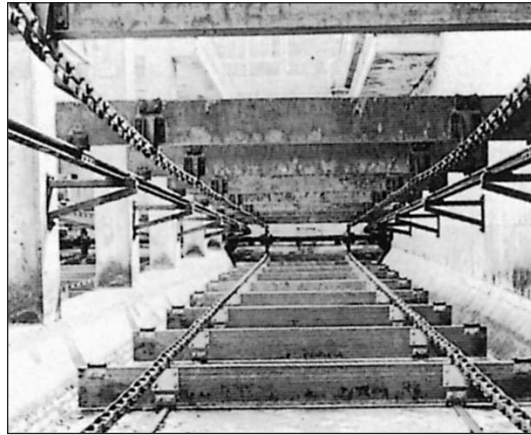
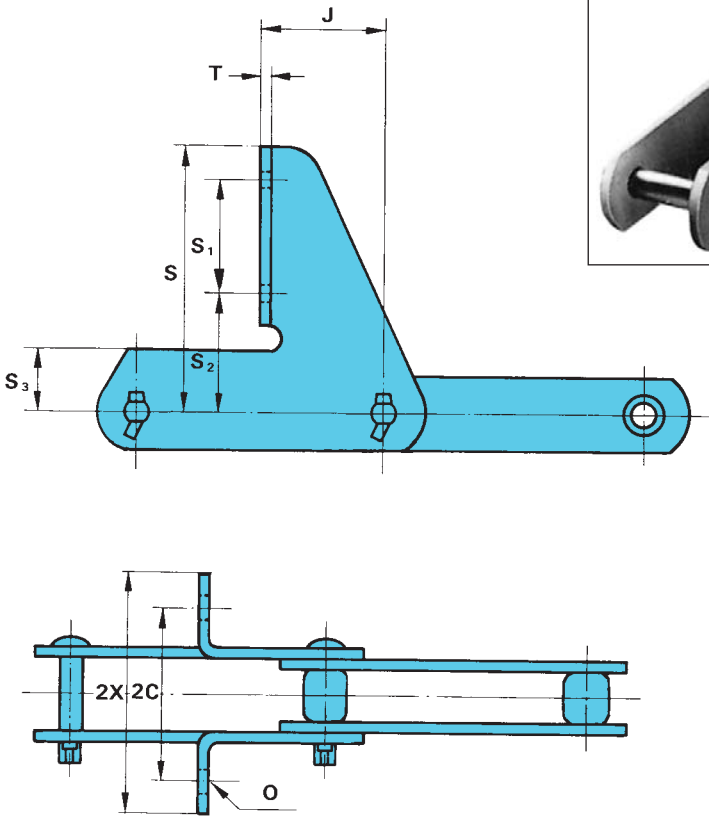
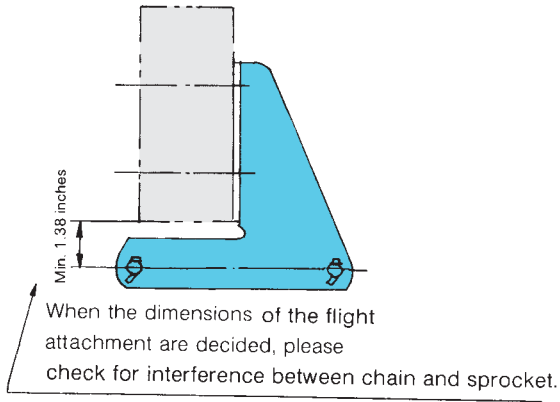
### ACR 810 Collector Tank Chain Specifications

All dimensions are in inches unless otherwise indicated.

Chain Number	Average Tensile Stgth. (lbs.)	Pitch	Width Between Inner Link Plates	Roller	Pin		Link Plate		Approx. Weight (lbs./ft.)	
				R	D	L <sub>1</sub>	L <sub>2</sub>	T		H
ACR810	22,000	6,000	.866	.874	.445	.984	1.122	.177	1.299	2.15

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



**ACR 810 Collector Tank Chain Attachment Specifications**

All dimensions are in inches unless otherwise indicated.

Attach. Style	Chain Number	Attachments									Add'l. Weight (lbs./att.)
		2C	2X	J	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	O	T	
SF-4	ACR810	3.937	5.512	2.992	6.102	2.559	2.756	.866	.551	.177	.60

Note: Attachments with different dimensions are also available upon request.

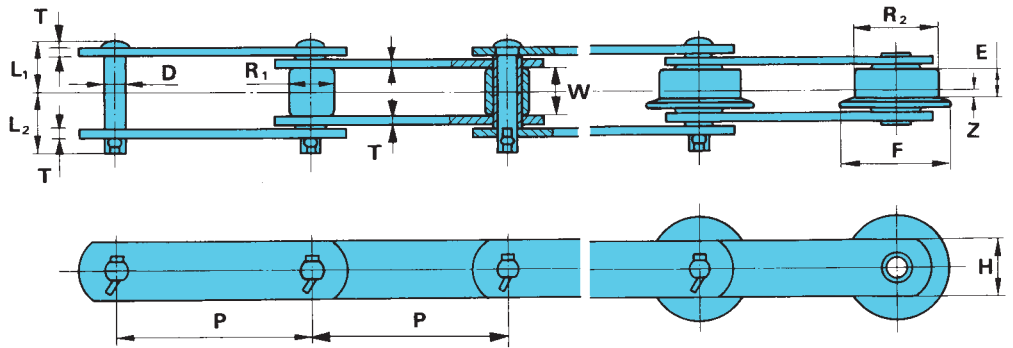
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## JAC Type Bar Screen Chains

We developed JAC Type Chains specifically to meet the demanding conditions of sewage removal. These long-wearing chains are also ideal to convey sand and dirt.

Please note: JAC Type Chains should be operated every two to three weeks. When seaweed, barnacles, or other marine life are present, the chains should be operated at least once a week. Please let us know if operation will be less than 100 hours per year. We have a special chain for these cases.



### Benefits

- High strength
- Exceptional wear resistance
- Superior anti-corrosion properties
- Durability
- Reliability

### JAC Type Bar Screen Chain Specifications

All dimensions are in inches unless otherwise indicated.

Chain Number	Average Tensile Strength (lbs.)	Pitch	Width Between Inner Link Plates	Roller					Pin			Link Plate		Approx. Weight (lbs./ft.)
				R <sub>1</sub>	R <sub>2</sub>	F	E	Z	D	L <sub>1</sub>	L <sub>2</sub>	T	H	
JAC08152-S	33,000	6.00	1.031	.874	—	—	—	—	.445	1.220	1.358	.248	1.126	2.62
JAC10152-S	48,500	6.00	1.142	1.142	—	—	—	—	.571	1.299	1.417	.248	1.500	3.96
JAC10152-F	48,500	6.00	1.142	—	2.000	2.559	.787	.276	.571	1.299	1.417	.248	1.500	5.38
JAC6205-S	61,700	6.00	1.413	1.374	—	—	—	—	.626	1.594	1.693	.311	1.752	6.25
JAC6205-F	61,700	6.00	1.413	—	2.559	3.346	.945	.315	.626	1.594	1.693	.311	1.752	9.74
JAC21152-S	85,900	6.00	1.406	1.579	—	—	—	—	.752	1.752	2.008	.374	2.000	8.47
JAC26152-S	114,500	6.00	2.189	1.752	—	—	—	—	.874	2.185	2.402	.374	2.500	11.96

Note: The above information is for VJ series chain. Please call for information about PJ series and SJ series.

### Bar Screen Selection Table

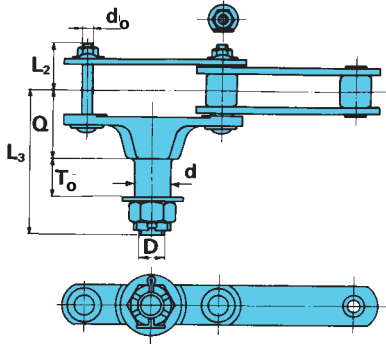
Series	Materials and Heat-Treatment			Standardized Attachment
	Pin Bushing	"S" Roller Link Plate	"F" Roller	
VJ <sup>1</sup>	400 Series, stainless steel heat-treated	alloy steel, heat-treated	alloy steel, heat-treated	Y, A-2(I), A-2 (II)
PJ	400 Series, stainless steel, heat-treated			Y, A-2(I), A-2 (II)
SJ	300 Series, stainless steel			A-2(I), A-2 (II)

<sup>1</sup>Bushings project slightly for smoother running.

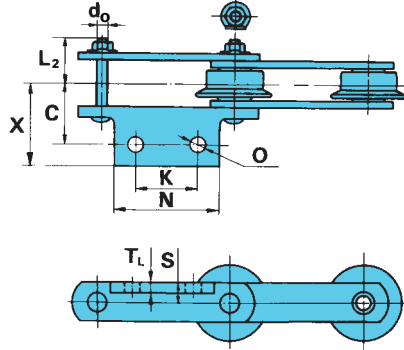
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

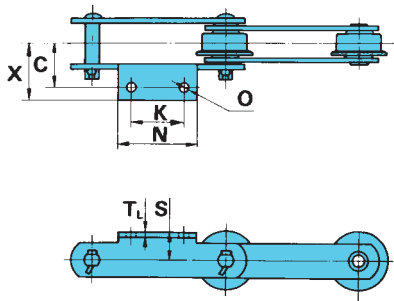
**"Y" Attachment**



**"A-2 (I)" Attachment**



**"A-2 (II)" Attachment**



**JAC Type Bar Screen Chain Attachment Specifications**

All dimensions are in inches unless otherwise indicated.

Attachment Style	Chain Number	d	d <sub>o</sub>	D	L <sub>2</sub>	L <sub>3</sub>	Q	T <sub>o</sub>	Additional Weight (lbs./att.)
Y	JAC08152-S	.984	M10	M20	1.496	4.724	2.362	1.181	2.43
Y	JAC10152-S	1.378	M12	M27	1.654	5.846	2.756	1.575	4.19
Y	JAC6205-S	1.575	M12	M30	1.929	6.476	3.071	1.732	5.95
Y	JAC21152-S	1.772	M16	M36	2.165	6.850	3.071	1.811	7.05
Y	JAC26152-S	1.969	M16	M45	2.559	8.031	3.740	1.969	11.24

Attachment Style	Chain Number	d <sub>o</sub>	L <sub>2</sub>	C	X	K	N	O	S	T <sub>L</sub>	Add'l. Weight (lbs./att.)
A-2 (I)	JAC10152-F	M12	1.654	2.362	3.150	2.559	4.331	.591	.748	.374	1.32
A-2 (I)	JAC 6205-F	M12	1.929	2.756	3.740	2.756	4.724	.709	.874	.472	1.98

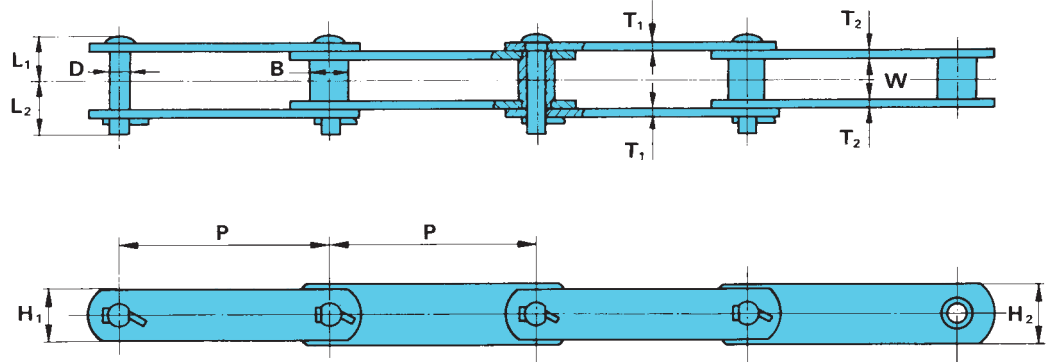
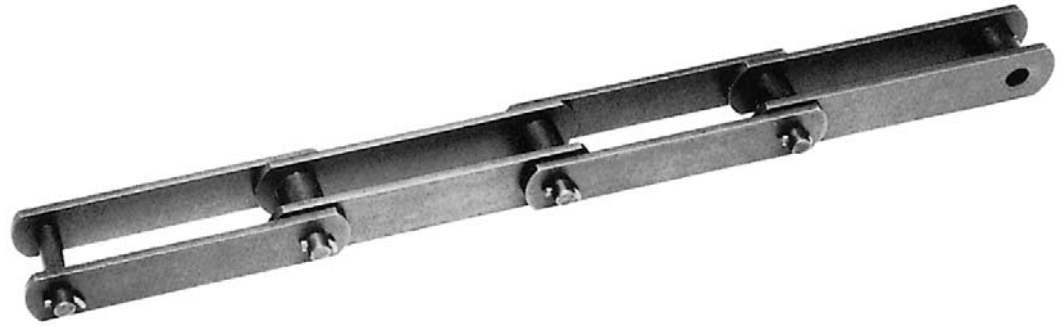
Attachment Style	Chain Number	C	X	K	N	O	S	T <sub>L</sub>	Additional Weight (lbs./att.)
A-2 (II)	JAC10152-F	1.969	2.559	2.362	3.543	.472	1.260	.248	.44
A-2 (II)	JAC 6205-F	2.362	3.110	2.362	3.937	.591	1.496	.311	.82

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

# ACS Type Heavy Duty Collector Chains

ACS Type Chains were specially developed for sand and dirt scrapers and conveyors. All components are constructed of high-quality stainless steel and through-hardened by heat-treatment before assembly. The link plates, pins, and bushings are press-fitted in order to ensure not only reliability against lateral and impact loads, but also protection against loosening caused by impact load cycles. ACS Type Chains provide long wear life and corrosion resistance.



### Benefits

- Excellent press fit
- Impact load protection
- Long-wear
- Corrosion resistant

## ACS Type Heavy Duty Collector Chain Specifications

All dimensions are in inches unless otherwise indicated.

Chain Number	Average Tensile Strength (lbs.)	Pitch	Width Between Inner Link Plates	Bushing	Pin			Link Plate				Approx. Weight (lbs./ft.)
		P	W	B	D	L <sub>1</sub>	L <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	
ACS13078W	29,700	3.075	1.024	.906	.500	1.102	1.260	.197	.197	1.299	1.417	3.49
ACS13103W	29,700	4.063	1.024	.906	.500	1.102	1.260	.197	.197	1.299	1.417	3.08
ACS13152W	29,700	6.000	1.024	.906	.500	1.102	1.260	.197	.197	1.299	1.417	2.41
ACS15152W	33,000	6.000	1.024	.945	.531	1.142	1.299	.197	.236	1.417	1.496	3.22
ACS19152W	41,900	6.000	1.181	1.024	.571	1.260	1.555	.236	.236	1.496	1.732	3.89
ACS25152W	55,100	6.000	1.181	1.142	.622	1.378	1.614	.236	.276	1.732	2.126	5.30
ACS35152W	77,100	6.000	1.496	1.378	.748	1.614	1.811	.276	.276	2.126	2.362	7.31

Note: Offset links are also available upon request.

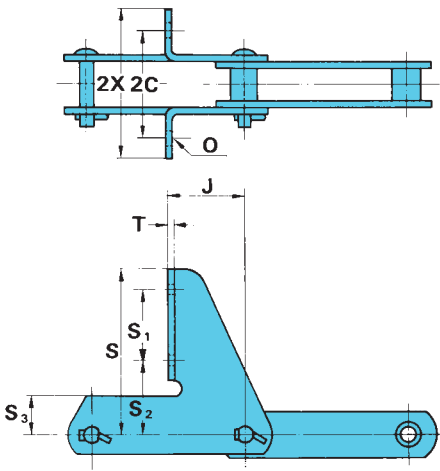
Standard coating is for sewage treatment. If used in other applications, please call for more information.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

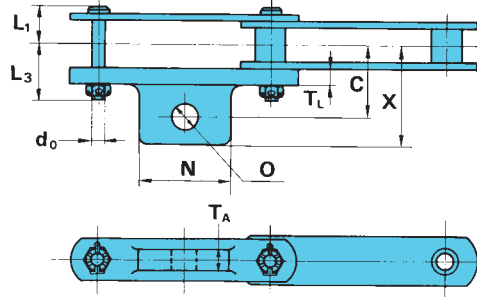
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



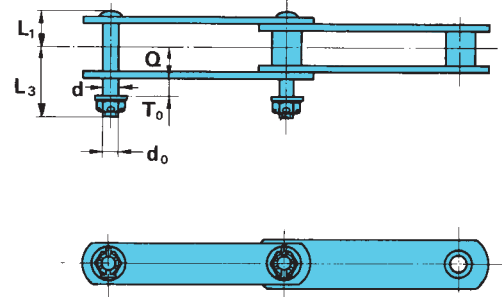
**"SF-4" Attachment**



**"LA-1" Attachment**



**Long Pin Attachment**



**Heavy Duty Collector Chain Attachment Specifications**

All dimensions are in inches unless otherwise indicated.

Attachment Style	Chain Number										Add'l. Weight (lbs./att.)
		2C	2X	J	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	O	T	
SF-4	ACS13078W	3.543	5.177	1.496	4.331	1.378	2.165	1.102	.551	.197	1.32
SF-4	ACS13103W	3.543	5.177	2.047	4.331	1.378	2.165	1.102	.551	.197	1.54
SF-4	ACS13152W	3.543	5.177	2.992	4.331	1.378	2.165	1.102	.551	.197	2.20
SF-4	ACS15152W	3.937	5.650	2.992	6.102	2.559	2.756	1.378	.551	.197	2.64
SF-4	ACS19152W	3.937	5.571	2.992	6.181	2.559	2.756	1.496	.551	.236	3.08
SF-4	ACS25152W	3.937	5.650	2.992	6.063	2.559	2.756	1.496	.551	.236	3.08
SF-4	ACS35152W	4.331	5.984	2.992	6.299	2.559	2.953	1.575	.551	.276	3.52

Attachment Style	Chain Number										Add'l. Weight (lbs./att.)
		d <sub>0</sub>	L <sub>1</sub>	L <sub>3</sub>	C	X	N	O	T <sub>A</sub>	T <sub>L</sub>	
LA-1	ACS13078W	M10	1.161	1.634	2.165	3.031	1.575	.748	.630	.472	.88
LA-1	ACS13103W	M10	1.161	1.634	2.165	3.031	2.205	.748	.630	.472	1.32
LA-1	ACS15152W	M12	1.201	1.752	2.165	3.031	2.677	.748	.630	.472	1.76
LA-1	ACS19152W	M12	1.319	2.208	2.559	3.543	3.150	.945	.787	.630	2.64
LA-1	ACS25152W	M14	1.437	2.106	2.559	3.543	3.150	.945	.787	.630	3.08
LA-1	ACS35152W	M16	1.673	2.421	2.953	4.016	3.150	1.024	.945	.748	4.40

Attachment Style	Chain Number							Add'l. Weight (lbs./att.)
		d	d <sub>0</sub>	L <sub>1</sub>	L <sub>3</sub>	Q	T <sub>0</sub>	
Long Pin	ACS13078W	.472	M10	1.102	1.929	.945	.472	.13
Long Pin	ACS13103W	.472	M10	1.102	1.929	.945	.472	.13
Long Pin	ACS15152W	.512	M12	1.142	2.008	.984	.472	.22
Long Pin	ACS19152W	.551	M12	1.260	2.323	1.102	.630	.24
Long Pin	ACS25152W	.610	M14	1.378	2.441	1.142	.630	.31
Long Pin	ACS35152W	.728	M16	1.614	2.835	1.346	.748	.44

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

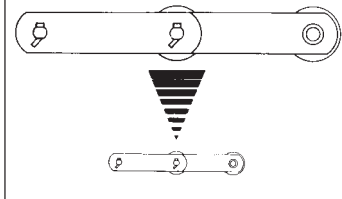
# Bearing Roller Conveyor Chains

Manufacturing experience and advanced production technology come together in the innovative Bearing Roller Conveyor Chain. Finely machined cylindrical roller bearings are incorporated into the chain. The result is improved performance in your operation.

- Less friction
- Higher maximum allowable load
- Reduced lubrication and maintenance

## 4 Reasons to Select Bearing Roller Conveyor Chains

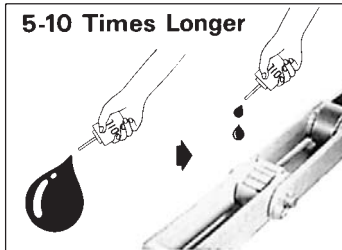
### 2 Chain Sizes Smaller



### 1. Cost-effective, High Performance

The cylindrical roller bearings provide superior performance through increased strength and reduced friction. That means you can use a chain two sizes smaller and increase the cost-effectiveness of your operation.

### 5-10 Times Longer



### 2. Virtually Maintenance Free with Long Chain Life

Cylindrical roller bearings inside the chain rollers lower frictional forces and reduce the need for lubrication and maintenance by five to ten times, depending on the application. The result is chain with a virtually maintenance-free, long service life.

### 3. Wide Selection of Sizes

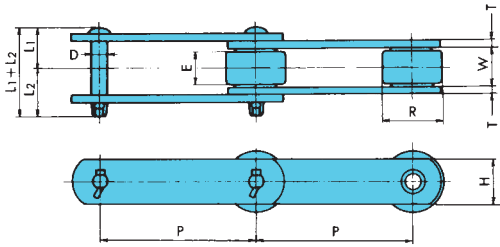
Small pitch to large, heavy-duty sizes of Bearing Roller Conveyor Chains are readily available in a wide range of specifications.

### 4. Prevention of "Slip Stick"

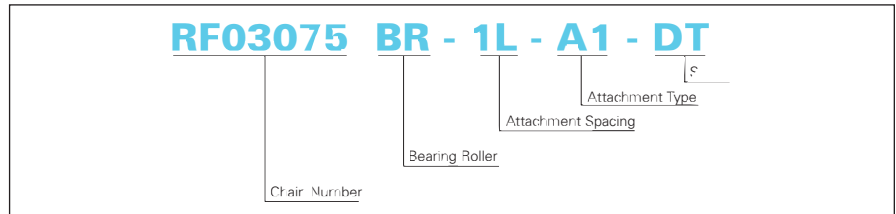
There is no "slip stick" with Bearing Roller Conveyor Chains. Use this chain in applications where "slip stick" cannot be tolerated.

Chain Speed (ft./min.)	Chain Selection
Faster than 6.56	Maximum allowable tension $\geq$ Chain tension
1.64 to 6.56	Maximum allowable tension $\geq$ Chain tension x 3

Note: For chain speeds slower than 1.64 ft./min., please contact Union Engineering.



**Model Identification**



**Bearing Roller Conveyor Chain Specifications**

All dimensions are in inches unless otherwise indicated.

Chain Number	Average Tensile Strength & Maximum Allowable Load				Allowable Roller Load (lbs.)	Pitch	Roller			Width Between Roller Link Plates
	Basic Series (DT)		Reinforced Series (AT)				P	R	E	
	(lbs.)	(lbs.)	(lbs.)	(lbs.)						
RF03075BR	6,600	925	15,650	1,760	440	2.953	1.250	.551	.634	
RF03100BR	6,600	925	15,650	1,760	440	3.937	1.250	.551	.634	
RF05100BR	15,400	2,200	31,950	3,300	680	3.937	1.575	.750	.866	
RF05150BR	15,400	2,200	31,950	3,300	680	5.906	1.575	.750	.866	
RF450BR	17,600	2,420	31,950	3,300	925	4.000	1.750	.906	1.603	
RF08150BR	17,600	2,420	31,950	3,300	925	5.906	1.750	.906	1.603	
RF10100BR	25,350	3,520	50,650	5,290	1,230	3.937	2.000	1.630	1.181	
RF10150BR	25,350	3,520	50,650	5,290	1,230	5.906	2.000	1.630	1.181	
RF12200BR	41,850	5,950	62,800	8,150	1,870	7.874	2.559	1.260	1.461	
RF12250BR	41,850	5,950	62,800	8,150	1,870	9.843	2.559	1.260	1.461	
RF17200BR	55,050	7,710	87,000	12,350	3,170	7.874	3.150	1.732	2.024	
RF17250BR	55,050	7,710	87,000	12,350	3,170	9.843	3.150	1.732	2.024	
RF17300BR	55,050	7,710	87,000	12,350	3,170	11.811	3.150	1.732	2.024	
RF26250BR	70,500	9,910	116,750	16,300	4,400	9.843	3.937	1.969	2.250	
RF26300BR	70,500	9,910	116,750	16,300	4,400	11.811	3.937	1.969	2.250	
RF26450BR	70,500	9,910	116,750	16,300	4,400	17.717	3.937	1.969	2.250	
RF36300BR	106,800	15,200	153,100	21,800	6,170	11.811	4.921	2.205	2.625	
RF36450BR	106,800	15,200	153,100	21,800	6,170	17.717	4.921	2.205	2.625	
RF36600BR	106,800	15,200	153,100	21,800	6,170	23.622	4.921	2.205	2.625	

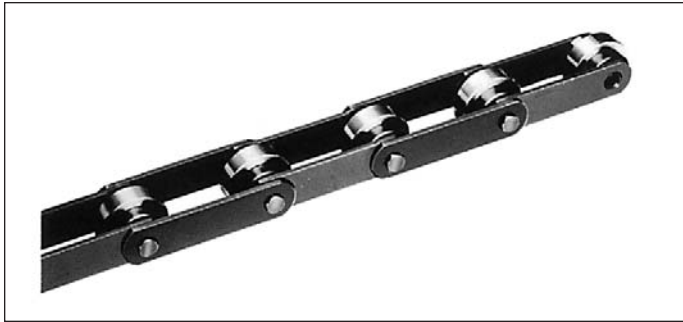
Chain Number	Link Plate		Pin				Approx. Weight (lbs./ft.)	Standard Attachment Type					
	H	T	D	L <sub>1</sub> +L <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>		A-1	A-2	A-2	A-3	SA-2	C-2
								K-1	K-2	(Welded)	(Welded)	SK-2	
RF03075BR	.866	.125	.313	1.500	.710	.790	1.81	o	o			o	
RF03100BR	.866	.125	.313	1.500	.710	.790	1.54	o	o			o	
RF05100BR	1.260	.177	.445	2.105	.985	1.120	3.36	o	o			o	o
RF05150BR	1.260	.177	.445	2.105	.985	1.120	2.75	o	o			o	o
RF450BR	1.125	.250	.445	2.580	1.220	1.360	4.57	o	o			o	
RF08150BR	1.125	.250	.445	2.580	1.220	1.360	3.69	o	o			o	
RF10100BR	1.500	.250	.571	2.715	1.300	1.415	6.58	o	o			o	
RF10150BR	1.500	.250	.571	2.715	1.300	1.415	5.30	o	o			o	o
RF12200BR	1.750	.312	.625	3.290	1.600	1.690	7.66	o	o			o	o
RF12250BR	1.750	.312	.625	3.290	1.600	1.690	6.92	o	o			o	o
RF17200BR	2.000	.375	.750	4.310	2.030	2.280	12.62	o	o				o
RF17250BR	2.000	.375	.750	4.310	2.030	2.280	11.08	o	o				o
RF17300BR	2.000	.375	.750	4.310	2.030	2.280	10.07			o			o
RF26250BR	2.500	.375	.875	4.590	2.190	2.400	16.99						
RF26300BR	2.500	.375	.875	4.590	2.190	2.400	14.97			o			o
RF26450BR	2.500	.375	.875	4.590	2.190	2.400	12.09				o		o
RF36300BR	3.000	.500	1.000	5.750	2.680	3.070	26.19					o	o
RF36450BR	3.000	.500	1.000	5.750	2.680	3.070	20.62					o	o
RF36600BR	3.000	.500	1.000	5.750	2.680	3.070	18.06					o	o

Note: Other chain pitches are available on request. The attachment dimensions are the same as standard conveyor chain.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

# Large Size Steel DOUBLE PLUS® Chains



### How U.S. Tsubaki DOUBLE PLUS® Chain Works

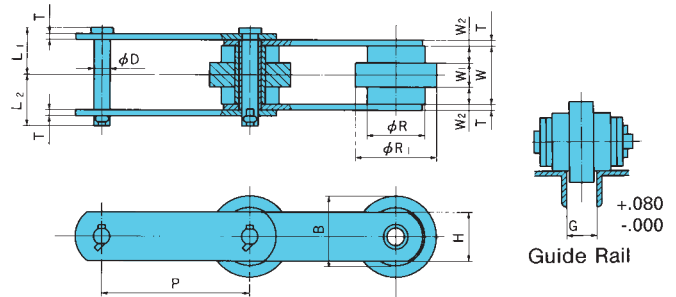
#### •When conveying

Friction between the larger center roller and the small roller allows them to rotate together in unison. The difference in diameter of the two rollers causes the speed of the conveyed object to be approximately 2.3 times the speed of the chain.

#### •When accumulating

The large roller rotates freely in the opposite direction of the small roller, allowing conveyed objects to accumulate. This is called free flow conveying.

- Energy saving — Rolling friction of the chain is less than conventional type, so the required power of the conveyor is less.
- Longer life — Lower chain speed (1/2.3) and large allowable roller load provide longer chain life.



### Large Size DOUBLE PLUS® Chain Specifications

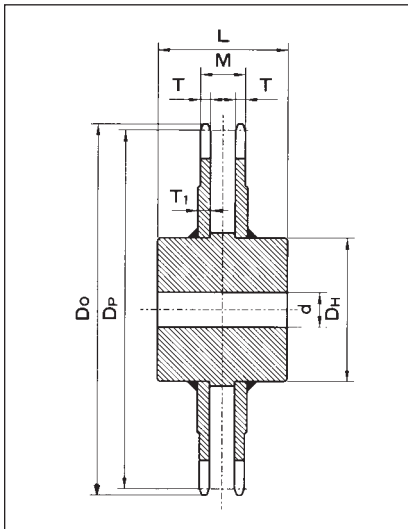
All dimensions are in inches unless otherwise indicated.

Chain Number	Maximum Allowable Tension (lbs.)	Maximum Allowable Roller Load (lbs.)	Pitch	P	R <sub>1</sub>	R	W <sub>1</sub>	W <sub>2</sub>	W	T	H	D	L <sub>1</sub> +L <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>	B	G	Approx. Weight (lbs./ft.)
RF03075VR	925	285	2.953	1.654	1.250	.472	.335	1.181	.125	.866	.313	2.030	.965	1.065	1.452	.571	3.16	
RF03100VR	925	285	3.937	1.654	1.250	.472	.335	1.181	.125	.866	.313	2.030	.965	1.065	1.452	.571	2.69	
RF05100VR	2,200	530	3.937	2.087	1.575	.630	.433	1.535	.177	1.260	.445	2.775	1.330	1.445	1.381	.728	5.37	
RF05150VR	2,200	530	5.906	2.087	1.575	.630	.433	1.535	.177	1.260	.445	2.775	1.330	1.445	1.381	.728	4.03	
RF10150VR	3,500	770	5.906	2.638	2.000	.787	.551	2.125	.250	1.500	.571	3.660	1.770	1.890	2.319	.984	8.06	
RF6205VR	5,950	1,100	6.000	2.972	2.250	.866	.630	2.440	.312	1.750	.625	4.270	2.090	2.180	2.611	1.100	12.09	
RF12200VR	5,950	1,100	7.847	2.972	2.250	.866	.630	2.440	.312	1.750	.625	4.270	2.090	2.180	2.611	1.100	10.07	
RF17200VR	7,700	1,370	7.847	3.385	2.559	.984	.709	2.717	.375	2.000	.750	5.000	2.380	2.620	2.972	1.220	13.43	

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**Sprocket**



**Large Size DOUBLE PLUS® Sprocket Specifications**

Sprocket Number	Number of Teeth	Outer Dia.	Pitch Dia.	Pilot Bore Dia.	Applicable Bore	Hub Dia.	Hub Length	Tooth	Thick.		Approx. Weight (lbs./ft.)
		<b>D<sub>o</sub></b>	<b>D<sub>p</sub></b>	<b>d</b>		<b>DH</b>	<b>L</b>	<b>T</b>	<b>T<sub>1</sub></b>	<b>M</b>	
RF03075VR-6T	6	6.225	5.906	.788	.985 - 1.576	2.561	2.165	.197	.236	1.024	6.61
RF03075VR-8T	8	8.235	7.717	.788	.985 - 1.773	2.758	2.362	.197	.236	1.024	9.92
RF03100VR-6T	6	8.116	7.874	.788	.985 - 1.773	2.758	2.362	.197	.236	1.024	9.92
RF03100R-8T	8	10.717	10.287	.788	.985 - 1.970	3.152	2.756	.197	.236	1.024	16.54
RF05100VR-6T	6	8.077	7.874	.985	1.182 - 2.364	3.743	3.150	.315	.355	1.399	16.54
RF05100VR-8T	8	10.756	10.287	.985	1.182 - 2.758	4.137	3.543	.315	.355	1.399	28.66
RF05150VR-6T	6	11.978	11.181	.985	1.182 - 2.758	4.137	3.543	.315	.355	1.399	33.07
RF05150VR-8T	8	15.839	15.433	1.182	1.379 - 2.955	4.531	3.937	.315	.355	1.399	52.91
RF10150VR-6T	6	12.175	11.181	1.182	1.379 - 3.152	4.925	4.134	.433	.473	1.891	44.09
RF10150R-8T	8	16.075	15.433	1.379	1.379 - 3.349	5.319	4.527	.433	.473	1.891	70.55
RF6205VR-6T	6	13.002	12.000	1.379	1.576 - 3.743	5.713	4.921	.552	.630	2.206	63.93
RF6205VR-8T	8	17.021	15.677	1.379	1.576 - 3.940	5.713	4.921	.552	.630	2.206	92.59
RF12200VR-6T	6	17.100	15.748	1.379	1.576 - 3.940	5.713	4.921	.552	.630	2.206	94.80
RF12200VR-8T	8	21.946	20.575	1.576	1.773 - 4.334	6.107	5.315	.552	.630	2.206	147.71
RF17200VR-6T	6	17.297	15.748	1.576	1.773 - 4.334	6.107	5.315	.591	.630	2.443	103.62
RF17200VR-8T	8	22.143	20.575	1.773	1.970 - 4.728	6.895	5.906	.591	.630	2.443	167.55

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

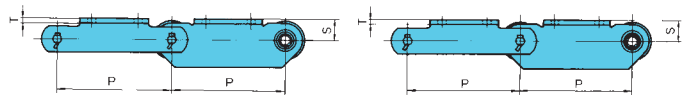
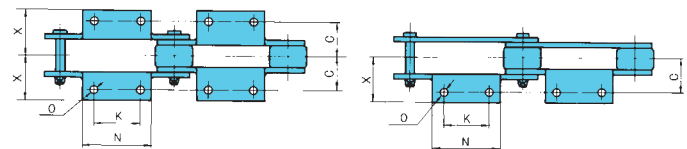
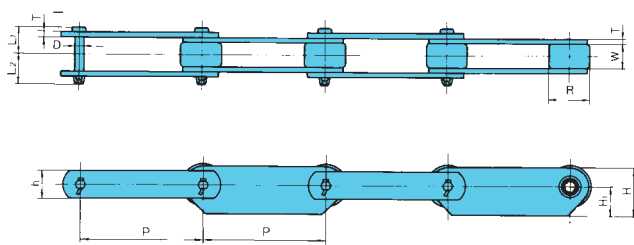
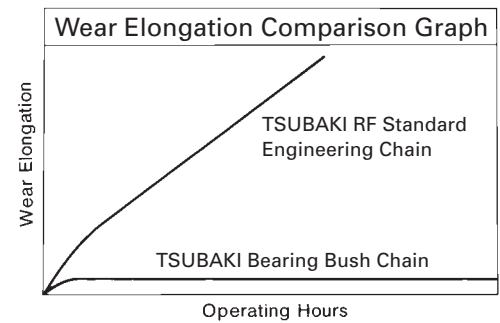
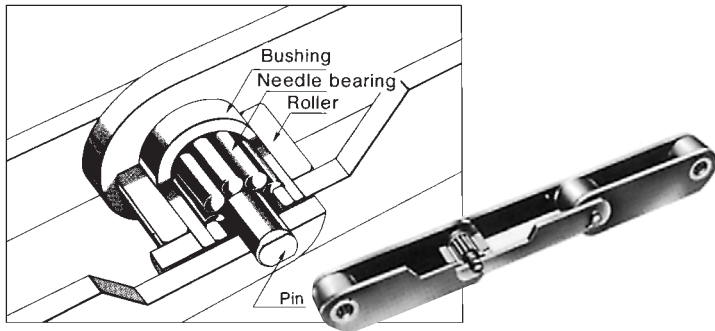
# Bearing Bush Chains

U.S. Tsubaki Bearing Bush chain virtually eliminates initial stretch. With needle bearings placed between the pin and bushing, Bearing Bush chain offers excellent wear life without lubrication.

- Virtually eliminates initial stretch
- Precise positioning
- Strong and long lasting

Major dimensions of the chain and attachments are the same as U.S. Tsubaki RF Type Standard Conveyor Chain.

Bearing Bush chain is suggested for precision applications requiring accurate positioning of the conveyed material.



K-2 attachment

A-2 attachment

## Bearing Bush Chain (RF Engineering Chain Series) Specifications

All dimensions are in inches unless otherwise indicated.

Chain Number	Maximum Allowable Tension (lbs.)	Maximum Allowable Roller Load (lbs.)	Pitch			Pin			Plate			Approx. Weight (lbs./ft.)	
						L <sub>1</sub>	L <sub>2</sub>	D	h	H	H <sub>1</sub>		T
			P	W	R	L <sub>1</sub>	L <sub>2</sub>	D	h	H	H <sub>1</sub>	T	
RFN03075R	550	120	2.953	.634	1.250	.710	.790	.313	.866	1.378	.787	.125	2.01
RFN05100R	1,100	230	3.937	.866	1.575	.985	1.120	.445	1.260	1.850	1.024	.177	3.89
RFN10150R	1,760	400	5.906	1.181	2.000	1.300	1.415	.571	1.500	2.400	1.378	.250	5.84
RFN12200R	2,200	560	7.874	1.461	2.559	1.600	1.690	.625	1.750	2.795	1.575	.312	8.73
RFN17200R	2,860	900	7.874	2.024	3.150	2.030	2.280	.750	2.000	3.346	2.008	.375	14.44
RFN26250R	4,400	1,190	9.843	2.250	3.937	2.190	2.400	.875	2.500	4.134	2.520	.375	19.14
RFN36300R	5,500	1,680	11.811	2.625	4.921	2.680	3.070	1.000	3.000	4.921	2.953	.500	27.87

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

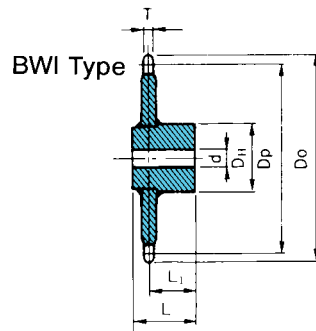
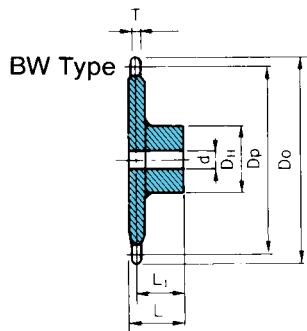
### Bearing Bush Chain (RF Engineering Chain Series) Attachments

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Attachment							Additional Weight per Attachment (lbs.)	
		S	C	X	K	N	T	O	A <sub>2</sub>	K <sub>2</sub>
RFN03075R	2.953	.787	1.181	1.810	1.181	2.165	.125	.394	.11	.22
RFN05100R	3.937	.866	1.378	1.850	1.575	2.560	.177	.394	.18	.36
RFN10150R	5.906	1.102	1.968	2.640	2.362	3.543	.250	.472	.44	.88
RFN12200R	7.874	1.500	2.362	3.110	3.150	4.724	.312	.590	.99	1.98
RFN17200R	7.874	1.770	2.950	3.937	2.640	4.724	.375	.590	1.45	2.90
RFN26250R	9.843	2.165	2.640	4.250	4.921	6.690	.375	.590	2.36	4.72
RFN36300R	11.811	2.755	2.937	5.315	5.906	8.660	.500	.748	3.96	7.92

### Bearing Bush Sprocket Specifications

Sprocket Number	Number of Teeth	Type	Pitch Dia.	Outer Dia.	Tooth Thick.	Bore Dia.		Hub Dia.	Hub Length		Approx. Weight (lbs./ft.)
						Min.	Max.				
			D <sub>p</sub>	D <sub>o</sub>	T			DH	L	L <sub>1</sub>	
RFN03075R-8T	8	BW	7.717	8.235	.512	.788	1.773	2.758	2.403	2.087	11.02
RFN03075R-10T	10	BW	9.555	10.047	.512	.788	1.970	2.955	2.600	2.283	15.43
RFN03075R-12T	12	BW	11.402	11.938	.512	.788	1.970	2.955	2.600	2.283	19.84
RFN05100R-8T	8	BW	10.287	10.756	.670	.985	2.561	3.940	3.310	2.933	26.46
RFN05100R-10T	10	BW	12.740	13.396	.670	.985	2.561	3.940	3.310	2.933	36.38
RFN05100R-12T	12	BW	15.213	15.839	.670	.985	2.955	4.334	3.704	3.327	51.81
RFN10150R-8T	8	BW	15.433	16.154	.906	1.182	3.349	5.122	4.334	3.838	72.75
RFN10150R-10T	10	BW	19.110	19.818	.906	1.379	3.743	5.516	4.728	4.232	104.72
RFN10150R-12T	12	BW	22.819	23.640	.906	1.379	3.940	5.910	4.925	4.429	147.71
RFN12200R-8T	8	BW	20.575	21.631	1.143	1.576	4.334	6.304	5.319	4.331	143.30
RFN12200R-10T	10	BW	25.480	26.516	1.143	1.773	4.728	7.092	5.910	4.921	224.87
RFN12200R-12T	12	BW	30.421	31.481	1.143	1.773	5.122	7.486	6.304	5.315	310.85
RFN17200R-8T	8	BW	20.575	21.867	1.655	1.773	4.728	7.092	5.910	4.646	198.41
RFN17200R-10T	10	BW	25.480	26.753	1.655	1.773	5.122	7.486	6.304	5.039	295.42
RFN17200R-12T	12	BW	30.421	31.717	1.655	1.970	5.713	8.274	7.092	5.827	423.28
RFN26250R-8T	8	BW	25.720	27.304	1.852	1.970	5.713	8.274	7.092	5.669	343.92
RFN26250R-10T	10	BW	31.850	33.451	1.852	1.970	5.713	8.274	7.092	5.669	493.83
RFN26250R-12T	12	BW	38.028	39.636	1.852	1.970	6.304	9.062	7.880	6.457	694.45
RFN36300R-8T	8	BW	30.862	32.860	2.246	2.364	6.895	9.850	8.668	7.008	593.04
RFN36300R-10T	10	BW	38.220	40.227	2.246	2.758	7.486	10.638	9.456	7.795	875.23
RFN36300R-12T	12	BW	45.634	47.635	2.246	3.152	8.274	11.820	10.244	8.583	1,240.09



To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**NOTES**

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# U.S. TSUBAKI ENGINEERING CHAIN DIVISION SELECTED INDUSTRY APPLICATIONS

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**The Union Chain Division of U.S. Tsubaki, Inc., brings fun—and safety—to amusement parks across the United States and Canada. We are the preferred supplier for hundreds of parks and a member of the Amusement Industry Manufacturers & Suppliers (AIMS) International. This helps us keep abreast of the strict requirements with today's safety and quality standards.**

**Union Amusement Park Chains are individually designed to ensure maximum strength and durability. This is of the utmost importance in an application like this where safety and reliability are so important. High quality alloy steels are used when appropriate. And we use special quality enhancing methods during manufacture and rigorous quality assurance procedures, including dimensional measurements, ultimate strength testing, hardness, and metallurgical analysis.**

**Amusement Park Chains are individually manufactured and tested on a made-to-order basis to meet your exact specifications. Please note: The user of Amusement Park Chain and the servicing distributor are required to sign an Indemnification Agreement with Union Chain before we accept an order. We will supply specification certification upon request.**

### **Free Ride Survey from U.S. Tsubaki**

Whether you are creating a new ride or maintaining an existing one, combine our chain engineering expertise with your ride knowledge to select the best chain for your ride. Call 1-800-537-6140 for a free Ride Survey, which includes the following on-site analyses:

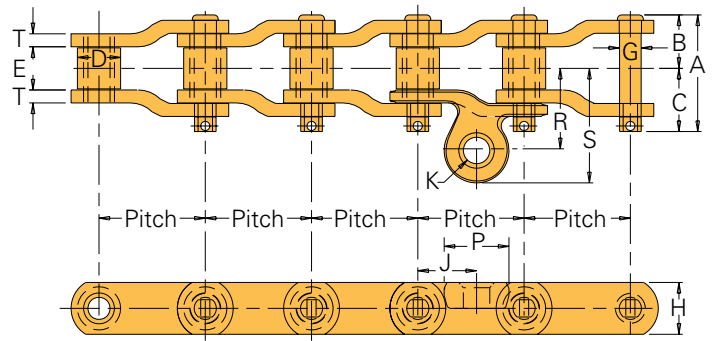
- Design
- Maintenance
- Wear
- Environment

### **THE UNION SOLUTION**

- **Strong, long-lasting chain**
- **Handles shock loads**
- **Reliable service**
- **Weather and water resistant**
- **Quality manufacturing at every step**
- **Made to your exact specifications**

### Paving Machines

When hot asphalt arrives at a road construction site, the mix flows from dump trucks into the paving machine hopper. An asphalt paving machine uses a special scraper conveyor to transfer hot asphalt from the hopper to the road surface. We have designed chains specifically to fit O.E.M. equipment and to function in this hot, abrasive environment.



### Paver Chains

All dimensions are in inches unless otherwise indicated.

Dwg. No.	Pitch	Width				Roller	Pin	Sidebar			Attachment					Bearing Area (in. <sup>2</sup> )	Average Ultimate Strength (lbs.)	Work Load (lbs.)	Approx. Weight (lbs./ft.)
		Overall	Pin Head to CL	Pin End to CL	Inside			Dia.	Hgt.	Th.				Rivet Dia.					
		A	B	C	E	D	G	H	T	P	J	R	S	K					
21460	3.075	3.37	1.55	1.83	1.25	1.25	.63	1.50	.38	1.97	1.70	2.31	3.30	1.02	1.09	56,900	4,375	7.5	
20842	3.075	3.37	1.55	1.83	1.25	1.25	.63	1.50	.38	1.88	1.70	2.38	3.31	.77	1.09	56,900	4,375	7.6	

Indicates this chain is normally stocked. All others are made-to-order.

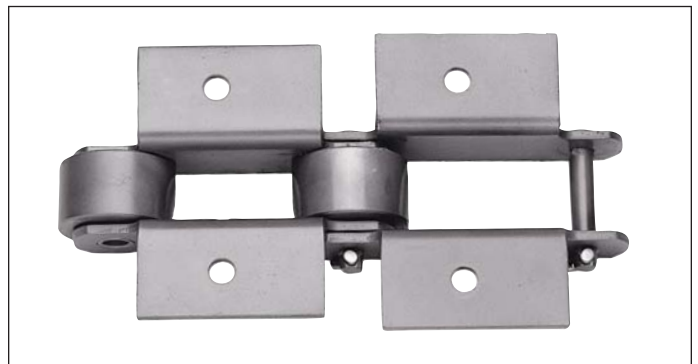
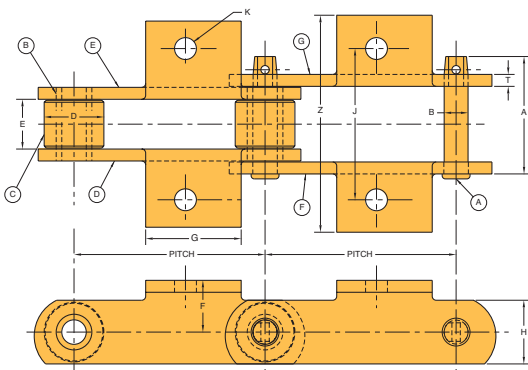
## Asphalt Plants

Three types of chains are typically used in asphalt plants:

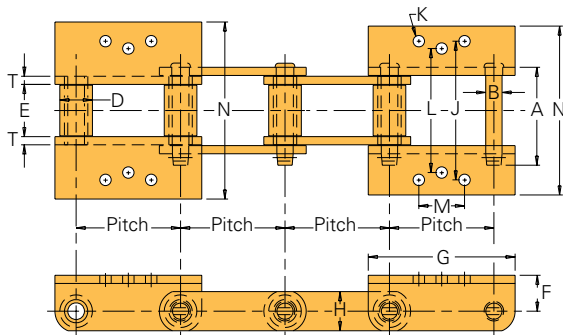
- Inclined Scraper Conveyor Chains are used to move the asphalt mix into storage hoppers.
- Drive Chains are used on rotating drums to mix the aggregate and asphalt.
- Bucket Elevator Chains are used to move aggregates to storage silos and are sometimes used to move the asphalt mix to storage hoppers.

The Union Chain Division supplies Inclined Scraper Conveyor Chains in 4" to 6" pitch with both K- and slotted-M-style attachments. These chains are designed and constructed to give the best combination of strength and toughness. The chains are balanced to ensure continued safe operation. Sidebars are hardened to resist the impact loading that may occur. Rollers are specially heat-treated to resist outside diameter abrasion inherent in asphalt conveyors. These special features make our chains long-lasting and keep your operation running smoothly.

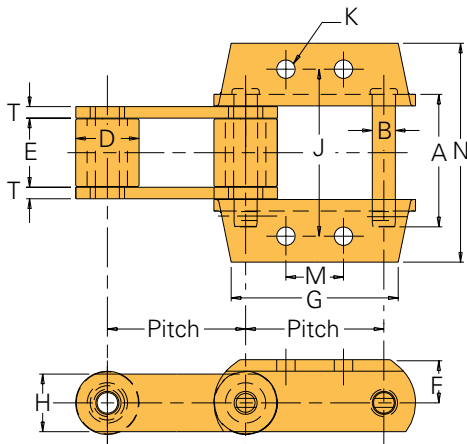
### K-11 Style Attachment



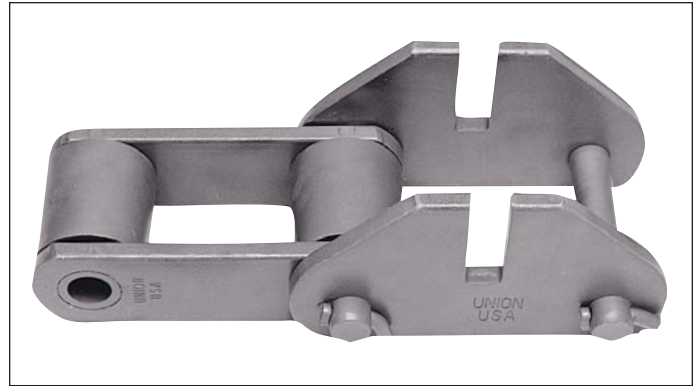
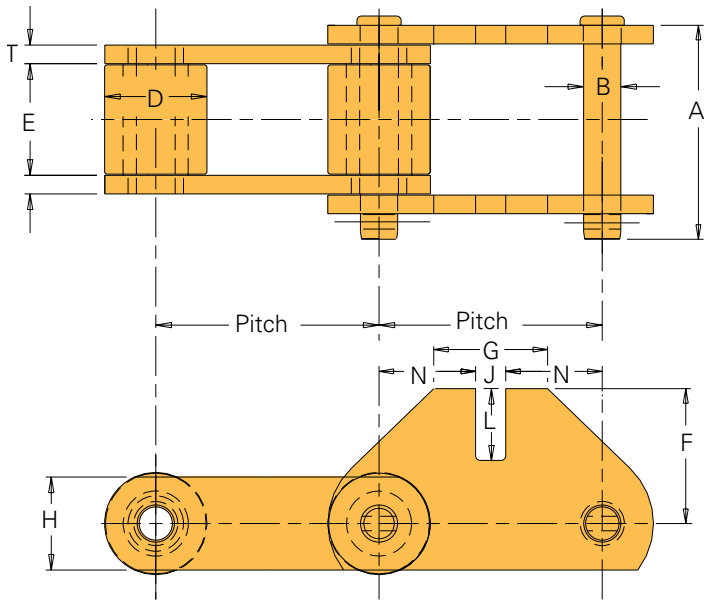
### K-1/K-2 or K-3 Style Attachment



### K-2 or K-44 Style Attachment



### MM-1 Style Attachment



### Incline Conveyor Chart

All dimensions are in inches unless otherwise indicated.

Dwg. No.	Description	Pitch	Pin		Inside Width E	Roller Dia. D	Sidebar		Attachment						Bolt Dia. K	Average Tensile Strength	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)
			A	B			H	T	F	G	M	N	J	L				
P-10024	2111/K-11 E/Pitch	6	3.69	0.75	1.56	1.88	2.00	0.38	1.63	3.00	—	6.79	4.75	—	0.69	83,000	5,900	12.1
P-10020	U-3945/K-3 E/3rd Pitch	4	3.75	0.63	2.00	1.25	1.50	0.31	1.38	5.63	1.75	6.50	5.31	4.75	0.44	44,000	5,740	9.8
P-10021	U-3952/K-2 *E/3rd Pitch	4	4.13	0.75	2.00	1.44	1.75	0.38	1.63	6.00	1.75	6.69	5.50	—	0.53	60,000	7,220	12.8
P-10022	3433 w/K-1/K-2 E/3rd (1.5" roller)	4	4.13	0.63	2.13	1.50	1.50	0.38	1.00	2.82	1.75	4.84	5.31	4.75	0.41	40,000	6,300	9.7
P-10023	U-3940/K-2 E/2nd Pitch	6	4.06	0.75	2.00	1.63	2.25	0.38	2.00	7.38	2.31	7.78	6.25	—	0.56	90,000	7,220	14.8
P-10025	856/K-24 E/2nd Pitch	6	5.75	1.00	3.00	—	2.50	0.50	1.88	7.25	2.50	9.50	7.25	—	0.75	145,000	14,000	16.5
P-10026	U-9856/K-44 E/2nd Pitch	6	5.75	1.00	3.00	2.75	2.50	0.50	1.88	7.25	2.50	9.52	7.25	—	0.81	140,000	14,000	30.0
P-10027	U-9856/MM-1 <sup>1</sup> E/2nd Pitch	6	5.75	1.00	3.00	2.75	2.50	0.50	3.75	3.06	—	2.59	0.81	2.75	—	140,000	14,000	29.1

<sup>1</sup>Verify attachment sidebar slot width and depth dimensions prior to ordering

\* Square hole on attachment

### Make In-Line Inspections Easy

Put machinery access at your fingertips. ONE-TOUCH INSPECTION DOOR® is a dust- and rain-tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are in-stock and ready-to-go for easy installation at the job site. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple. For more information, see the ONE-TOUCH INSPECTION DOOR description in Section C.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

ONE-TOUCH INSPECTION DOOR® is a registered trademark of Tsubaki Conveyor of America, Inc.

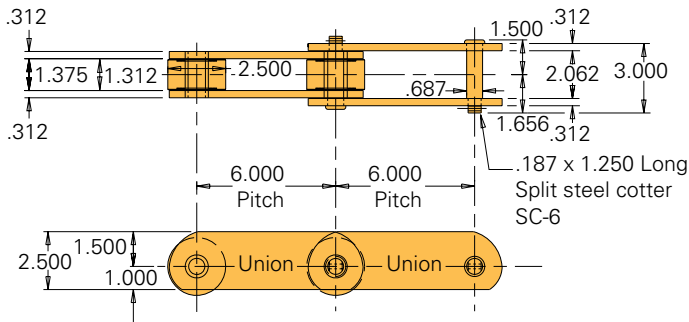
### THE UNION SOLUTION

- High quality, tough chains
- Withstands impact loads
- Reliability
- Durability
- Strong, long-lasting

## High Sidebar Roller Conveyor Chain/ CC5 Chain

CC5 High Sidebar Roller Conveyor Chain is the most widely used conveyor chain in the auto industry, and no wonder:

- CC5 meets industry quality standards, which means better reliability for your application.
- CC5 rolls on any flat, firm surface, which means “instant conveying” for auto parts.
- CC5 can be customized, including welded-on flat tops, hex holes in sidebars for gravity roll conveyors, top rollers, and custom-specified attachments.



### CC5 Specifications

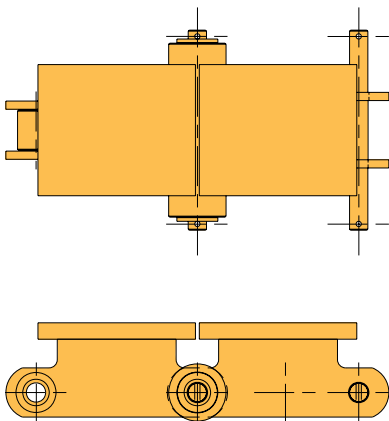
Standard Ultimate Strength	50,000 lbs.
Max. Allowable Working Load	4,800 lbs.
Weight per Foot	11 lbs.

## Flat Top and Gull Wing Chains

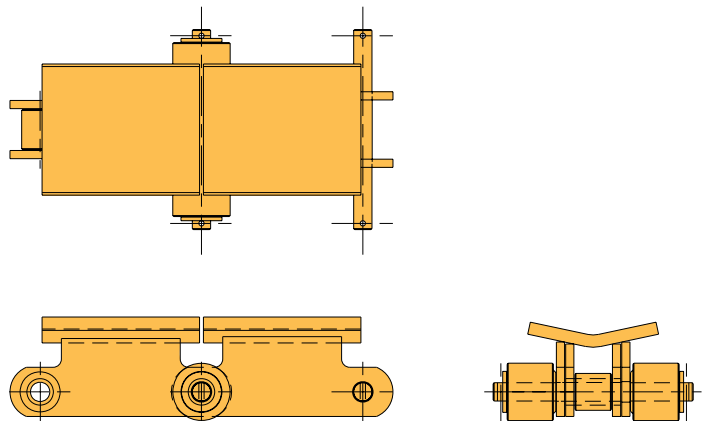
Double strand Flat Top Chain with outboard carrying rollers moves heavy loads with dependability. Top plate surfaces may be smooth, checkered, or nonskid. Chain pitch ranges from 4" to 24". Gull Wing Chain provides an alternative to Flat Top,

keeping the conveyed materials in line during movement. Either style can be made from a variety of materials and heat-treated to stand up to extreme conditions.

### Flat Top Chain



### Gull Wing Chain



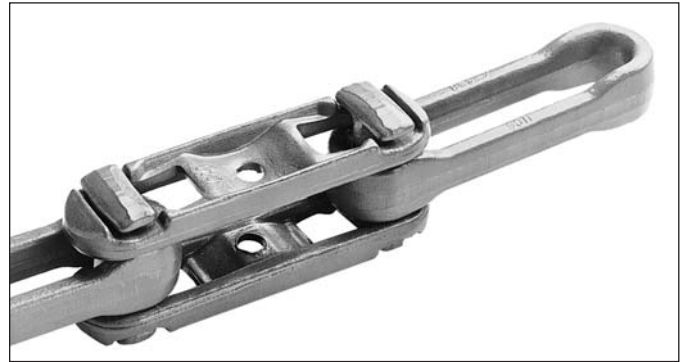
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

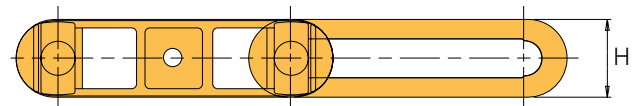
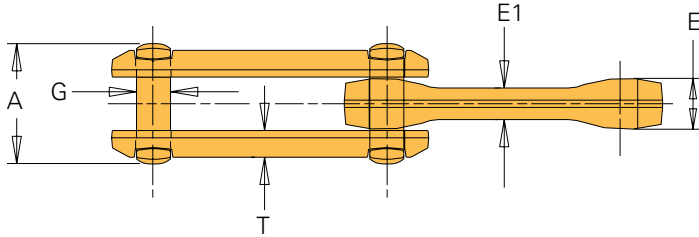
## Drop Forged Rivetless Chains

Drop Forged Rivetless Chains from U.S. Tsubaki offer an optimum combination of chain strength and wear life. Quality heat-treated steel provides hardness where it matters to reduce line breaks. Precise pitch control ensures consistent, reliable performance. Power and free units, multi-lane operations, trolley conveyors, overhead handling systems — choose Union Drop Forged Rivetless Chain whenever dependable material handling is required.

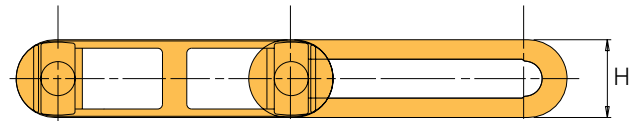
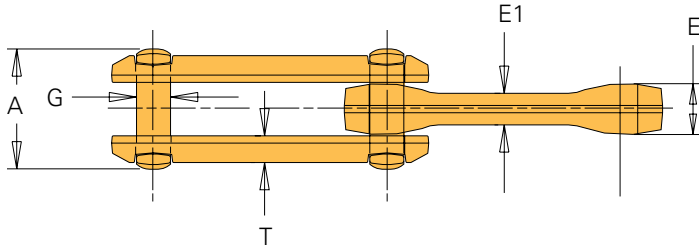
## Drop Forged Rivetless Chain



## X-Style Drop Forged Rivetless Chain




## Standard Drop Forged Rivetless Chain



## Drop Forged Rivetless Chain

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Chain Width			Pin Diameter	Sidebars		Average Ultimate Strength (lbs.)		Maximum Work Load (lbs.)		Average Pitches (ft.)	Approx. Weight (lbs./ft.)
		Overall	Inside Width			Thick.	Height	Alloy Heat Treated <sup>1</sup>	Heat Treated	Normal	Freq. Flex		
			A	E	E1								
X-348 <sup>2</sup>	3.015	1.73	.75	.50	.50	.41	1.09		24,000	2,600	1,200	3.95	2.2
X-458 <sup>2</sup>	4.031	2.19	1.00	.63	.63	.47	1.38	60,000	48,000	4,000	1,900	2.98	3.2
X-678 <sup>2</sup>	6.031	3.03	1.28	.81	.88	.72	2.00	100,000	85,000	7,100	3,300	1.99	6.7
698	6.031	3.75	1.56	1.00	1.13	.56	2.56	150,000	130,000	10,800	5,200	1.99	11.4
998	9.031	3.75	1.56	1.00	1.13	.63	2.53	150,000	130,000	10,800	5,200	1.33	9.0

 Indicates this chain is normally stocked. All others are made-to-order.

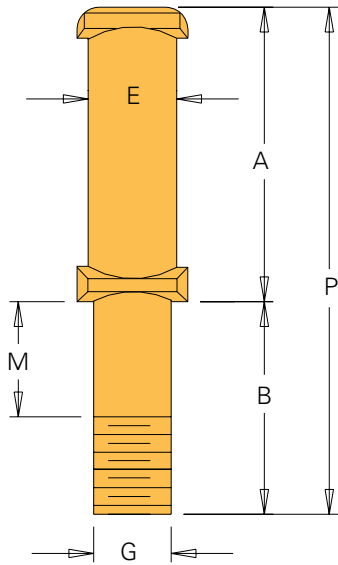
<sup>1</sup>ANSI/SAE 8642

<sup>2</sup>The prefix "X" designates a design proportioned to flex transversely on a shorter radius. The outside bars are made with a mid-pitch panel that strengthens the sidebar and prevents material from falling through the link. X-Styles are used on overhead conveyors and other special applications. Attachments shown fit both Standard and X-Style Chain.

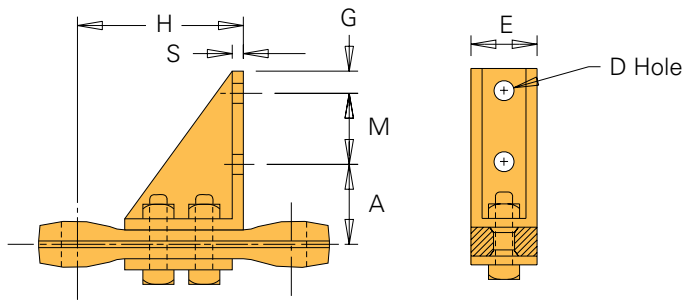
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**Extended Pin**



**S-22 Attachment**



**Drop Forged Rivetless Chain Attachments**

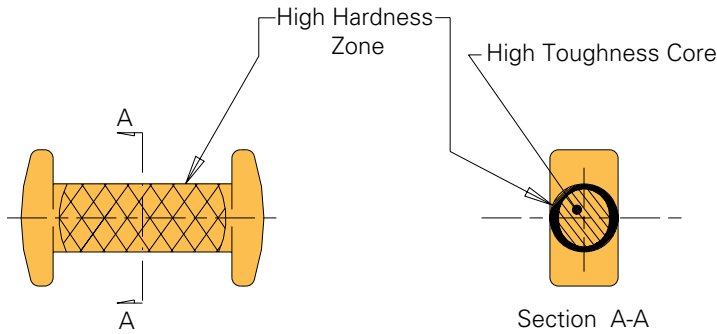
All dimensions are in inches unless otherwise indicated.

Attachment Number	Chain Number	A	B	D	E	G	H	M	P	S	Approx. Chain Weight (lbs./ft.)
Extended Pin	X-458	2.25	1.13		.63	.50		.31	3.38		.3
	X-678	3.13	1.50		.88	.75		.19	4.63		1.6
	X-678	3.13	1.50		.88	.88		.19	4.63		1.6
	998	3.88	1.75		1.13	.75		.38	5.63		1.9
S-22 Attachment	X-458	2.25		.56	1.38	.63	3.18	2.00		.31	2.0
	X-678	2.88		.68	1.81	.88	4.75	2.25		.31	4.7

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.  
 Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



## Higher Hardness Pin for "Ultra Wear Life" Performance



## UWL-Drop Forged Rivetless Chains

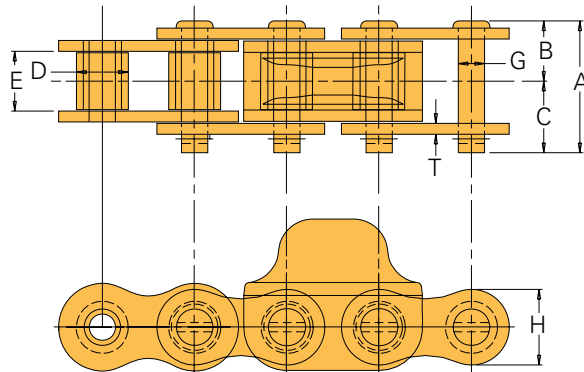
Ultra Wear Life Drop Forged Rivetless Chains are innovative products that extend wear life of rivetless chain 40 percent or more. This extraordinary performance is achieved with special steels and a special pin hardening process. That means significant savings of time and money, by reducing maintenance and changeout costs, decreasing downtime, and lowering repair bills.



## Caterpillar Drive (Power) Chains

Caterpillar Drive Chains must deliver fatigue-free operation. Every part of Caterpillar Drive Chain from the Union Chain Division is top of the line. The roller chain is high-quality, with many drive dogs made of one-piece forged, induction-hardened steel. Special, made-to-order caterpillar chains are also available. The entire assembly is designed to operate flawlessly in combination with Drop Forged Rivetless Chain.


### Caterpillar Drive Dog



## Caterpillar Drive Chain

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Chain Width				Diameter		Sidebars		Driving Dog Pitch Spacing	Average Ultimate Strength (lbs.)	Approx. Weight (lbs./ft.)
		Overall	Pin Head to CL	Pin End to CL	Inside Width	Roller	Pin	Thick.	Height			
		A	B	C	E	D	G	T	H			
160/348	2.000	2.64	1.23	1.41	1.25	1.13	.56	.25	1.90	6	58,000	8.3
160/458	2.000	2.64	1.23	1.41	1.25	1.13	.56	.25	1.90	4 or 6	58,000	8.3 or 10.0
160/678	2.000	2.64	1.23	1.41	1.25	1.13	.56	.25	1.90	6	58,000	9.8

 Indicates this chain is normally stocked. All others are made-to-order.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

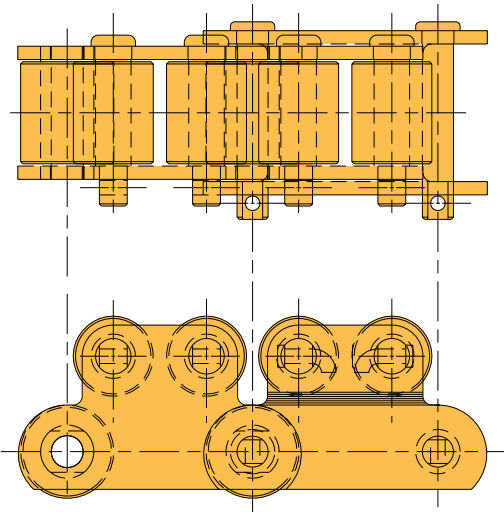
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



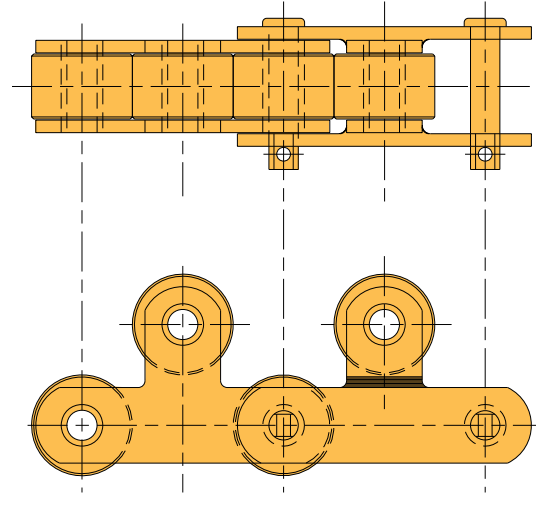
## Top Roller Chains

Build a long-lasting accumulating conveyor for heavy loads. Top Roller Chain is designed for engine production lines or any time you want to temporarily stop or accumulate products or materials without halting the entire line. With Top Roller Chain, you can stop the movement of conveyed products while the line continues to roll beneath. This affords manufacturing with buffer storage between production operations necessary to ensure consistent process throughput.

### 2.609" Pitch Top Roller Chain



### 53R Top Roller Chain



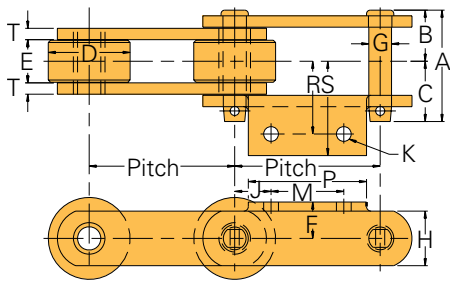
## Make In-Line Inspections Easy

Put machinery access at your fingertips. ONE-TOUCH INSPECTION DOOR® is a dust- and rain-tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are in-stock and ready-to-go for easy installation at the job site. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple. For more information, see the ONE-TOUCH INSPECTION DOOR description in Section C.

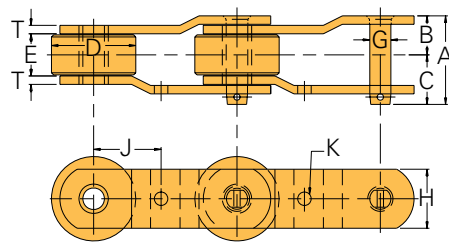
## THE UNION SOLUTION

- **Strong, long-lasting chain**
- **Quality that exceeds industry standards**
- **Variety of sizes and treatments**
- **Custom-specified constructions**
- **Precise pitch control**
- **Smooth bearing areas**

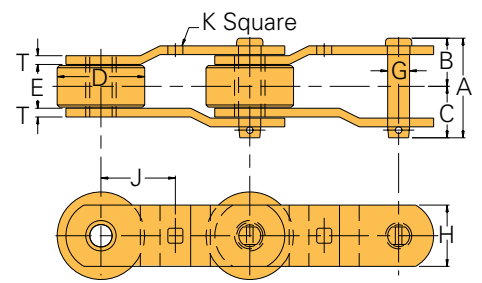
**40001, 60001, 60002**



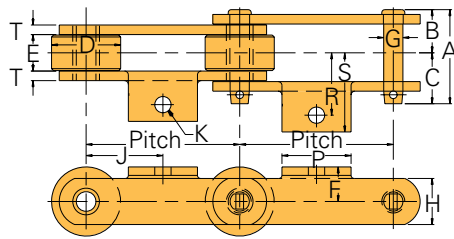
**40002**



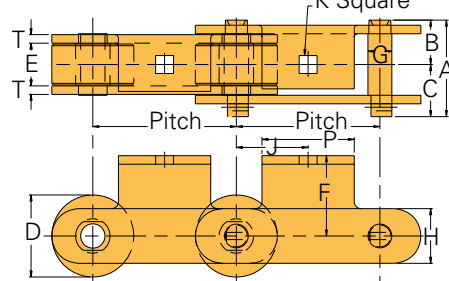
**40003, 42501**



**50001, 52502**



**52501**



**Bottle Washing, Pasteurizing and Sterilizing Chains**

All dimensions are in inches unless otherwise indicated.

Chain No.	Pitch	Width				Roller Dia.	Pin Dia.	Pin Hgt.	Pin Thk.	Sidebar	Attachment						Bearing Area (in. <sup>2</sup> )	Average Ultimate Stgth. (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)
		Overall	Pin Head to CL	Pin End to CL	Inside						D	G	H	T	F	P				
40001	4.000	2.91	1.31	1.60	1.25	2.00	.56	1.50	.25	1.00	3.25	1.00	2.00	2.00	2.59	.38	.97	27,000	3,440	7.4
40002	4.000	2.63	1.12	1.51	.94	2.50	.56	1.50	.31			2.00				.38	.69	50,000	3,075	7.8
40003	4.000	3.09	1.50	1.59	1.25	2.50	.56	1.50	.31			2.00				.43	1.03	31,000	3,995	10.6
42501	4.250	2.84	1.37	1.47	1.25	2.50	.56	1.75	.25			2.13				.43	1.03	31,000	3,825	8.9
50001	5.000	3.06	1.39	1.67	1.19	2.25	.63	1.50	.31	1.13	2.25	2.50		1.69	2.31	.50	1.01	43,000	3,995	8.0
52501	5.250	3.53	1.62	1.91	1.56	3.00	.88	2.00	.31	2.94	3.38	2.63				.66	1.89	47,000	6,890	15.2
52502	5.250	3.41	1.56	1.85	1.44	2.75	.63	1.50	.31	3.06	2.25	2.63		2.00	2.80	.53	1.26	37,000	4,645	11.0
60001	6.000	3.06	1.39	1.67	1.19	2.50	.63	1.50	.31	1.25	3.25	1.94	2.13	2.08	2.69	.38	1.01	46,000	3,995	8.3
60002	6.000	3.06	1.39	1.67	1.19	3.00	.63	1.50	.31	1.25	3.25	1.94	2.13	2.08	2.69	.38	1.01	46,000	3,995	9.7

**Make In-Line Inspections Easy**

Put machinery access at your fingertips. ONE-TOUCH INSPECTION DOOR® is a dust- and rain-tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are in-stock and ready-to-go for easy installation at the job site. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple. For more information, see the ONE-TOUCH INSPECTION DOOR description in Section C.

**THE UNION SOLUTION**

- **Manufactured to tight tolerances**
- **Strong, long-lasting chain**
- **Corrosion resistant**
- **High durability**
- **Reliable in-plant service**

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

ONE-TOUCH INSPECTION DOOR® is a registered trademark of Tsubaki Conveyor of America, Inc.

## Maximum Strength

The Union 4000 Series Chains are made of specially selected 100% alloy steel, and they possess ultimate strength ratings approximately 45% higher than competitive brands. A special piercing technique developed by U.S. Tsubaki makes exceptionally smooth pitch holes for high interference fits. This piercing method, combined with shot peening, yields maximum fatigue strength and protects against failure—even when chains are challenged by the most severe applications.

### Union Builds the Strongest Chain

Chain Number	Average Tensile Strength	
	4000 Series	Competitor's Product
4856	145,000	100,000
4857	174,000	130,000
4859	264,000	200,000
4864	275,000	200,000

### Three-Year Limited Performance Guarantee Union Chain Division, U.S. Tsubaki, Inc.

U.S. Tsubaki, Inc., guarantees the Union Chain Division Cement Plant Chains, when used in Cement Plant Service only, will not fail or wear out beyond 5% chain elongation for three (3) years and will not fail due to any defect in material or workmanship. In the event of any such wear out, the chain will be replaced in accordance with the following schedule.

**1st Year:** Chain replaced at no charge.

**2nd Year:** Chain replaced at 40% of original price.

**3rd Year:** Chain replaced at 70% of original price.

Improper installation or maintenance, or any abuse, alteration, inappropriate grinding of pins for insertion purposes, etc., will void this guarantee. The guarantee set forth above is exclusive of all other guarantees or warranties, express or implied, and extend only to buyer and to no other person. U.S. Tsubaki's liability is limited to replacement of the non-conforming or defective product, and buyer waives all other remedies, including but not limited to, all rights to consequential, special or incidental damages, including but not limited to damages resulting from personal injury, death, or damage to or loss of use of property. This guarantee commences upon the date of installation, or one year after the date of shipment, whichever occurs first. All Warranties of Merchantability or Fitness for Particular Purpose are Hereby Excluded.

## Precision Manufacturing Eliminates Staggered Pins

Side bowing (when the chain hangs crooked) has been a problem in bucket elevator chains for years. The condition occurs when the pitch of the outer sidebars is not held to tight tolerances or when pin links are not built straight. Staggering pins or pin links had been believed to correct the problem.

We have a better idea. We manufacture 4000 Series Chains to exacting tolerances using state-of-the-art production equipment and methods. This enables us to produce high performance cement plant elevator chains **without** staggered pins. Union 4000 Series Chains hang straight and true without compromising strength or wear life.

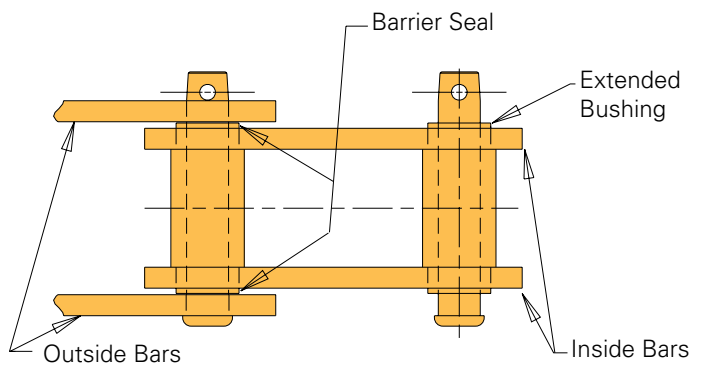
## Maximum Wear Life

Extra deep induction hardening of pins and carburizing of bushings provide unsurpassed wear life. After years of testing, we developed a high hardness specification so our 4000 Series Chains resist abrasion by cement. This ensures maximum wear life and the toughness necessary to survive extended periods of service in cement plant bucket elevators.

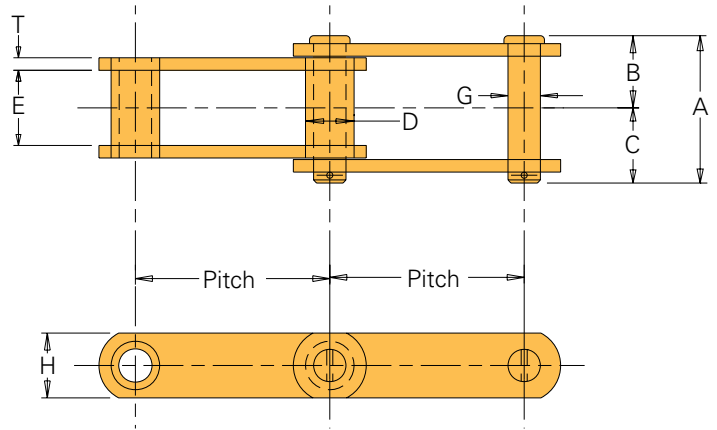
## Barrier Seal Design for Longer Wear Life

The 4000 Series Chain bushings extend beyond the inside sidebar to establish a barrier. This virtually eliminates abrasive material from entering the pin/bushing joint area. This heavy-duty hardened part will not wear out prematurely, and it will not separate from the chain and contaminate current plant production batches. Located between the inside and outside sidebars, the barrier seals prevent a build-up of material due to "flooding" of the elevator boot section, which can result in dry cavitation of pins.

### 4000 Series Elevator Chain with Barrier Seals



## 4000 Series Cement Plant Bucket Elevator Chains

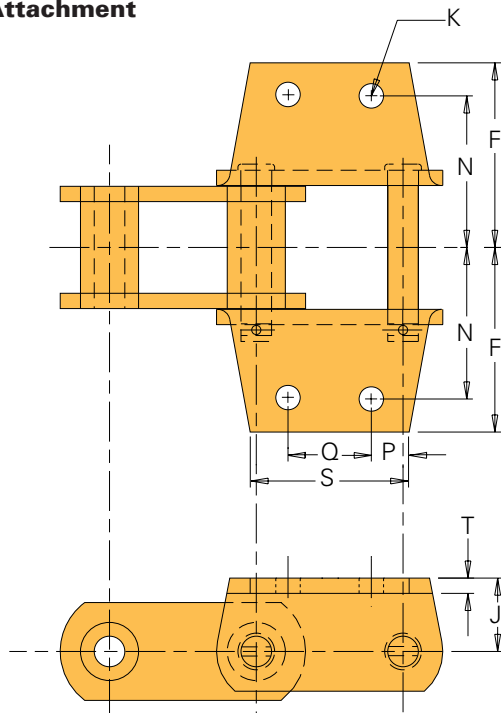


## 4000 Series Cement Plant Bucket Elevator Chains

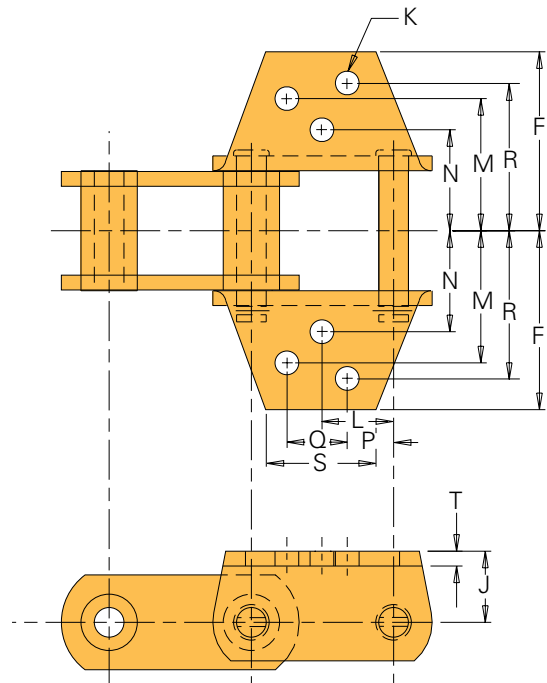
All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Width				Bushing Diameter	Pin Diameter	Sidebars		Approx. Weight (lbs./ft.)
		A	B	C	E			Height	Thickness	
4856	6.000	6.13	2.88	3.22	3.00	1.75	1.00	2.50	.50	16.5
4857	6.000	6.13	2.88	3.22	3.00	1.75	1.00	3.25	.50	21.0
4859	6.000	7.38	3.56	3.81	3.75	2.38	1.25	4.00	.63	34.0
4864	7.000	7.38	3.56	3.81	3.75	2.38	1.25	4.00	.63	31.0

## K-24 Attachment



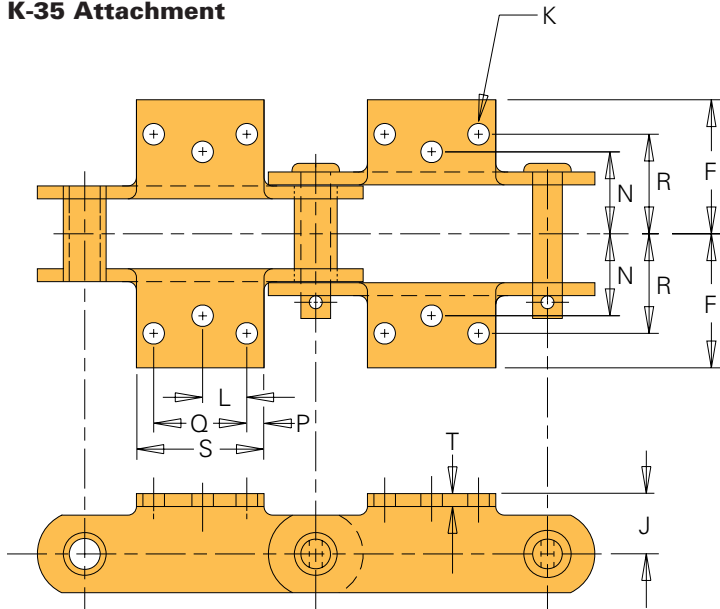
## K-3 Attachment



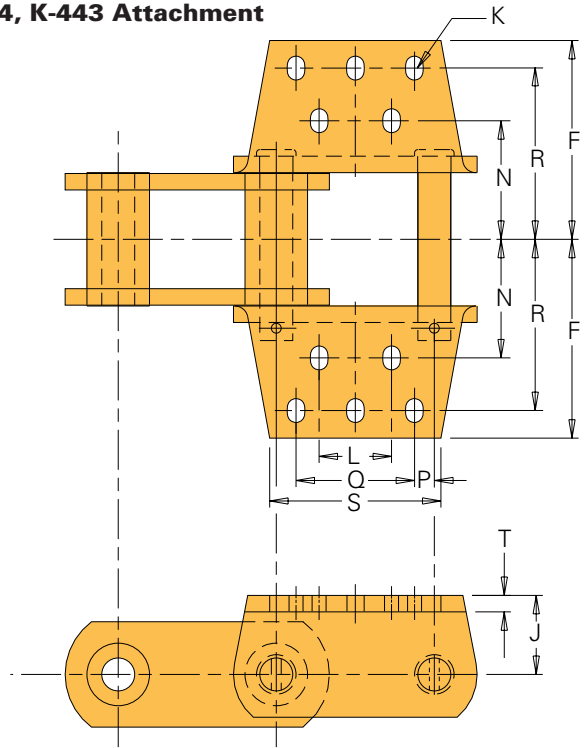
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**K-35 Attachment**



**K-44, K-443 Attachment**



**4000 Series Chains with Attachments**

Attachment Number	Chain No.												Approx. Weight (lbs./ft.)
		N	M	R	F	L	Q	S	P	K	J	T	
K-24	4856	3.63			4.75		2.50	7.25	1.75	.63 <sup>1</sup>	1.88	.50	27.5
K-3	4856	3.28	5.47	6.03	6.75	3.00	2.75	4.25	1.63	.50	1.88	.50	27.5
K-35	4856	3.63		6.13	6.75	1.25	2.50	6.44	1.75	.63	1.88	.50	27.5
K-44	4857	3.50		6.00	7.25	3.50	3.50	6.56	1.25	.50	2.50	.50	42.0
	4859	4.50		6.50	7.55	2.75	4.50	6.50	.75	.63	3.00	.63	67.0
K-443	4864	4.50		6.50	7.55	3.75	5.50	8.56	.75	.63	3.00	.63	53.0

Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Hole can also be supplied for 1/2" size bolt.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

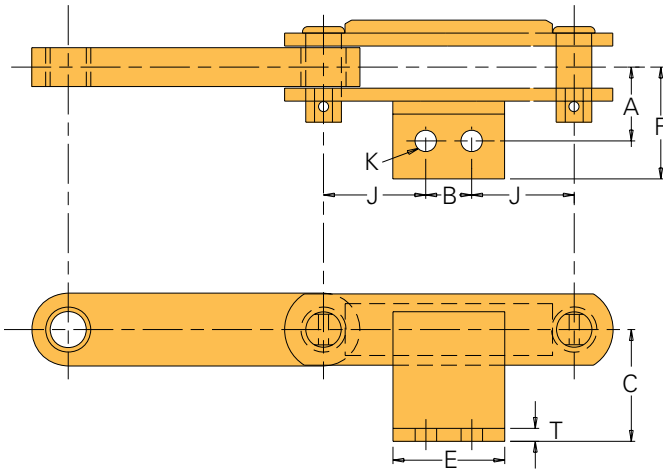
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## Stack Reclaimers

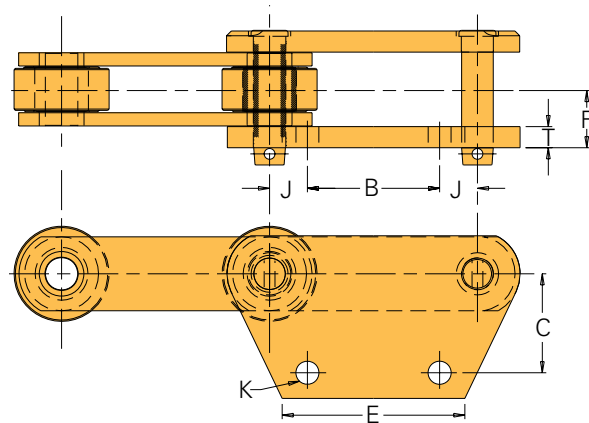
Stack Reclaimers are popular when heavy industrial processes require that large storage piles of lump material are necessary. Reclaimer chain and flight assemblies function like scraper conveyors, less the trough, with flight blades that push material toward a belt feeding conveyor. The reclaimer conveyor's chain with digging flights are supported by rails and structure which span over or across the pile being reclaimed for transfer to plant processes.

Chain for this demanding application should provide the longest service life to achieve the best overall value. Chain must have large bearing areas, high hardnesses and deep case depths to provide the best performance. Union Chain Division engineers have used these principles while retrofitting many reclaiming conveyors with chain and sprockets, achieving service life which is longer than O.E.M. chains. For the superior value and performance, Union Chain is your best choice.

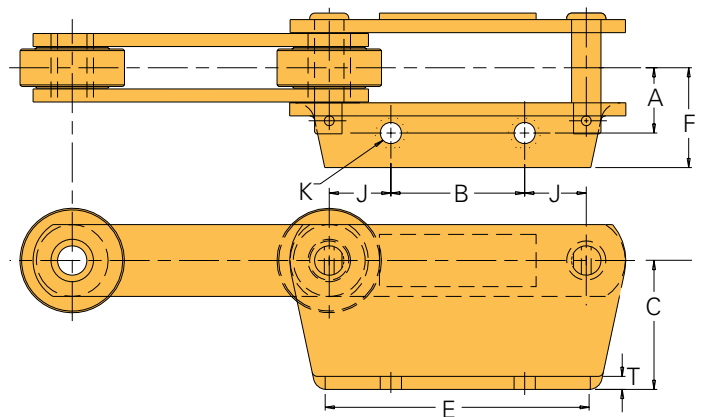
**22568**



**22535**



**22220**



### Reclaimer Chains

All dimensions are in inches unless otherwise indicated.

Drawing Number	Pitch	A	B	C	E	F	J	K	T
		22568	9.843	2.85	1.77	4.31	4.31	4.31	4.04
22535	9.843		6.26	4.69	8.65	2.11	1.79	1.09	1.00
22220	9.843	2.50	5.12	4.94	10.15	3.82	2.36	.81	.50

Note: Reclaimer chains are normally manufactured on a made-to-order basis. A few standard styles are shown above.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## Make In-Line Inspections Easy

Put machinery access at your fingertips. ONE-TOUCH INSPECTION DOOR® is a dust- and rain-tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are in-stock and ready-to-go for easy installation at the job site. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple. For more information, see the ONE-TOUCH INSPECTION DOOR description in Section C.

### THE UNION SOLUTION

- **Maximum strength— Approximately 45% greater than the competition**
- **High hardness to resist abrasion**
- **Precision manufacturing**
- **Exacting tolerances**
- **Smooth pitch holes for high interference fit and increased fatigue resistance**
- **Quality guarantee**

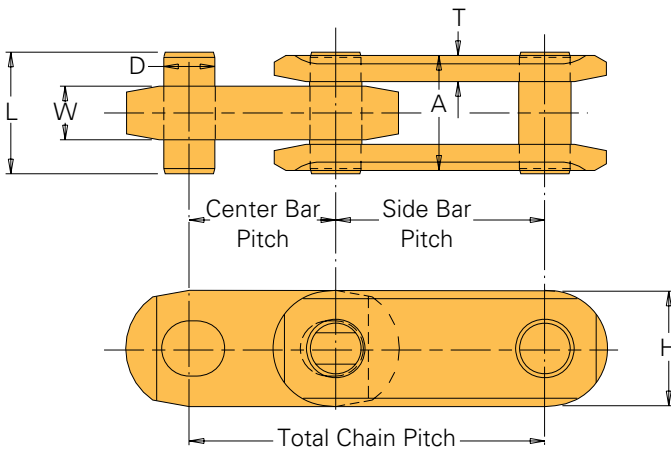


In-floor conveyors at dairy plants generally move case weights of up to 15,000 pounds; however, Union Dairy Handling Chains have an ultimate strength rating of up to 48,000 pounds per strand. The added strength means longer-lasting chain for your application—chain that can stand up to variable or shock loads and keep performing.

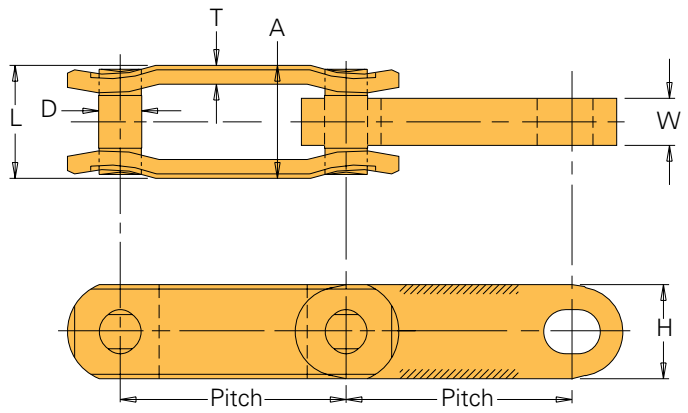
We have a variety of Dairy Handling Chains in stock; we've listed a few standard chains in the following chart. We can also manufacture a chain to your exact specifications. With Union you get the flexibility to make your business succeed.



**DF-3498**



**DF-3500 and DF-3910**



Note: Hatching shows induction hardened area.

**Dairy Case Conveyor Chain**

All dimensions are in inches unless otherwise indicated.

Chain Number	Chain Width		Link Plate		Pin		Minimum Flex Radius	Average Tensile Strength (lbs.)	Maximum Allowable Work Load (lbs.)	Approx. Weight (lbs./ft.)	
	Pitch	Overall Width	Width of Inner Link								
		A	W	T	H	D	L				
DF-3498	1.750 2.500	1.45	.64	.31	1.40	.63	1.45	18.00	50,000	4,000	3.9
DF-3500	2.500 3.000	1.50	.63	.25	1.25	.57	1.46	20.00	48,000	4,000	3.3
DF-3910	3.000 3.000	1.50	.63	.25	1.25	.57	1.46	22.00	48,000	4,000	3.3

Indicates this chain is normally stocked. All others are made-to-order.

Note: For additional chain application information, refer to Section A (Engineering Class Chains) Double Flex Bar and Pin Chains.

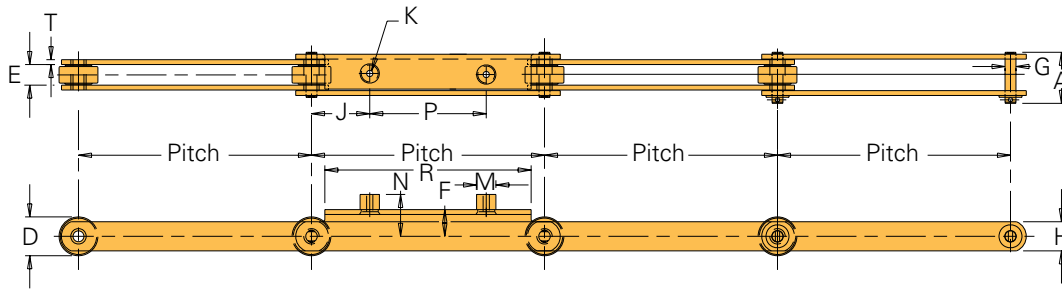
**THE UNION SOLUTION**

- **Very high ultimate strength ratings**
- **Reliable in-plant service**
- **Quality construction**
- **Long-lasting**
- **In-stock or made-to-order flexibility**

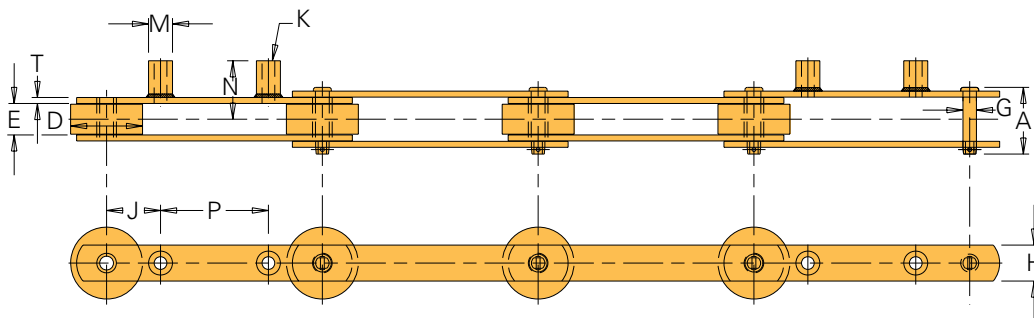
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

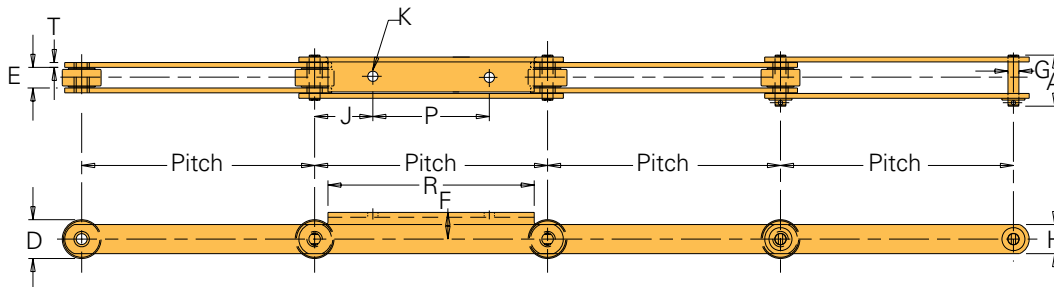
**90003, 12001**



**90004, 12002**



**12003**



**Sortation Chains**

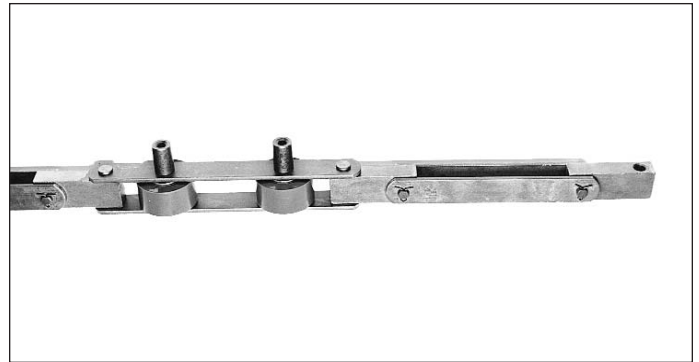
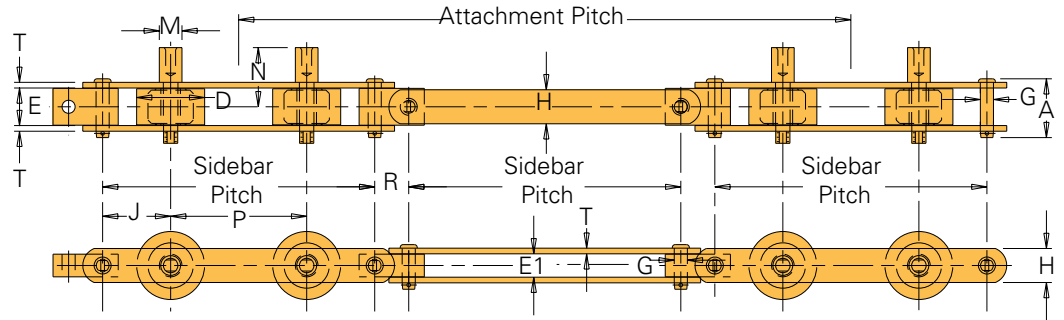
All dimensions are in inches unless otherwise indicated.

Chain No.	Pitch	Overall	Roller Dia.	Inside Width	Pin Dia.	Sidebar		Attachment						Bolt Dia.
						H	T	F	J	P	M	N	R	
90003	9.000	2.66	2.00	1.31	.56	1.50	.25	1.38	1.50	6.00	1.00	2.94	7.63	.50
12001	12.000	2.73	2.00	1.31	.56	1.50	.25	1.38	3.00	6.00	1.00	2.94	10.63	.50
90004	9.000	2.78	3.00	1.31	.56	1.50	.25		1.50	6.00	1.00	2.44		.50
12002	12.000	2.78	3.00	1.31	.56	1.50	.25		3.00	6.00	1.00	2.44		.50
12002	12.000	2.78	3.00	1.31	.56	1.50	.25		2.25	7.50	1.00	2.44		.63
12003	12.000	2.73	2.00	1.06	.56	1.50	.25	1.38	3.00	6.00			10.63	.50

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## 27001, 30001



### Bi-Planer Sortation Chains

All dimensions are in inches unless otherwise indicated.

Chain No.	Sidebar Pitch	Att. Pitch	Overall	Roller Dia.	Inside Width		Pin Dia.	Sidebar			Attachment				
					E	E1		H	T	J	P	M	N	R	
27001	12.000	27.000	2.59	3.00	1.66	1.03	.63	1.50	.25	3.00	6.00	1.00	2.61	1.50	
30001	12.000	30.000	2.59	3.00	1.66	1.03	.63	1.50	.25	3.00	6.00	1.00	2.61	3.00	

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

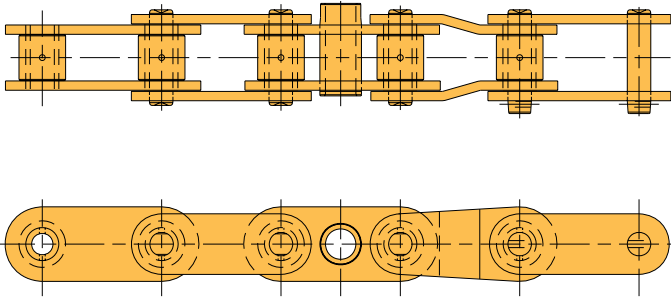
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## Make In-Line Inspections Easy

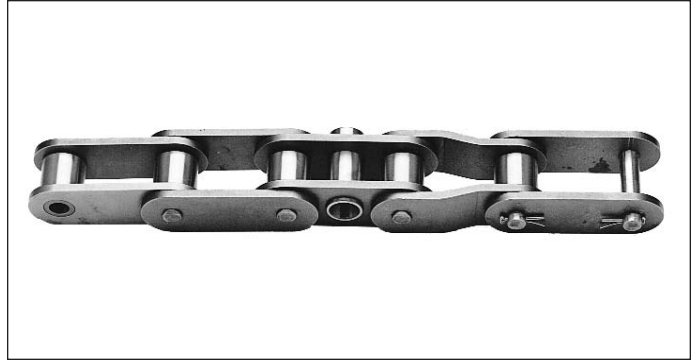
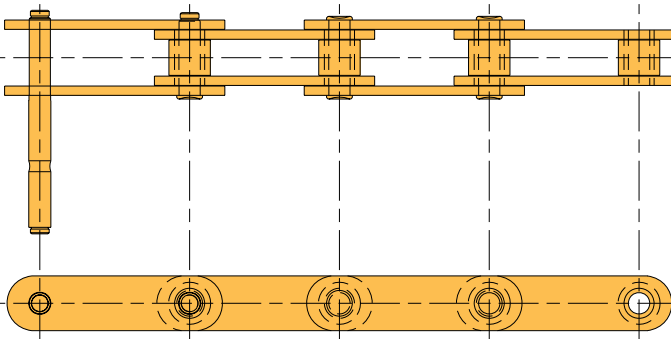
Put machinery access at your fingertips. ONE-TOUCH INSPECTION DOOR® is a dust- and rain-tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are in-stock and ready-to-go for easy installation at the job site. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple. For more information, see the ONE-TOUCH INSPECTION DOOR description in Section C.

### THE UNION SOLUTION

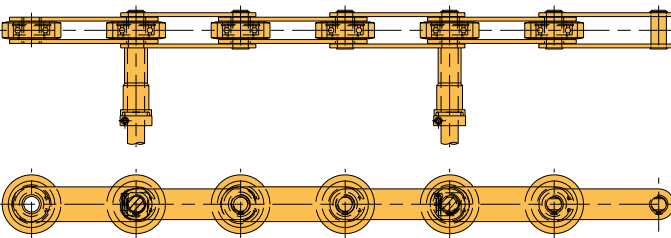
- **Automatic welding for sound, consistent welds**
- **Strong, long-lasting chain**
- **Special heat-treatment**
- **Microprocessor-controlled furnaces**
- **In-plant quality checks**

**Style 1**

- 3.200 Pitch
- Attachment: .812 Nom. I.D. Mid Pitch Bushing Link and Offset Pitch Every 5th Pitch
- Minimum Ultimate Strength 52,000 lbs.

**Style 2**

- 3.986 Pitch
- Attachment: .588 Nom. Dia. Extended Pin Every 4th Pitch
- Size A) Minimum Ultimate Strength 41,000 lbs.  
Size B) Minimum Ultimate Strength 56,000 lbs.  
Size C) Minimum Ultimate Strength 80,000 lbs.

**Style 3**

- 5.333 Pitch Conveyor (2 Strand Assembly)
- Attachment: Through Rods Every 3rd Pitch (.875 Nom. Dia. x 40.156 Nom. Working Length Between Strands)
- Minimum Ultimate Strength 23,800 lbs.

**THE UNION SOLUTION**

- **Strong, long-lasting chain**
- **Carburized case-hardened pins and bushings**
- **Reliable in-facility performance**
- **Strand-length quality specifications**
- **Meets ASME A17.1 Code**
- **Manufactured in precision-matched pairs**

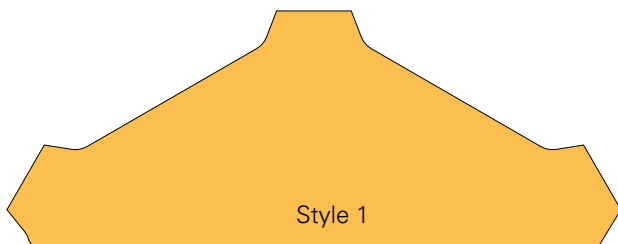
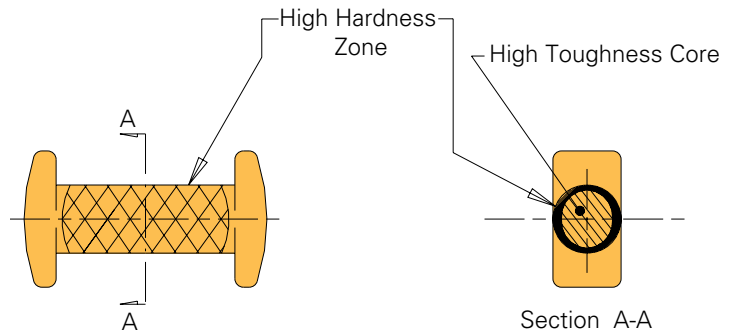
## Red Meat Processing

Delrin (Acetal) Bushed Conveyor Chain is used primarily in meat processing and packing plants. Even in these wet, corrosive environments, the Delrin (Acetal) insert eliminates the need for lubrication. These chains feature K-2 attachments; Acetal insert rollers; stainless steel bushings; and electro-galvanized sidebars, pins, and rollers, see page B-33. You get lube-free operation for a clean environment.

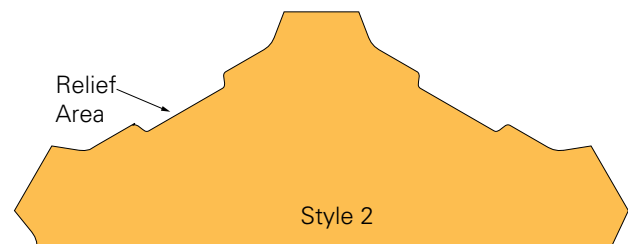
Trolley conveyors and long, complex, overhead conveyor systems such as on the primary processing line in a slaughterhouse require Drop Forged Rivetless Chain, see page B-34. The open joint construction allows for easy washdowns and helps prevent contamination. For extended wear, select Ultra Wear Life-Drop Forged Rivetless Chain, an innovative product that extends wear life of rivetless chain 40 percent or more. This extraordinary performance is achieved with special steels and a proprietary pin hardening process. The result is a pin with a very hard, wear-resistant surface over a ductile core. UWL-Drop Forged Rivetless Chain is available in both X-Style and Barloop Style.

Pay particular attention to the style of sprocket you select and use with Drop Forged Rivetless Chain. Some attachments on overhead slaughterhouse lines, including slider attachments, require additional clearance that is not accounted for in standard sprockets. The Union Chain Division offers sprockets that are specially designed with relief areas to accommodate attachment protrusion, helping the Drop Forged Rivetless Chain to stay in the sprocket and preventing premature chain joint wear.

## Higher Hardness Pin for “Ultra Wear Life” Performance

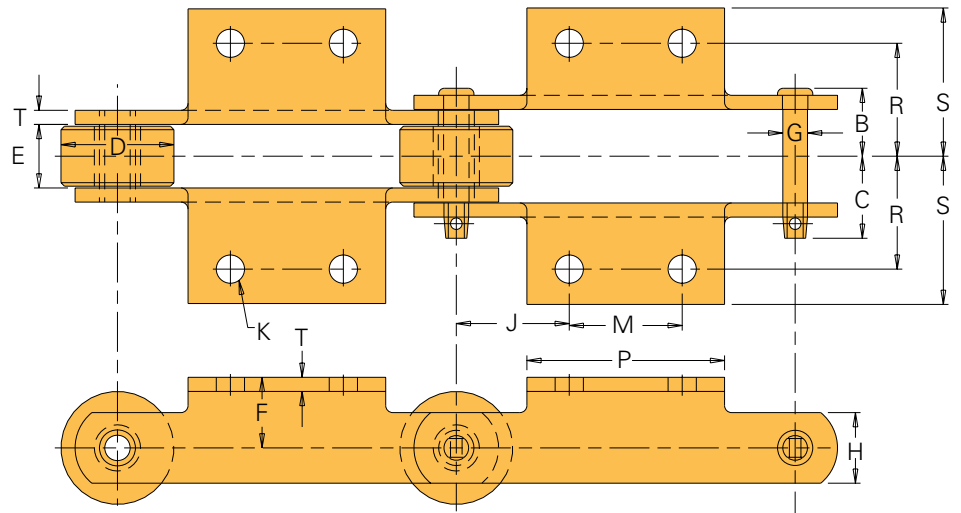


Standard sprockets are not designed for some applications like overhead slaughterhouse lines where the attachment requires extra clearance.



Drop Forged Rivetless Sprockets from the Union Chain Division have a “relief area” that allows for attachment protrusion. This means better articulation and longer wear life.


## Red Meat Processing Chain



### Red Meat Processing (DS Series Chains)

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Chain Width		Inside Width		Roller		Pin		Sidebar		Bushing	Attachment						Bolt Dia.	Avg. Ult. Stgth. (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)
		B	C	E	D	Matl. <sup>2</sup>	G	Matl. <sup>2</sup>	H	T	Matl. <sup>2</sup>		Matl. <sup>2</sup>	P	M	J	R	S				
DS-1113 <sup>1</sup>	4.040	1.47	1.75	1.31	2.00	AHT	.63	CHT	1.50	.31	HC	SSHT	2.88	1.50	1.27	2.06	2.77	1.25	.38	26,000	3,150	11.4
DS-196R	6.000	1.20	1.45	1.13	2.00	CCH	.44	CHT	1.25	.25	HC	SSHT	3.50	2.00	2.00	2.00	2.63	1.25	.38	18,000	1,950	7.5
DS-6272 <sup>1</sup>	6.000	1.47	1.75	1.31	2.25	PMHT	.63	CHT	1.50	.31	HC	SSHT	3.50	2.00	2.00	2.00	2.64	1.38	.38	26,000	3,150	9.2

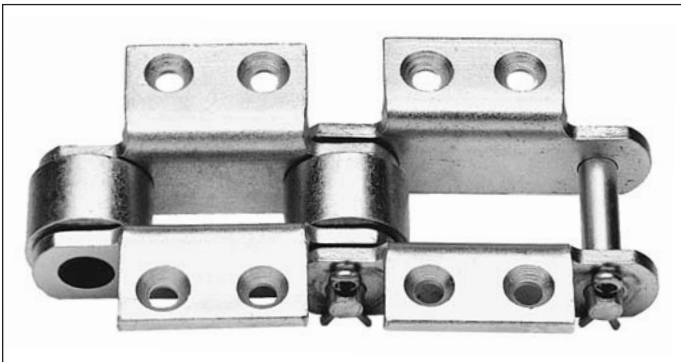
 Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>DS-1113 and DS-6272 furnished with counter sunk attachment holes.

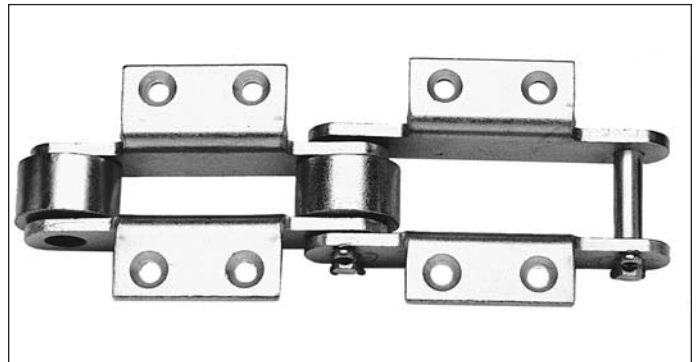
<sup>2</sup>Material: CCH = Carbon case hardened; CHT = Carbon heat-treated; HC = High carbon; SSHT = Stainless steel heat-treated; AHT = Alloy heat-treated; PMHT = Powdered metal heat-treated.

Notes: DS Series Chains have zinc-plated sidebars, pins, and rollers. The bushings are heat-treated stainless steel.

### DS-1113 Chain



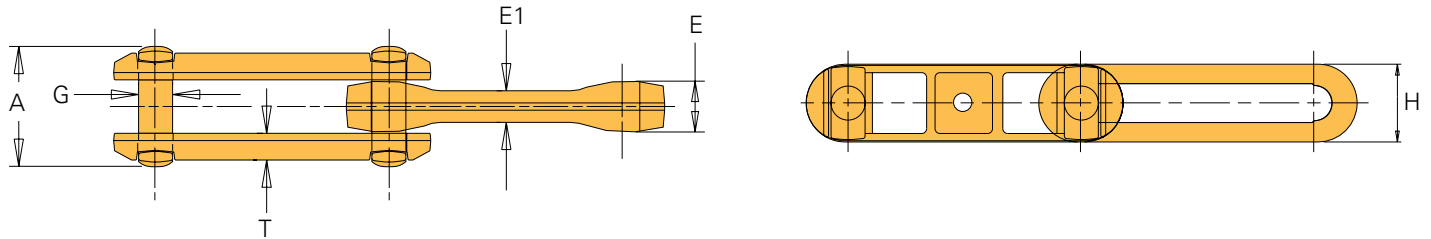
### DS-6272 Chain



To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

### X-Style Drop Forged Rivetless Chain

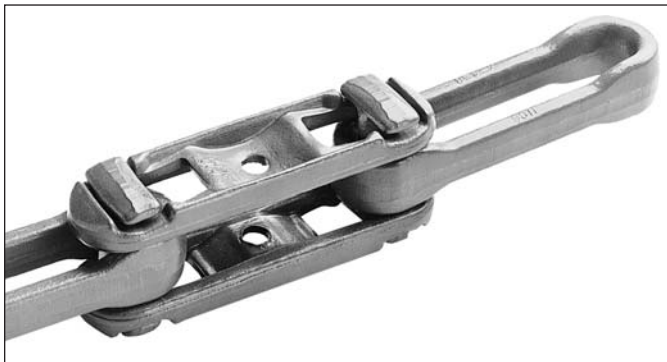


### Red Meat Processing (Drop Forged Rivetless Chains)

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Chain Width			Pin	Sidebars		Average Ultimate Strength (lbs.)		Max. Work Load (lbs.)		Average Pitches (ft.)	Approx. Weight (lbs./ft.)
		Overall	Inside Width		Dia.	Thickness	Height	Alloy Heat Treated <sup>1</sup>	Heat Treated	Normal	Freq. Flex.		
		<b>A</b>	<b>E</b>	<b>E1</b>	<b>G</b>	<b>T</b>	<b>H</b>						
X-678	6.031	3.03	1.28	.81	.88	.72	2.00	100,000	85,000	7,100	3,300	1.990	6.7

<sup>1</sup>ANSI/SAE 8642



To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

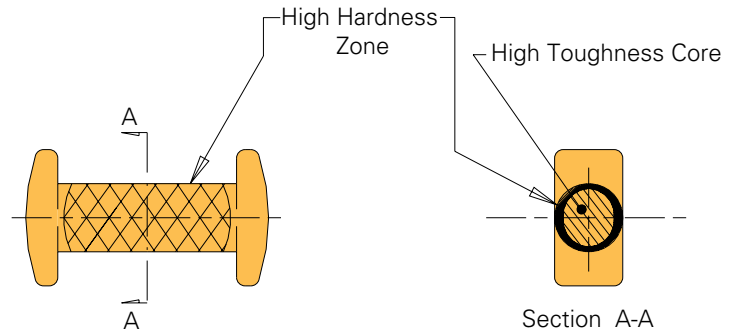


## Poultry Processing

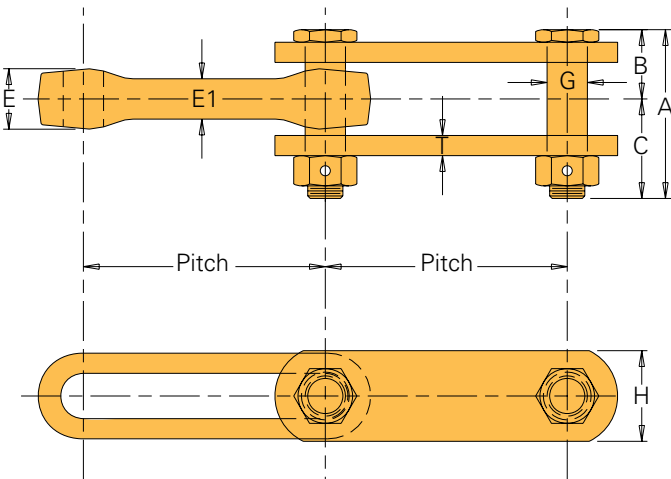
We make several types of chains and sprockets that are used extensively in poultry processing. X-Style and Barloop Style Drop Forged Rivetless Chains are used in overhead trolley conveyors, which move birds and drive processing equipment. The links on the Barloop Style are usually connected with a bolt and threaded lock nut for easy assembly and disassembly.

For extended wear, select Ultra Wear Life-Drop Forged Rivetless Chain, an innovative product that extends wear life of rivetless chain 40 percent or more. This extraordinary performance is achieved with special steels and a proprietary pin hardening process. The result is a pin with a very hard, wear-resistant surface over a ductile core. UWL-Drop Forged Rivetless Chain is available in both X-Style and Barloop Style.

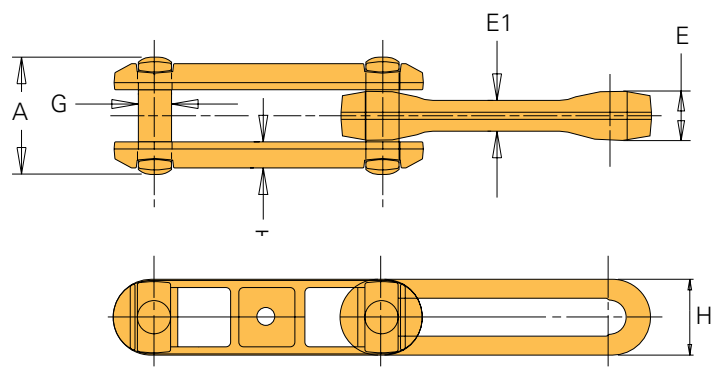
## Higher Hardness Pin for "Ultra Wear Life" Performance



### Barloop Chain



### X-Style Drop Forged Rivetless Chain



## Poultry Processing (Drop Forged Rivetless Chains)

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Chain Width					Pin Dia.	Sidebars			Average Ultimate Strength (lbs.)		Max. Work Load (lbs.)		Average Pitches (ft.)	Approx. Weight (lbs./ft.)
		Overall			Inside Width			Thickness	Height	Alloy Heat Treated <sup>1</sup>	Heat Treated	Normal	Freq. Flex.			
		A	B	C	E	E1								G		
X-348	3.015	1.73			.75	.50	.50	.41	1.09		24,000	2,600	1,200	3.950	2.2	
S-348	3.015	2.09	.86	1.23	.75	.50	.50	.25	1.13		24,000	2,600	1,200	3.950	2.4	
X-458	4.031	2.19			1.00	.63	.63	.47	1.38	60,000	48,000	4,000	1,900	2.980	3.2	

<sup>1</sup>ANSI/SAE 8642

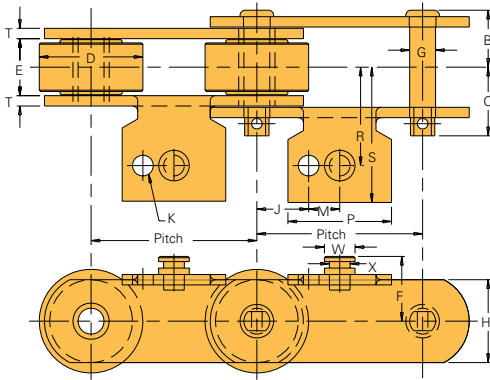
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

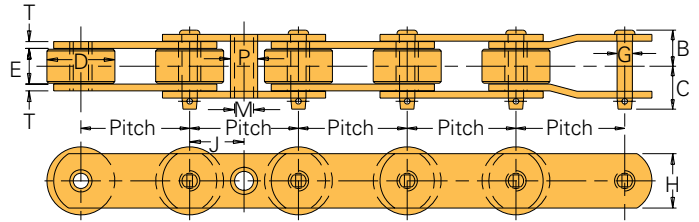
## Commercial Baking Ovens

Engineering Class Chains are excellent in this application because they stand up to high temperatures and can be used in horizontal and vertical configurations. We offer a variety of constructions for baking and proofer ovens. Contact Union Engineering for more information.

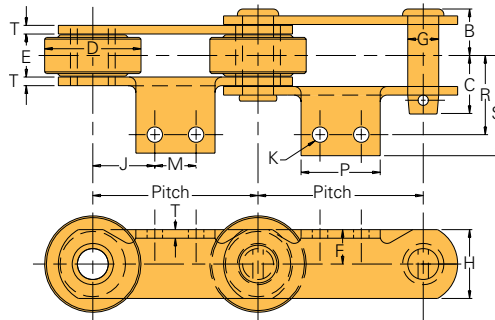
### 40005



### 40004



### 60003

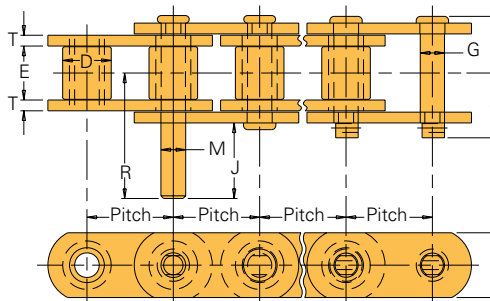


## Baking Ovens

All dimensions are in inches unless otherwise indicated.

Chain No.	Pitch	Pin Head to CL	Pin End to CL	Roller Dia.	Inside Width	Pin Dia.	Sidebar			Attachment							Bolt Dia.	Average Ultimate Strength (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)				
		B	C				D	E	G	H	T	P	M	J	R	S					F	W	X	K
40004	4.000	1.20	1.52	2.50	1.06	.63	2.00	.25	1.31	1.15	2.00											31,000	3,400	9.6
40005	4.000	1.37	1.66	2.50	1.38	.63	2.00	.25	2.50	.75	1.25	2.38	3.27	1.56	.74	.50	.47					31,000	4,100	11.5
60003	6.000	1.69	2.13	3.50	1.56	1.13	2.50	.31	2.88	1.50	2.25	2.88	3.70	1.19			.53					60,000	8,600	16.8

### 20002



## Proofer Oven Chain

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Pin Head to CL	Pin End to CL	Roller Dia.	Inside Width	Pin Dia.	Sidebar			Attachment			Average Ultimate Strength (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)		
		B	C				D	E	G	H	T	M				J	R
20002	2.000	1.31	1.50	1.13	1.25	.56	1.50	.25	.57	1.75	2.91				21,000	3,500	6.2

Note: Extended pins either every 14th or 18th pitch.

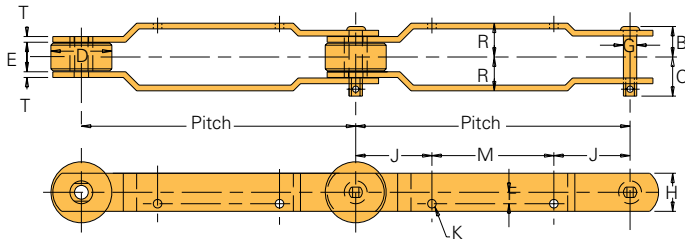
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

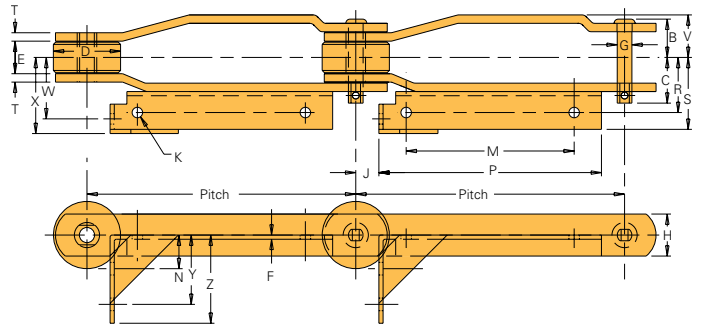
## Dehydrator Ovens

Dehydrator ovens remove moisture from foods at a temperature around 200°F. This mildly corrosive environment can be hard on some chains. That's why we provide heat-treated carbon steels or stainless steels.

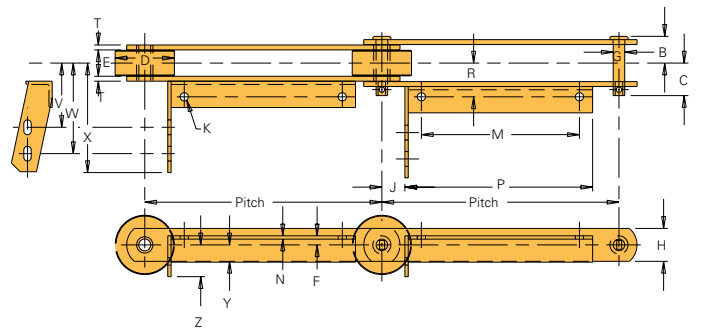
### 90001



### 80002 and 80003



### 90002



## Dehydrator Ovens

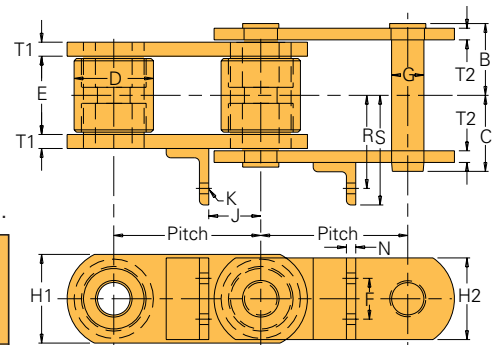
All dimensions are in inches unless otherwise indicated.

Chain No.	Pitch	Pin		Roller Dia.	Inside Width	Pin Dia.	Sidebar										Attachment										Bolt Dia.	Avg. Ult. Stgth. (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)
		Head to CL	End to CL				B	C	D	E	G	H	T	P	M	J	R	S	F	N	V	W	X	Y	Z	K				
80002	8.000	.89	1.61	2.00	.97	.44	1.25	.25	6.50	5.00	.69	1.64	2.14	.13	1.00	1.27	1.83	2.27	2.06	2.62	.28	18,000	2,500	4.6						
80003	8.000	1.42	1.47	2.50	1.25	.63	1.50	.25	6.50	5.00	.69	1.78	2.28	.13	1.00	1.41	1.79	2.41	2.06	2.62	.28	37,000	3,800	5.9						
90001	9.000	1.02	1.11	2.50	1.00	.44	1.13	.19	4.00	2.50	1.13			.31							.25	13,000	2,100	3.8						
90002	9.000	1.02	1.24	2.25	1.00	.44	1.25	.19	7.13	6.00	.88	1.28		.34	.13	2.64	3.64	4.33	.59	1.21	.28	16,500	2,100	4.1						

## Cooker Ovens

Transferring canned goods through a pressurized steam-filled chamber is an important step in food processing. These Union chains are designed for corrosion resistance to withstand the hot, damp environment within the cooker unit.

### European Style Can Cooker Chain



### European Style Can Cooker Chain

All dimensions are in inches unless otherwise indicated.

Pitch	Pin Head to CL	Pin End to CL	Inside Width	Roller Dia.	Pin Dia.	Sidebar				Attachment					Bolt Dia.
						H1	T1	H2	T2	R	S	J	N	F	
3.937 <sup>1</sup>	1.88	2.08	2.08	2.05	.87	2.38	.38	2.19	.31	2.56	3.45	1.06	.19	1.18	.39
7.283 <sup>1</sup>	1.88	2.08	2.08	2.36	1.10	3.00	.38	2.75	.31	2.56	3.45	2.74	.19	1.18	.39

<sup>1</sup>Chains furnished with special insert bearings between pin-bushing and roller-bushing areas.

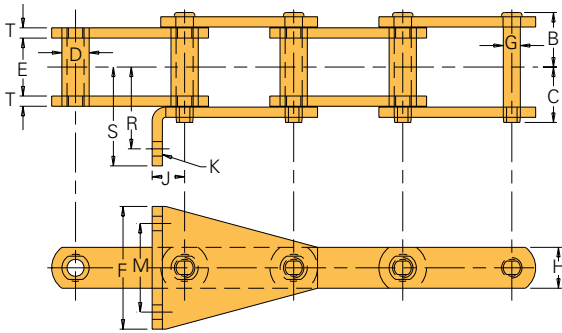
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

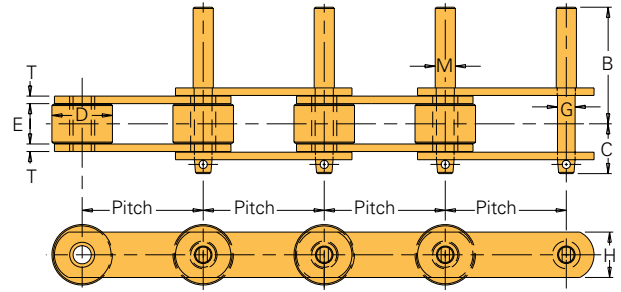
## Citrus Processing

This can be a harsh environment for chain—continual operation, minimal lubrication, and corrosion. We have a line of citrus processing chains that have been engineered to meet these specialized demands. The conveyor and elevator chains with G-19 attachments that we show are commonly used to convey or elevate citrus products. The conveyor chain with D-5 attachments is used in washing, sorting, and inspection lines. These are just a few of the chains that the Union Chain Division can make to meet your specifications.

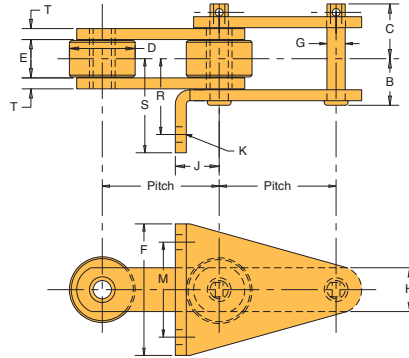
### 188 and 102B with G-19 Attachment



### 303R and 53R with D-5 Attachment



### 89R with G-19 Attachment



All dimensions are in inches unless otherwise indicated.

### Citrus Chain

Chain No.	Pitch	Pin Head to CL	Pin End to CL	Roller Dia.	Inside Width	Pin Dia.	Sidebar		Attachment					Bolt Dia.	Avg. Ult. Stgth. (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)
		B	C	D	E	G	H	T	M	J	R	S	F				
303R w/D-5	3.000	1.44	.77	.88	.50	.44	.88	.19	.50						8,300	1,340	2.2
53R w/D-5	3.000	2.39	1.25	1.50	1.00	.44	1.13	.19	.63						13,000	2,100	4.3
188 <sup>1</sup> w/G-19	2.609	1.43	1.43	.88	1.06	.50	1.12	.25	2.62	.94	2.19	2.64	3.75	.41	25,000	2,750	4.0
102B <sup>1</sup> w/G-19	4.000	2.00	2.03	1.00	2.13	.63	1.50	.38	3.25	1.13	3.00	3.63	4.50	.50	40,000	6,300	7.9
89R <sup>1</sup> w/G-19	4.000	1.59	1.88	2.25	1.31	.63	1.50	.38	3.25	1.50	2.63	3.44	4.50	.50	28,000	4,500	10.8

<sup>1</sup>Furnished standard with G-19 attachment every 4th pitch.

## Make In-Line Inspections Easy

Put machinery access at your fingertips. ONE-TOUCH INSPECTION DOOR® is a dust- and rain-tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are in-stock and ready-to-go for easy installation at the job site. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple. For more information, see the ONE-TOUCH INSPECTION DOOR description in Section C.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

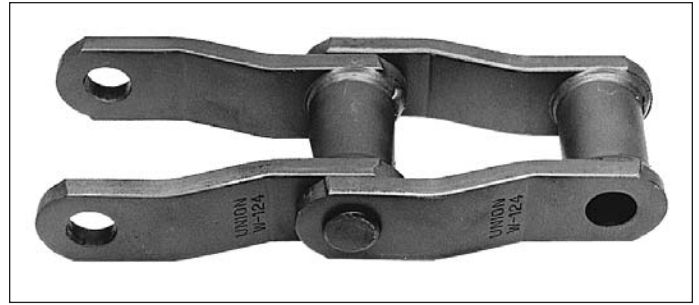
ONE-TOUCH INSPECTION DOOR® is a registered trademark of Tsubaki Conveyor of America, Inc.

## THE UNION SOLUTION

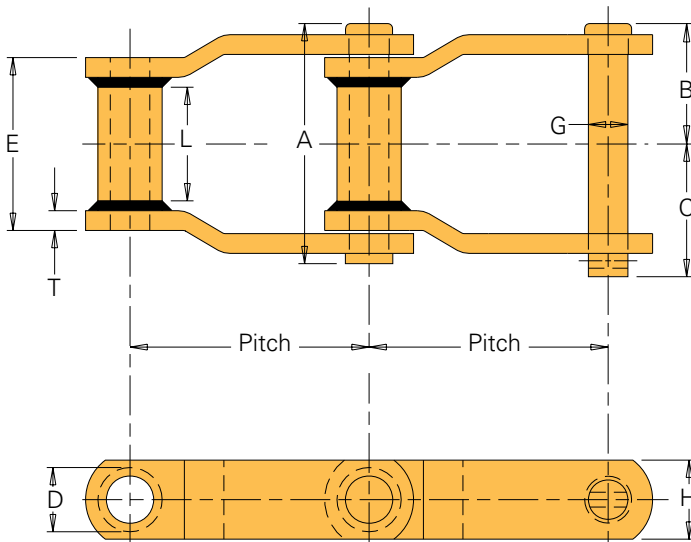
- **A wide variety of high-quality products**
- **Optimal performance and strength**
- **Long-lasting chains and sprockets**
- **Reliable service in challenging applications**
- **Durable and dependable**

## Welded Steel Mill Chains and Attachments

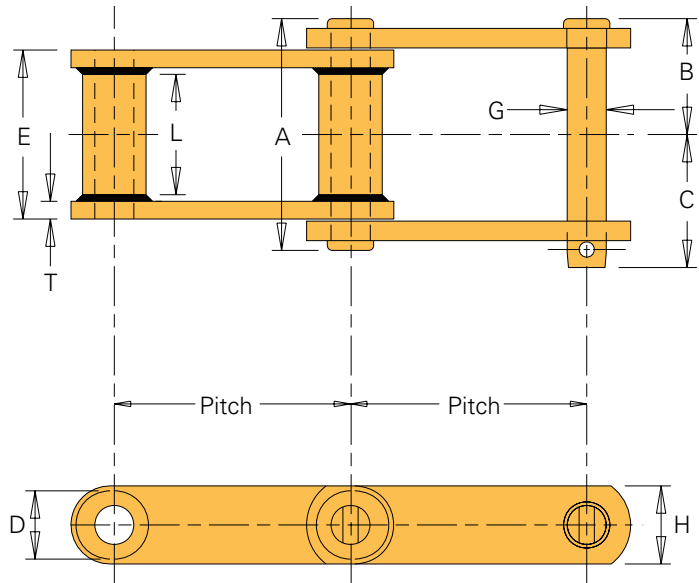
Welded Steel Mill Chains from the Union Chain Division are designed to efficiently convey wood chips, sawdust, ashes, garbage, and other bulk materials. Our chains combine greater strength, higher impact resistance, and longer wear-life to withstand the punishing shock loads and abrasive conditions in the forest products industry. For added convenience, the chains are ideally suited for welding in the field.



### Offset Sidebar



### WCH-Style Chain



## Welded Steel Mill Chain Specifications

All dimensions are in inches unless otherwise indicated.

Chain No.	Pitch	Chain Width				Barrel		Pin	Sidebars			Avg. Ult. Strength (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)
		Overall	Pin Head to CL	Pin End to CL	Lgth. of Bearing	D	L	Dia.	Thick.	Height				
		A	B	C	E	D	L	G	T	H				
WH-78	2.609	3.00	1.44	1.56	2.00	.88	1.13	.50	.25	1.13	33,000	3,500	4.0	
WH-82	3.075	3.25	1.56	1.69	2.25	1.06	1.25	.56	.25	1.25	36,000	4,400	4.8	
WH-124 <sup>1</sup>	4.000	4.25	2.03	2.22	2.75	1.25	1.63	.75	.38	1.50	60,000	7,350	8.3	
WH-124H	4.063	4.75	2.28	2.47	3.00	1.75	1.63	1.00	.50	2.00	100,000	10,500	14.7	
WH-111	4.760	4.88	2.34	2.54	3.38	1.38	2.38	.75	.38	1.75	60,000	8,850	9.5	
WH-106	6.000	4.25	2.03	2.31	2.75	1.25	1.63	.75	.38	1.50	60,000	7,200	7.0	
WH-132 <sup>1</sup>	6.050	6.25	3.00	3.40	4.38	1.75	2.88	1.00	.50	2.00	100,000	15,300	14.2	
WH-150	6.050	6.25	3.00	3.25	4.38	1.75	2.88	1.00	.50	2.50	100,000	15,300	16.8	
WH-155	6.050	6.91	3.25	3.66	4.63	1.75	3.00	1.13	.63	2.50	184,000	20,000	20.0	
WCH-132	6.050	6.25	3.00	3.25	4.38	1.75	2.88	1.00	.50	2.00	100,000	15,300	14.2	

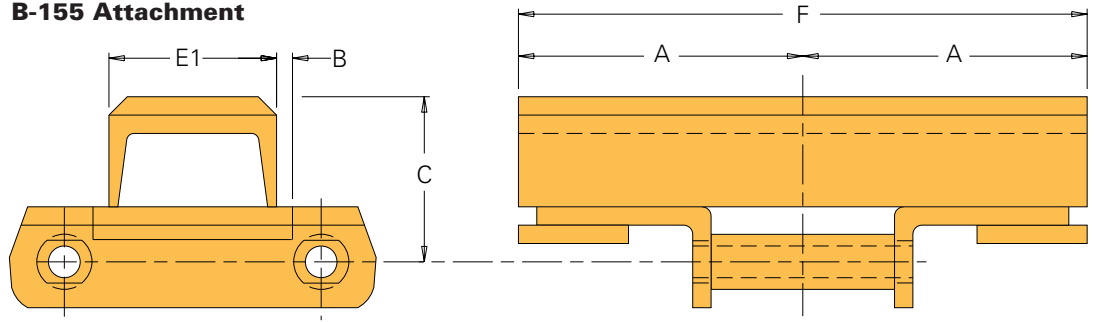
Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Chain numbers WH-124 and WH-132 are also stocked in stainless steel with riveted and cotter construction.

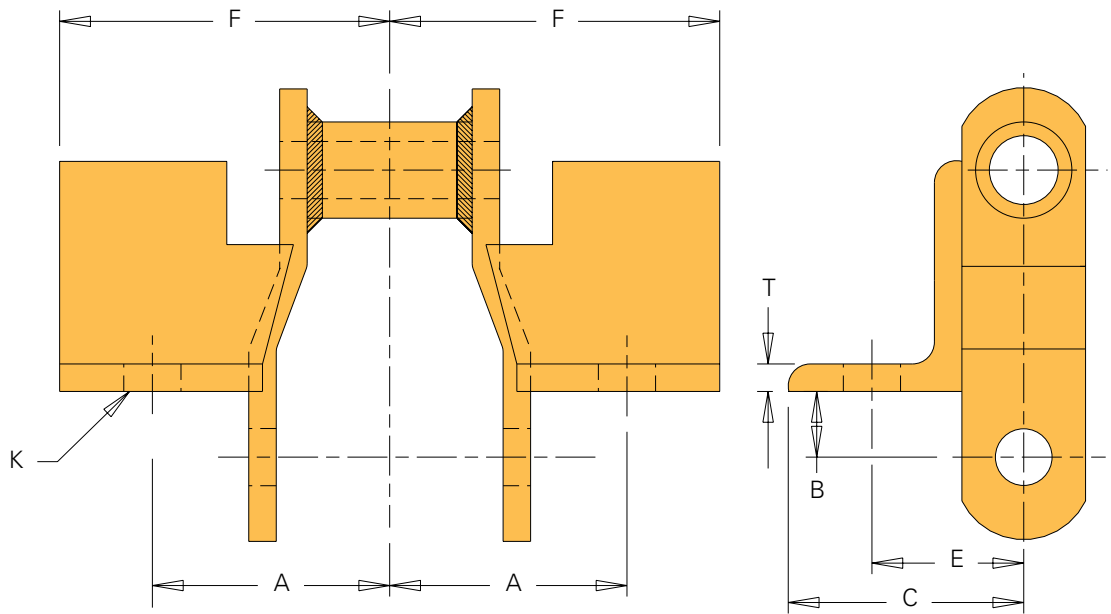
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

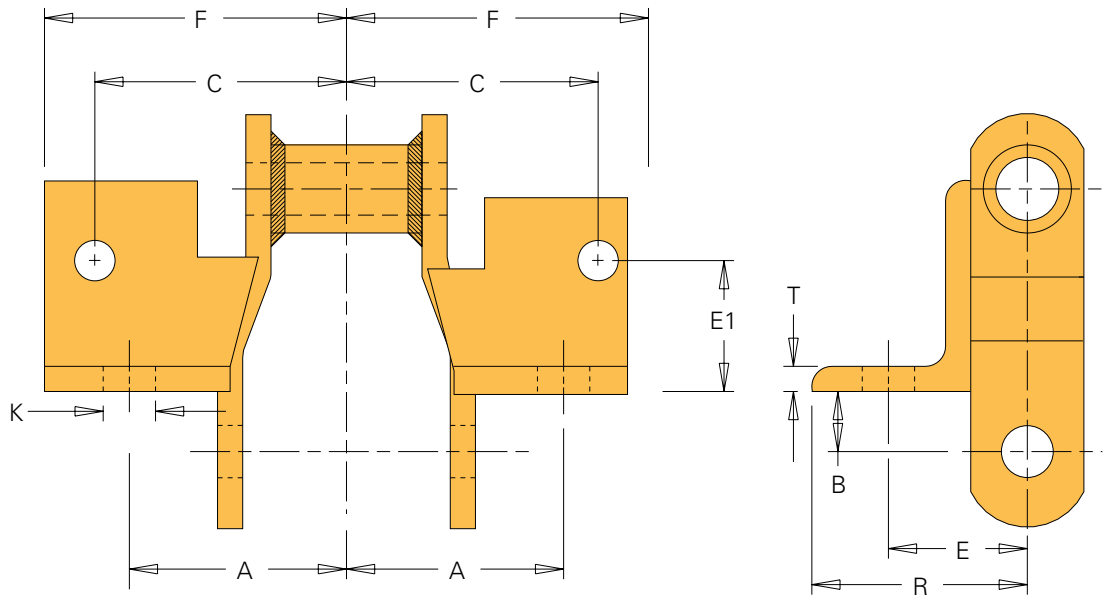
**B-155 Attachment**



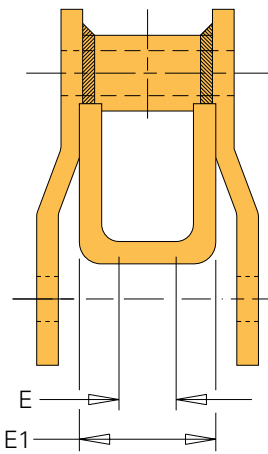
**F-2 Attachment**



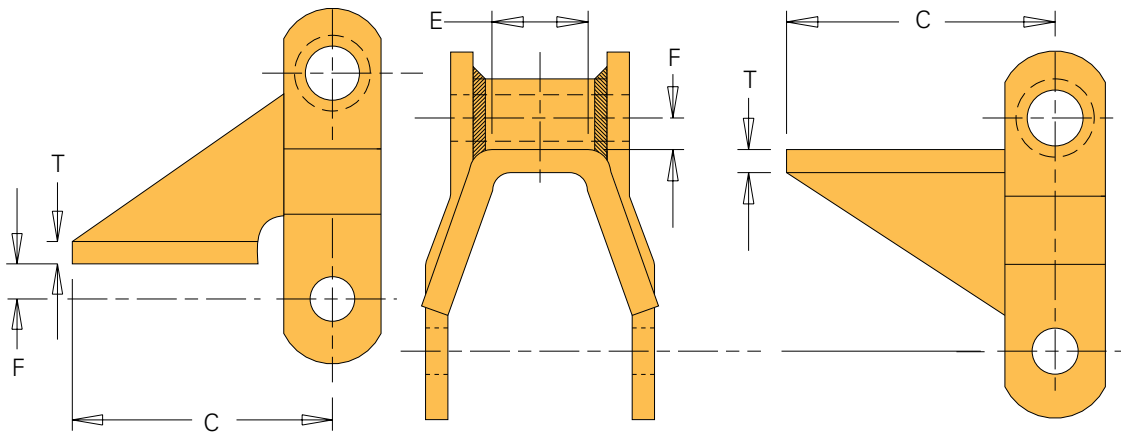
**F-4 Attachment**



**H-1 Attachment**



**H-2 Attachment**



**Welded Steel Mill Chain Attachments**

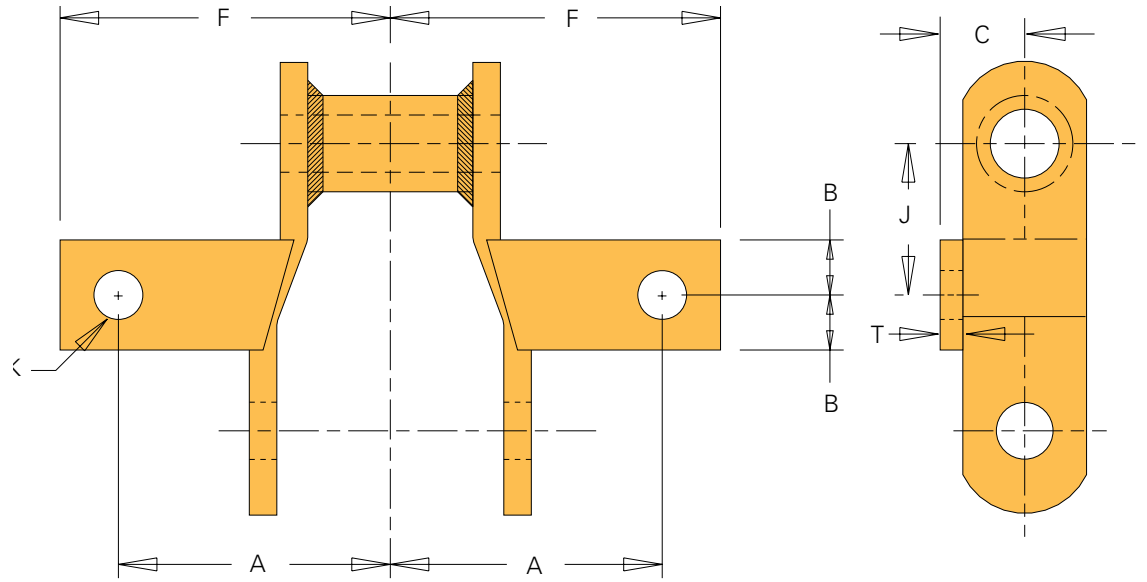
All dimensions are in inches unless otherwise indicated.

Attach. Number	Chain Number	A	B	C	E	E1	F	Bolt Diameter	K	T	R	Approx. Weight (lbs./ft.)
B-155	WH-132	7.00	1.03	4.25		4.00	14.00					49.6
	WH-150	7.00	1.03	4.50		4.00	14.00					54.6
	WH-155	7.00	1.03	4.50		4.00	14.00					56.6
F-2	WH-78	1.88	.69	2.06	1.44		2.69	.38		.25		6.0
F-4	WH-78	1.88	.69	2.25	1.44	1.25	2.75	.38		.25	2.06	6.1
	WH-82	2.06	.75	2.50	1.50	1.13	2.97	.38		.25	2.38	8.9
	WH-124	2.19	.88	2.63	2.06	1.44	3.09	.38		.39	2.75	11.6
H-1	WH-78			3.56	.88	1.75	.50			.25		8.3
	WH-82			3.63	1.13	2.00	.63			.25		9.9
H-2	WH-78			3.56	.81		.31			.25		7.5
	WH-82			3.63	1.03		.38			.25		8.8

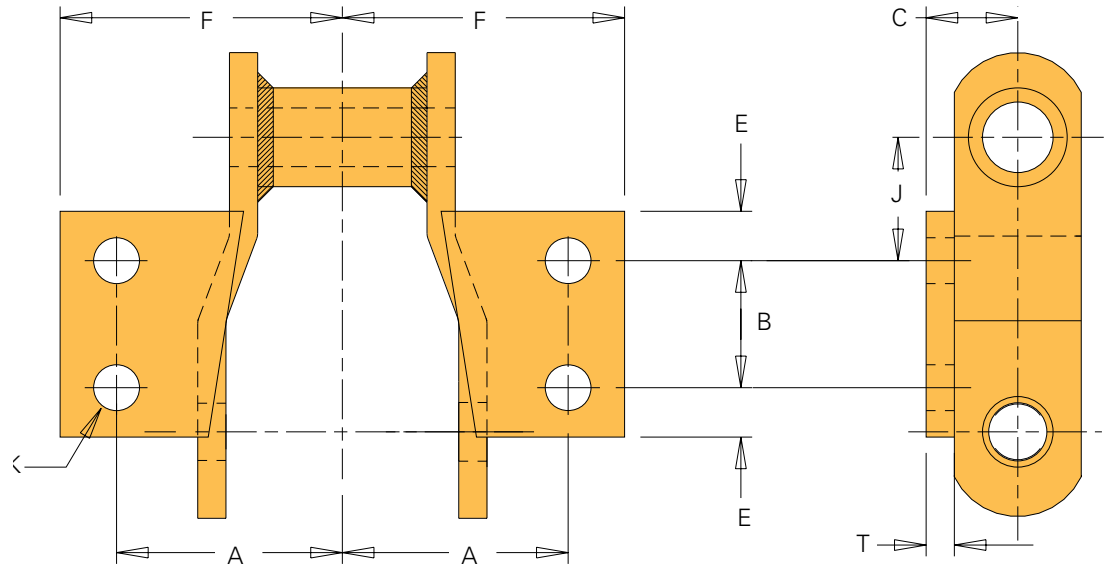
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

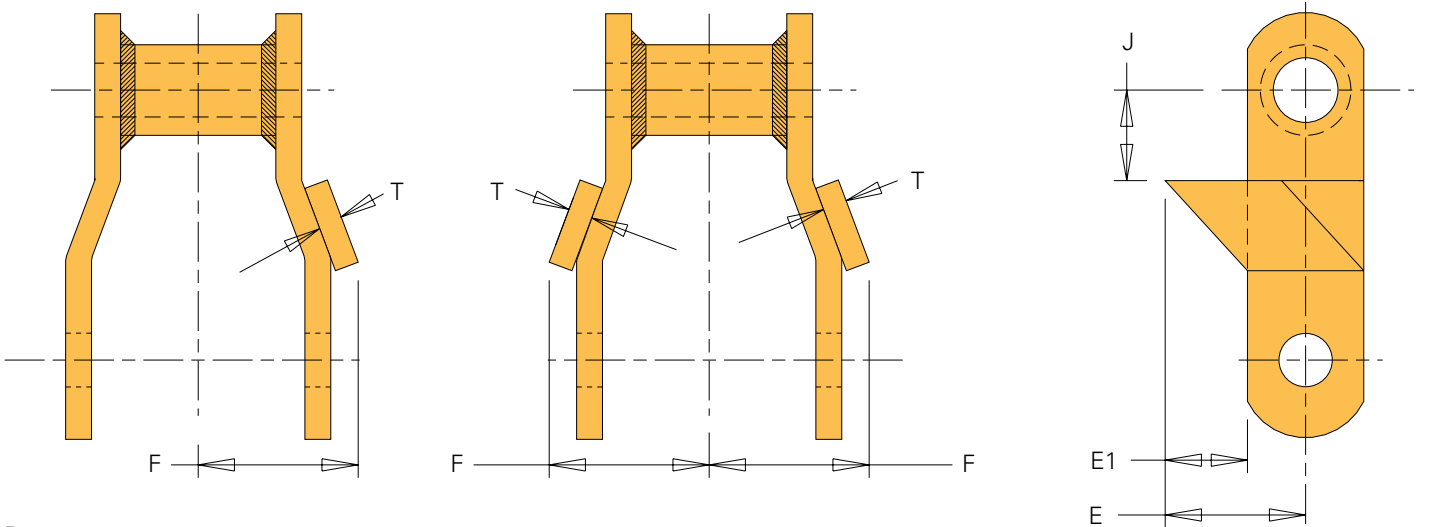
**K-1 Attachment**



**K-2 Attachment**

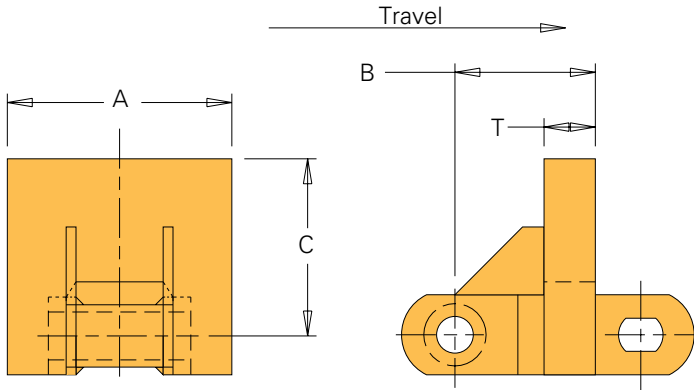


**R-1, R-1-1/2, RR Attachment**

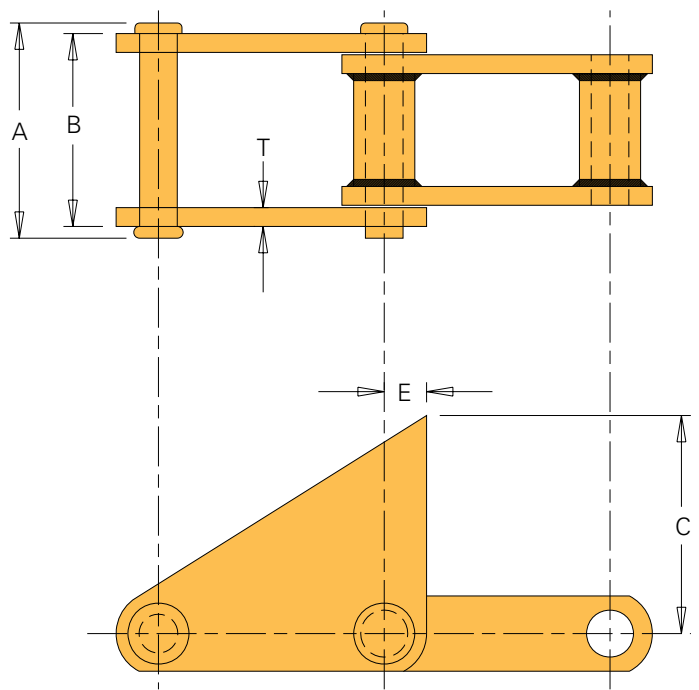




**RF-12 Attachment**



**S-1 Attachment**



**Welded Steel Mill Chain Attachments (Continued)**

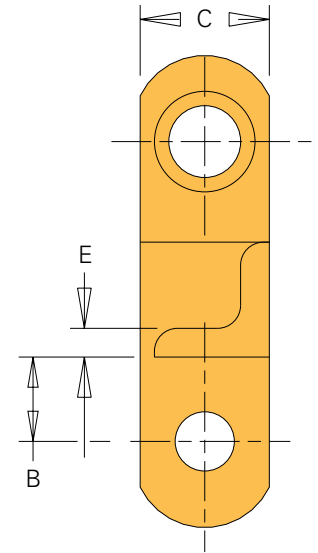
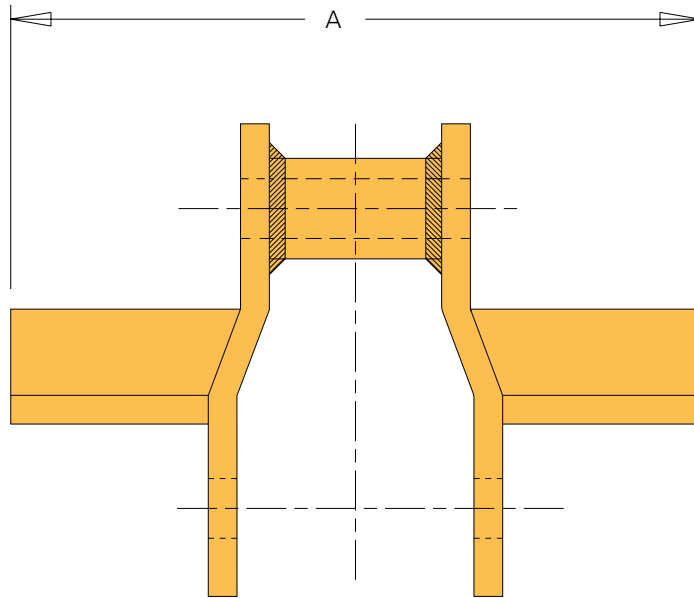
All dimensions are in inches unless otherwise indicated.

Attach. Number	Chain Number	A	B	C	E	E1	F	Bolt Diameter	K	J	T	Approx. Weight (lbs./ft.)
K-1	WH-78	2.00	.63	.81			2.50	.38	1.38	.25	5.5	
	WH-82	2.13	.88	.88			2.75	.38	1.56	.25	7.2	
K-2	WH-78	2.00	1.13	.81	.43		2.50	.38	1.09	.25	6.3	
	WH-82	2.13	1.31	.88	.47		2.75	.38		.25	7.6	
	WH-124	2.63	1.94	1.13	.53		3.50	.38		.38	11.7	
	WH-124H	2.63	1.94	1.50	.53		3.50	.50		.50	18.4	
	WH-132	3.75	2.75	1.38	.63		4.38	.50	1.66	.50	18.0	
	WCH-132	3.75	2.75	1.38	.63		4.38	.50	1.66	.50	18.0	
R-1	WH-78				1.56	1.00	1.56		.75	.25	4.7	
	WH-82				1.88	1.25	1.69		.88	.25	6.1	
	WH-124				1.88	1.13	2.16		1.28	.38	9.4	
R-1-1/2	WH-78				2.06	1.50	1.56		.75	.25	4.9	
RR	WH-78				1.56	1.00	3.13		.75	.25	5.2	
	WH-82				1.88	1.25	3.38		.88	.25	6.7	
	WH-124				1.88	1.13	4.25		1.25	.38	10.4	
	WH-124H				2.13	1.13	4.88		1.25	.50	17.6	
RF-12	WH-132	12.00	4.56	5.25						1.00	55.0	
	WH-150	12.00	4.56	5.50						1.00	58.0	
	WH-155	12.00	4.56	5.50						1.00	63.0	
S-1	WCH-132	6.00	5.44	5.00	1.28					.50	18.1	

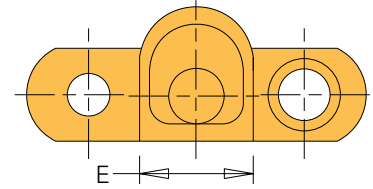
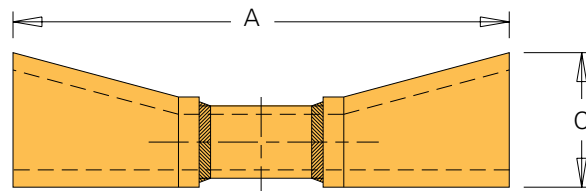
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

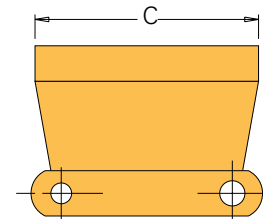
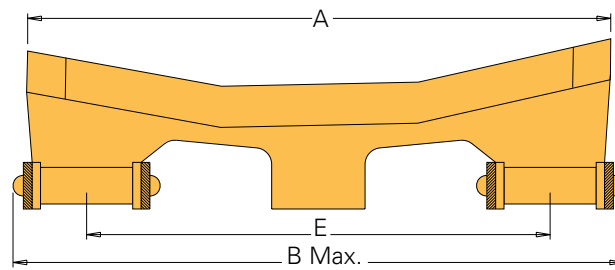
### Wing



### Log Cradle



### Double Strand Log Cradle



**Welded Steel Mill Chain Attachments (Continued)**

All dimensions are in inches unless otherwise indicated.

Attachment Number	Chain Number	A	B	C	E	Approximate Weight (lbs./ft.)
Wing	WH-78	6.00	.75	1.00	.25	7.3
	WH-82	6.50	.81	1.25	.25	8.6
	WH-124	8.50	1.19	1.50	.25	14.2
	WH-132	12.38	1.44	2.00	.38	21.0
	WCH-132	12.38	1.44	2.00	.38	21.0
	WH-124H	8.50	1.38	2.00	.50	19.1
Log Cradle	WH-132	11.13		3.00	3.50	29.2
	WH-132	13.00		3.00	3.50	32.2
	WCH-132	11.13		3.00	3.50	29.2
	WCH-132	13.00		3.00	3.50	32.2
Double Strand Log Cradle	WH-132	16.00	17.50	6.00	12.00	96.0
	WCH-132	16.00	17.50	6.00	12.00	96.0

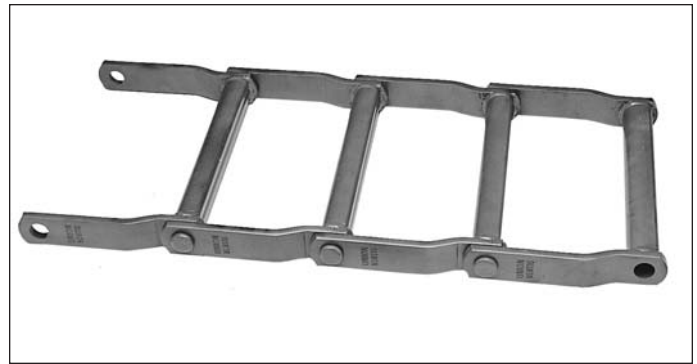
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

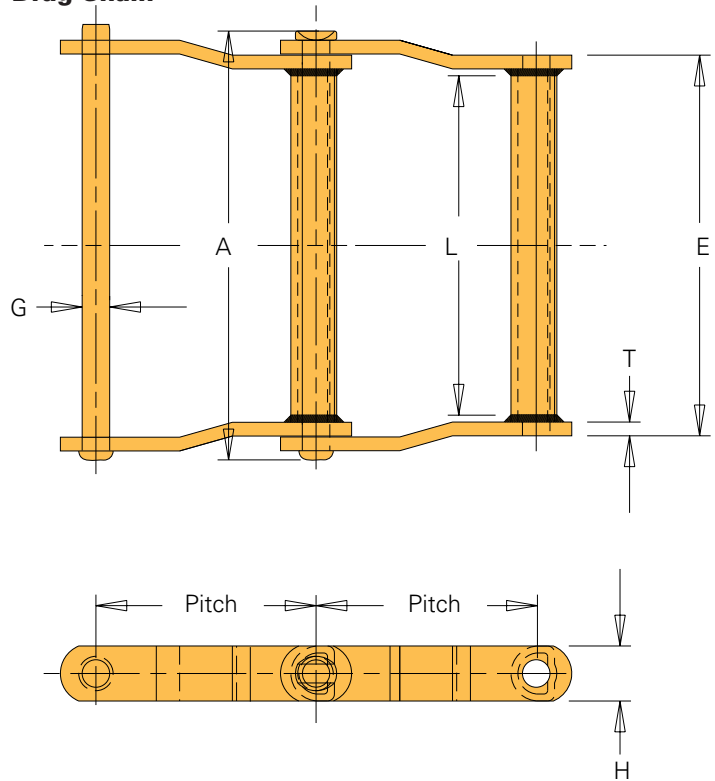


## Welded Steel Drag Chains and Attachments

Welded Steel Drag Chains move very heavy loads. Like Welded Steel Mill Chains, Drag Chains combine strength, precision, impact resistance, and wear resistance. This versatile and economical chain is built to withstand punishing shock loads and abrasive conditions to provide longer wear life in your operation.



Drag Chain



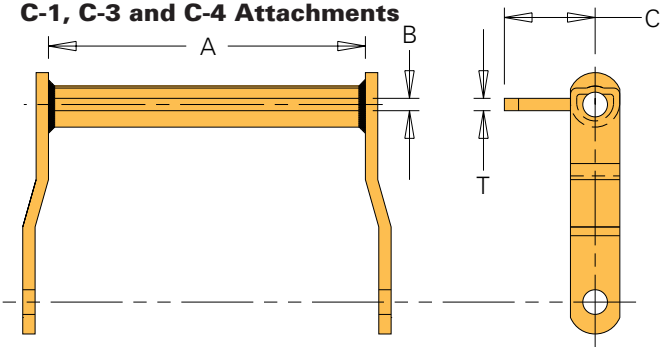
### Welded Steel Drag Chain

All dimensions are in inches unless otherwise indicated.

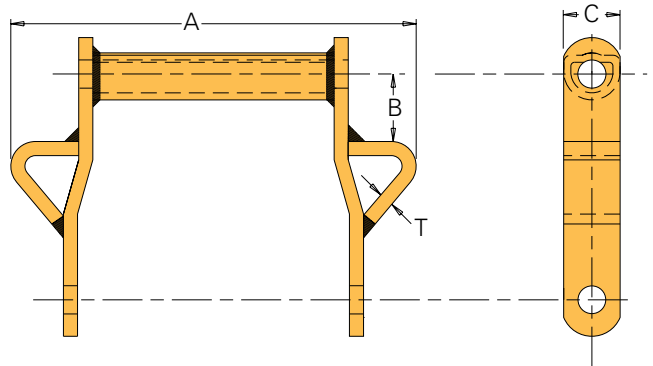
Chain Number	Pitch	Chain Width		Barrel	Pin	Sidebars		Avg. Ult. Strength (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)
		Overall	Length of Bearing			Thickness	Height			
		A	E	L	G	T	H			
WDH-102	5.000	9.25	7.75	6.38	.75	.38	1.50	60,000	10,000	11.8
WDH-104	6.000	6.88	5.38	4.13	.75	.38	1.50	60,000	10,000	8.7
WDH-110	6.000	11.88	10.38	9.00	.75	.38	1.50	60,000	10,000	12.0
WDH-113	6.000	12.50	10.63	9.00	.88	.50	1.50	68,000	11,700	15.0
WDH-112	8.000	11.88	10.38	9.00	.75	.38	1.50	60,000	10,000	9.8
WDH-116	8.000	15.38	14.13	12.75	.75	.38	1.75	80,000	11,500	14.5
WDH-480	8.000	14.63	12.75	11.00	.88	.50	2.00	90,000	15,000	18.1

Indicates this chain is normally stocked. All others are made-to-order.

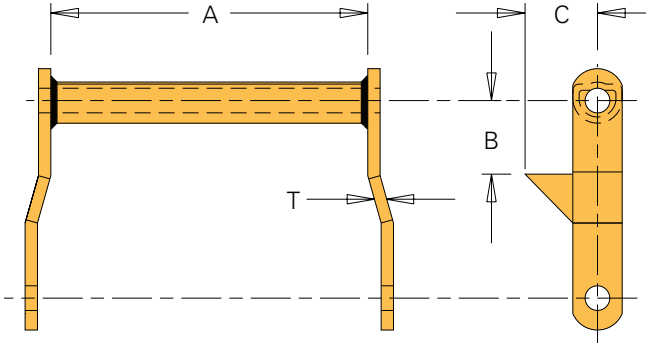
**C-1, C-3 and C-4 Attachments**



**Folded Wing Attachment**



**RR Attachment**



**Welded Steel Drag Chain Attachments**

All dimensions are in inches unless otherwise indicated.

Attachment Number	Chain Number					Approx. Weight (lbs./ft.)
		A	B	C	T	
C-1	WDH-102	7.00	.38	2.38	.38	14.4
	WDH-104	5.00	.38	2.38	.38	10.1
	WDH-110	10.00	.38	2.38	.38	15.5
	WDH-112	10.00	.38	2.38	.38	12.6
	WDH-116	13.00	.38	2.56	.38	18.4
C-3	WDH-113	10.00	.50	2.25	.50	17.3
	WDH-480	12.00	.50	3.00	.50	25.8
Folded Wing	WDH-102	14.25	1.75	1.50	.38	17.1
	WDH-104	11.50	2.75	1.50	.38	12.5
	WDH-110	17.00	2.63	1.50	.38	17.8
	WDH-112	17.00	3.25	1.50	.38	14.6
	WDH-113	17.00	2.25	1.50	.50	22.2
	WDH-116	22.00	3.25	1.75	.38	21.2
C-4	WDH-102	7.00	.38	3.75	.38	17.1
	WDH-104	5.00	.38	3.75	.38	11.7
	WDH-110	10.00	.38	3.75	.38	18.7
	WDH-112	10.00	.38	3.75	.38	15.1
	WDH-113	10.00	.50	4.75	.50	20.9
	WDH-116	13.00	.38	4.81	.38	23.5
RR	WDH-102	8.50	1.75	2.50	.38	12.0
	WDH-104	6.25	3.00	2.50	.38	8.9
	WDH-112	11.25	3.00	2.50	.38	10.3
	WDH-113	11.63	2.25	2.50	.38	16.0
	WDH-116	14.88	3.25	3.00	.38	15.2
	WDH-480	13.75	3.00	3.25	.50	20.8

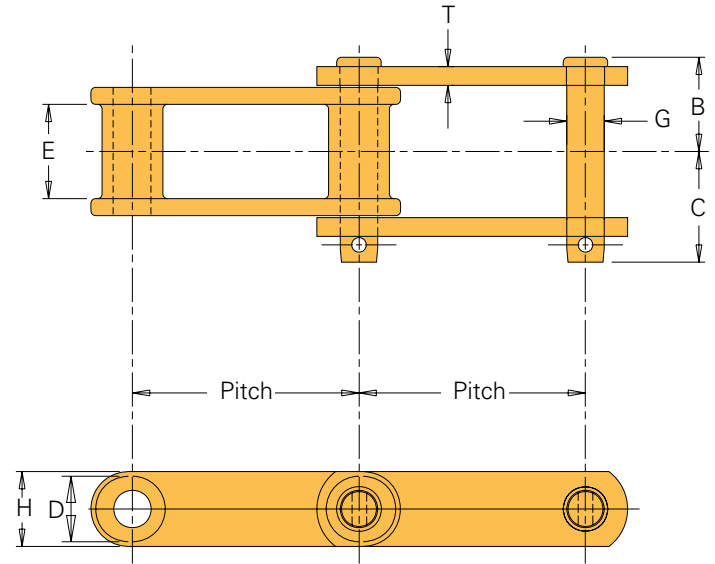
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## Cast Combination Chains and Attachments

Cast Combination Chain offers additional corrosion resistance because the block links are constructed from malleable cast iron. You get strong, long-lasting chain that stands up to the most rigorous environments.

### Cast Combination Chain



### Cast Combination Chain Specifications

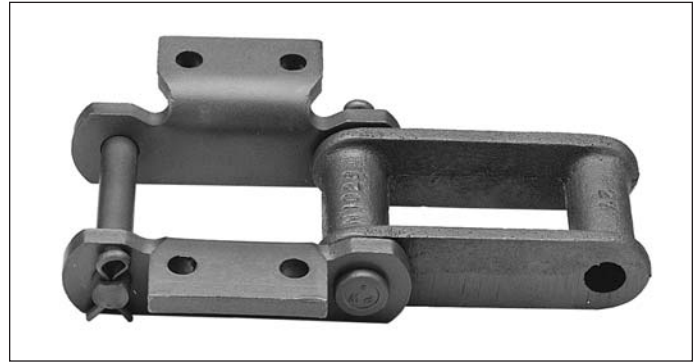
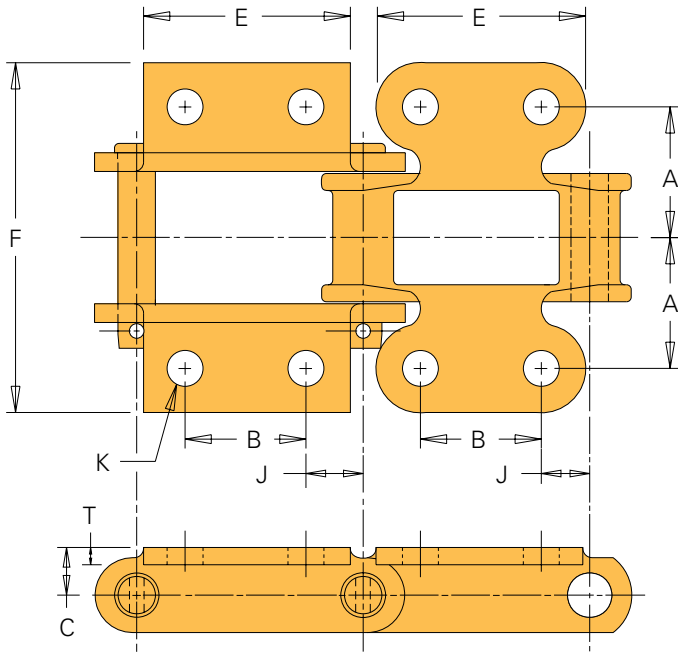
All dimensions are in inches unless otherwise indicated.

Chain Number	Average Ultimate Strength	Working Load	Pitch	Links in Approx. 10 ft.	Dimensions							Approx. Weight (lbs./ft.)
					Pin Head to CL	Pin End to CL	Maximum Allowable Sprocket Face	Pin Dia.	Sidebar Height	Sidebar Thick.	Barrel Dia. Size	
					<b>B</b>	<b>C</b>	<b>E</b>	<b>G</b>	<b>H</b>	<b>T</b>	<b>D</b>	
C-188	17,500	2,340	2.609	46	1.34	1.44	.94	.50	1.13	.25	.88	3.6
C-131	30,000	3,750	3.075	40	1.81	1.88	1.13	.63	1.50	.38	1.25	6.5
C-102B	30,000	5,000	4.000	30	2.19	2.30	2.00	.63	1.50	.38	1.00	6.8
C-111	45,000	7,500	4.760	26	2.59	2.66	2.38	.75	1.75	.38	1.44	9.8
C-110	30,000	5,000	6.000	20	2.19	2.30	1.94	.63	1.50	.38	1.25	6.0
C-132	62,500	10,400	6.050	20	3.22	3.16	3.13	1.00	2.00	.50	1.75	14.5

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**K-2 Attachment**



**Specifications with K-2 Attachments**

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Dimensions								Approx. Weight <sup>1</sup> (lbs./ft.)
		A	J	E <sup>2</sup>	B	C	F <sup>2</sup>	T	K	
C-188	2.609	2.09	.69	2.13	1.25	.81	5.06	.25	.31	4.3/5.4
C-131	3.075	2.06	.78	2.63	1.50	1.06	5.50	.31	.50	7.4/8.7
C-102B	4.000	2.66	1.13	2.75	1.75	1.06	6.63	.25	.38	7.8/9.1
C-111	4.760	3.13	1.22	3.63	2.31	1.13	7.50	.31	.50	11.3/12.7
C-110	6.000	2.66	2.13	3.00	1.75	1.06	6.50	.25	.38	7.3/8.4
C-132	6.050	3.75	1.66	4.13	2.75	1.25	9.06	.38	.50	16.1/17.9

<sup>1</sup>Figure on left represents weight for chain with attachment on sidebar only.  
Figure on right represents weight for chain with attachment on sidebar and center block.

<sup>2</sup>Block link attachment dimensions.

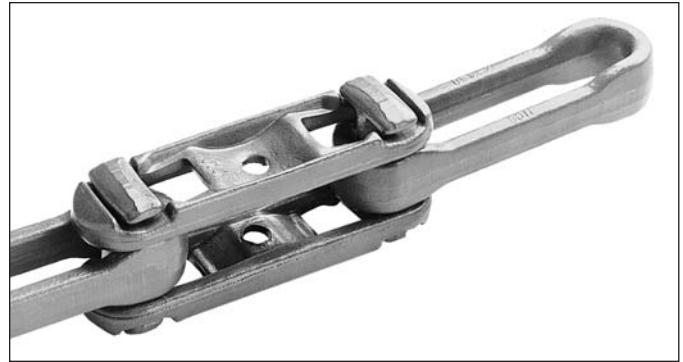
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

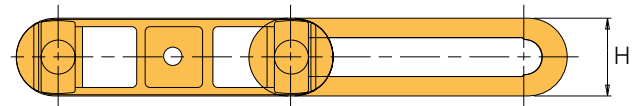
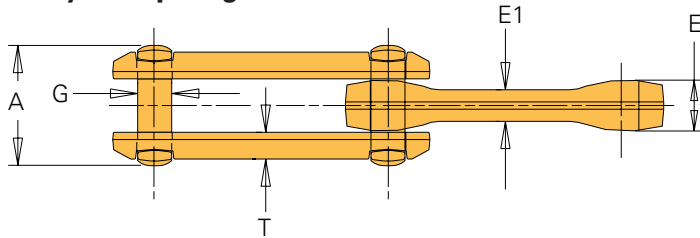


## Drop Forged Rivetless Chains

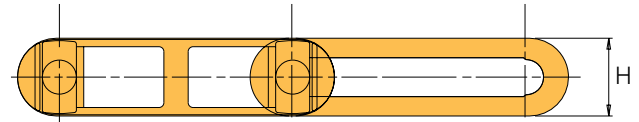
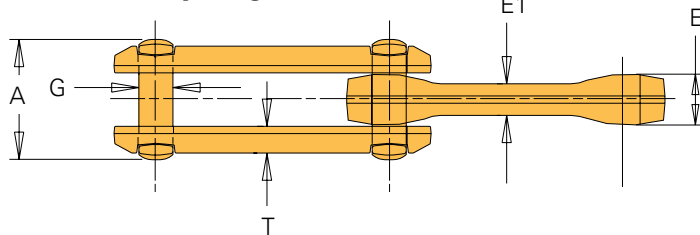
Union Drop Forged Rivetless Chains serve many functions in the forest and paper processing industries. You'll find our chain in overhead conveyors, ash handling applications, and various scraper conveyors—anywhere tough, dependable material handling is required.



### X-Style Drop Forged Rivetless Chain



### Standard Drop Forged Rivetless Chain



### X-Style and Standard Drop Forged Rivetless Chain

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Chain Width			Pin Diameter	Sidebar		Average Ultimate Strength (lbs.)		Maximum Work Load (lbs.)		Avg. Pitches (ft.)	Approx. Weight (lbs./ft.)
		Overall A	Inside			Thick. T	Height H	Alloy Heat-Treated <sup>1</sup>	Heat-Treated	Normal	Freq. Flex.		
			E	E1	G								
X-348 <sup>2</sup>	3.015	1.73	.75	.50	.50	.41	1.09		24,000	2,600	1,200	3.95	2.2
X-458 <sup>2</sup>	4.031	2.19	1.00	.63	.63	.47	1.38	60,000	48,000	4,000	1,900	2.98	3.2
468	4.031	3.19	1.59	1.13	.75	.41	1.88		70,000			2.98	7.5
X-658 <sup>2</sup>	6.031	2.19	1.00	.63	.63	.47	1.38		48,000			1.99	2.7
X-678 <sup>2</sup>	6.031	3.03	1.28	.81	.88	.72	2.00	100,000	85,000	7,100	3,300	1.99	6.7
698	6.031	3.75	1.56	1.00	1.13	.56	2.56	150,000	130,000	10,800	5,200	1.99	11.4
998	9.031	3.75	1.56	1.00	1.13	.63	2.53	150,000	130,000	10,800	5,200	1.33	9.0

■ Indicates this chain is normally stocked. All others are made-to-order.

Note: Magna-flux inspected chain is available.

Component hardness: BHN 344 (Nom.) = Carbon steel chains; BHN 380 (Nom.) = Alloy steel chains.

<sup>1</sup>ANSI/SAE 8642

<sup>2</sup>The prefix "X" designates a design proportioned to flex transversely on a shorter radius. The outside bars are made with a mid-pitch panel that strengthens the sidebar and prevents material from falling through the link. X-Styles are used on overhead conveyors and other special applications.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

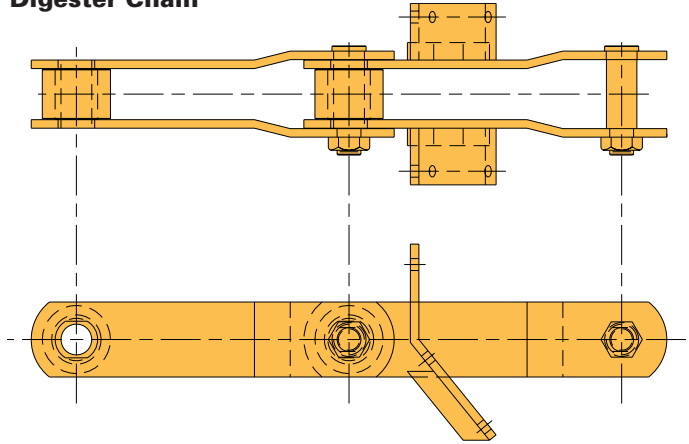
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



## Digester Chains

We offer chains with 12" to 20" pitch for digester applications. Because these chains have direct exposure to an alkaline slurry of paper fibers, we follow rigid specifications for special corrosion resistance. Digester Chains are carefully manufactured on a made-to-order basis to meet your specifications. Contact Union Engineering for your specific requirements.

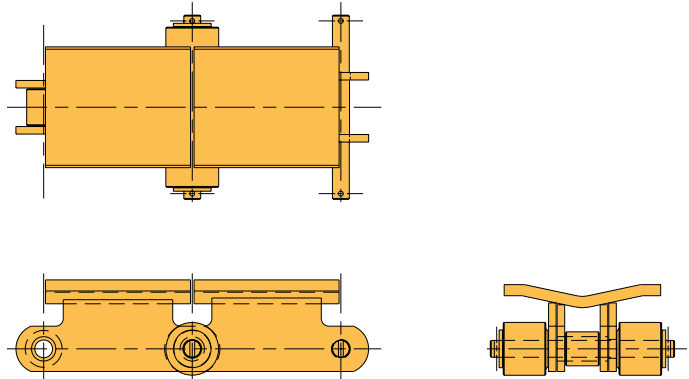
### Digester Chain



## Gull Wing Conveyor Chains

We have two styles of Gull Wing Conveyor Chains. Gull Wing Chain with a single, centered strand of chain, is ideal for moving paper rolls. Any pitch size can be produced with a variety of working loads. Gull Wing Chain with Outboard Rollers are an excellent way to customize your application. We offer rollers and bearings with a variety of materials and heat-treating possibilities to stand up to extreme conditions and load requirements.

### Gull Wing Chain



## Make In-Line Inspections Easy

Put machinery access at your fingertips. ONE-TOUCH INSPECTION DOOR® is a dust- and rain-tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are in-stock and ready-to-go for easy installation at the job site. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple. For more information, see the ONE-TOUCH INSPECTION DOOR description in Section C.

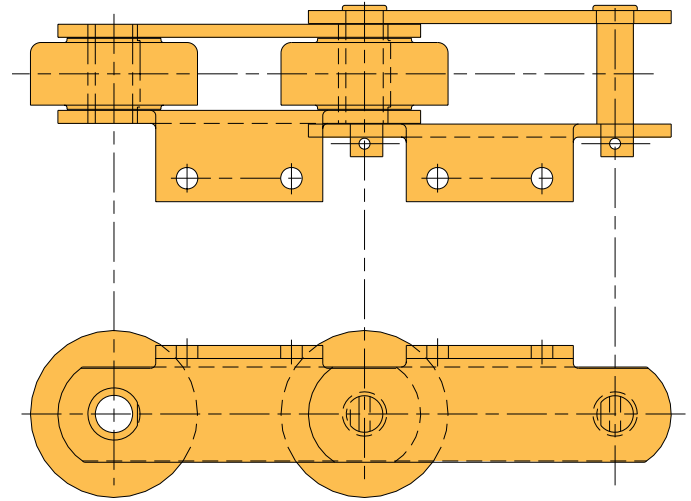
### THE UNION SOLUTION

- **High strength**
- **Dependable service**
- **Long wear life**
- **Abrasion resistance**
- **Anticorrosion properties**
- **Consistent dimensional accuracy**

## Forming Chains

Forming Chains are usually Roller Conveyor Chains in tandem, top and bottom, which transfer a continuous line of product. The two conveyors sandwich formed product between them, holding it in place and moving it through a curing oven. Product thickness is accommodated by elevation set points on the top conveyor, which can be positioned up or down. Forming Chains are usually furnished with A-2 attachments with special attention to maintaining uniform attachment height.

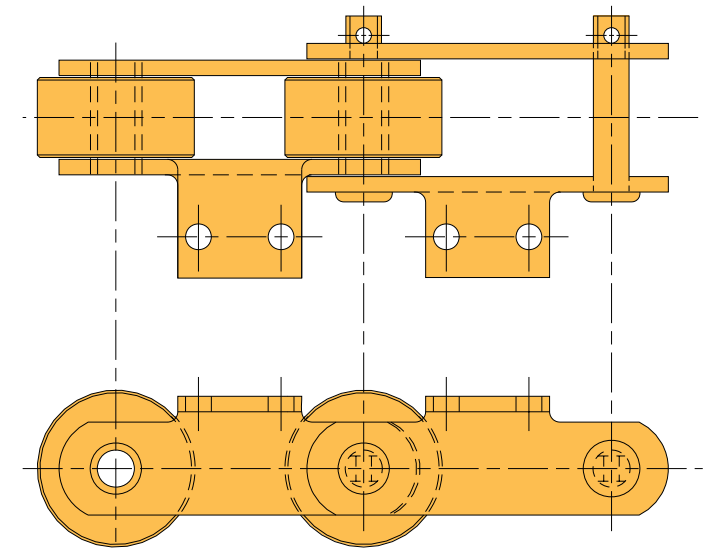
### Typical Forming Chain



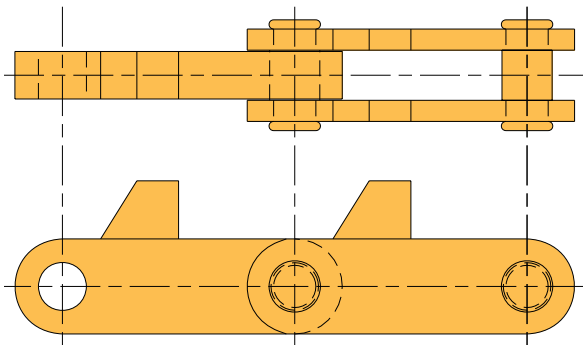
## Metal Process Oven Chains

Materials frequently need to be tempered or annealed in high-temperature ovens. We offer a variety of chains that operate in these conditions—from Bar and Pin to Roller Conveyor with attachments. Chain materials are usually chosen based on the operating conditions, including the maximum temperature and the loads. Stainless Steel Conveyor Chains, for example, provide long service life and heat resistance. Consult Union Engineering to discuss your operation. We'll help you select the right chain for your application.

### Roller Conveyor Style



### Bar and Pin Style



## Make In-Line Inspections Easy

Put machinery access at your fingertips. ONE-TOUCH INSPECTION DOOR® is a dust- and rain-tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are in-stock and ready-to-go for easy installation at the job site. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple. For more information, see the ONE-TOUCH INSPECTION DOOR description in Section C.

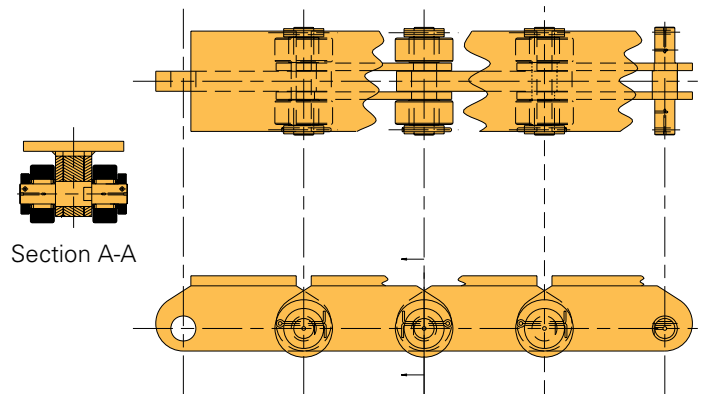
## THE UNION SOLUTION

- **Strong, long-lasting chain**
- **Withstands high shock loads**
- **Holds product on-line**
- **Range of attachments**
- **Low bearing pressures**

### Flat Top Chains

Flat Top Chains are designed to convey ingots, billets, large structural shapes, upended coils, and more to and from process operations. The flat top plate design offers large areas to evenly distribute product load. This minimizes the effect of transfer impacts that can cause product damage. In addition, the top plate protects the chain joint from unwanted exposure to heat or abrasive particles. Because of the heavy load, bearing rollers are widely used to provide the lowest chain tension and trouble-free operation.

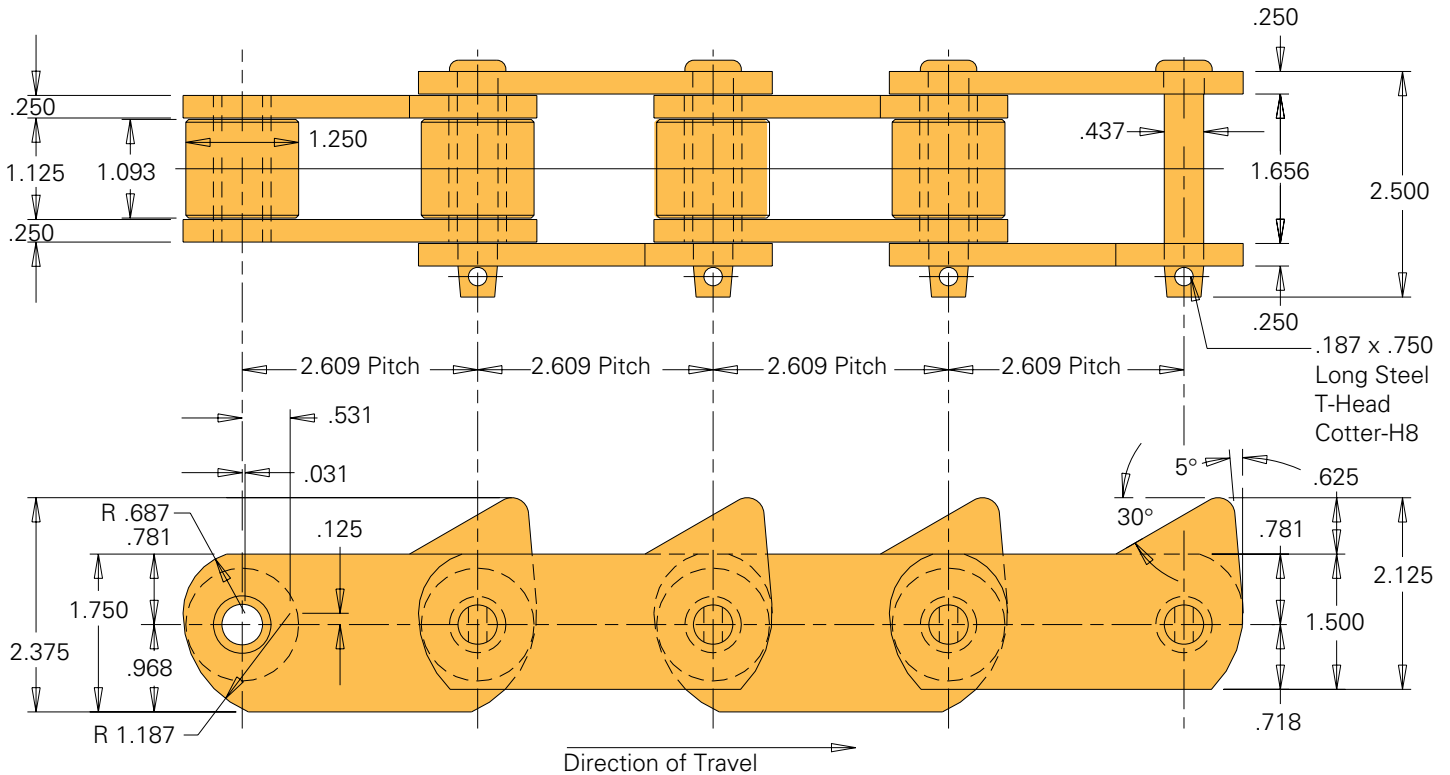
### Flat Top Chain



### Coiled Wire Chains

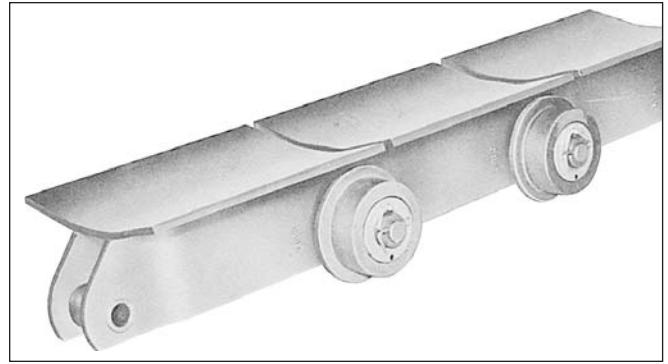
Coiled Wire Chains are designed to run conveyors in hot wire mills. These conveyors act as cooling lines, transferring continuous loops of hot wire, which are coiled after cooling down. Coiled Wire Chains are offered with special M-style attachments at every pitch to force the wire to fall between as it is loaded onto the moving conveyor.

### Coiled Wire Chain with M Attachment

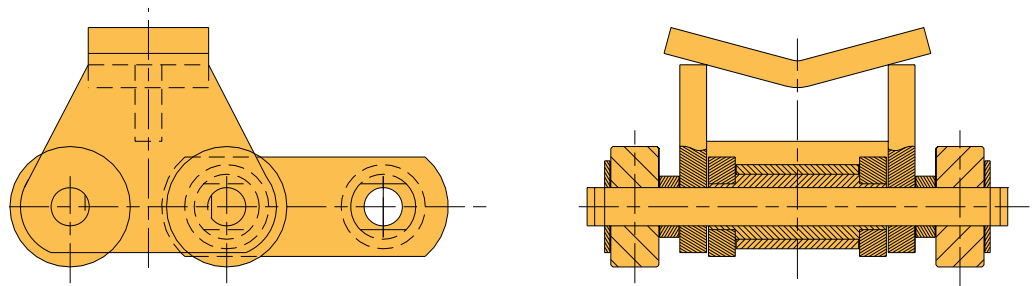


## Coil Conveyor Chains

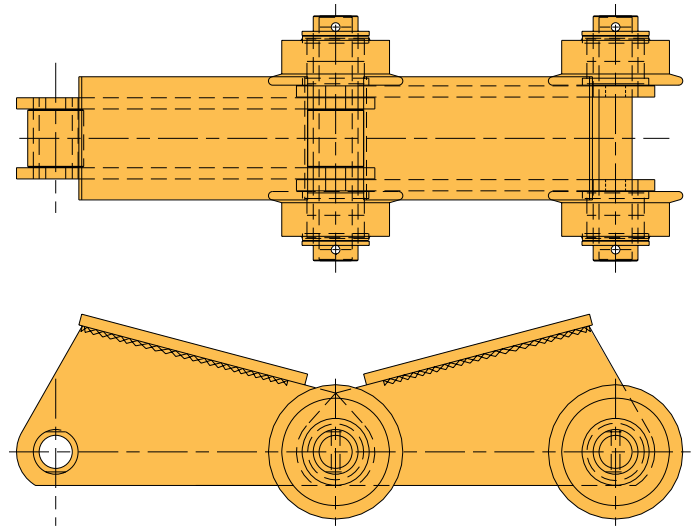
Move coils, pipe, tubing, or other large, round shapes with Gull Wing Chains or Saddle Attachments on Roller Conveyor Chains. The vee shape is designed to accommodate a range of diameter sizes that run within the process. The saddle or vee plate corner edges can be ground smooth to avoid scratching product during transfers. Gull Wing Chains or Saddle Attachments on Roller Conveyor Chains can be adapted to a variety of conveyor configurations, from top plates to bearing rollers and from inboard to outboard carrier rollers. Often economy is achieved through the use of multiple chain strands or chain strands independent of carrier assemblies.



**Gull Wing Chain**



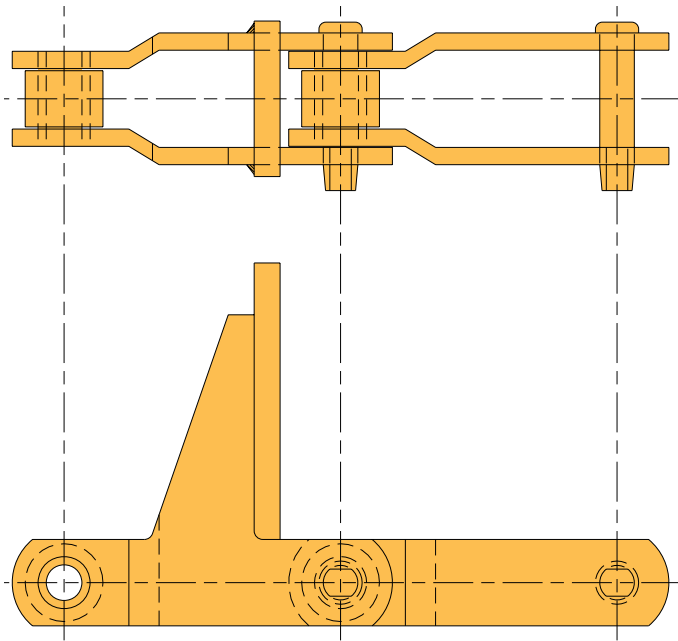
**Saddle Attachment**



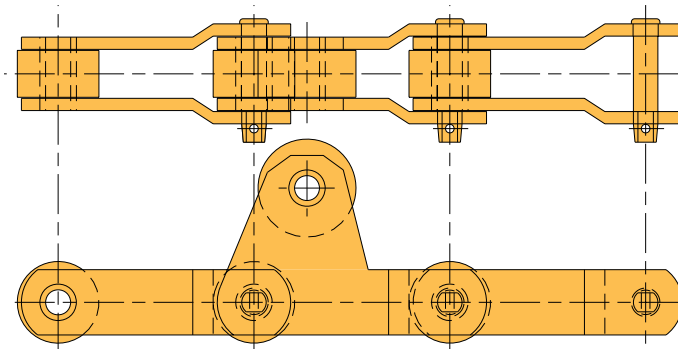
## Pusher Attachment Chains

Pusher Attachment Chains are designed for cooling beds where temperatures can reach 1,900°F. Special finger attachments push against sliding or rolling product such as billet or bars, keeping it on-line. Pusher Attachment Chains are usually designed with three to six strands across to side push evenly through the bar length. Attachments are generally MM-style with top rollers or pusher bars that project upward to engage product for side transfer movement. Designs are customized to your operation, based on the width or shape of the conveyed material.

### MM Attachment

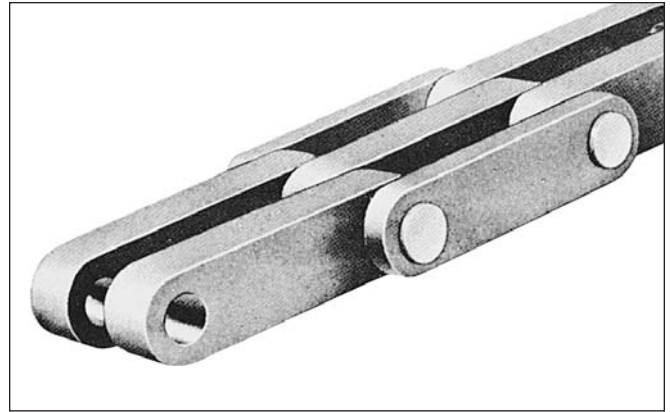


### Top Roller Attachment

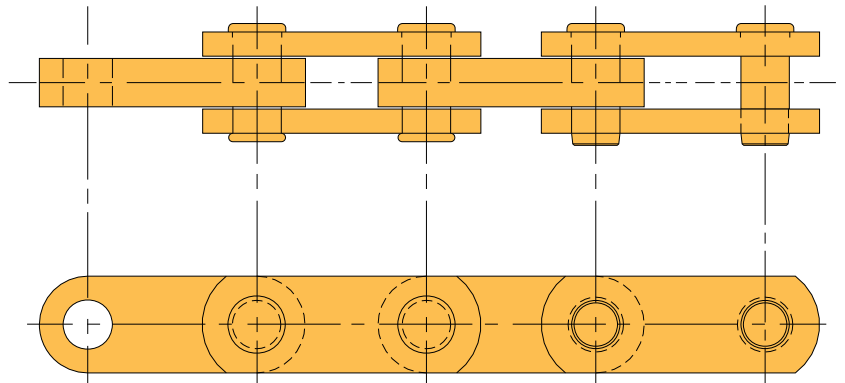


## Draw Bench Bar and Pin Chains

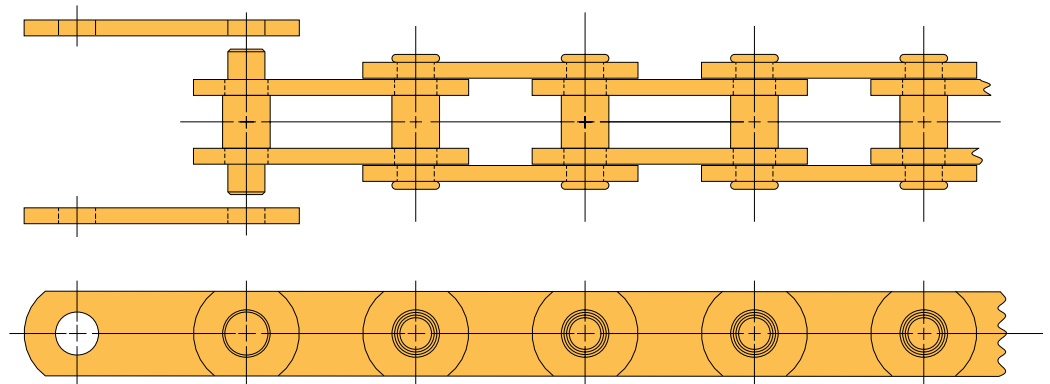
Draw Bench Bar and Pin Chains are the tension linkage that pulls a sizing mandrel through tubing. Mandrels interfere with the smaller relative tube size to create very high chain pull. So the chain must provide very high ultimate strength and long service life. Often Draw Bench Bar and Pin Chains terminate with strands called suicide chains. In an over-run situation, suicide chains stop the pulling, thus protecting the unit from permanent damage. Because of the chain tension, sprockets require enhanced features to attain the best performance.



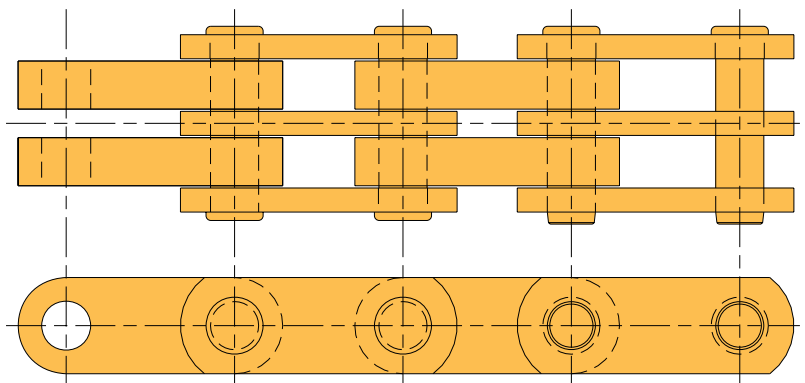
**Style 1**



**Style 2**

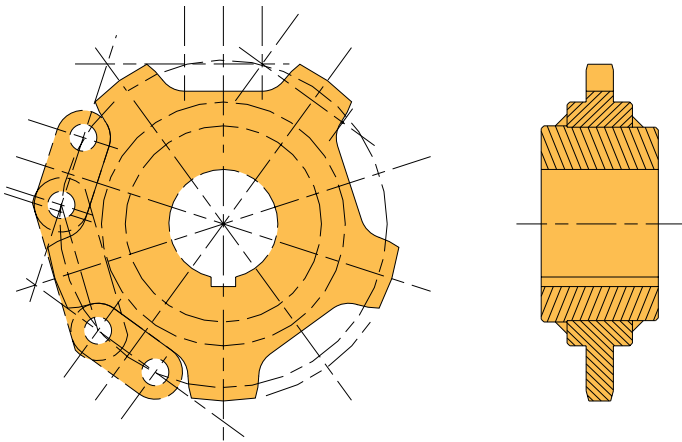


**Style 3**



## Sprockets for Draw Bench Chain

The Union Chain Division has a variety of sprockets for the metal processing industries. Some operations, like pulling a sizing mandrel through tubing, create very high chain tension. This process can put significant stress on the sprockets. To keep your operation moving, you need sprockets that can stand up to the challenge. Every Union sprocket is carefully manufactured to tight tolerances to ensure smooth operation in your applications.



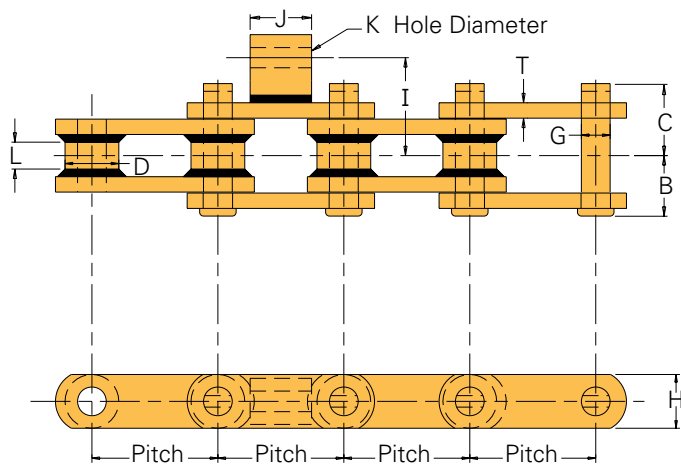
## Make In-Line Inspections Easy

Put machinery access at your fingertips. ONE-TOUCH INSPECTION DOOR® is a dust- and rain-tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are in-stock and ready-to-go for easy installation at the job site. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple. For more information, see the ONE-TOUCH INSPECTION DOOR description in Section C.

### THE UNION SOLUTION

- **Strong, long-lasting chains**
- **Attachments for your application**
- **Temperature resistance**
- **Withstand heavy shock loads**
- **Product undamaged and on-line**
- **High-tension chains and sprockets**

**Super Shuttle 4**



**Super Shuttle 4—Shuttle Car Chain Specifications**

All dimensions are in inches unless otherwise indicated.

Chain No.	Dwg. No.	Pitch	Style	Chain Width			Chain Dimensions									Attachments			Approx. Wgt. (lbs./ft.)
				Overall	Head to CL	End to CL	Pins		Bushings			Sidebars			Space	I	J	K	
							Dia.	Matl. <sup>1</sup>	Dia.	Matl. <sup>1</sup>	Thick.	Height	Matl. <sup>1</sup>						
(B+C)	B	C	G	D	L	T	H	I	J	K									
41001	21752	4.100	S <sup>2</sup>	4.31	1.97	2.34	.94	AHT	1.75	.88	AHT	.50	1.75	CHT	Ev.6th	3.00	2.00	.67	12.5

Indicates this chain is normally stocked.

<sup>1</sup>Material: AHT = Alloy heat-treated; CHT = Carbon heat-treated.

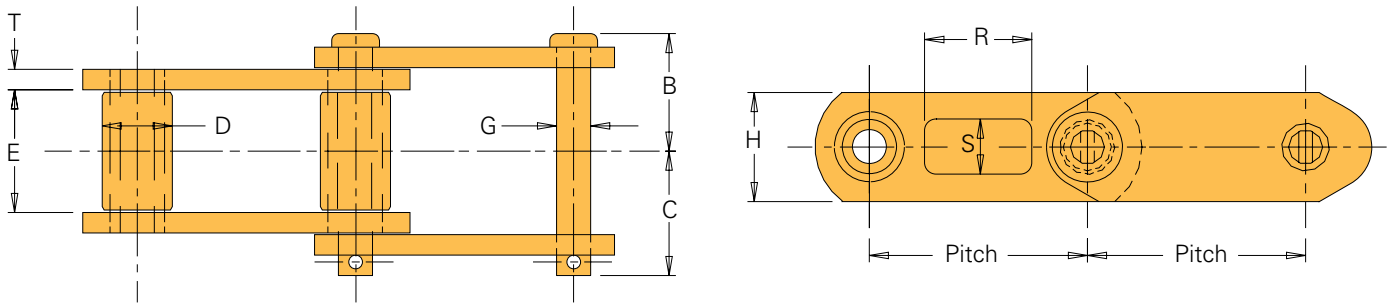
<sup>2</sup>Indicates straight sidebar style.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



### Standard Shuttle Car Chain



### Standard Shuttle Car Chains Specifications

All dimensions are in inches unless otherwise indicated.

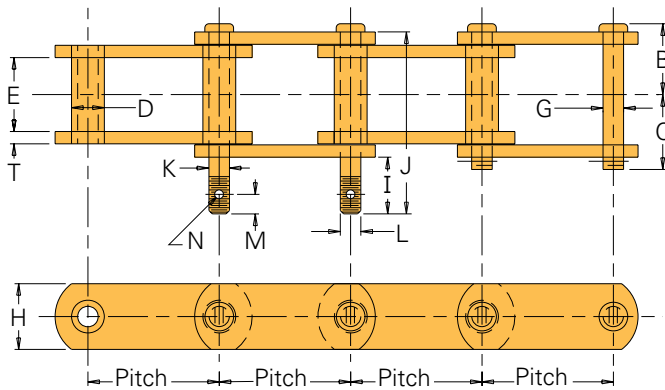
Chain No. <sup>1</sup>	Dwg. No.	Pitch	Space	Chain Width				Pins		Rollers		Sidebars			Attachments		Approx. Weight (lbs./ft.)
				Overall	Head to CL	End to CL	Inside Width	Dia.	Matl. <sup>2</sup>	Dia.	Matl. <sup>2</sup>	Thick.	Height	Matl. <sup>2</sup>	R	S	
				(B+C)	B	C	E	G		D		T	H				
26001	17108	2.609	Ev. 6th	2.91	1.36	1.55	1.13	.56	AHT	1.13	ACH	.31	1.63	AHT	1.28	.66	6.3
26001	22304	2.609	Ev. 8th	2.91	1.36	1.55	1.13	.56	AHT	1.13	ACH	.31	1.63	AHT	1.28	.66	6.3
30701	22376	3.075	Ev. 6th	3.56	1.89	1.67	1.50	.63	AHT	1.25	ACH	.38	1.75	CHT	1.28	.66	8.8

Indicates this chain is normally stocked. All others are made-to-order.

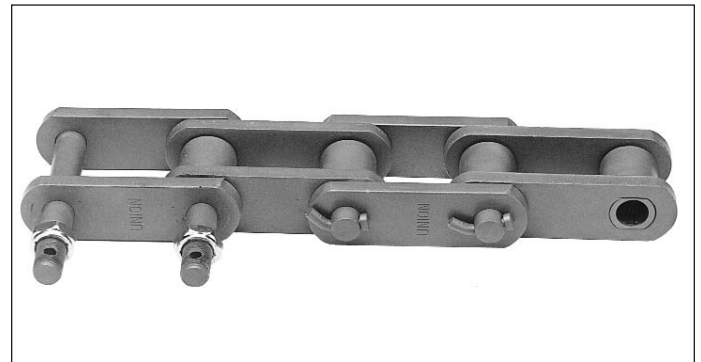
<sup>1</sup>Chain number 26001 has the slotted attachment hole on the cottered side only and Chain number 30701 has slotted attachment holes on both sides.

<sup>2</sup>Material: AHT = Alloy heat-treated; CHT = Carbon heat-treated.

### Feeder Breaker Chain



### Chain Number 30703



### Feeder Breaker Chain Specifications

All dimensions are in inches unless otherwise indicated.

Chain No.	Dwg. No.	Pitch	Chain Width				Pins		Bushings		Sidebars			Attachments						Approx. Weight (lbs./ft.)
			Over-all	Head to CL	End to CL	Inside Width	Dia.	Matl. <sup>1</sup>	Dia.	Matl. <sup>1</sup>	Thick.	Height	Matl. <sup>1</sup>	I	J	K	L	M	N	
			(B+C)	B	C	E	G	D		T	H									
30703	19501	3.075	3.44	1.63	1.81	1.31	.68	AHT	1.25	CCH	.38	1.50	CHT	2.06	4.94	.67	.63	.50	.25	4.6

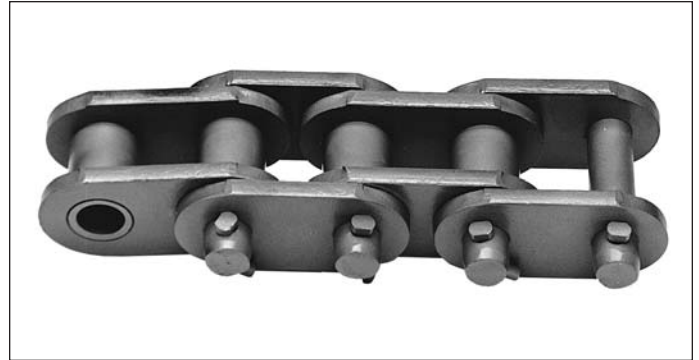
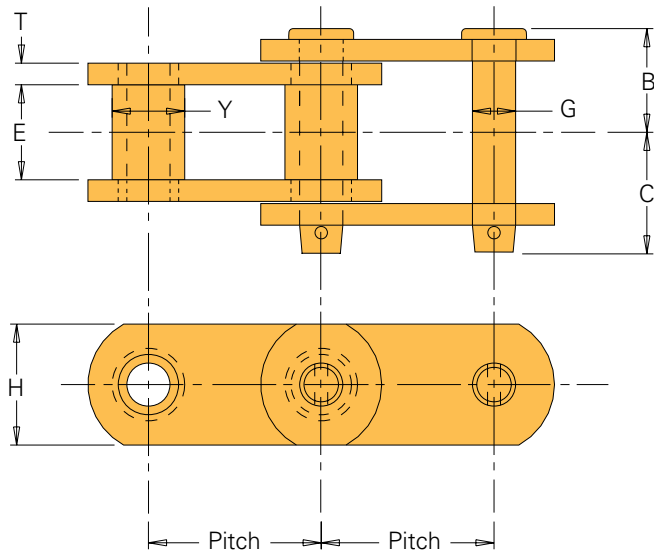
Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Material: CHT = Carbon heat-treated; ACH = Alloy case hardened; AHT = Alloy heat-treated.

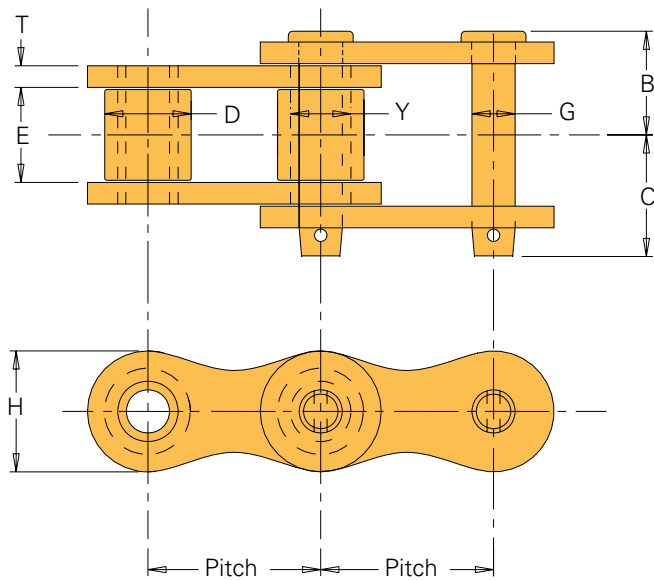
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**Style A**



**Style B**



**Tram Chains Specifications**

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Style	Chain Width				Pins		Bushings		Rollers		Sidebars			Approx. Weight (lbs./ft.)
			Overall	Head to CL	End to CL	Inside Width	Dia.	Matl. <sup>1</sup>	Dia.	Matl. <sup>1</sup>	Dia.	Matl. <sup>1</sup>	Thick. <sup>2</sup>	Height	Matl. <sup>1</sup>	
			(B+C)	B	C	E	G		Y		D		T	H		
US-2 <sup>3</sup>	2.000	A	3.38	1.44	1.72	1.25	0.72	AHT	1.13	ACH	—	—	0.31	1.88	AHT	8.3
US-64S	2.500	B	3.72	1.69	2.00	1.50	0.88	AHT	1.13	ACH	1.56	AHT	0.38	2.13	AHT	13.5
US-64SH	2.500	B	4.13	1.91	2.22	1.50	0.88	AHT	1.13	ACH	1.56	AHT	.44x.50	2.13	AHT	14.5

Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Material: AHT = Alloy heat-treated; ACH = Alloy case hardened.

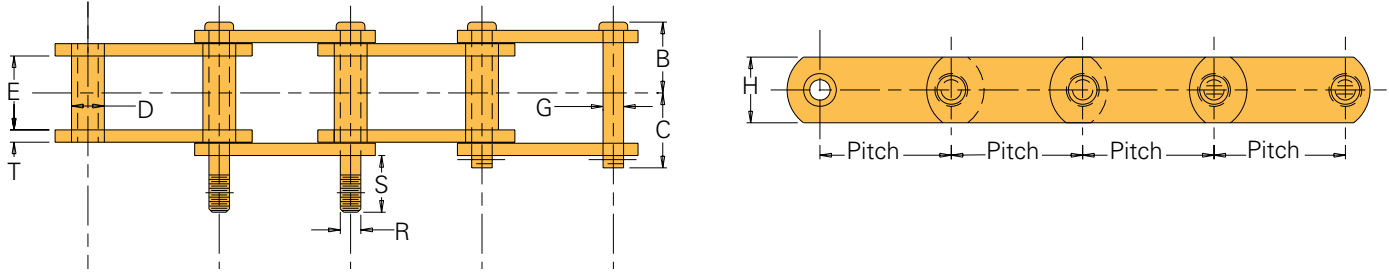
<sup>2</sup>US-64SH sidebar thickness on roller links is .50" and pin link .44".

<sup>3</sup>US-2 is a bushing type chain and does not have rollers.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## Wash Box Chain



## Wash Box Chains Specifications

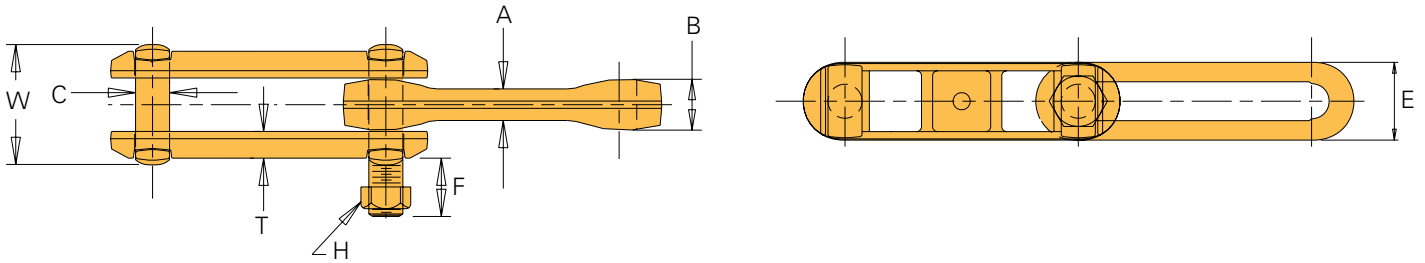
All dimensions are in inches unless otherwise indicated.

Chain No.	Dwg. No.	Pitch	Space	Chain Width				Pins		Bushings		Sidebars			Attachments		Approx. Weight (lbs./ft.)
				Overall	Head to CL	End to CL	Inside Width	Dia.	Matl. <sup>1</sup>	Dia.	Matl. <sup>1</sup>	Thick.	Height	Matl. <sup>1</sup>	R	S	
				(B+C)	B	C	E	G	D	T	H	R	S				
30702	16290	3.075	Ev. 4th	1.69	2.00	2.00	1.31	.75	ACHCP	1.25	CCH	.38	1.75	CHT	.75	1.25	10.2
30702	14143	3.075	Ev. 6th	1.69	2.00	2.00	1.31	.75	ACHCP	1.25	CCH	.38	1.75	CHT	.75	1.25	9.8

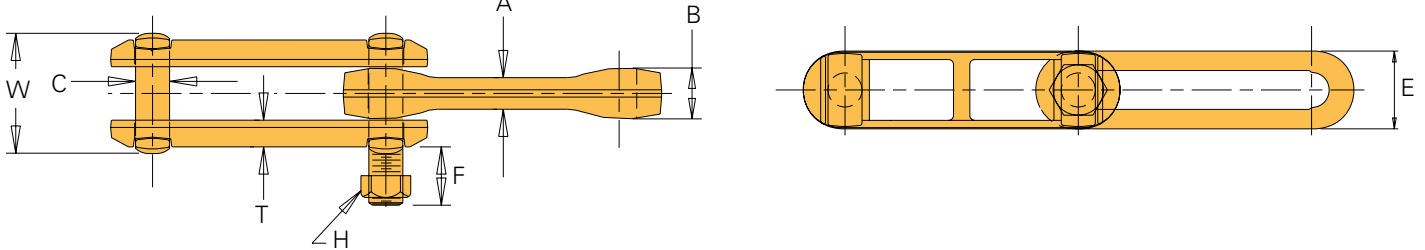
Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Material: ACHCP = Alloy case hardened chrome plated; CCH = Carbon case hardened; CHT = Carbon heat-treated.

## X-Style Drop Forged Rivetless Chain with Extended Pins



## Standard Drop Forged Rivetless Chain



## Drop Forged Rivetless Chain Specifications

All dimensions are in inches unless otherwise indicated.

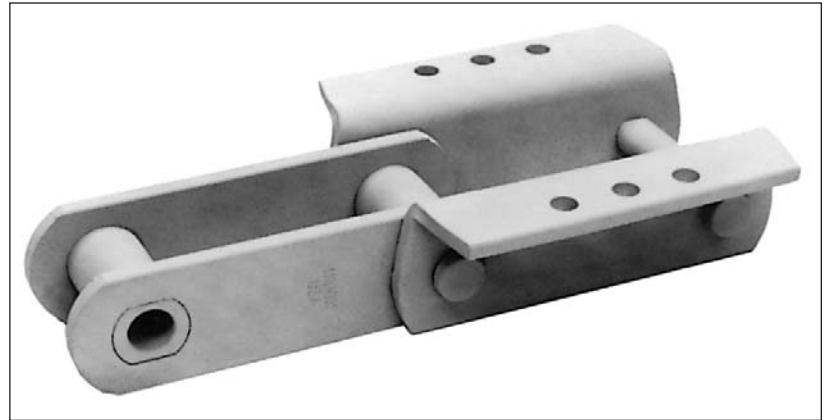
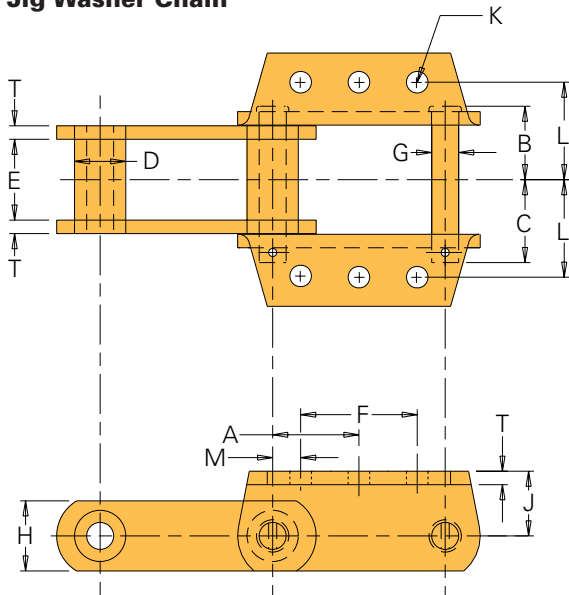
Chain Number	Drawing Number	Pitch	Average Tensile Strength	A	B	C	E	T	W	Attachments			Approx. Weight (lbs./ft.)
										Space	F	H	
X-678	18371	6.031	85,000	.81	1.31	.88	2.00	.50	3.09	2 Ext. Pins Ev. 4th	1.50	.75	6.9
698	21652	6.031	130,000	1.00	1.56	1.13	2.52	.63	3.75	2 Ext. Pins Ev. 4th	1.50	.75	12.1

Indicates this chain is normally stocked. All others are made-to-order.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

### Jig Washer Chain



### 6826 Jig Washer Chains

All dimensions are in inches unless otherwise indicated.

Chain Number	Dwg. No.	Pitch	Chain Width				Pins		Bushings		Sidebars			Attachments					Approx. Weight (lbs./ft.)		
			Over-all	Head to CL	End to CL	Inside Width	Dia.	Matl. <sup>1</sup>	Dia.	Matl. <sup>1</sup>	Thick.	Height	Matl. <sup>1</sup>	A	F	J	M	L		K	
			(B+C)	B	C	E	G			D		T	H		A	F	J	M	L	K	
6826 K1/K2 Ev. 2nd	19583	6.000	4.75	2.22	2.53	2.38	.88	AHTIH	1.50	ACH	.38	2.50x3	CHT	3.00	2.63	1.75	1.69	3.00	.53	15.5	
6826 K1/K2 Ev. 3rd	19442	6.000	4.75	2.22	2.53	2.38	.88	AHTIH	1.50	ACH	.38	2.50x3	CHT	3.00	2.63	1.75	1.69	3.00	.53	14.0	
6826 K1/K2 Ev. 4th	19448	6.000	4.75	2.22	2.53	2.38	.88	AHTIH	1.50	ACH	.38	2.50x3	CHT	3.00	2.63	1.75	1.69	3.00	.53	13.0	

<sup>1</sup>Material: AHTIH = Alloy heat-treated induction hardened; ACH = Alloy case hardened; CHT = Carbon heat-treated.

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To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

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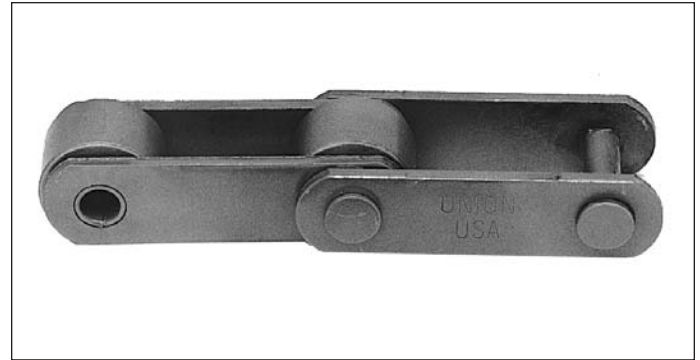
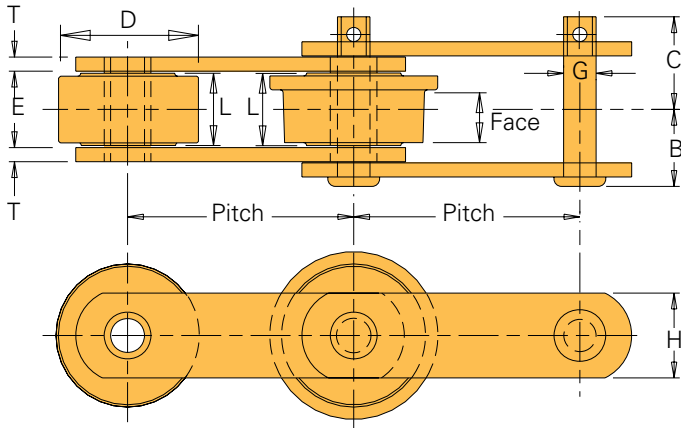
### THE UNION SOLUTION

- Long wear-life
- Durability
- In-stock and made-to-order chains
- Reliability
- Alloy steel, when required
- Precision manufacturing

## Roller Conveyor Chains

Union Roller Conveyor Chains are constructed to last in your operation. These chains are typically used for conveying or elevating applications. Sidebars are fabricated from carbon or alloy steels for long wear life. Pins and bushings are made from carbon or alloy steel and heat-treated and hardened. Dimensions of

pins are checked to ensure straight, smooth-wearing surface and a proper fit of the pin in the link bar. Pin and bushing holes are carefully finished to ensure true pitch accuracy and correct interference fit.



### Roller Conveyor Plain Chain

All dimensions are in inches unless otherwise indicated.

	Chain Number	Pitch	Width			Roller				Pin			Sidebar			Bushing <sup>1</sup>	Avg. Ult. Stgth. (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)	
			Pin Head to CL	Pin End to CL	Inside	Dia.	Lgth.	Sty. <sup>2</sup>	Matl. <sup>3</sup>	Face Width	Dia.	Sty. <sup>2</sup>	Matl. <sup>3</sup>	Hgt.	Th.	Matl. <sup>2</sup>				Matl. <sup>3</sup>
			B	C	E	D	L			G	H	T								
Straight Sidebar	95R	4.000	1.03	1.25	1.00	1.50	.97	T	PMCCH	.44	A	CHT	1.13	.19	CRS	ACH	13,000	2,100	3.4	
	83R	4.000	1.38	1.63	1.31	2.00	1.25	T	CCH	.63	A	CHT	1.50	.25	HC	CCH	22,000	3,650	6.6	
	1113R	4.040	1.50	1.75	1.31	2.00	1.25	T	CCH	.63	A	CHT	1.50	.31	HC	CCH	26,000	4,250	7.4	
	US-196R	6.000	1.20	1.45	1.13	2.00	1.06	T	CCH	.44	A	CHT	1.25	.25	HC	CCH	18,000	2,500	5.0	
	607R	6.000	1.33	1.58	1.31	2.50	1.25	T	CCH	.56	A	CHT	1.50	.25	HC	CCH	21,000	3,500	6.5	
	631R	6.000	1.78	2.03	1.38	3.00	1.31	T	CCH	.75	A	CHT	2.00	.38	HC	CCH	38,000	5,600	12.2	
	96R	6.000	1.84	2.09	1.50	2.75	1.44	V	CCH	1.31	.75	A	CHT	2.00	.38	HC	CCH	47,000	5,900	11.8
	1131R	6.000	1.84	2.09	1.50	3.00	1.44	T	CCH	.75	A	CHT	2.00	.38	HC	CCH	47,000	5,900	12.5	
	96RX	6.000	1.84	2.09	1.50	2.75	1.44	V	CCH	1.31	.75	A	CHT	2.00	.38	CHT	CCH	70,000	5,900	11.8
	614R	6.000	1.78	2.03	1.38	2.50	1.31	T	CCH	.75	A	CHT	2.00	.38	HC	CCH	38,000	5,600	11.0	
625R	6.000	1.56	1.81	1.69	3.00	1.63	U	AIHT	1.13	.63	A	CHT	2.00	.25	HC	CCH	25,000	4,750	9.8	
Offset Sidebar	1604R	6.000	1.28	1.63	1.06	3.00	.88	T	CCH	.50	A	ACH	1.25	.25	CHT	CCH	24,000	2,750	5.4	
	2130R	6.000	1.72	2.00	1.31	2.50	1.25	T	CCH	.75	A	CHT	2.00	.38	HC	CCH	38,000	5,250	11.0	
	1630R	6.000	1.72	2.03	1.38	2.50	1.31	T	CCH	.88	A	CHT	2.00	.38	HC	CCH	43,000	6,500	11.0	
	2184R	6.000	1.72	2.03	1.38	3.00	1.31	V	PMCCH	1.18	.88	A	ACH	2.00	.38	HC	CCH	43,000	6,500	12.3
	2184RX	6.000	1.72	2.03	1.38	3.00	1.31	V	PMCCH	1.18	.88	A	ACH	2.00	.38	CHT	ACH	75,000	6,500	12.0

<sup>1</sup>Bushing styles are typically full round or double flat, but may differ depending on the specific application.

<sup>2</sup>Styles for rollers, pins and sidebars are shown on pages A-17 – A-18.

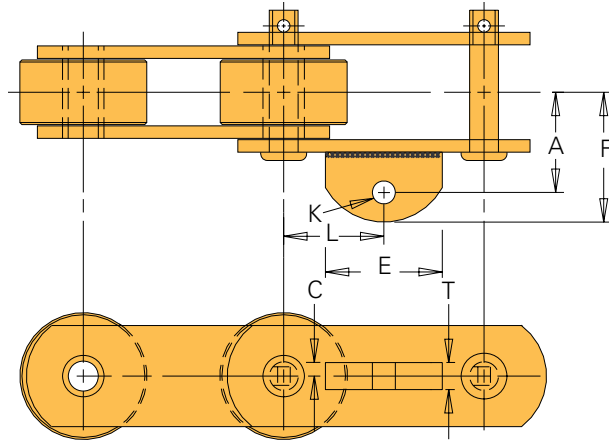
<sup>3</sup>Material: CHT = Carbon heat-treated; CCH = Carbon case hardened; AHT = Alloy heat-treated; CRS = Cold rolled steel; AIHT = Alloy iron heat-treated; ACH = Alloy case hardened; HC = High carbon; PMCCH = Powdered metal carbon case hardened.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## Bagasse Carriers

Bagasse Carriers are the efficient, economical way to handle bagasse that is to be fed to boilers, put into storage, or further processed. The alloy steel pins are heat-treated for wear resistance and can be nickel-plated to prevent corrosion fatigue. The high-strength sidebars are designed to withstand heavy shock loads. We even made the base of the 2-C flight wings thicker to last longer.



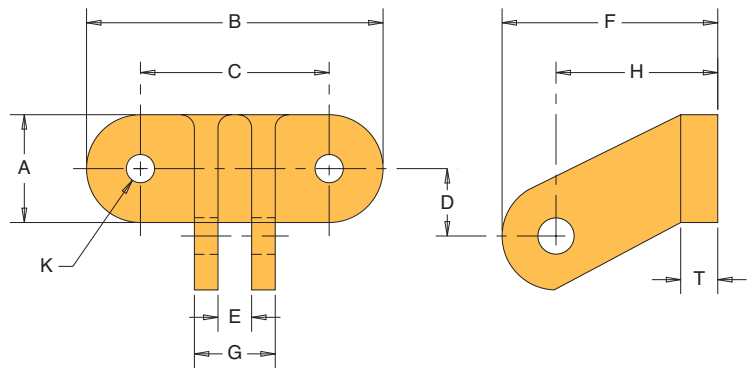
## Bagasse Carriers

All dimensions are in inches unless otherwise indicated.

Attachment Number	Chain Number								Approximate Weight (lbs/ft.)
		A	C	E	F	Bolt Diameter	K	L	
A-42	53R	1.56	.13	1.00	2.00	.38	2.00	.25	4.2
	86R	2.34	.19	2.00	3.16	.50	1.50	.38	6.4
	95R	1.63	.19	1.25	2.13	.38	3.00	.38	3.6
	119R	2.00	.25	1.38	2.69	.63	1.50	.50	7.5
	604R	2.34	.25	2.00	3.16	.63	3.00	.50	6.2
	614R	2.75	.25	2.00	3.75	.63	3.00	.50	12.3
	631R	2.56	.25	2.00	3.56	.69	3.00	.50	13.5
	1131R	2.84	.25	2.00	3.84	.63	3.00	.50	13.8
	1604R	2.31	.25	2.00	3.06	.63	3.00	.50	6.7
	2184RX	2.63	.25	2.00	3.63	.63	3.00	.50	13.6

## Hinged Bucket and Scraper Flight Wings for Bagasse Carriers

Flight wings are used with double strands of parallel chain and are usually connected to the A-42 chain attachments. This helps prevent the chain from binding by compensating for irregularities in the length of the two strands.



## Hinged Bucket and Scraper Flight Wings

All dimensions are in inches unless otherwise indicated.

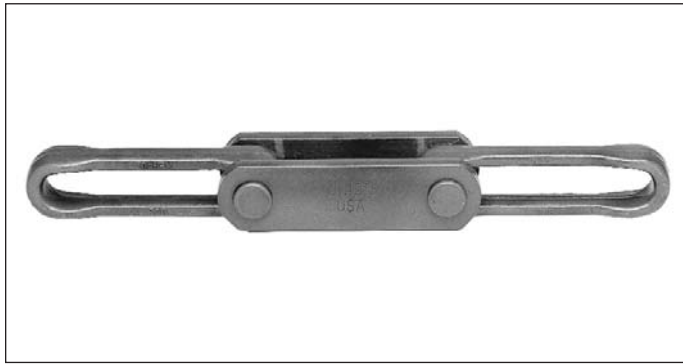
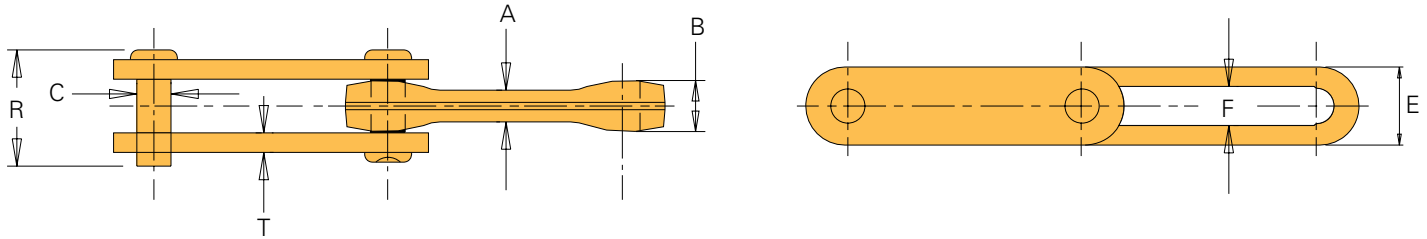
Bucket Wing Style	Attach. Number											Bolt Dia.	Rivet Dia.	Approx. Weight Ea. Unit (lbs.)
		A	B	C	D	E	F	G	H	K	L			
Style C	2C	2.00	5.00	3.50	1.00	0.63	4.00	1.50	3.00	0.50	0.63	0.69	2.8	
	15C	1.75	3.50	2.50	0.81	0.44	1.81	1.00	1.13	0.31	0.38	0.28	0.7	

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## Barloop Chains

Barloop Chains offer the strength and versatility of Drop Forged Rivetless Chain PLUS flat sidebars for welding attachments. The pins are securely locked in the sidebars, eliminating both the wear between the pin and sidebar and the possibility of the chain coming apart when slack.



## Barloop (Bar Link) Chains

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Dimensions							Average Ultimate Stgth.(lbs.)	Average Pitches per Foot	Approx. Weight (lbs./ft.)
		A	B	C	E	F	T	R			
S-348 <sup>1</sup>	3.015	.50	.75	.50	1.06	.53	.25	1.75	24,000	3.95	2.4
S-458	4.031	.63	1.02	.63	1.38	.69	.31	2.06	48,000	2.98	3.5
S-678	6.031	.81	1.31	.88	2.00	1.00	.50	3.00	85,000	1.99	8.6
S-698	6.031	1.00	1.56	1.13	2.69	1.25	.50	3.13	130,000	1.33	13.2
S-998	9.031	1.00	1.56	1.13	2.69	1.25	.50	3.13	130,000	1.33	10.4

Indicates this chain is normally stocked. All others are made-to-order.

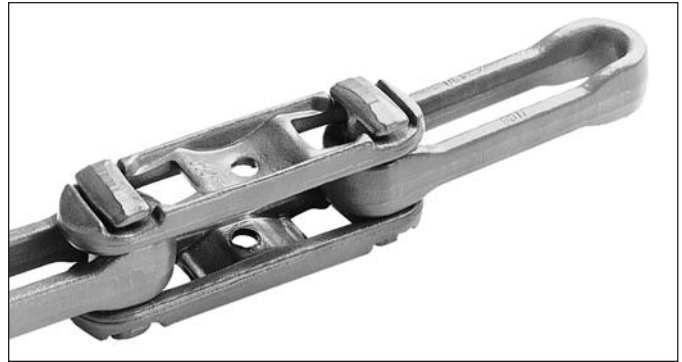
<sup>1</sup>Standard chain inventory features nut and bolt construction.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

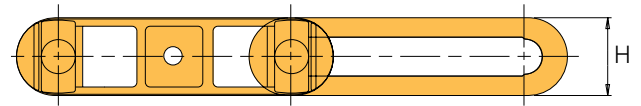
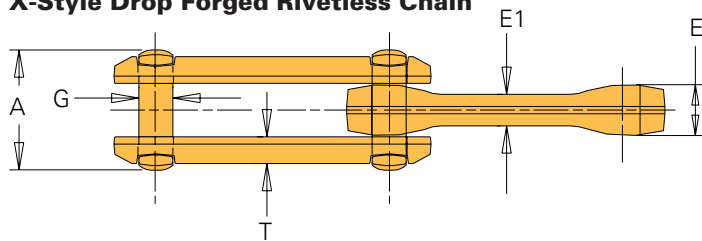
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## Drop Forged Rivetless Chain

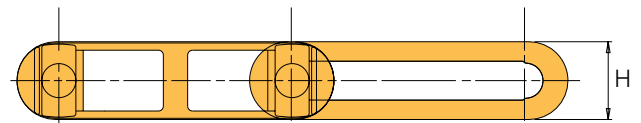
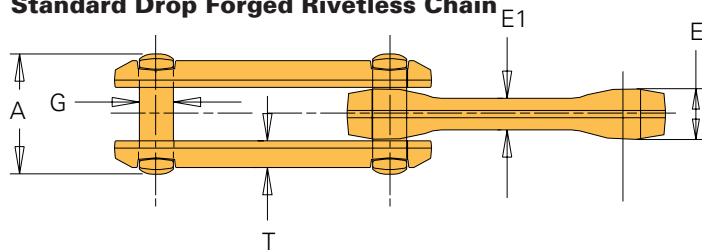
Drop Forged Rivetless Chain is used extensively in the cane washing operation before milling as well as in other applications in the sugar mill. The chain design lends itself to multi-plane operation, such as flight and drag conveyors, that move the unwashed cane to the washing plant.



### X-Style Drop Forged Rivetless Chain



### Standard Drop Forged Rivetless Chain



### X-Style and Standard Drop Forged Rivetless Chain

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Chain Width			Pin Diameter	Sidebars		Average Ultimate Strength (lbs.)		Maximum Work Load (lbs.)		Avg. Pitches (ft.)	Approx. Weight (lbs./ft.)
		Overall	Inside			Thick.	Height	Alloy Heat-Treated <sup>1</sup>	Heat-Treated	Normal	Freq. Flex.		
			A	E	E1								
X-348 <sup>2</sup>	3.015	1.73	.75	.50	.50	.41	1.09		24,000	2,600	1,200	3.95	2.2
X-458 <sup>2</sup>	4.031	2.19	1.00	.63	.63	.47	1.38	60,000	48,000	4,000	1,900	2.98	3.2
468	4.031	3.19	1.59	1.13	.75	.41	1.88		70,000			2.98	7.5
X-658 <sup>2</sup>	6.031	2.19	1.00	.63	.63	.47	1.38		48,000			1.99	2.7
X-678 <sup>2</sup>	6.031	3.03	1.28	.81	.88	.72	2.00	100,000	85,000	7,100	3,300	1.99	6.7
698	6.031	3.75	1.56	1.00	1.13	.56	2.56	150,000	130,000	10,800	5,200	1.99	11.4
998	9.031	3.75	1.56	1.00	1.13	.63	2.53	150,000	130,000	10,800	5,200	1.33	9.0

Indicates this chain is normally stocked. All others are made-to-order.

Note: Magna-flux inspected chain is available.

Component hardness: BHN 344 (Nom.) = Carbon steel chains; BHN 380 (Nom.) = Alloy steel chains.

<sup>1</sup>ANSI/SAE 8642

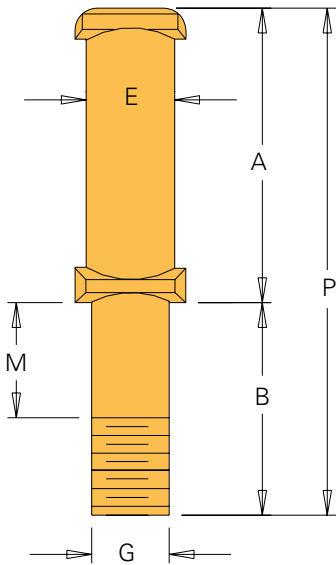
<sup>2</sup>The prefix "X" designates a design proportioned to flex transversely on a shorter radius. The outside bars are made with a mid-pitch panel that strengthens the sidebar and prevents material from falling through the link. X-Styles are used on overhead conveyors and other special applications. Attachments shown on the following page fit both Standard and X-Style Chain.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

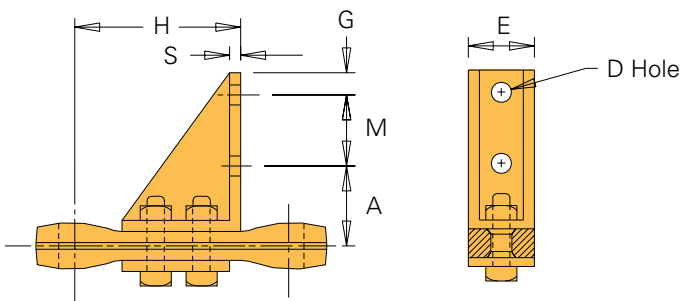
Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



### Extended Pin



### S-22 Attachment



### Drop Forged Rivetless Chain Attachments

All dimensions are in inches unless otherwise indicated.

Attach. Number	Chain Number	A	B	D	E	G	H	M	P	S	Approx. Chain Weight (lbs./ft.)
Extended Pin	X-458	2.25	1.13		.63	.50		.31	3.38		.3
	X-678	3.13	1.50		.88	.75		.19	4.63		1.6
	X-678	3.13	1.50		.88	.88		.19	4.63		1.6
	998	3.88	1.75		1.13	.75		.38	5.63		1.9
S-22 Attach.	X-458	2.25		.56	1.38	.63	3.18	2.00		.31	2.0
	X-678	2.88		.68	1.81	.88	4.75	2.25		.31	4.7

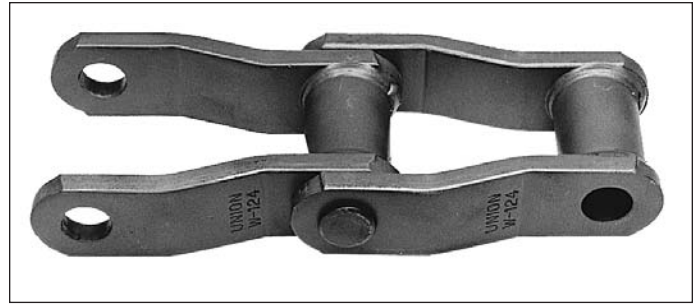
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

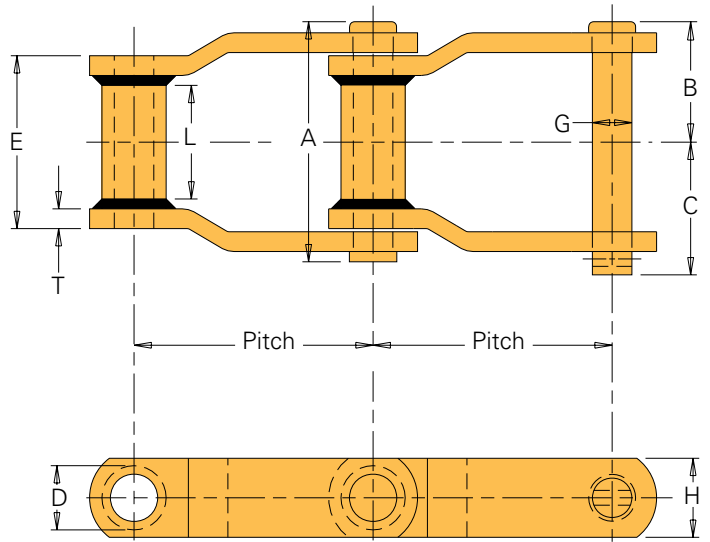


## Welded Steel Chains

Union Welded Steel Mill Chains are high-strength rollerless chains that can often be used when increased loads are required. Sidebars are precision-welded to tubular barrels, then connected with through-hardened pins for maximum strength and durability.



### Offset Sidebar



## Welded Steel Mill Chain Specifications

All dimensions are in inches unless otherwise indicated.

Chain No.	Pitch	Chain Width				Barrel		Pin Dia.	Sidebars Strength (lbs.)			Avg. Ult. Load (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)
		Overall	Pin Head to CL	Pin End to CL	Lgth. of Bearing				Thick.	Height				
		A	B	C	E	D	L	G	T	H				
WH-78	2.609	3.00	1.44	1.56	2.00	.88	1.13	.50	.25	1.13	33,000	3,500	4.0	
WH-82	3.075	3.25	1.56	1.69	2.25	1.06	1.25	.56	.25	1.25	36,000	4,400	4.8	
WH-124 <sup>1</sup>	4.000	4.25	2.03	2.22	2.75	1.25	1.63	.75	.38	1.50	60,000	7,350	8.3	
WH-124H	4.063	4.75	2.28	2.47	3.00	1.75	1.63	1.00	.50	2.00	100,000	10,500	14.7	
WH-111	4.760	4.88	2.34	2.54	3.38	1.38	2.38	.75	.38	1.75	60,000	8,850	9.5	
WH-106	6.000	4.25	2.03	2.31	2.75	1.25	1.63	.75	.38	1.50	60,000	7,200	7.0	
WH-132 <sup>1</sup>	6.050	6.25	3.00	3.40	4.38	1.75	2.88	1.00	.50	2.00	100,000	15,300	14.2	
WH-150	6.050	6.25	3.00	3.25	4.38	1.75	2.88	1.00	.50	2.50	100,000	15,300	16.8	
WH-155	6.050	6.91	3.25	3.66	4.63	1.75	3.00	1.13	.63	2.50	184,000	20,000	20.0	
WCH-132	6.050	6.25	3.00	3.25	4.38	1.75	2.88	1.00	.50	2.00	100,000	15,300	14.2	

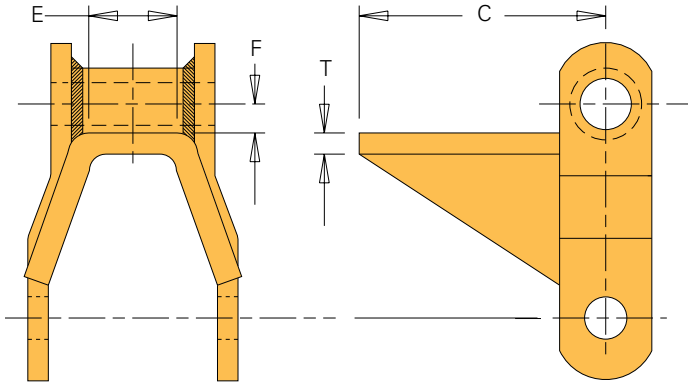
Indicates this chain is normally stocked. All others are made-to-order.

<sup>1</sup>Chain numbers WH-124 and WH-132 are also stocked in stainless steel with riveted and cotter construction.

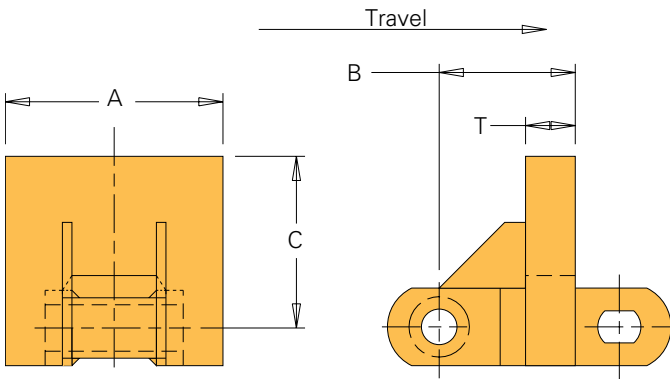
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

### H-2 Attachment



### RF-12 Attachment



### Welded Steel Chain Attachments

All dimensions are in inches unless otherwise indicated.

Attachment Number	Chain Number							Approximate Weight (lbs/ft.)
		A	B	C	E	F	T	
H-2	WH-78			3.56	.81	.31	.25	
	WH-82			3.63	1.03	.38	.25	
RF-12	WH-132	12.00	4.56	5.25			1.00	
	WH-150	12.00	4.56	5.50			1.00	58.0
	WH-155	12.00	4.56	5.50			1.00	63.0

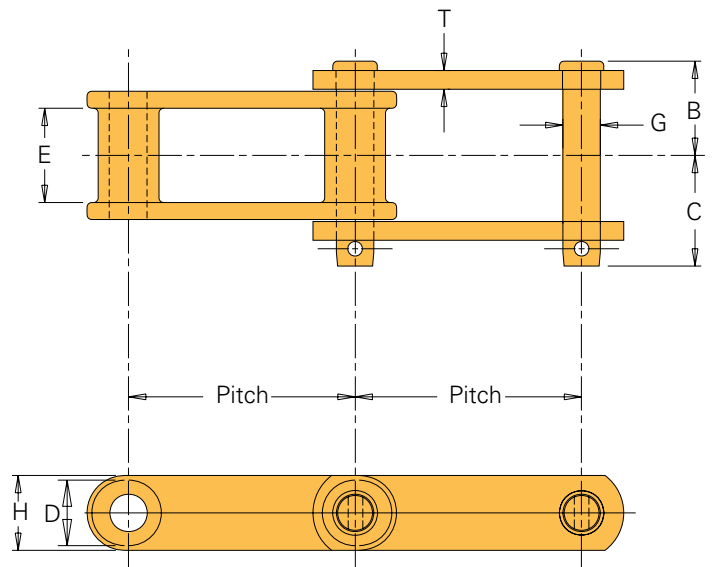
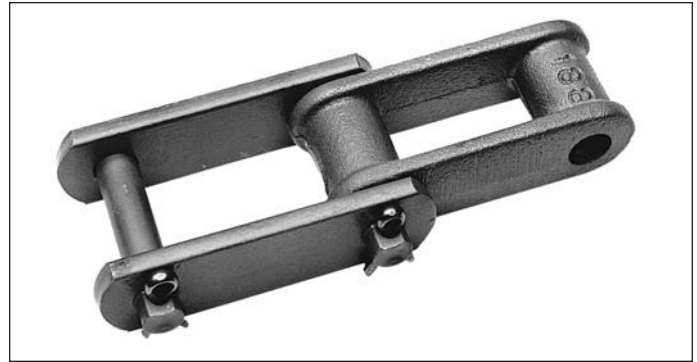
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



## Cast Combination Chains

Cast Combination Chains are used extensively on cane feeding tables where heavy, abrasive loads are the norm. These chains are carefully constructed using pearlitic iron block links and high carbon steel sidebars and pins to create an economical, extra-strength chain. The ultimate tensile strength of pearlitic iron is about 35 percent higher than standard iron. That makes Cast Combination the ideal chain for heavy-duty applications.



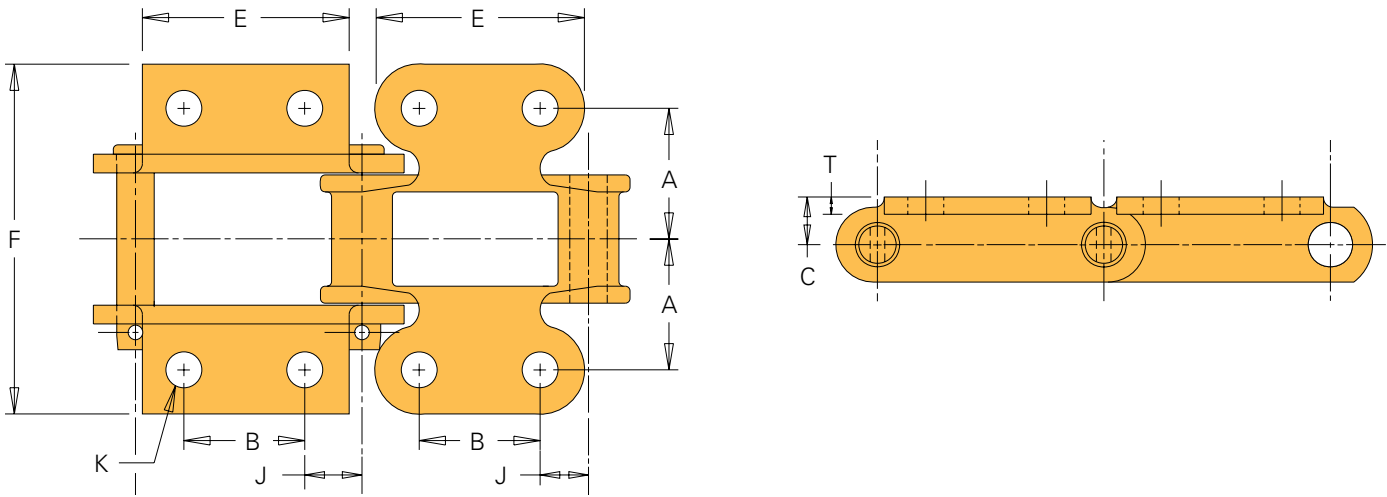
## Cast Combination Chain Specifications

All dimensions are in inches unless otherwise indicated.

Chain Number	Average Ultimate Strength	Working Load	Pitch	Links in Approx. 10 ft.	Dimensions							Approx. Weight (lbs./ft.)
					Pin Head to CL	Pin End to CL	Maximum Allowable Sprocket Face	Pin Dia.	Sidebar Height	Sidebar Thick.	Barrel Dia. Size	
					<b>B</b>	<b>C</b>	<b>E</b>	<b>G</b>	<b>H</b>	<b>T</b>	<b>D</b>	
C-188	17,500	2,340	2.609	46	1.34	1.44	.94	.50	1.13	.25	.88	3.6
C-131	30,000	3,750	3.075	40	1.81	1.88	1.13	.63	1.50	.38	1.25	6.5
C-102B	30,000	5,000	4.000	30	2.19	2.30	2.00	.63	1.50	.38	1.00	6.8
C-111	45,000	7,500	4.760	26	2.59	2.66	2.38	.75	1.75	.38	1.44	9.8
C-110	30,000	5,000	6.000	20	2.19	2.30	1.94	.63	1.50	.38	1.25	6.0
C-132	62,500	10,400	6.050	20	3.22	3.16	3.13	1.00	2.00	.50	1.75	14.5

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.



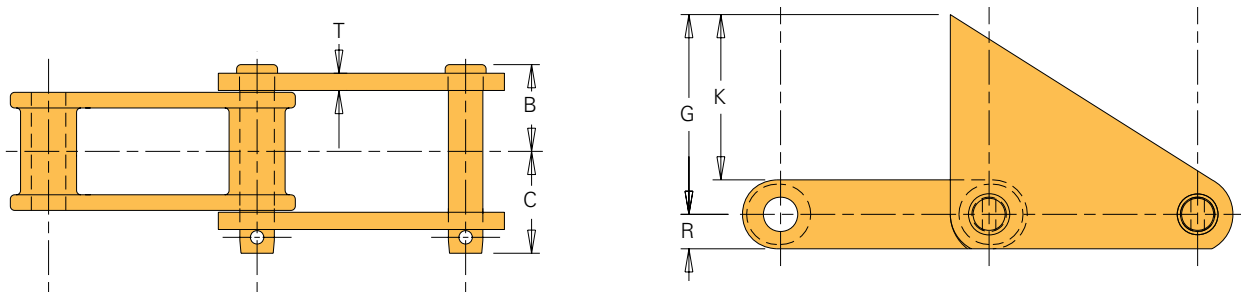
**Cast Combination Chain with K-2 Attachments**

All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Dimensions								Approx. Weight <sup>1</sup> (lbs./ft.)
		A	J	E <sup>2</sup>	B	C	F <sup>2</sup>	T	K	
C-188	2.609	2.09	.69	2.13	1.25	.81	5.06	.25	.31	4.3/5.4
C-131	3.075	2.06	.78	2.63	1.50	1.06	5.50	.31	.50	7.4/8.7
C-102B	4.000	2.66	1.13	2.75	1.75	1.06	6.63	.25	.38	7.8/9.1
C-111	4.760	3.13	1.22	3.63	2.31	1.13	7.50	.31	.50	11.3/12.7
C-110	6.000	2.66	2.13	3.00	1.75	1.06	6.50	.25	.38	7.3/8.4
C-132	6.050	3.75	1.66	4.13	2.75	1.25	9.06	.38	.50	16.1/17.9

<sup>1</sup>Figure on left represents weight for chain with attachment on sidebar only.  
 Figure on right represents weight for chain with attachment on sidebar and center block.

<sup>2</sup>Block link attachment dimensions.



**Cast Combination Chain with S-1 Attachments**

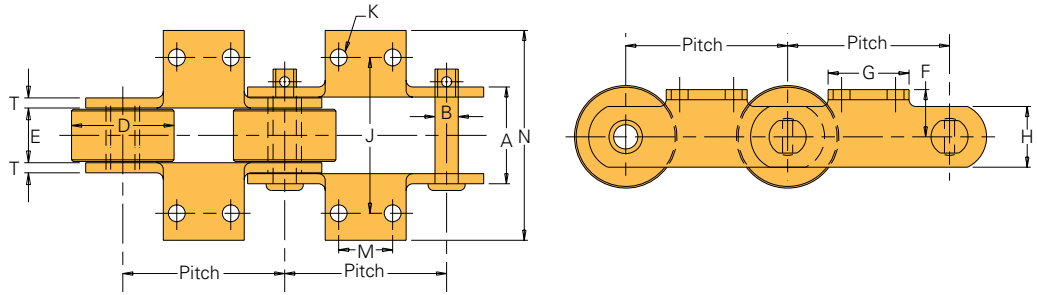
All dimensions are in inches unless otherwise indicated.

Chain Number	B	C	G	K	R	T	Approximate Weight (lbs./ft.)
C-102B	2.05	2.33	3.75	3.00	.75	.38	9.6
C-111	2.31	2.66	4.38	3.50	.88	.38	12.6
C-132	3.06	3.27	5.00	4.00	1.00	.50	19.6

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.  
 Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

## Main Cane Carrier Chain

Union Main Cane Carrier Chains are strong and long-lasting. In fact, the average ultimate strengths range from 140,000 to 310,000 pounds. Main Cane Carriers are available in 6", 8", and 12" pitches. The spacing and sizing of attachment holes may be varied to match the punching of existing slats.



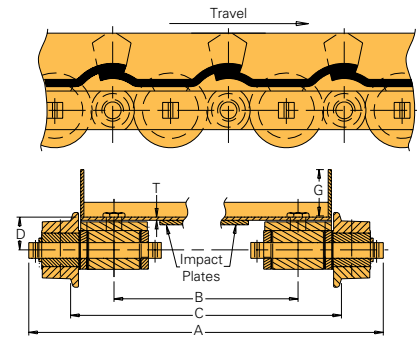
## Main Cane Carriers with Chain Rollers

All dimensions are in inches unless otherwise indicated.

Attach. No.	Chain Number	Pitch	Dimensions						Attachment					Bolt Dia.	Avg. Tensile (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)
			A	B	E	D	H	T	F	G	M	N	J				
K-2	96R	6.000	3.06	.75	1.50	2.75	2.00	.38	1.63	5.50	3.00	6.00	4.38	.50	47,000	5,900	15.8
	96RX	6.000	3.06	.75	1.50	2.75	2.00	.38	1.63	5.50	3.00	6.00	4.38	.50	70,000	5,900	15.8
	2178RX	6.000	3.06	.88	1.50	2.75	2.25	.38	1.63	4.50	3.00	5.72	4.38	.50	85,000	6,900	15.3
	2198RX	6.000	3.56	.88	1.50	2.75	2.25	.50	1.63	4.50	3.00	6.62	4.38	.50	100,000	7,700	18.2
	60175	6.000	3.63	1.13	1.56	3.00	2.75	.50	2.00	4.25	3.00	5.81	4.38	.56	175,000	35,000	23.5
	9063RXX	6.000	3.06	.94	1.50	3.00	2.50	.38	1.75	4.50	3.00	6.53	4.38	.50	110,000	7,400	18.7
	896R	8.000	3.06	.75	1.50	2.75	2.00	.38	1.63	5.50	3.50	6.28	4.38	.50	47,000	5,900	16.9
	806R	8.000	3.88	1.00	1.81	3.00	2.50	.50	2.19	6.88	3.50	7.59	5.19	.63	95,000	9,800	22.5
	800RX	8.000	3.88	1.00	1.81	3.50	3.00	.50	2.19	7.00	4.50	7.09	5.19	.63	125,000	9,800	26.1

## Main Cane Carriers with Outboard Roller Style Apron Conveyors

Union Main Cane Carriers with Outboard Roller Style Apron Conveyors are built for long-lasting, trouble-free operation. The outboard rollers feature a lubricating system that maintains a continuous film in the bearing surfaces. Rollers are easily removable without dismantling the chain. That makes maintenance fast and simple, keeping your costs down and your line up...and running. Side plates and steel impact shoes are welded to the apron pans for added strength. The rugged load saddles are bolted to the underside of the apron pan. This transmits shock loads caused by the knifing action to the rollers.



## OBR Style Apron Conveyors

All dimensions are in inches unless otherwise indicated.

Style	Chain Number	Pitch	Width <sup>1</sup>			Centerline Chain to Top of Pan Bead	Base Dim.	Pan Thickness	Max. <sup>2</sup> Work Load (lbs.)	Approx. Weights (lbs.)		
			Overall	Center to Center Sprocket	Track Gauge					Conveyor <sup>3</sup> Weight 18" Pan (ft.)	Wgt. Ea. 1" Added to Hgt.	Weight Added Ea. 6" of Width
			A	B	C	D	G	T				
Style A	961R	9.000	28.06	14.75	22.56	2.88	4.00	.25	18,000	115.2	2.9	8.3
OBR Aprons <sup>4</sup>	2397R	12.000	27.25	15.19	21.81	3.75	4.00	.25	18,400	92.5	2.6	7.5
	1706R	12.000	28.06	14.75	22.56	3.75	4.00	.25	28,000	108.7	2.6	7.5
	2614R	12.000	27.69	14.19	22.06	4.25	4.00	.25	35,000	157.1	2.6	7.5
	2614R	12.000	27.69	14.19	22.06	4.38	4.00	.38	35,000	172.4	4.0	11.3

<sup>1</sup>All widths and weights are based on 18" apron pan widths. For weight estimate refer to "Approximate Weight (lbs.)" column for your specific conveyor width.

<sup>2</sup>Indicates working load for two strands of chain.

<sup>3</sup>Indicates without through-rods. Refer to page A-44 for rod weights.

<sup>4</sup>OBR style can be furnished stub shaft every pitch or every 2nd pitch depending on load criteria. All weights shown above are for OBR every pitch. Consult with Union engineers for selection assistance.

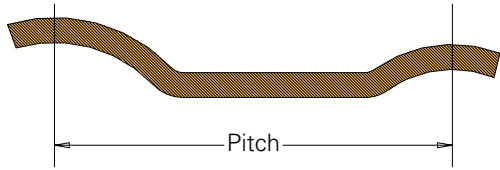
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

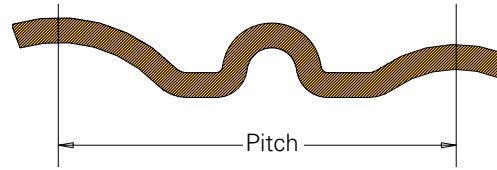
## Cane Carrier Slats

Cane Carrier Slats can be supplied for any of the carrier chains. The slats are available in 3/16-inch and 1/4-inch thicknesses and can be supplied in any length.

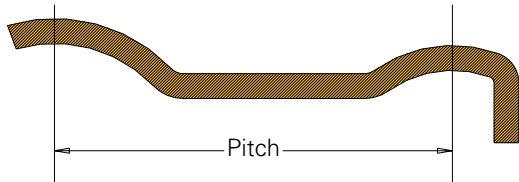
**Style CA**



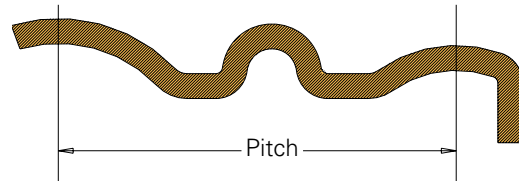
**Style CC**



**Style CB**



**Style CD**



### Cane Carrier Slats

Slats for Chain Numbers Style CA			Slats for Chain Numbers Style CB			Slats for Chain Numbers Style CC			Slats for Chain Numbers Style CD		
Width	Weight		Width	Weight		Width	Weight		Width	Weight	
	3/16"	1/4"		3/16"	1/4"		3/16"	1/4"		3/16"	1/4"
30	11.7	15.5	30	13.1	17.5	30	12.3	16.5	30	13.9	18.6
36	14.0	18.6	36	15.8	21.1	36	14.8	19.8	36	16.8	22.3
42	16.3	21.7	42	18.4	24.5	42	17.3	23.1	42	19.6	26.1
48	18.7	24.8	48	21.1	28.1	48	19.8	26.4	48	22.3	29.8
54	21.0	27.9	54	23.7	31.5	54	22.2	29.6	54	25.1	33.5
60	23.4	31.0	60	26.3	35.2	60	24.7	32.9	60	27.9	37.2
66	25.7	34.1	66	28.9	38.5	66	27.2	36.2	66	30.7	40.9
72	28.0	37.3	72	31.6	42.1	72	29.6	39.4	72	33.6	44.6
78	30.4	40.4	78	34.2	45.6	78	32.1	42.8	78	36.3	48.4
84	32.7	43.5	84	36.8	49.1	84	34.6	46.2	84	39.0	52.1
90	35.0	46.6	90	39.4	52.6	90	37.0	49.4	90	41.9	55.7
96	37.4	49.7	96	42.1	56.1	96	39.5	52.6	96	44.7	59.5
102	39.7	52.8	102	44.7	59.6	102	41.9	56.0	102	47.4	63.3
108	42.0	55.9	108	47.4	63.2	108	44.4	59.3	108	50.3	67.0

## Make In-Line Inspections Easy

Put machinery access at your fingertips. ONE-TOUCH INSPECTION DOOR® is a dust- and rain-tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are in-stock and ready-to-go for easy installation at the job site. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple. For more information, see the ONE-TOUCH INSPECTION DOOR description in Section C.

ONE-TOUCH INSPECTION DOOR® is a registered trademark of Tsubaki Conveyor of America, Inc.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

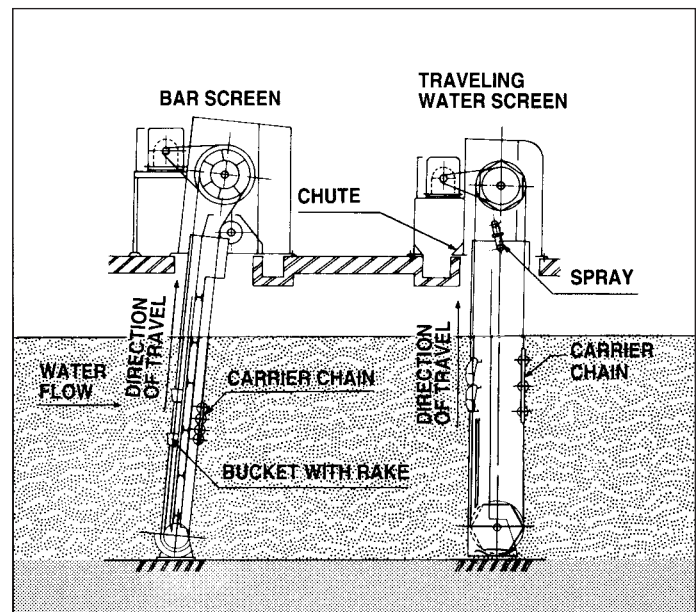
## THE UNION SOLUTION

- **Reliable chains that handle high tonnage and continuous operation**
- **Careful construction for your operation**
- **Added strength for extended wear life**
- **Easy inspection and maintenance**
- **Strong, long-lasting components**

## Select Union Chains

Union Traveling Water and Bar Screens are specially designed to stand up to this corrosive environment. Pins and bushings are through hardened for extended wear life. Rollers are constructed of cast iron or through hardened stainless steel and have a special synthetic resin bushing for smooth operation. The resin bushings require no lubrication, saving you time and money.

To add even more protection, Union Water Treatment Chains are double-treated for extra corrosion resistance—first with an adhesive sealant in the pin, bushing and link plate press-fit areas, and then with an anti-corrosion, rust-prevention coating. That means strong, long-lasting chain for your screening environment.



## Factors to Consider

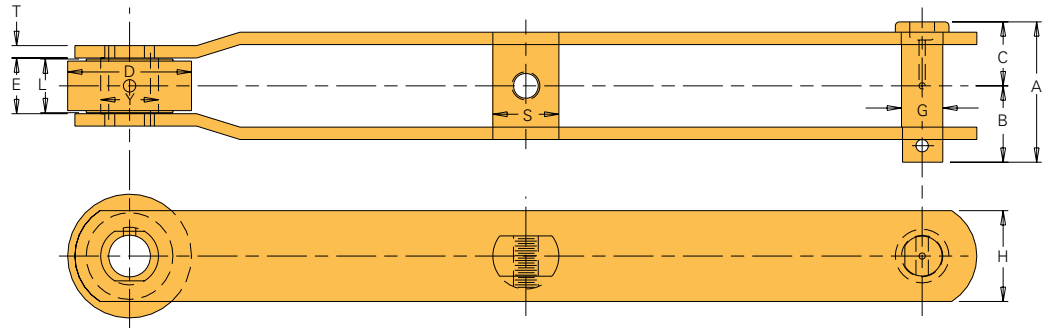
**Kind of water.** Fresh water has a different chemistry than salt or brackish water and has a different impact on chain. Several different types of materials are used, including heat-treatable, stainless steels, alloy steels, and cast iron rollers. Choose the construction that is right for your application. If you have any questions, contact Union Engineering.

**Types of water screen chain.** There are three main types of water screen carrier chain. Union produces all three with either 3/8"- or 1/2"-thick sidebars. Pitch is usually 24", but each type has distinctive characteristics.

**Styles of bar screen chain.** 700 series, 6-inch pitch chains are widely used. Sidebars are usually 5/16" for standard and 3/8" for heavy-duty applications. Other chain series are also available.



## Style A



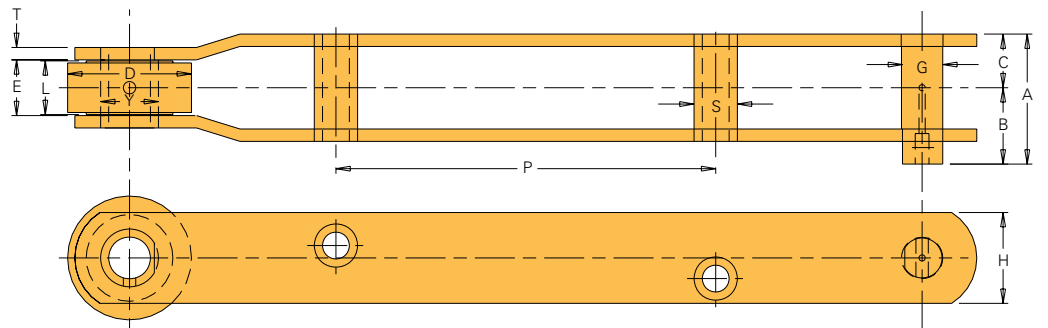
### Traveling Water Screen Chains

All dimensions are in inches unless otherwise indicated.

	Pitch	Width				Roller		Pin	Sidebar		Bushing	Bushing Attach.	Approx. Weight (lbs./ft.)
		Overall	Pin Head to CL	Pin End to CL	Inside	Diameter	Length	Diameter	Height	Thick.	Diameter	Diameter	
		A	C	B	E	D	L	G	H	T	Y	S	
Style A	24.000	4.25	1.94	2.31	1.69	3.75	1.63	1.25	2.75	.38	1.75	2.00	12.3
	24.000	4.75	2.19	2.19	1.69	3.75	1.63	1.25	2.75	.50	1.75	1.94	15.1

Note: Dimensions shown are nominal. Obtain certified prints for design and construction.

## Style B



### Traveling Water Screen Chains

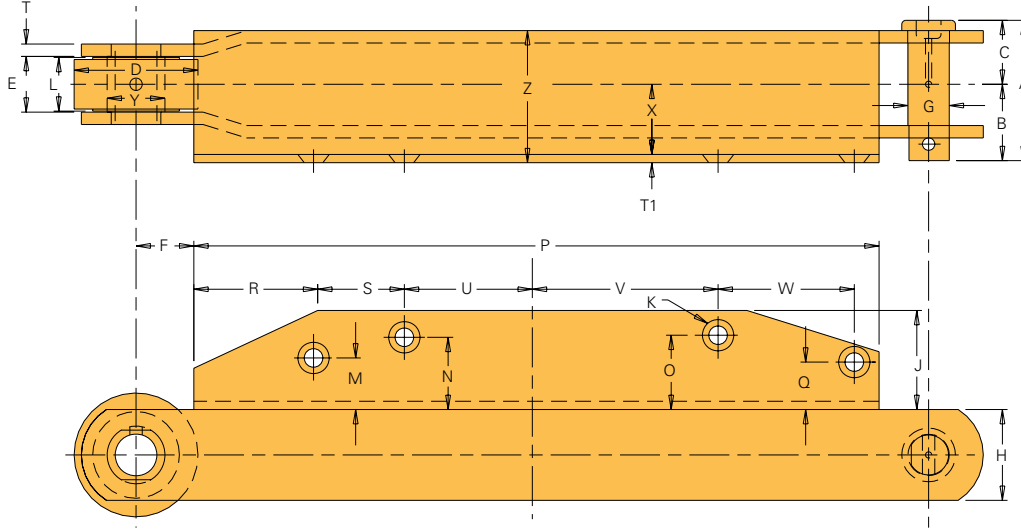
	Pitch	Width				Roller		Pin	Sidebar		Bushing	Bushing Attach.	Approx. Weight (lbs./ft.)
		Overall	Pin Head to CL	Pin End to CL	Inside	Dia.	Length	Dia.	Height	Thick.	Dia.	Dia.	
		A	C	B	E	D	L	G	H	T	Y	S	P
Style B	24.000	3.63	1.56	2.06	1.56	4.00	1.50	1.21	3.00	.38	1.75	1.31	11.50
	24.000	4.13	1.81	2.31	1.56	4.00	1.50	1.21	3.00	.50	1.75	1.31	11.50

Note: Dimensions shown are nominal. Obtain certified prints for design and construction.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

**Style C**



**Traveling Water Screen Chains**

All dimensions are in inches unless otherwise indicated.

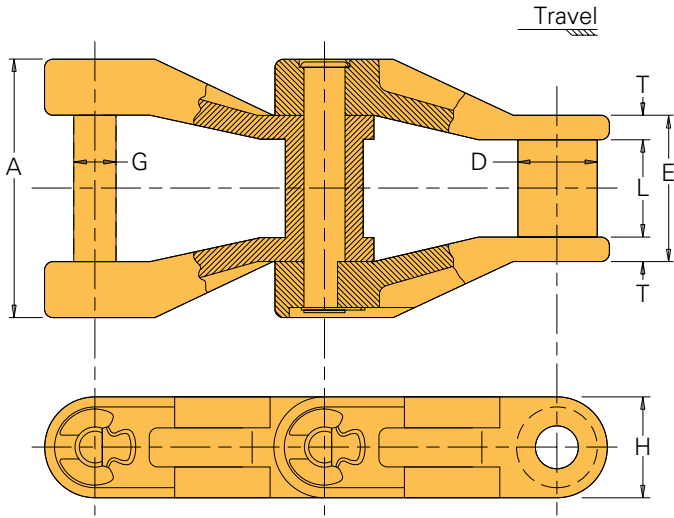
	Pitch	Width				Roller		Pin	Sidebar		Bushing	Bushing Attachment														Approx. Weight (lbs./ft.)		
		Over-all	Pin Hd. to CL	Pin End to CL	In-side	Dia.	Lgth.	Dia.	Hgt.	Th.	Dia.	P	T1	J	M	N	O	Q	R	S	U	V	W	F	X		Z	K
		A	C	B	E	D	L	G	H	T	Y	P	T1	J	M	N	O	Q	R	S	U	V	W	F	X	Z	K	
Style	24.000	4.19	1.89	2.31	1.69	3.75	1.63	1.25	2.75	.38	1.75	20.75	.25	3.00	1.56	2.19	2.25	1.44	5.38	2.75	3.88	5.63	4.13	1.75	2.38	4.00	.53	15.8
C	24.000	4.75	2.19	2.56	1.69	3.75	1.63	1.25	2.75	.50	1.75	20.75	.25	3.00	1.56	2.19	2.25	1.44	5.38	2.75	3.88	5.63	4.13	1.75	2.63	5.00	.53	18.6

Note: Dimensions shown are nominal. Obtain certified prints for design and construction.

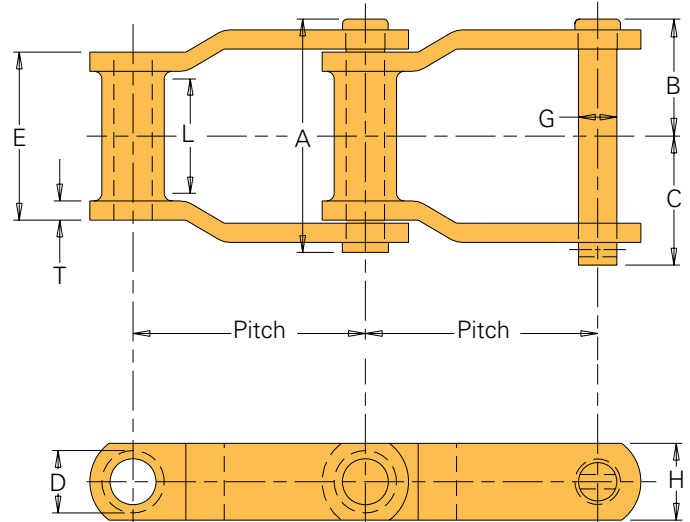
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

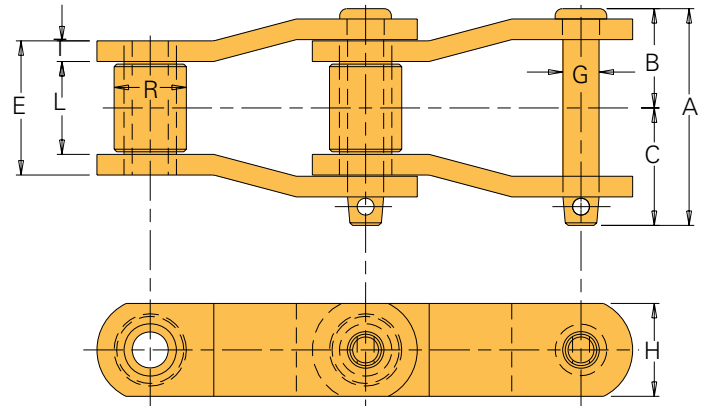
## EPC-78 Chain



## WH-78 and 488 Chains



## US-882 Chain



## Drive Chains (Rectangular Settling Tanks)

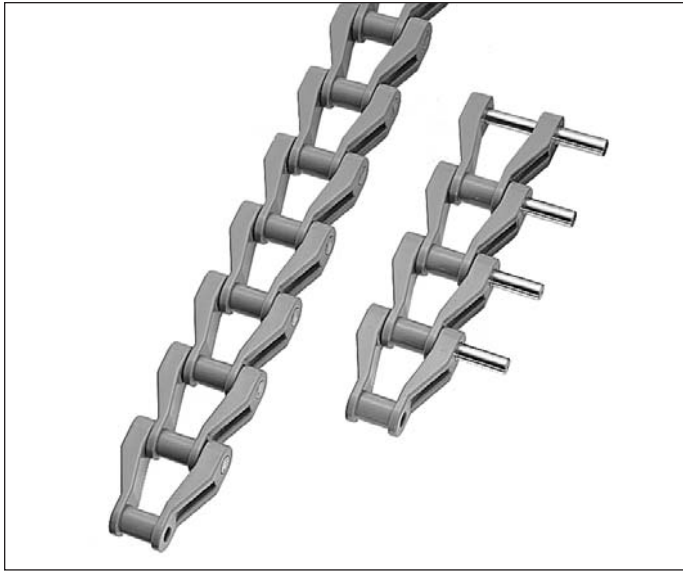
All dimensions are in inches unless otherwise indicated.

Chain No.	Pitch	Chain Width				Roller Dia.	Barrel Dia.	Pin Dia.	Sidebar			Avg. Ult. Stgth. (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)
		Overall	Pin Head to Center-line	Pin End to Center-line	Length of Bearing				Th.	Height				
											A			
EPC-78	2.609	2.93			1.63		.88	1.09	.45	.27	1.13			1.5
WH-78	2.609	3.00	1.44	1.56	2.00		.88	1.13	.50	.25	1.13	33,000	3,500	4.0
488	2.609	2.75	1.31	1.44	1.63		.88	.94	.44	.25	.94	13,750	2,130	2.9
US-882	2.609	2.69	1.25	1.44	1.63	.88		1.13	.44	.25	1.13	26,000	2,500	3.6

Note: US-1030 and WH-82 are also commonly used.

To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

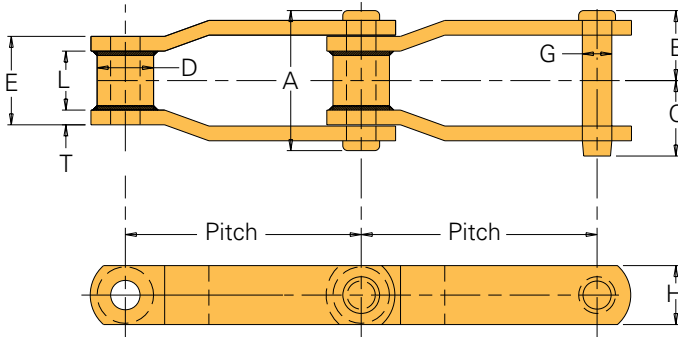


### EPC-78 Allowable Load and Speed

Chain Speed (ft./min.)	Number of Sprocket Teeth			
	6	8	10	12
33	1,348	1,348	1,348	1,348
44	1,348	1,348	1,348	1,348
66	1,348	1,348	1,348	1,348
82	1,057	1,348	1,348	1,348
98	804	1,233	1,348	1,348

For higher chain speeds than shown above, please consult with Union Engineering.

### WH-720S and WH-720SH Chains



### Conveyor Chains (Rectangular Settling Tanks)

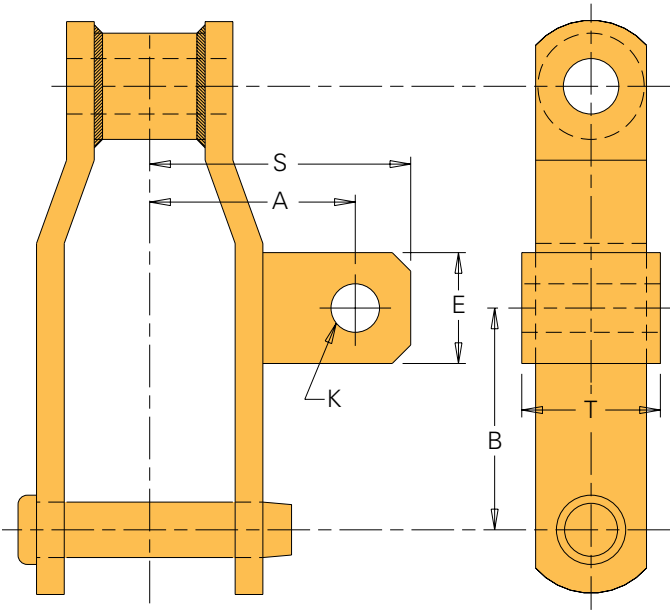
All dimensions are in inches unless otherwise indicated.

Chain Number	Pitch	Chain Width				Barrel		Pin	Sidebars			Average Ultimate Strength (lbs.)	Max. Work Load (lbs.)	Approx. Weight (lbs./ft.)
		Overall	Pin Head to Center-line	Pin End to Center-line	Length of Bearing	D	L	Dia.	Thick.	Height	All Parts Heat Treated	All Parts Heat Treated		
											A	B	C	
WH-720S	6.000	3.94	1.81	2.13	2.13	1.44	1.50	.75	.31	1.50	60,000	5,570	5.2	
WH-720SH	6.000	4.06	1.88	2.19	2.25	1.44	1.50	.75	.38	1.50	60,000	5,900	6.1	

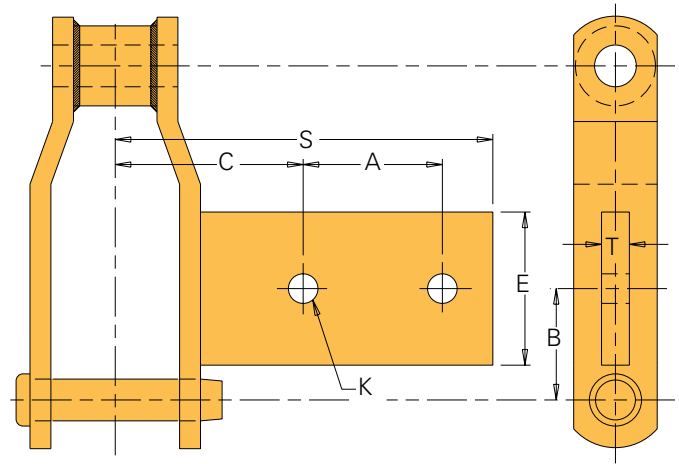
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.

Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

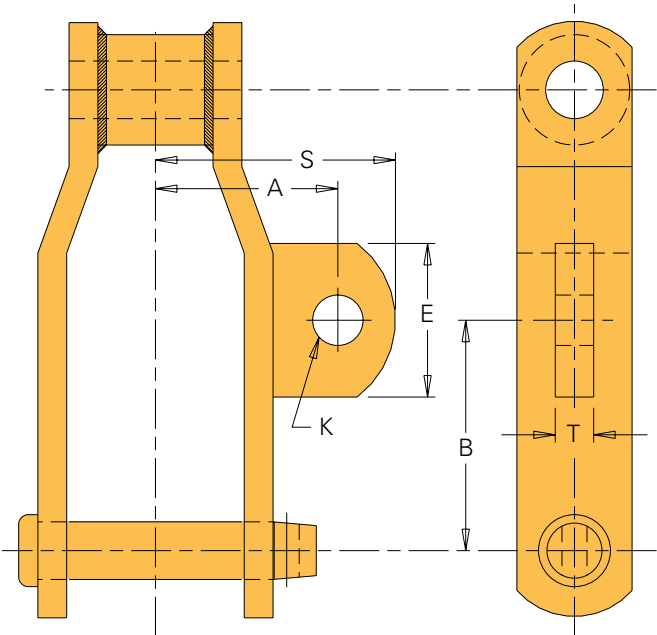
**AM-116 Attachment**



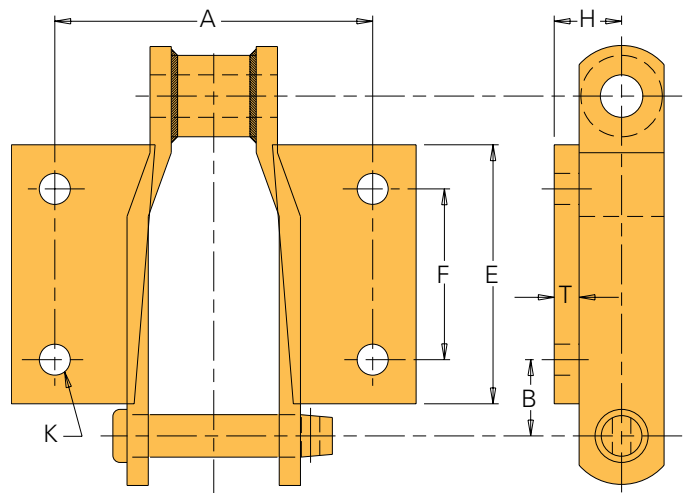
**AD-474 Attachment**



**A-42 Attachment**



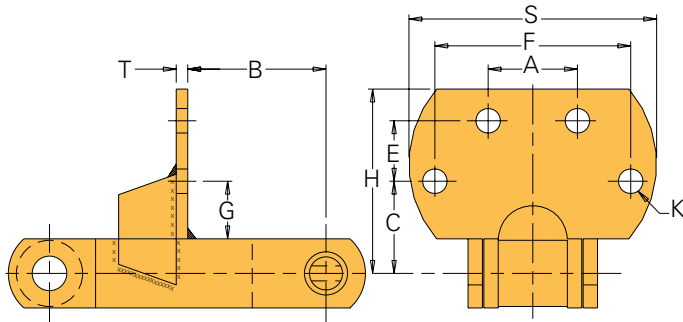
**K-2 Attachment**



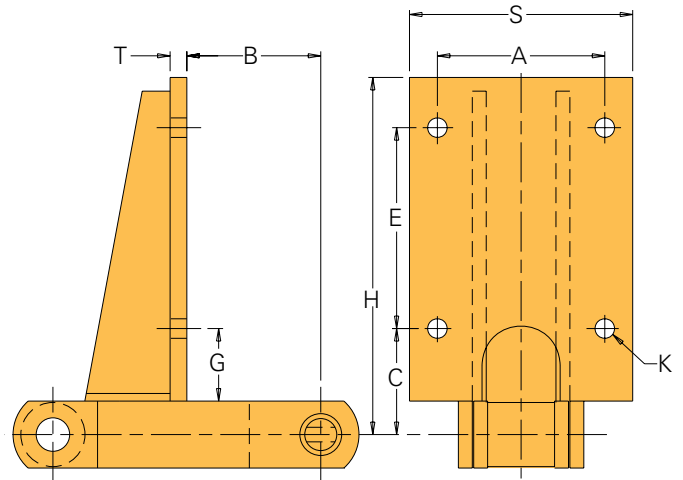
To locate compatible sprockets for your chain, refer to the Product Cross-Reference in Section D.  
 Note: Dimensions are subject to change. Contact Union Chain to obtain certified prints for design and construction.

B - INDUSTRY APPLICATIONS

### F-2 Attachment



### F-22-6 and F-22-8 Attachments



### Conveyor Chain Attachments

All dimensions are in inches unless otherwise indicated.

Attach. Number	A	B	C	E	F	G	Maximum	Maximum	T	Bolt Diameter
							H	S		
AM-116	2.78	3.00		1.50				3.56	1.88	.63
AD-474	2.50	2.00	3.38	2.75				6.81	.50	.50
A-42	2.38	3.00		2.00				3.19	.50	.63
K-2	6.00	1.69		4.14	2.62		.94		.31	.50
F-2	1.94	3.00	2.00	1.31	4.25	1.06	3.94	5.44	.25	.38
F-22-6	3.75	3.00	2.38	2.63		1.47	6.14	5.64	.25	.38
F-22-8	3.75	3.00	2.38	4.50		1.47	8.14	5.64	.25	.38

### Make In-Line Inspections Easy

Put machinery access at your fingertips. ONE-TOUCH INSPECTION DOOR® is a dust- and rain-tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are in-stock and ready-to-go for easy installation at the job site. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple. For more information, see the ONE-TOUCH INSPECTION DOOR description in Section C.

### THE UNION SOLUTION

- **High strength**
- **Exceptional wear resistance**
- **Superior anti-corrosion properties**
- **Durability**
- **Reliability**



# U.S. TSUBAKI ENGINEERING CHAIN DIVISION SPROCKETS AND ACCESSORIES

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# Engineering Class Sprockets

Chains and sprockets must work together, so buying them from the same source makes sense. When chains and sprockets articulate correctly, the life of the chain is extended. That means long-term savings and real value for your application.

### **Start with High-Quality Materials**

Union sprockets for Engineering Class Chain are made with quality material—usually carbon steel. Heat-treated carbon steel provides long wear life, resists abrasion, and withstands heavy shock loads. We can also manufacture sprockets using special materials to meet your specific needs. For example, we can make sprockets from alloy steel, stainless steel, or bronze. The result is always the same: Union sprockets are designed to maximize the life of your chain and to keep your operation running smoothly.

### **Flame Cut for Long Wear**

Union sprockets are flame machined, not torched. This special manufacturing operation ensures hardened teeth that stand up to rigorous applications. And we build the same quality into every manufacturing step. We use state-of-the-art computer-driven machinery to precision manufacture heavy-duty sprockets that consistently provide the highest standard of performance.

### **Get Added Locking Power FREE!**

Two set screws are standard on every Union Engineering Class Sprocket. No additional cost. No additional waiting time. That means on-line locking power where you need it most. Two set screws hold sprockets in place well and that means less wear and tear on costly shafting.

### **Select the Sprocket You Need**

The Union Chain Division of U.S. Tsubaki, Inc. offers a full line of Engineering Class Sprockets. In addition to providing Engineering Class Sprockets for every Union chain, our sprockets can be used with chains made by many other manufacturers. Check the Sprocket Cross-Reference Chart in Section D of this catalog. If you have any questions, please contact Union Chain.

## Sprocket Tables

The Specification Tables in this catalog are designed for quick and easy reference. Each table lists the number of teeth, critical dimensions, and standard specifications. You'll also find all

pertinent data for selecting and ordering standard Engineering Class Sprockets, including materials and approximate weights. An example is shown below.

### Sprocket Specification Table Example

**Use the Sprocket Number to order. See the Selection Guidelines at the end of Section C for more information.**

**"For Union Chain Number..." lists all Union chain numbers that will run on this sprocket. See the Product Cross-Reference (Section D) for other industry chain numbers.**

**Sprocket Number US-3075**  
 For Union Chain Numbers US-3075, US-1031, US-1030, 30701, US-1032

All dimensions are in inches unless otherwise specified

**Important Chain Dimensions**

**Pitch**

**3.075 Pitch**

**1.250 Roller Diameter  
1.250 Plate Thickness**

**Type**

Type A				Type C							
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)	
8	US-3075A8	1.25	18.0	US-3075C8	1.25	3.19	8.035	5.25	3.88	33.0	
9	US-3075A9	1.25	22.0	US-3075C9	1.25	3.19	8.991	5.25	3.88	37.0	
10	US-3075A10	1.50	27.0	US-3075C10	1.50	3.44	9.951	5.50	4.25	48.0	
11	US-3075A11	1.50	33.0	US-3075C11	1.50	3.44	10.915	5.50	4.25	53.0	
12	US-3075A12	1.50	39.0	US-3075C12	1.50	3.44	11.881	5.50	4.25	60.0	
13	US-3075A13	1.50	46.0	US-3075C13	1.50	3.44	12.849	5.50	4.25	66.0	
14	US-3075A14	1.50	53.0	US-3075C14	1.50	3.44	13.819	5.50	4.25	73.0	
15	US-3075A15	1.50	61.0	US-3075C15	1.50	3.94	14.790	6.50	5.00	93.0	
17	US-3075A17	1.50	78.0	US-3075C17	1.50	3.94	16.735	6.50	5.00	110.0	
19	US-3075A19	1.50	97.0	US-3075C19	1.50	3.94	18.682	6.50	5.00	129.0	
21	US-3075A21	1.50	119.0	US-3075C21	1.50	3.94	20.632	6.50	5.00	151.0	
24 <sup>1</sup>	US-3075A24	1.50	155.0	US-3075C24	1.50	3.94	23.558	6.50	5.00	169.0	
30 <sup>1</sup>	US-3075A30	1.50	241.0	US-3075C30	1.50	3.94	29.418	6.50	5.00	227.0	
36 <sup>1</sup>	US-3075A36	1.50	347.0	US-3075C36	1.50	5.44	35.282	8.00	6.25	332.0	
42 <sup>1</sup>	US-3075A42	1.50	472.0	US-3075C42	1.50	5.44	41.148	8.00	6.25	399.0	
48 <sup>1</sup>	US-3075A48	1.50	616.0	US-3075C48	1.50	5.44	47.016	8.00	6.25	458.0	

**Important Sprocket Information**

<sup>1</sup>Furnished standard with lightening holes.

**Special features, such as lightening holes, are listed under tables.**



# Drive Chain Sprockets

## Sprocket Number US-64S

For Union Chain Numbers US-64S, US-64SH

All dimensions are in inches unless otherwise specified.

2.500 Pitch				1.562 Roller Diameter 1.250 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
9	US-64SA9	1.50	15.0	US-64SC9	1.50	2.44	7.310	4.00	2.75	19.0
10	US-64SA10	1.50	18.0	US-64SC10	1.50	2.94	8.090	4.75	3.13	27.0
11	US-64SA11	1.50	22.0	US-64SC11	1.50	3.19	8.874	5.25	3.88	36.0
12	US-64SA12	1.50	26.0	US-64SC12	1.50	3.44	9.659	5.50	4.25	46.0
13	US-64SA13	1.50	30.0	US-64SC13	1.50	3.44	10.446	5.50	4.25	51.0
14	US-64SA14	1.50	35.0	US-64SC14	1.50	3.44	11.235	5.50	4.25	56.0
15	US-64SA15	1.50	40.0	US-64SC15	1.50	3.44	12.024	5.50	4.25	61.0
17	US-64SA17	1.50	52.0	US-64SC17	1.50	3.44	13.605	5.50	4.25	72.0
19	US-64SA19	1.50	64.0	US-64SC19	1.50	3.94	15.189	6.50	5.00	97.0
21	US-64SA21	1.50	78.0	US-64SC21	1.50	3.94	16.774	6.50	5.00	111.0
24	US-64SA24	1.50	102.0	US-64SC24	1.50	3.94	19.153	6.50	5.00	135.0
30	US-64SA30	1.50	144.0	US-64SC30	1.50	4.44	23.917	7.00	6.00	193.0
36	US-64SA36	1.50	188.0	US-64SC36	1.50	4.44	28.684	7.00	6.00	236.0
42	US-64SA42	1.50	241.0	US-64SC42	1.50	5.44	33.454	8.00	6.25	308.0
48	US-64SA48	1.50	301.0	US-64SC48	1.50	5.44	38.224	8.00	6.25	367.0
54	US-64SA54	1.50	354.0	US-64SC54	1.50	5.44	42.996	8.00	6.25	420.0
60	US-64SA60	1.50	418.0	US-64SC60	1.50	5.94	47.768	9.00	6.50	510.0

**Sprocket Number US-882**

For Union Chain Number US-882

All dimensions are in inches unless otherwise specified.

<b>2.609 Pitch</b>				<b>.875 Roller Diameter .875 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	US-882A8	1.25	9.0	US-882C8	1.25	2.94	6.817	4.75	3.13	19.0
9	US-882A9	1.25	11.0	US-882C9	1.25	3.19	7.628	5.25	3.88	28.0
10	US-882A10	1.25	14.0	US-882C10	1.25	3.19	8.442	5.25	3.88	31.0
11	US-882A11	1.25	17.0	US-882C11	1.25	3.19	9.260	5.25	3.88	34.0
12	US-882A12	1.25	20.0	US-882C12	1.25	3.19	10.080	5.25	3.88	37.0
13	US-882A13	1.50	23.0	US-882C13	1.50	3.44	10.901	5.50	4.25	44.0
14	US-882A14	1.50	27.0	US-882C14	1.50	3.44	11.724	5.50	4.25	47.0
15	US-882A15	1.50	31.0	US-882C15	1.50	3.44	12.548	5.50	4.25	51.0
17	US-882A17	1.50	39.0	US-882C17	1.50	3.44	14.198	5.50	4.25	58.0
19	US-882A19	1.50	49.0	US-882C19	1.50	3.94	15.851	6.50	5.00	86.0
21	US-882A21	1.50	60.0	US-882C21	1.50	3.94	17.505	6.50	5.00	97.0
24	US-882A24	1.50	78.0	US-882C24	1.50	3.94	19.988	6.50	5.00	115.0
25	US-882A25	1.50	85.0	US-882C25	1.50	3.94	20.816	6.50	5.00	121.0
28	US-882A28	1.50	106.0	US-882C28	1.50	3.94	23.302	6.50	5.00	142.0
30	US-882A30	1.50	122.0	US-882C30	1.50	3.94	24.959	6.50	5.00	134.0
35	US-882A35	1.50	165.0	US-882C35	1.50	3.94	29.105	6.50	5.00	156.0
40	US-882A40	1.50	216.0	US-882C40	1.50	4.44	33.252	7.00	6.00	206.0
42	US-882A42	1.50	238.0	US-882C42	1.50	4.44	34.912	7.00	6.00	215.0
46	US-882A46	1.50	285.0	US-882C46	1.50	4.44	38.231	7.00	6.00	235.0
54	US-882A54	1.50	393.0	US-882C54	1.50	5.44	44.870	8.00	6.25	308.0
60	US-882A60	1.50	485.0	US-882C60	1.50	5.44	49.851	8.00	6.25	340.0

**Sprocket Number 344SXX**

For Union Chain Number 344SXX

<b>3.000 Pitch</b>				<b>1.781 Roller Diameter 1.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	344SXXA8	1.50	24.0	344SXXC8	1.50	2.94	7.839	4.75	3.12	30.0
9	344SXXA9	1.50	30.0	344SXXC9	1.50	3.44	8.771	5.50	4.25	47.0
10	344SXXA10	1.50	37.0	344SXXC10	1.50	3.94	9.708	6.50	5.00	65.0
11	344SXXA11	1.50	44.0	344SXXC11	1.50	4.44	10.648	7.00	6.00	88.0
12	344SXXA12	1.50	52.0	344SXXC12	1.50	4.44	11.591	7.00	6.00	96.0
13	344SXXA13	1.50	61.0	344SXXC13	1.50	5.44	12.536	8.00	6.25	121.0
14	344SXXA14	1.50	71.0	344SXXC14	1.50	5.44	13.482	8.00	6.25	130.0
15	344SXXA15	1.50	81.0	344SXXC15	1.50	5.44	14.429	8.00	6.25	141.0
17	344SXXA17	1.50	104.0	344SXXC17	1.50	5.94	16.327	9.00	6.50	187.0
19	344SXXA19	1.50	130.0	344SXXC19	1.50	5.94	18.227	9.00	6.50	212.0
21	344SXXA21	1.50	158.0	344SXXC21	1.50	5.94	20.129	9.00	6.50	241.0
24	344SXXA24	1.50	206.0	344SXXC24	1.50	6.50	22.984	10.00	6.75	314.0
30	344SXXA30	1.50	321.0	344SXXC30	1.50	6.50	28.700	10.00	6.75	430.0
36 <sup>1</sup>	344SXXA36	1.50	407.0	344SXXC36	1.50	7.00	34.421	11.00	7.75	565.0
42 <sup>1</sup>	344SXXA42	1.50	522.0	344SXXC42	1.50	7.00	40.144	11.00	7.75	680.0
48 <sup>1</sup>	344SXXA48	1.50	654.0	344SXXC48	1.50	7.00	45.869	11.00	7.75	812.0



# UNION CHAIN DIVISION - DRIVE CHAIN SPROCKETS

## Sprocket Number US-3011

For Union Chain Number US-3011

All dimensions are in inches unless otherwise specified.

3.067 Pitch				1.625 Roller Diameter 1.250 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	US-3011A8	1.25	18.0	US-3011C8	1.25	2.94	8.014	4.75	3.12	20.0
9	US-3011A9	1.25	22.0	US-3011C9	1.25	3.19	8.967	5.25	3.88	37.0
10	US-3011A10	1.50	27.0	US-3011C10	1.50	3.44	9.925	5.50	4.25	48.0
11	US-3011A11	1.50	33.0	US-3011C11	1.50	3.44	10.886	5.50	4.25	53.0
12	US-3011A12	1.50	39.0	US-3011C12	1.50	3.44	11.850	5.50	4.25	60.0
13	US-3011A13	1.50	46.0	US-3011C13	1.50	3.44	12.816	5.50	4.25	66.0
14	US-3011A14	1.50	53.0	US-3011C14	1.50	3.44	13.783	5.50	4.25	73.0
15	US-3011A15	1.50	61.0	US-3011C15	1.50	3.94	14.751	6.50	5.00	93.0
17	US-3011A17	1.50	78.0	US-3011C17	1.50	3.94	16.691	6.50	5.00	110.0
19	US-3011A19	1.50	97.0	US-3011C19	1.50	3.94	18.634	6.50	5.00	129.0
21	US-3011A21	1.50	118.0	US-3011C21	1.50	3.94	20.578	6.50	5.00	150.0
24	US-3011A24	1.50	154.0	US-3011C24	1.50	4.44	23.497	7.00	6.00	204.0
30	US-3011A30	1.50	244.0	US-3011C30	1.50	4.44	29.341	7.00	6.00	252.0
36	US-3011A36	1.50	345.0	US-3011C36	1.50	5.44	35.190	8.00	6.25	341.0
42	US-3011A42	1.50	470.0	US-3011C42	1.50	5.44	41.041	8.00	6.25	404.0
48	US-3011A48	1.50	613.0	US-3011C48	1.50	5.44	46.894	8.00	6.25	462.0

## Sprocket Number US-3075

For Union Chain Numbers US-3075, US-1031, US-1030, 30701, US-1032

3.075 Pitch				1.250 Roller Diameter 1.250 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	US-3075A8	1.25	18.0	US-3075C8	1.25	3.19	8.035	5.25	3.88	33.0
9	US-3075A9	1.25	22.0	US-3075C9	1.25	3.19	8.991	5.25	3.88	37.0
10	US-3075A10	1.50	27.0	US-3075C10	1.50	3.44	9.951	5.50	4.25	48.0
11	US-3075A11	1.50	33.0	US-3075C11	1.50	3.44	10.915	5.50	4.25	53.0
12	US-3075A12	1.50	39.0	US-3075C12	1.50	3.44	11.881	5.50	4.25	60.0
13	US-3075A13	1.50	46.0	US-3075C13	1.50	3.44	12.849	5.50	4.25	66.0
14	US-3075A14	1.50	53.0	US-3075C14	1.50	3.44	13.819	5.50	4.25	73.0
15	US-3075A15	1.50	61.0	US-3075C15	1.50	3.94	14.790	6.50	5.00	93.0
17	US-3075A17	1.50	78.0	US-3075C17	1.50	3.94	16.735	6.50	5.00	110.0
19	US-3075A19	1.50	97.0	US-3075C19	1.50	3.94	18.682	6.50	5.00	129.0
21	US-3075A21	1.50	119.0	US-3075C21	1.50	3.94	20.632	6.50	5.00	151.0
24	US-3075A24	1.50	155.0	US-3075C24	1.50	3.94	23.558	6.50	5.00	169.0
30	US-3075A30	1.50	241.0	US-3075C30	1.50	3.94	29.418	6.50	5.00	227.0
36	US-3075A36	1.50	347.0	US-3075C36	1.50	5.44	35.282	8.00	6.25	332.0
42	US-3075A42	1.50	472.0	US-3075C42	1.50	5.44	41.148	8.00	6.25	399.0
48	US-3075A48	1.50	616.0	US-3075C48	1.50	5.44	47.016	8.00	6.25	458.0

C - SPROCKETS AND ACCESSORIES

### Sprocket Number US-3514

For Union Chain Number US-3514

All dimensions are in inches unless otherwise specified.

<b>3.500 Pitch</b>				<b>1.750 Roller Diameter 1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	US-3514A8	1.50	23.0	US-3514C8	1.50	3.62	9.146	5.75	5.00	49.0
9	US-3514A9	1.50	29.0	US-3514C9	1.50	4.44	10.233	7.00	6.00	78.0
10	US-3514A10	1.50	36.0	US-3514C10	1.50	4.44	11.326	7.00	6.00	85.0
11	US-3514A11	1.50	43.0	US-3514C11	1.50	5.44	12.423	8.00	6.25	111.0
12	US-3514A12	1.50	51.0	US-3514C12	1.50	5.44	13.523	8.00	6.25	119.0
13	US-3514A13	1.50	60.0	US-3514C13	1.50	5.44	14.625	8.00	6.25	127.0
14	US-3514A14	1.50	69.0	US-3514C14	1.50	5.44	15.729	8.00	6.25	137.0
15	US-3514A15	1.50	79.0	US-3514C15	1.50	5.44	16.834	8.00	6.25	147.0
17	US-3514A17	1.50	101.0	US-3514C17	1.50	5.94	19.048	9.00	6.50	193.0
19	US-3514A19	1.50	126.0	US-3514C19	1.50	5.94	21.264	9.00	6.50	218.0
21	US-3514A21	1.50	154.0	US-3514C21	1.50	6.50	23.483	10.00	6.75	273.0
24	US-3514A24	1.50	200.0	US-3514C24	1.50	6.50	26.815	10.00	6.75	320.0
30	US-3514A30	1.50	313.0	US-3514C30	1.50	7.00	33.484	11.00	7.75	435.0
36	US-3514A36	1.50	450.0	US-3514C36	1.50	7.00	40.158	11.00	7.75	521.0
42	US-3514A42	1.50	612.0	US-3514C42	1.50	7.00	46.835	11.00	7.75	614.0

Note: Sizes and hub styles other than listed above are available. Large segmental rim sprockets are available.

### Sprocket Number US-1242

For Union Chain Number US-1242, US-1241

<b>4.063 Pitch</b>				<b>1.750 Roller Diameter 1.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
9	US-1242A9	1.50	55.0	US-1242C9	1.50	4.44	11.879	7.00	6.00	99.0
10	US-1242A10	1.50	67.0	US-1242C10	1.50	5.44	13.148	8.00	6.25	129.0
11	US-1242A11	1.50	81.0	US-1242C11	1.50	5.44	14.421	8.00	6.25	142.0
12	US-1242A12	1.50	96.0	US-1242C12	1.50	5.44	15.698	8.00	6.25	157.0
13	US-1242A13	1.50	113.0	US-1242C13	1.50	5.44	16.978	8.00	6.25	174.0
14	US-1242A14	1.50	130.0	US-1242C14	1.50	5.94	18.259	9.00	6.50	213.0
15	US-1242A15	1.50	149.0	US-1242C15	1.50	5.94	19.542	9.00	6.50	232.0
17	US-1242A17	1.50	191.0	US-1242C17	1.50	5.94	22.112	9.00	6.50	273.0
19	US-1242A19	1.50	238.0	US-1242C19	1.50	6.50	24.685	10.00	6.75	346.0
21	US-1242A21	1.50	290.0	US-1242C21	1.50	6.50	27.261	10.00	6.75	398.0
24	US-1242A24	1.50	378.0	US-1242C24	1.50	6.50	31.128	10.00	6.75	453.0
30	US-1242A30	1.50	590.0	US-1242C30	1.50	7.00	38.870	11.00	7.75	649.0
36	US-1242A36	1.50	848.0	US-1242C36	1.50	7.00	46.618	11.00	7.75	830.0



# UNION CHAIN DIVISION - DRIVE CHAIN SPROCKETS

## Sprocket Number US-1245

For Union Chain Number US-1245

All dimensions are in inches unless otherwise specified.

4.073 Pitch				1.781 Roller Diameter 1.750 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
9	US-1245A9	1.50	55.0	US-1245C9	1.50	4.44	11.909	7.00	6.00	99.0
10	US-1245A10	1.50	68.0	US-1245C10	1.50	5.44	13.181	8.00	6.25	129.0
11	US-1245A11	1.50	82.0	US-1245C11	1.50	5.44	14.457	8.00	6.25	143.0
12	US-1245A12	1.50	97.0	US-1245C12	1.50	5.44	15.737	8.00	6.25	158.0
13	US-1245A13	1.50	113.0	US-1245C13	1.50	5.44	17.019	8.00	6.25	174.0
14	US-1245A14	1.50	131.0	US-1245C14	1.50	5.94	18.304	9.00	6.50	213.0
15	US-1245A15	1.50	150.0	US-1245C15	1.50	5.94	19.590	9.00	6.50	232.0
17	US-1245A17	1.50	192.0	US-1245C17	1.50	5.94	22.166	9.00	6.50	274.0
19	US-1245A19	1.50	239.0	US-1245C19	1.50	6.50	24.746	10.00	6.75	347.0
21	US-1245A21	1.50	292.0	US-1245C21	1.50	6.50	27.328	10.00	6.75	400.0
24	US-1245A24	1.50	380.0	US-1245C24	1.50	6.50	31.204	10.00	6.75	455.0
30	US-1245A30	1.50	593.0	US-1245C30	1.50	7.00	38.965	11.00	7.75	652.0
36	US-1245A36	1.50	852.0	US-1245C36	1.50	7.00	46.732	11.00	7.75	835.0

## Sprocket Number US-4122

For Union Chain Number US-4122

4.090 Pitch				2.000 Roller Diameter 1.750 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
9	US-4122A9	1.50	56.0	US-4122C9	1.50	4.44	11.958	7.00	6.00	99.0
10	US-4122A10	1.50	68.0	US-4122C10	1.50	5.44	13.236	8.00	6.25	129.0
11	US-4122A11	1.50	82.0	US-4122C11	1.50	5.44	14.517	8.00	6.25	143.0
12	US-4122A12	1.50	97.0	US-4122C12	1.50	5.44	15.803	8.00	6.25	159.0
13	US-4122A13	1.50	114.0	US-4122C13	1.50	5.44	17.090	8.00	6.25	175.0
14	US-4122A14	1.50	132.0	US-4122C14	1.50	5.94	18.380	9.00	6.50	214.0
15	US-4122A15	1.50	151.0	US-4122C15	1.50	5.94	19.672	9.00	6.50	234.0
17	US-4122A17	1.50	193.0	US-4122C17	1.50	5.94	22.259	9.00	6.50	276.0
19	US-4122A19	1.50	241.0	US-4122C19	1.50	6.50	24.849	10.00	6.75	349.0
21	US-4122A21	1.50	294.0	US-4122C21	1.50	6.50	27.442	10.00	6.75	402.0
24	US-4122A24	1.50	383.0	US-4122C24	1.50	6.50	31.335	10.00	6.75	458.0
30	US-4122A30	1.50	598.0	US-4122C30	1.50	7.00	39.128	11.00	7.75	657.0
36	US-4122A36	1.50	860.0	US-4122C36	1.50	7.00	46.927	11.00	7.75	841.0

**Sprocket Number US-4522**

For Union Chain Number US-4522

All dimensions are in inches unless otherwise specified.

<b>4.500 Pitch</b>				<b>2.250 Roller Diameter 1.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
10	US-4522A10	1.50	83.0	US-4522C10	1.50	5.44	14.562	8.00	6.25	144.0
11	US-4522A11	1.50	100.0	US-4522C11	1.50	5.44	15.973	8.00	6.25	161.0
12	US-4522A12	1.50	118.0	US-4522C12	1.50	5.44	17.387	8.00	6.25	179.0
13	US-4522A13	1.50	138.0	US-4522C13	1.50	5.44	18.804	8.00	6.25	199.0
14	US-4522A14	1.50	160.0	US-4522C14	1.50	5.94	20.223	9.00	6.50	242.0
15	US-4522A15	1.50	183.0	US-4522C15	1.50	5.94	21.644	9.00	6.50	265.0
17	US-4522A17	1.50	234.0	US-4522C17	1.50	5.94	24.490	9.00	6.50	317.0
19	US-4522A19	1.50	292.0	US-4522C19	1.50	6.50	27.340	10.00	6.75	400.0
21	US-4522A21	1.50	356.0	US-4522C21	1.50	6.50	30.193	10.00	6.75	439.0
24	US-4522A24	1.50	464.0	US-4522C24	1.50	6.50	34.476	10.00	6.75	519.0
30	US-4522A30	1.50	723.0	US-4522C30	1.50	7.00	43.050	11.00	7.75	714.0

**Sprocket Number US-5035**

For Union Chain Numbers US-5035, US-5031

<b>5.000 Pitch</b>				<b>2.500 Roller Diameter 2.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
11	US-5035A11	1.50	158.0	US-5035C11	1.50	6.50	17.747	10.00	6.75	255.0
12	US-5035A12	1.50	187.0	US-5035C12	1.50	7.00	19.319	11.00	7.75	332.0
13	US-5035A13	1.50	219.0	US-5035C13	1.50	7.00	20.893	11.00	7.75	364.0
14	US-5035A14	1.50	253.0	US-5035C14	1.50	7.00	22.470	11.00	7.75	398.0
15	US-5035A15	1.50	290.0	US-5035C15	1.50	8.00	24.049	12.00	8.50	487.0
17	US-5035A17	1.50	372.0	US-5035C17	1.50	8.00	27.211	12.00	8.50	568.0
19	US-5035A19	1.50	463.0	US-5035C19	1.50	9.00	30.378	13.00	9.00	713.0
21	US-5035A21	1.50	565.0	US-5035C21	1.50	9.00	33.548	13.00	9.00	815.0
24	US-5035A24	1.50	736.0	US-5035C24	1.50	9.00	38.306	13.00	9.00	937.0
30	US-5035A30	1.50	1,148.0	US-5035C30	1.50	9.50	47.834	14.00	9.50	1,313.0





# UNION CHAIN DIVISION - DRIVE CHAIN SPROCKETS

## Sprocket Number US-5042

For Union Chain Number US-5042

All dimensions are in inches unless otherwise specified.

<b>5.000 Pitch</b>				<b>3.000 Roller Diameter 2.500 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
11	US-5042A11	1.50	176.0	US-5042C11	1.50	6.50	17.747	10.00	6.75	267.0
12	US-5042A12	1.50	208.0	US-5042C12	1.50	6.50	19.319	10.00	6.75	299.0
13	US-5042A13	1.50	243.0	US-5042C13	1.50	7.00	20.893	11.00	7.75	381.0
14	US-5042A14	1.50	281.0	US-5042C14	1.50	7.00	22.470	11.00	7.75	419.0
15	US-5042A15	1.50	322.0	US-5042C15	1.50	7.00	24.049	11.00	7.75	460.0
17	US-5042A17	1.50	413.0	US-5042C17	1.50	8.00	27.211	12.00	8.50	601.0
19	US-5042A19	1.50	514.0	US-5042C19	1.50	8.00	30.378	12.00	8.50	703.0
21	US-5042A21	1.50	627.0	US-5042C21	1.50	9.00	33.548	13.00	9.00	868.0
24	US-5042A24	1.50	783.0	US-5042C24	1.50	9.00	38.306	13.00	9.00	1,023.0
30	US-5042A30	1.50	1,123.0	US-5042C30	1.50	9.00	47.834	13.00	9.00	1,364.0

## Sprocket Number US-5542

For Union Chain Number US-5542

<b>5.500 Pitch</b>				<b>3.000 Roller Diameter 2.500 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
11	US-5542A11	1.50	212.0	US-5542C11	1.50	6.50	19.522	10.00	6.75	304.0
12	US-5542A12	1.50	252.0	US-5542C12	1.50	7.00	21.250	11.00	7.75	390.0
13	US-5542A13	1.50	294.0	US-5542C13	1.50	7.00	22.982	11.00	7.75	432.0
14	US-5542A14	1.50	341.0	US-5542C14	1.50	7.00	24.717	11.00	7.75	478.0
15	US-5542A15	1.50	390.0	US-5542C15	1.50	8.00	26.454	12.00	8.50	579.0
17	US-5542A17	1.50	499.0	US-5542C17	1.50	8.00	29.932	12.00	8.50	688.0
19	US-5542A19	1.50	622.0	US-5542C19	1.50	9.00	33.415	13.00	9.00	863.0
21	US-5542A21	1.50	759.0	US-5542C21	1.50	9.00	36.902	13.00	9.00	1,000.0
24	US-5542A24	1.50	934.0	US-5542C24	1.50	9.00	42.137	13.00	9.00	1,174.0
30	US-5542A30	1.50	1,401.0	US-5542C30	1.50	9.50	52.617	14.00	9.50	1,701.0

**Sprocket Number US-6042**

For Union Chain Numbers US-6042, US-6066

All dimensions are in inches unless otherwise specified.

<b>6.000 Pitch</b>				<b>3.000 Roller Diameter 2.500 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
11	US-6042A11	1.50	253.0	US-6042C11	1.50	6.50	21.297	10.00	6.75	344.0
12	US-6042A12	1.50	300.0	US-6042C12	1.50	7.00	23.182	11.00	7.75	437.0
13	US-6042A13	1.50	350.0	US-6042C13	1.50	7.00	25.071	11.00	7.75	488.0
14	US-6042A14	1.50	405.0	US-6042C14	1.50	7.00	26.964	11.00	7.75	543.0
15	US-6042A15	1.50	464.0	US-6042C15	1.50	8.00	28.858	12.00	8.50	653.0
17	US-6042A17	1.50	594.0	US-6042C17	1.50	8.00	32.653	12.00	8.50	783.0
19	US-6042A19	1.50	741.0	US-6042C19	1.50	9.00	36.453	13.00	9.00	981.0
21	US-6042A21	1.50	856.0	US-6042C21	1.50	9.00	40.257	13.00	9.00	1,097.0
24	US-6042A24	1.50	1,058.0	US-6042C24	1.50	9.00	45.968	13.00	9.00	1,298.0
30	US-6042A30	1.50	1,519.0	US-6042C30	1.50	9.50	57.401	14.00	9.50	1,820.0

**Sprocket Number US-7080**

For Union Chain Number US-7080

<b>7.000 Pitch</b>				<b>4.500 Roller Diameter 2.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
11	US-7080A11	1.50	379.0	US-7080C11	1.50	9.00	24.846	13.00	9.00	610.0
12	US-7080A12	1.50	449.0	US-7080C12	1.50	9.00	27.046	13.00	9.00	680.0
13	US-7080A13	1.50	525.0	US-7080C13	1.50	9.00	29.250	13.00	9.00	756.0
14	US-7080A14	1.50	607.0	US-7080C14	1.50	9.00	31.458	13.00	9.00	838.0
15	US-7080A15	1.50	695.0	US-7080C15	1.50	9.50	33.668	14.00	9.50	986.0
17	US-7080A17	1.50	890.0	US-7080C17	1.50	9.50	38.095	14.00	9.50	1,180.0
19	US-7080A19	1.50	1,070.0	US-7080C19	1.50	9.50	42.529	14.00	9.50	1,400.0
21	US-7080A21	1.50	1,300.0	US-7080C21	1.50	10.00	46.967	16.00	10.00	1,744.0
24	US-7080A24	1.50	1,609.0	US-7080C24	1.50	10.00	53.629	16.00	10.00	2,053.0
30	US-7080A30	1.50	2,325.0	US-7080C30	1.50	10.00	66.967	16.00	10.00	2,768.0



# Roller Conveyor Chain Sprockets

## Sprocket Number 378RX

For Union Chain Numbers 378RX, 378R, 162R, 462R

All dimensions are in inches unless otherwise specified.

1.654 Pitch				<b>.875 Roller Diameter .750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
9	378RXA9	1.25	4.0	378RXC9	1.25	1.94	4.836	3.00	2.25	7.0
10	378RXA10	1.25	5.0	378RXC10	1.25	1.94	5.352	3.00	2.25	8.0
11	378RXA11	1.25	6.0	378RXC11	1.25	2.44	5.871	4.00	2.75	12.0
12	378RXA12	1.25	7.0	378RXC12	1.25	2.44	6.391	4.00	2.75	13.0

## Sprocket Number 81X

For Union Chain Number 81X

2.609 Pitch				<b>.906 Roller Diameter .875 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	81XA8	.94	8.0	81XC8	.94	2.44	6.818	4.00	2.75	14.0
9	81XA9	1.25	10.0	81XC9	1.25	2.44	7.628	4.00	2.75	16.0
10	81XA10	1.25	12.0	81XC10	1.25	2.94	8.443	4.75	3.13	23.0
11	81XA11	1.25	14.0	81XC11	1.25	2.94	9.261	4.75	3.13	25.0
12	81XA12	1.25	17.0	81XC12	1.25	2.94	10.080	4.75	3.13	28.0

## Sprocket Number 87R

For Union Chain Numbers 87R, US-278R

2.609 Pitch				<b>.875 Roller Diameter .875 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	87RA8	1.25	8.0	87RC8	1.25	2.44	6.818	4.00	2.75	14.0
9	87RA9	1.25	10.0	87RC9	1.25	2.44	7.628	4.00	2.75	16.0
10	87RA10	1.25	12.0	87RC10	1.25	2.94	8.443	4.75	3.13	23.0
11	87RA11	1.25	14.0	87RC11	1.25	2.94	9.261	4.75	3.13	25.0
12	87RA12	1.25	17.0	87RC12	1.25	2.94	10.080	4.75	3.13	28.0

**Sprocket Number 53R**

For Union Chain Number 53R

All dimensions are in inches unless otherwise specified.

<b>3.000 Pitch</b>				<b>1.500 Roller Diameter .875 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	53RA8	1.25	12.0	53RC8	1.25	3.19	7.839	5.25	3.88	29.0
9	53RA9	1.25	15.0	53RC9	1.25	3.19	8.771	5.25	3.88	32.0
10	53RA10	1.25	18.0	53RC10	1.25	3.19	9.708	5.25	3.88	35.0
11	53RA11	1.25	22.0	53RC11	1.25	3.19	10.648	5.25	3.88	39.0
12	53RA12	1.25	26.0	53RC12	1.25	3.19	11.591	5.25	3.88	43.0

**Sprocket Number 93R**

For Union Chain Number 93R

<b>3.000 Pitch</b>				<b>1.500 Roller Diameter 1.000 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	93RA8	1.25	14.0	93RC8	1.25	3.19	7.839	5.25	3.88	30.0
9	93RA9	1.25	17.0	93RC9	1.25	3.19	8.771	5.25	3.88	33.0
10	93RA10	1.25	21.0	93RC10	1.25	3.19	9.708	5.25	3.88	37.0
11	93RA11	1.25	25.0	93RC11	1.25	3.19	10.648	5.25	3.88	42.0
12	93RA12	1.25	30.0	93RC12	1.25	3.19	11.591	5.25	3.88	46.0

**Sprocket Number 119RX**

For Union Chain Numbers 119RX, 119R

<b>3.075 Pitch</b>				<b>1.250 Roller Diameter 1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	119RXA8	1.25	18.0	119RXC8	1.25	3.19	8.035	5.25	3.88	32.0
9	119RXA9	1.25	22.0	119RXC9	1.25	3.19	8.991	5.25	3.88	36.0
10	119RXA10	1.50	27.0	119RXC10	1.50	3.44	9.951	5.50	4.25	48.0
11	119RXA11	1.50	33.0	119RXC11	1.50	3.44	10.915	5.50	4.25	53.0
12	119RXA12	1.50	39.0	119RXC12	1.50	3.44	11.881	5.50	4.25	60.0



# UNION CHAIN DIVISION - ROLLER CONVEYOR CHAIN SPROCKETS

## Sprocket Number 94R

For Union Chain Number 94R

All dimensions are in inches unless otherwise specified.

<b>4.000 Pitch</b>				<b>1.500 Roller Diameter .750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	94RA8	1.25	18.0	94RC8	1.25	3.19	10.453	5.25	3.88	36.0
9	94RA9	1.25	23.0	94RC9	1.25	3.19	11.695	5.25	3.88	40.0
10	94RA10	1.25	28.0	94RC10	1.25	3.19	12.944	5.25	3.88	45.0
11	94RA11	1.25	34.0	94RC11	1.25	3.19	14.198	5.25	3.88	51.0
12	94RA12	1.25	40.0	94RC12	1.25	3.19	15.455	5.25	3.88	57.0

## Sprocket Number 97R

For Union Chain Number 97R

<b>4.000 Pitch</b>				<b>1.750 Roller Diameter .750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	97RA8	1.25	17.0	97RC8	1.25	3.19	10.453	5.25	3.88	35.0
9	97RA9	1.25	22.0	97RC9	1.25	3.19	11.695	5.25	3.88	39.0
10	97RA10	1.25	28.0	97RC10	1.25	3.19	12.944	5.25	3.88	44.0
11	97RA11	1.25	33.0	97RC11	1.25	3.19	14.198	5.25	3.88	50.0
12	97RA12	1.25	39.0	97RC12	1.25	3.12	15.455	5.25	3.88	56.0

## Sprocket Number 95R

For Union Chain Number 95R

<b>4.000 Pitch</b>				<b>1.500 Roller Diameter .875 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	95RA8	1.25	21.0	95RC8	1.25	3.19	10.453	5.25	3.88	38.0
9	95RA9	1.25	27.0	95RC9	1.25	3.19	11.695	5.25	3.88	43.0
10	95RA10	1.25	33.0	95RC10	1.25	3.19	12.944	5.25	3.88	49.0
11	95RA11	1.25	39.0	95RC11	1.25	3.19	14.198	5.25	3.88	56.0
12	95RA12	1.25	47.0	95RC12	1.25	3.19	15.455	5.25	3.88	63.0

**Sprocket Number 91R**

For Union Chain Numbers 91R, 1188R

All dimensions are in inches unless otherwise specified.

<b>4.000 Pitch</b>				<b>1.750 Roller Diameter 1.000 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	91RA8	1.25	34.0	91RC8	1.25	3.19	10.453	5.25	3.88	40.0
9	91RA9	1.25	31.0	91RC9	1.25	3.19	11.695	5.25	3.88	46.0
10	91RA10	1.25	37.0	91RC10	1.25	3.19	12.944	5.25	3.88	53.0
11	91RA11	1.25	45.0	91RC11	1.25	3.19	14.198	5.25	3.88	61.0
12	91RA12	1.25	53.0	91RC12	1.25	3.19	15.455	5.25	3.88	69.0

**Sprocket Number US-90R**

For Union Chain Numbers US-90R, 83R, 40001,82R

<b>4.000 Pitch</b>				<b>2.000 Roller Diameter 1.000 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	US-90RA8	1.25	24.0	US-90RC8	1.25	3.19	10.453	5.25	3.88	40.0
9	US-90RA9	1.25	31.0	US-90RC9	1.25	3.19	11.695	5.25	3.88	46.0
10	US-90RA10	1.25	37.0	US-90RC10	1.25	3.19	12.944	5.25	3.88	53.0
11	US-90RA11	1.25	45.0	US-90RC11	1.25	3.19	14.198	5.25	3.88	61.0
12	US-90RA12	1.25	53.0	US-90RC12	1.25	3.19	15.455	5.25	3.88	69.0

**Sprocket Number 89R**

For Union Chain Number 89R

<b>4.000 Pitch</b>				<b>2.250 Roller Diameter 1.125 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	89RA8	1.50	27.0	89RC8	1.50	3.44	10.453	5.50	4.25	46.0
9	89RA9	1.50	34.0	89RC9	1.50	3.44	11.695	5.50	4.25	53.0
10	89RA10	1.50	42.0	89RC10	1.50	3.44	12.944	5.50	4.25	61.0
11	89RA11	1.50	51.0	89RC11	1.50	3.44	14.198	5.50	4.25	70.0
12	89RA12	1.50	60.0	89RC12	1.50	3.44	15.455	5.50	4.25	79.0



# UNION CHAIN DIVISION - ROLLER CONVEYOR CHAIN SPROCKETS

## Sprocket Number 84R

For Union Chain Number 84R

All dimensions are in inches unless otherwise specified.

<b>4.000 Pitch</b>				<b>2.250 Roller Diameter 1.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	84RA8	1.50	43.0	84RC8	1.50	3.94	10.453	6.50	5.00	71.0
9	84RA9	1.50	53.0	84RC9	1.50	3.94	11.695	6.50	5.00	81.0
10	84RA10	1.50	63.0	84RC10	1.50	3.94	12.944	6.50	5.00	93.0
11	84RA11	1.50	79.0	84RC11	1.50	3.94	14.198	6.50	5.00	107.0
12	84RA12	1.50	93.0	84RC12	1.50	3.94	15.455	6.50	5.00	121.0

## Sprocket Number DS-1113

For Union Chain Numbers DS-1113, 1113R

<b>4.040 Pitch</b>				<b>2.000 Roller Diameter 1.125 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	DS-1113A8	1.50	28.0	DS-1113C8	1.50	3.44	10.557	5.50	4.25	47.0
9	DS-1113A9	1.50	35.0	DS-1113C9	1.50	3.44	11.812	5.50	4.25	54.0
10	DS-1113A10	1.50	43.0	DS-1113C10	1.50	3.44	13.074	5.50	4.25	62.0
11	DS-1113A11	1.50	52.0	DS-1113C11	1.50	3.44	14.340	5.50	4.25	71.0
12	DS-1113A12	1.50	61.0	DS-1113C12	1.50	3.44	15.609	5.50	4.25	80.0

## Sprocket Number 6053R

For Union Chain Number 6053R

<b>6.000 Pitch</b>				<b>1.500 Roller Diameter .750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	6053RA8	1.25	41.0	6053RC8	1.25	2.94	15.679	4.75	3.13	52.0
9	6053RA9	1.25	51.0	6053RC9	1.25	2.94	17.543	4.75	3.13	62.0
10	6053RA10	1.25	63.0	6053RC10	1.25	2.94	19.416	4.75	3.13	74.0
11	6053RA11	1.25	76.0	6053RC11	1.25	2.94	21.297	4.75	3.13	87.0
12	6053RA12	1.25	90.0	6053RC12	1.25	2.94	23.182	4.75	3.13	101.0

**Sprocket Number 627R**

For Union Chain Numbers 627R, 86R, US-196R, DS-196R, 604R, 634R

All dimensions are in inches unless otherwise specified.

<b>6.000 Pitch</b>				<b>2.000 Roller Diameter 1.000 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	627RA8	1.50	55.0	627RC8	1.50	3.44	15.679	5.50	4.25	75.0
9	627RA9	1.50	69.0	627RC9	1.50	3.44	17.543	5.50	4.25	88.0
10	627RA10	1.50	84.0	627RC10	1.50	3.44	19.416	5.50	4.25	104.0
11	627RA11	1.50	101.0	627RC11	1.50	3.94	21.297	6.50	5.00	136.0
12	627RA12	1.50	120.0	627RC12	1.50	3.94	23.182	6.50	5.00	155.0

**Sprocket Number DS-6272**

For Union Chain Numbers DS-6272, 628R, 1126R

<b>6.000 Pitch</b>				<b>2.250 Roller Diameter 1.125 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	DS-6272A8	1.50	62.0	DS-6272C8	1.50	3.94	15.679	6.50	5.00	96.0
9	DS-6272A9	1.50	77.0	DS-6272C9	1.50	3.94	17.543	6.50	5.00	111.0
10	DS-6272A10	1.50	95.0	DS-6272C10	1.50	3.94	19.416	6.50	5.00	129.0
11	DS-6272A11	1.50	114.0	DS-6272C11	1.50	3.94	21.297	6.50	5.00	148.0
12	DS-6272A12	1.50	135.0	DS-6272C12	1.50	3.94	23.182	6.50	5.00	169.0

**Sprocket Number 603R**

For Union Chain Number 603R

<b>6.000 Pitch</b>				<b>2.500 Roller Diameter .750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	603RA8	1.50	41.0	603RC8	1.50	3.44	15.679	5.50	4.25	63.0
9	603RA9	1.50	51.0	603RC9	1.50	3.44	17.543	5.50	4.25	73.0
10	603RA10	1.50	63.0	603RC10	1.50	3.44	19.416	5.50	4.25	85.0
11	603RA11	1.50	76.0	603RC11	1.50	3.44	21.297	5.50	4.25	97.0
12	603RA12	1.50	90.0	603RC12	1.50	3.44	23.182	5.50	4.25	111.0





# UNION CHAIN DIVISION - ROLLER CONVEYOR CHAIN SPROCKETS

## Sprocket Number CC5

For Union Chain Numbers CC5, 607R, 614R, 1630R, 2130R

All dimensions are in inches unless otherwise specified.

Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
6	CC5A6	1.50	36.0	CC5C6	1.50	3.44	12.000	5.50	4.25	55.0
7 <sup>1</sup>	CC5A7	1.50	48.0	CC5C7	1.50	3.44	13.829	5.50	4.25	67.0
8 <sup>1</sup>	CC5A8	1.50	62.0	CC5C8	1.50	3.94	15.679	6.50	5.00	96.0
9	CC5A9	1.50	77.0	CC5C9	1.50	3.94	17.543	6.50	5.00	111.0
10	CC5A10	1.50	95.0	CC5C10	1.50	3.94	19.416	6.50	5.00	129.0
11	CC5A11	1.50	114.0	CC5C11	1.50	3.94	21.297	6.50	5.00	148.0
12	CC5A12	1.50	135.0	CC5C12	1.50	3.94	23.182	6.50	5.00	169.0

<sup>1</sup>CC5 Sprockets are available with double duty tooth forms in both 7- and 8-tooth sizes.

Note: Standard automotive specification for CC5 sprockets is 4.00 L.T.B. C style and 6.00 L.T.B. (2x4 offset) C Offset style.

## Sprocket Number 610R

For Union Chain Numbers 610R, 96R, 96RX, 2178R, 2178RX, 2198RX

Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	610RA8	1.50	69.0	610RC8	1.50	4.44	15.679	7.00	6.00	117.0
9	610RA9	1.50	86.0	610RC9	1.50	4.44	17.543	7.00	6.00	135.0
10	610RA10	1.50	105.0	610RC10	1.50	4.44	19.416	7.00	6.00	154.0
11	610RA11	1.50	126.0	610RC11	1.50	5.44	21.297	8.00	6.25	193.0
12	610RA12	1.50	150.0	610RC12	1.50	5.44	23.182	8.00	6.25	216.0

## Sprocket Number 625R

For Union Chain Numbers 625R, 60002, 629R Special

Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	625RA8	1.50	55.0	625RC8	1.50	3.44	15.679	5.50	4.25	75.0
9	625RA9	1.50	69.0	625RC9	1.50	3.44	17.543	5.50	4.25	88.0
10	625RA10	1.50	84.0	625RC10	1.50	3.44	19.416	5.50	4.25	104.0
11	625RA11	1.50	101.0	625RC11	1.50	3.94	21.297	6.50	5.00	136.0
12	625RA12	1.50	120.0	625RC12	1.50	3.94	23.182	6.50	5.00	155.0

**Sprocket Number 626R**

For Union Chain Numbers 626R, 631, 631R, 1126RS

All dimensions are in inches unless otherwise specified.

<b>6.000 Pitch</b>				<b>3.000 Roller Diameter 1.125 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	626RA8	1.50	62.0	626RC8	1.50	4.44	15.679	7.00	6.00	112.0
9	626RA9	1.50	77.0	626RC9	1.50	4.44	17.543	7.00	6.00	127.0
10	626RA10	1.50	95.0	626RC10	1.50	4.44	19.416	7.00	6.00	145.0
11	626RA11	1.50	114.0	626RC11	1.50	4.44	21.297	7.00	6.00	164.0
12	626RA12	1.50	135.0	626RC12	1.50	4.44	23.182	7.00	6.00	185.0

**Sprocket Number 629R**

For Union Chain Numbers 629R, B-663R, 1131R, 2184R, 2184RX

<b>6.000 Pitch</b>				<b>3.000 Roller Diameter 1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	629RA8	1.50	69.0	629RC8	1.50	4.44	15.679	7.00	6.00	117.0
9	629RA9	1.50	86.0	629RC9	1.50	4.44	17.543	7.00	6.00	135.0
10	629RA10	1.50	105.0	629RC10	1.50	4.44	19.416	7.00	6.00	154.0
11	629RA11	1.50	126.0	629RC11	1.50	5.44	21.297	8.00	6.25	193.0
12	629RA12	1.50	150.0	629RC12	1.50	5.44	23.182	8.00	6.25	216.0

**Sprocket Number 806R**

For Union Chain Number 806R

<b>8.000 Pitch</b>				<b>3.000 Roller Diameter 1.500 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	806RA8	1.50	146.0	806RC8	1.50	5.94	20.905	9.00	6.50	233.0
9	806RA9	1.50	183.0	806RC9	1.50	5.94	23.390	9.00	6.50	270.0
10	806RA10	1.50	224.0	806RC10	1.50	5.94	25.889	9.00	6.50	311.0
11	806RA11	1.50	270.0	806RC11	1.50	5.94	28.396	9.00	6.50	357.0
12	806RA12	1.50	291.0	806RC12	1.50	5.94	30.910	9.00	6.50	378.0



# UNION CHAIN DIVISION - ROLLER CONVEYOR CHAIN SPROCKETS

## Sprocket Number 896R

For Union Chain Number 896R

All dimensions are in inches unless otherwise specified.

<b>8.000 Pitch</b>				<b>3.500 Roller Diameter 1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	896RA8	1.50	122.0	896RC8	1.50	4.44	20.905	7.00	6.00	171.0
9	896RA9	1.50	153.0	896RC9	1.50	4.44	23.390	7.00	6.00	201.0
10	896RA10	1.50	187.0	896RC10	1.50	4.44	25.889	7.00	6.00	236.0
11	896RA11	1.50	201.0	896RC11	1.50	4.44	28.396	7.00	6.00	250.0
12	896RA12	1.50	266.0	896RC12	1.50	4.44	30.910	7.00	6.00	273.0

## Sprocket Number 800RX

For Union Chain Number 800RX

<b>8.000 Pitch</b>				<b>3.500 Roller Diameter 1.500 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	800RXA8	1.50	146.0	800RXC8	1.50	5.94	20.905	9.00	6.50	233.0
9	800RXA9	1.50	183.0	800RXC9	1.50	5.94	23.390	9.00	6.50	270.0
10	800RXA10	1.50	224.0	800RXC10	1.50	5.94	25.889	9.00	6.50	311.0
11	800RXA11	1.50	270.0	800RXC11	1.50	5.94	28.396	9.00	6.50	357.0
12	800RXA12	1.50	291.0	800RXC12	1.50	5.94	30.910	9.00	6.50	407.0

## Sprocket Number 925R

For Union Chain Numbers 925R, 90004

<b>9.000 Pitch</b>				<b>3.000 Roller Diameter 1.000 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	925RA8	1.50	123.0	925RC8	1.50	3.94	23.518	6.50	5.00	158.0
9	925RA9	1.50	135.0	925RC9	1.50	3.94	26.314	6.50	5.00	171.0
10	925RA10	1.50	152.0	925RC10	1.50	3.94	29.125	6.50	5.00	187.0
11	925RA11	1.50	187.0	925RC11	1.50	4.44	31.945	7.00	6.00	239.0
12	925RA12	1.50	207.0	925RC12	1.50	4.44	34.773	7.00	6.00	259.0

C - SPROCKETS AND ACCESSORIES

**Sprocket Number B-912R**

For Union Chain Number B-912R

All dimensions are in inches unless otherwise specified.

<b>9.000 Pitch</b>				<b>3.000 Roller Diameter 1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	B-912RA8	1.50	154.0	B-912RC8	1.50	3.94	23.518	6.50	5.00	187.0
9	B-912RA9	1.50	173.0	B-912RC9	1.50	3.94	26.314	6.50	5.00	205.0
10	B-912RA10	1.50	199.0	B-912RC10	1.50	3.94	29.125	6.50	5.00	232.0
11	B-912RA11	1.50	238.0	B-912RC11	1.50	4.44	31.945	7.00	6.00	287.0
12	B-912RA12	1.50	269.0	B-912RC12	1.50	4.44	34.773	7.00	6.00	318.0

**Sprocket Number 4009**

For Union Chain Number 4009

<b>9.000 Pitch</b>				<b>3.000 Roller Diameter 1.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
9	4009A9	1.50	270.0	4009C9	1.50	5.94	26.314	9.00	6.50	353.0
10	4009A10	1.50	331.0	4009C10	1.50	5.94	29.125	9.00	6.50	414.0
11	4009A11	1.50	365.0	4009C11	1.50	5.94	31.945	9.00	6.50	448.0
12	4009A12	1.50	413.0	4009C12	1.50	5.94	34.773	9.00	6.50	496.0

**Sprocket Number 965R**

For Union Chain Number 965R

<b>9.000 Pitch</b>				<b>3.000 Roller Diameter 2.000 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	965RA8	1.50	247.0	965RC8	1.50	5.94	23.518	9.00	6.50	325.0
9	965RA9	1.50	309.0	965RC9	1.50	5.94	26.314	9.00	6.50	387.0
10	965RA10	1.50	378.0	965RC10	1.50	5.94	29.125	9.00	6.50	456.0
11	965RA11	1.50	422.0	965RC11	1.50	5.94	31.945	9.00	6.50	500.0
12	965RA12	1.50	489.0	965RC12	1.50	5.94	34.773	9.00	6.50	567.0



# UNION CHAIN DIVISION - ROLLER CONVEYOR CHAIN SPROCKETS

## Sprocket Number 4004

For Union Chain Number 4004

All dimensions are in inches unless otherwise specified.

Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
9	4004A9	1.50	347.0	4004C9	1.50	6.50	26.314	10.00	6.75	444.0
10	4004A10	1.50	425.0	4004C10	1.50	6.50	29.125	10.00	6.75	523.0
11	4004A11	1.50	512.0	4004C11	1.50	6.50	31.945	10.00	6.75	609.0
12	4004A12	1.50	565.0	4004C12	1.50	6.50	34.773	10.00	6.75	661.0

**3.000 Roller Diameter  
2.250 Plate Thickness**

## Sprocket Number B-963R

For Union Chain Numbers B-963R, 809R

Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	B-963RA8	1.50	139.0	B-963RC8	1.50	5.44	23.518	8.00	6.25	207.0
9	B-963RA9	1.50	174.0	B-963RC9	1.50	5.44	26.314	8.00	6.25	242.0
10	B-963RA10	1.50	185.0	B-963RC10	1.50	5.44	29.125	8.00	6.25	253.0
11	B-963RA11	1.50	218.0	B-963RC11	1.50	5.44	31.945	8.00	6.25	287.0
12	B-963RA12	1.50	240.0	B-963RC12	1.50	5.44	34.773	8.00	6.25	308.0

**3.500 Roller Diameter  
1.125 Plate Thickness**

## Sprocket Number D-963R

For Union Chain Number D-963R

Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	D-963RA8	1.50	185.0	D-963RC8	1.50	5.44	23.518	8.00	6.25	248.0
9	D-963RA9	1.50	232.0	D-963RC9	1.50	5.44	26.314	8.00	6.25	295.0
10	D-963RA10	1.50	255.0	D-963RC10	1.50	5.44	29.125	8.00	6.25	318.0
11	D-963RA11	1.50	301.0	D-963RC11	1.50	5.44	31.945	8.00	6.25	363.0
12	D-963RA12	1.50	338.0	D-963RC12	1.50	5.44	34.773	8.00	6.25	401.0

**3.500 Roller Diameter  
1.500 Plate Thickness**

**Sprocket Number E-963R**

For Union Chain Number E-963R

All dimensions are in inches unless otherwise specified.

<b>9.000 Pitch</b>				<b>4.000 Roller Diameter 1.125 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	E-963RA8	1.50	139.0	E-963RC8	1.50	5.44	23.518	8.00	6.25	207.0
9	E-963RA9	1.50	174.0	E-963RC9	1.50	5.44	26.314	8.00	6.25	242.0
10	E-963RA10	1.50	188.0	E-963RC10	1.50	5.44	29.125	8.00	6.25	256.0
11	E-963RA11	1.50	222.0	E-963RC11	1.50	5.44	31.945	8.00	6.25	290.0
12	E-963RA12	1.50	245.0	E-963RC12	1.50	5.44	34.773	8.00	6.25	313.0

**Sprocket Number B-964R**

For Union Chain Number B-964R

<b>9.000 Pitch</b>				<b>4.000 Roller Diameter 1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	B-964RA8	1.50	154.0	B-964RC8	1.50	5.94	23.518	9.00	6.50	246.0
9	B-964RA9	1.50	193.0	B-964RC9	1.50	5.94	26.314	9.00	6.50	285.0
10	B-964RA10	1.50	219.0	B-964RC10	1.50	5.94	29.125	9.00	6.50	310.0
11	B-964RA11	1.50	249.0	B-964RC11	1.50	5.94	31.945	9.00	6.50	341.0
12	B-964RA12	1.50	286.0	B-964RC12	1.50	5.94	34.773	9.00	6.50	378.0

**Sprocket Number 4065**

For Union Chain Number 4065

<b>9.000 Pitch</b>				<b>4.250 Roller Diameter 2.500 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
9	4065A9	1.50	386.0	4065C9	1.50	7.00	26.314	11.00	7.75	524.0
10	4065A10	1.50	473.0	4065C10	1.50	7.00	29.125	11.00	7.75	611.0
11	4065A11	1.50	569.0	4065C11	1.50	7.00	31.945	11.00	7.75	707.0
12	4065A12	1.50	674.0	4065C12	1.50	7.00	34.773	11.00	7.75	812.0



# UNION CHAIN DIVISION - ROLLER CONVEYOR CHAIN SPROCKETS

## Sprocket Number 973R

For Union Chain Number 973R

All dimensions are in inches unless otherwise specified.

<b>9.000 Pitch</b>				<b>5.000 Roller Diameter 1.500 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	973RA8	1.50	185.0	973RC8	1.50	6.50	23.518	10.00	6.75	299.0
9	973RA9	1.50	232.0	973RC9	1.50	6.50	26.314	10.00	6.75	345.0
10	973RA10	1.50	284.0	973RC10	1.50	6.50	29.125	10.00	6.75	397.0
11	973RA11	1.50	341.0	973RC11	1.50	6.50	31.945	10.00	6.75	455.0
12	973RA12	1.50	367.0	973RC12	1.50	6.50	34.773	10.00	6.75	481.0

## Sprocket Number B-1212R

For Union Chain Number B-1212R

<b>12.000 Pitch</b>				<b>3.000 Roller Diameter 1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	B-1212RA8	1.50	232.0	B-1212RC8	1.50	5.44	31.358	8.00	6.25	299.0
9	B-1212RA9	1.50	280.0	B-1212RC9	1.50	5.44	35.086	8.00	6.25	346.0
10	B-1212RA10	1.50	325.0	B-1212RC10	1.50	5.44	38.833	8.00	6.25	392.0
11	B-1212RA11	1.50	366.0	B-1212RC11	1.50	5.44	42.594	8.00	6.25	433.0
12	B-1212RA12	1.50	415.0	B-1212RC12	1.50	5.44	46.364	8.00	6.25	481.0

## Sprocket Number 1265R

For Union Chain Number 1265R

<b>12.000 Pitch</b>				<b>3.000 Roller Diameter 2.000 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	1265RA8	1.50	439.0	1265RC8	1.50	6.50	31.358	10.00	6.75	541.0
9	1265RA9	1.50	501.0	1265RC9	1.50	6.50	35.086	10.00	6.75	603.0
10	1265RA10	1.50	584.0	1265RC10	1.50	6.50	38.833	10.00	6.75	687.0
11	1265RA11	1.50	692.0	1265RC11	1.50	6.50	42.594	10.00	6.75	794.0
12	1265RA12	1.50	788.0	1265RC12	1.50	6.50	46.364	10.00	6.75	891.0

**Sprocket Number B-1266R**

For Union Chain Number B-1266R

All dimensions are in inches unless otherwise specified.

<b>12.000 Pitch</b>				<b>3.250 Roller Diameter 1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	B-1266RA8	1.50	235.0	B-1266RC8	1.50	5.94	31.358	9.00	6.50	326.0
9	B-1266RA9	1.50	283.0	B-1266RC9	1.50	5.94	35.086	9.00	6.50	375.0
10	B-1266RA10	1.50	320.0	B-1266RC10	1.50	5.94	38.833	9.00	6.50	411.0
11	B-1266RA11	1.50	386.0	B-1266RC11	1.50	5.94	42.594	9.00	6.50	478.0
12	B-1266RA12	1.50	431.0	B-1266RC12	1.50	5.94	46.364	9.00	6.50	522.0

**Sprocket Number B-1263R**

For Union Chain Number B-1263R

<b>12.000 Pitch</b>				<b>3.500 Roller Diameter 1.125 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	B-1263RA8	1.50	215.0	B-1263RC8	1.50	5.94	31.358	9.00	6.50	309.0
9	B-1263RA9	1.50	250.0	B-1263RC9	1.50	5.94	35.086	9.00	6.50	344.0
10	B-1263RA10	1.50	288.0	B-1263RC10	1.50	5.94	38.833	9.00	6.50	382.0
11	B-1263RA11	1.50	342.0	B-1263RC11	1.50	5.94	42.594	9.00	6.50	436.0
12	B-1263RA12	1.50	387.0	B-1263RC12	1.50	5.94	46.364	9.00	6.50	481.0

**Sprocket Number D-1263R**

For Union Chain Number D-1263R

<b>12.000 Pitch</b>				<b>3.500 Roller Diameter 1.500 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	D-1263RA8	1.50	301.0	D-1263RC8	1.50	5.94	31.358	9.00	6.50	388.0
9	D-1263RA9	1.50	351.0	D-1263RC9	1.50	5.94	35.086	9.00	6.50	438.0
10	D-1263RA10	1.50	406.0	D-1263RC10	1.50	5.94	38.833	9.00	6.50	493.0
11	D-1263RA11	1.50	479.0	D-1263RC11	1.50	5.94	42.594	9.00	6.50	566.0
12	D-1263RA12	1.50	543.0	D-1263RC12	1.50	5.94	46.364	9.00	6.50	630.0





# UNION CHAIN DIVISION - ROLLER CONVEYOR CHAIN SPROCKETS

## Sprocket Number E-1263R

For Union Chain Numbers E-1263R, 1276R

All dimensions are in inches unless otherwise specified.

Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	E-1263RA8	1.50	219.0	E-1263RC8	1.50	5.94	31.358	9.00	6.50	313.0
9	E-1263RA9	1.50	255.0	E-1263RC9	1.50	5.94	35.086	9.00	6.50	349.0
10	E-1263RA10	1.50	294.0	E-1263RC10	1.50	5.94	38.833	9.00	6.50	388.0
11	E-1263RA11	1.50	348.0	E-1263RC11	1.50	5.94	42.594	9.00	6.50	442.0
12	E-1263RA12	1.50	394.0	E-1263RC12	1.50	5.94	46.364	9.00	6.50	488.0

**4.000 Roller Diameter**  
**1.125 Plate Thickness**

**12.000 Pitch**

## Sprocket Number B-1264R

For Union Chain Number B-1264R

Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	B-1264RA8	1.50	247.0	B-1264RC8	1.50	6.50	31.358	10.00	6.75	366.0
9	B-1264RA9	1.50	289.0	B-1264RC9	1.50	6.50	35.086	10.00	6.75	409.0
10	B-1264RA10	1.50	344.0	B-1264RC10	1.50	6.50	38.833	10.00	6.75	463.0
11	B-1264RA11	1.50	385.0	B-1264RC11	1.50	6.50	42.594	10.00	6.75	504.0
12	B-1264RA12	1.50	460.0	B-1264RC12	1.50	6.50	46.364	10.00	6.75	579.0

**4.000 Roller Diameter**  
**1.250 Plate Thickness**

**12.000 Pitch**

## Sprocket Number 1273R

For Union Chain Numbers 1273R, 1271R

Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	1273RA8	1.50	329.0	1273RC8	1.50	7.00	31.358	11.00	7.75	494.0
9	1273RA9	1.50	379.0	1273RC9	1.50	7.00	35.086	11.00	7.75	544.0
10	1273RA10	1.50	440.0	1273RC10	1.50	7.00	38.833	11.00	7.75	605.0
11	1273RA11	1.50	509.0	1273RC11	1.50	7.00	42.594	11.00	7.75	673.0
12	1273RA12	1.50	574.0	1273RC12	1.50	7.00	46.364	11.00	7.75	739.0

**5.000 Roller Diameter**  
**1.500 Plate Thickness**

**12.000 Pitch**

**Sprocket Number B-1863R**

For Union Chain Number B-1863R

All dimensions are in inches unless otherwise specified.

<b>18.000 Pitch</b>				<b>3.500 Roller Diameter 1.125 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
6	B-1863RA6	1.50	262.0	B-1863RC6	1.50	5.94	36.000	9.00	6.50	355.0
7	B-1863RA7	1.50	317.0	B-1863RC7	1.50	5.94	41.486	9.00	6.50	410.0
8	B-1863RA8	1.50	403.0	B-1863RC8	1.50	6.50	47.036	10.00	6.75	525.0
9	B-1863RA9	1.50	466.0	B-1863RC9	1.50	6.50	52.628	10.00	6.75	588.0
10	B-1863RA10	1.50	540.0	B-1863RC10	1.50	6.50	58.249	10.00	6.75	662.0

**Sprocket Number D-1863R**

For Union Chain Number D-1863R

<b>18.000 Pitch</b>				<b>3.500 Roller Diameter 1.500 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
6	D-1863RA6	1.50	361.0	D-1863RC6	1.50	5.94	36.000	9.00	6.50	448.0
7	D-1863RA7	1.50	469.0	D-1863RC7	1.50	5.94	41.486	9.00	6.50	556.0
8	D-1863RA8	1.50	573.0	D-1863RC8	1.50	6.50	47.036	10.00	6.75	687.0
9	D-1863RA9	1.50	665.0	D-1863RC9	1.50	6.50	52.628	10.00	6.75	779.0
10	D-1863RA10	1.50	771.0	D-1863RC10	1.50	6.50	58.249	10.00	6.75	885.0

**Sprocket Number E-1863R**

For Union Chain Number E-1863R

<b>18.000 Pitch</b>				<b>4.000 Roller Diameter 1.125 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
6 <sup>1</sup>	E-1863RA6	1.50	266.0	E-1863RC6	1.50	5.94	36.000	9.00	6.50	360.0
7 <sup>1</sup>	E-1863RA7	1.50	323.0	E-1863RC7	1.50	5.94	41.486	9.00	6.50	417.0
8 <sup>1</sup>	E-1863RA8	1.50	410.0	E-1863RC8	1.50	6.50	47.036	10.00	6.75	532.0
9 <sup>1</sup>	E-1863RA9	1.50	475.0	E-1863RC9	1.50	6.50	52.628	10.00	6.75	597.0
10 <sup>1</sup>	E-1863RA10	1.50	550.0	E-1863RC10	1.50	6.50	58.249	10.00	6.75	672.0



# UNION CHAIN DIVISION - ROLLER CONVEYOR CHAIN SPROCKETS

## Sprocket Number B-1864R

For Union Chain Number B-1864R

All dimensions are in inches unless otherwise specified.

18.000 Pitch				4.000 Roller Diameter 1.250 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
6 <sup>1</sup>	B-1864RA6	1.50	306.0	B-1864RC6	1.50	6.50	36.000	10.00	6.75	425.0
7 <sup>1</sup>	B-1864RA7	1.50	379.0	B-1864RC7	1.50	6.50	41.486	10.00	6.75	499.0
8 <sup>1</sup>	B-1864RA8	1.50	463.0	B-1864RC8	1.50	6.50	47.036	10.00	6.75	582.0
9 <sup>1</sup>	B-1864RA9	1.50	545.0	B-1864RC9	1.50	6.50	52.628	10.00	6.75	665.0
10 <sup>1</sup>	B-1864RA10	1.50	622.0	B-1864RC10	1.50	6.50	58.249	10.00	6.75	741.0

<sup>1</sup>Furnished standard with lightening holes.

## Sprocket Number G-1864R

For Union Chain Number G-1864R

18.000 Pitch				4.000 Roller Diameter 1.500 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
6 <sup>1</sup>	G-1864RA6	1.50	378.0	G-1864RC6	1.50	6.50	36.000	10.00	6.75	492.0
7 <sup>1</sup>	G-1864RA7	1.50	470.0	G-1864RC7	1.50	6.50	41.486	10.00	6.75	584.0
8 <sup>1</sup>	G-1864RA8	1.50	581.0	G-1864RC8	1.50	6.50	47.036	10.00	6.75	695.0
9 <sup>1</sup>	G-1864RA9	1.50	675.0	G-1864RC9	1.50	6.50	52.628	10.00	6.75	789.0
10 <sup>1</sup>	G-1864RA10	1.50	783.0	G-1864RC10	1.50	6.50	58.249	10.00	6.75	897.0

<sup>1</sup>Furnished standard with lightening holes.

## Sprocket Number 1873R

For Union Chain Numbers 1873R, 1871R

18.000 Pitch				5.000 Roller Diameter 1.500 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
6 <sup>1</sup>	1873RA6	1.50	391.0	1873RC6	1.50	7.00	36.000	11.00	7.75	556.0
7 <sup>1</sup>	1873RA7	1.50	497.0	1873RC7	1.50	7.00	41.486	11.00	7.75	662.0
8 <sup>1</sup>	1873RA8	1.50	603.0	1873RC8	1.50	8.00	47.036	12.00	8.50	824.0
9 <sup>1</sup>	1873RA9	1.50	695.0	1873RC9	1.50	8.00	52.628	12.00	8.50	915.0
10 <sup>1</sup>	1873RA10	1.50	852.0	1873RC10	1.50	8.00	58.249	12.00	8.50	1,073.0

<sup>1</sup>Furnished standard with lightening holes.

## Sprocket Number 1866R

For Union Chain Numbers 1866R, 1867R

18.000 Pitch				6.000 Roller Diameter 1.500 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
6	1866RA6	1.50	434.0	1866RC6	1.50	9.00	36.000	13.00	9.00	712.0
7 <sup>1</sup>	1866RA7	1.50	515.0	1866RC7	1.50	9.00	41.486	13.00	9.00	794.0
8 <sup>1</sup>	1866RA8	1.50	649.0	1866RC8	1.50	9.50	47.036	14.00	9.50	994.0
9 <sup>1</sup>	1866RA9	1.50	755.0	1866RC9	1.50	9.50	52.628	14.00	9.50	1,100.0
10 <sup>1</sup>	1866RA10	1.50	870.0	1866RC10	1.50	9.50	58.249	14.00	9.50	1,215.0

<sup>1</sup>Furnished standard with lightening holes.



# Dairy Case Flex Bar Chain Sprockets

## Sprocket Number DF-3498 Flex Bar

For Union Chain Number DF-3498 Flex Bar

All dimensions are in inches unless otherwise specified.

1.750 x 2.500 Pitch				.575 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
7	DF-3498A7	1.25	12.0	DF-3498C7	1.25	2.44	9.557	4.00	2.75	19.0
8	DF-3498A8	1.25	15.0	DF-3498C8	1.25	2.44	10.899	4.00	2.75	22.0
9	DF-3498A9	1.25	19.0	DF-3498C9	1.25	2.94	12.243	4.75	3.13	31.0
10	DF-3498A10	1.25	24.0	DF-3498C10	1.25	2.94	13.589	4.75	3.13	35.0
11	DF-3498A11	1.25	29.0	DF-3498C11	1.25	2.94	14.936	4.75	3.13	40.0

## Sprocket Number DF-3500 Flex Bar

For Union Chain Number DF-3500 Flex Bar

2.500 x 3.000 Pitch				.575 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
5	DF-3500A5	1.25	10.0	DF-3500C5	1.25	2.94	8.903	4.50	2.00	22.0
5 (Split)				DF-3500E5 <sup>1</sup>	1.25	2.94	8.903	—	3.13	26.0
6	DF-3500A6	1.25	14.0	DF-3500C6	1.25	2.94	10.628	4.50	2.00	26.0
6 (Split)				DF-3500E6 <sup>1</sup>	1.25	2.94	10.628	—	3.13	30.0
7	DF-3500A7	1.25	20.0	DF-3500C7	1.25	2.94	12.361	5.50	2.00	31.0
7 (Split)				DF-3500E7 <sup>1</sup>	1.25	2.94	12.361	—	3.13	35.0

<sup>1</sup>E designates split construction sprocket.

## Sprocket Number DF-3910 Flex Bar

For Union Chain Number DF-3910 Flex Bar

3.000 x 3.000 Pitch				.575 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
5	DF-3910A5	1.25	12.0	DF-3910C5	1.25	2.94	9.708	4.75	3.13	24.0
5 (Split)				DF-3910E5 <sup>1</sup>	1.25	2.94	9.708	—	3.13	28.0
6	DF-3910A6	1.25	17.0	DF-3910C6	1.25	2.94	11.591	4.75	3.13	29.0
6 (Split)				DF-3910E6 <sup>1</sup>	1.25	2.94	11.591	—	3.13	33.0
7	DF-3910A7	1.25	23.0	DF-3910C7	1.25	2.94	13.482	4.75	3.13	35.0
7 (Split)				DF-3910E7 <sup>1</sup>	1.25	2.94	13.482	—	3.13	39.0

<sup>1</sup>E designates split construction sprocket.



# Steel Bushed Chain Sprockets

## Sprocket Number 188

For Union Chain Number 188

All dimensions are in inches unless otherwise specified.

<b>.875 Barrel Diameter 1.000 Plate Thickness</b>										
<b>2.609 Pitch</b>										
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	188A8	1.25	10.0	188C8	1.25	2.94	6.817	4.75	3.13	20.0
9	188A9	1.25	13.0	188C9	1.25	3.19	7.628	5.25	3.88	29.0
10	188A10	1.25	16.0	188C10	1.25	3.19	8.442	5.25	3.88	32.0
11	188A11	1.25	19.0	188C11	1.25	3.19	9.260	5.25	3.88	35.0
12	188A12	1.25	23.0	188C12	1.25	3.19	10.080	5.25	3.88	39.0
13	188A13	1.50	26.0	188C13	1.50	3.44	10.901	5.50	4.25	46.0
14	188A14	1.50	31.0	188C14	1.50	3.44	11.724	5.50	4.25	50.0
15	188A15	1.50	35.0	188C15	1.50	3.44	12.548	5.50	4.25	55.0
16	188A16	1.50	40.0	188C16	1.50	3.44	13.373	5.50	4.25	60.0

Note: Specify 50 Rc minimum tooth hardness when chain is run non-lubricated.

## Sprocket Number 131

For Union Chain Numbers 131, 30702, 30703, 30704, C-131

<b>1.250 Barrel Diameter 1.125 Plate Thickness</b>										
<b>3.075 Pitch</b>										
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	131A8	1.25	16.0	131C8	1.25	3.19	8.035	5.25	3.88	32.0
9	131A9	1.25	20.0	131C9	1.25	3.19	8.991	5.25	3.88	36.0
10	131A10	1.25	25.0	131C10	1.25	3.19	9.951	5.25	3.88	40.0
11	131A11	1.25	30.0	131C11	1.25	3.19	10.915	5.25	3.88	45.0
12	131A12	1.25	35.0	131C12	1.25	3.19	11.881	5.25	3.88	51.0
13	131A13	1.50	41.0	131C13	1.50	3.44	12.849	5.50	4.25	60.0
14	131A14	1.50	48.0	131C14	1.50	3.44	13.819	5.50	4.25	67.0
15	131A15	1.50	55.0	131C15	1.50	3.44	14.790	5.50	4.25	74.0
16	131A16	1.50	62.0	131C16	1.50	3.44	15.762	5.50	4.25	81.0

Note: Specify 50 Rc minimum tooth hardness when chain is run non-lubricated.

Note: When sprockets are used for Amusement Park applications, specify "AP" (example: 102 1/2 APC16) along with chain number, pitch, and barrel diameter.

C - SPROCKETS AND ACCESSORIES

**Sprocket Number 102B**

For Union Chain Numbers 102B, C-102B

All dimensions are in inches unless otherwise specified.

<b>4.000 Pitch</b>				<b>1.000 Barrel Diameter 1.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	102BA8	1.50	43.0	102BC8	1.50	3.94	10.453	6.50	6.00	80.0
9	102BA9	1.50	53.0	102BC9	1.50	3.94	11.695	6.50	6.00	90.0
10	102BA10	1.50	65.0	102BC10	1.50	3.94	12.944	6.50	6.00	102.0
11	102BA11	1.50	79.0	102BC11	1.50	3.94	14.198	6.50	6.00	116.0
12	102BA12	1.50	93.0	102BC12	1.50	3.94	15.455	6.50	6.00	130.0
13	102BA13	1.50	109.0	102BC13	1.50	3.94	16.714	6.50	6.00	146.0
14	102BA14	1.50	126.0	102BC14	1.50	3.94	17.976	6.50	6.00	163.0
15	102BA15	1.50	144.0	102BC15	1.50	3.94	19.239	6.50	6.00	181.0
16	102BA16	1.50	164.0	102BC16	1.50	3.94	20.503	6.50	6.00	201.0

Note: Specify 50 Rc minimum tooth hardness when chain is run non-lubricated.

**Sprocket Number 102 1/2**

For Union Chain Number 102 1/2

<b>4.040 Pitch</b>				<b>1.375 Barrel Diameter 2.000 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	102 1/2A8	1.50	50.0	102 1/2C8	1.50	3.94	10.557	6.50	6.00	84.0
9	102 1/2A9	1.50	62.0	102 1/2C9	1.50	3.94	11.812	6.50	6.00	97.0
10	102 1/2A10	1.50	76.0	102 1/2C10	1.50	3.94	13.074	6.50	6.00	111.0
11	102 1/2A11	1.50	92.0	102 1/2C11	1.50	3.94	14.340	6.50	6.00	126.0
12	102 1/2A12	1.50	109.0	102 1/2C12	1.50	3.94	15.609	6.50	6.00	143.0
13	102 1/2A13	1.50	127.0	102 1/2C13	1.50	4.44	16.881	7.00	6.00	168.0
14	102 1/2A14	1.50	147.0	102 1/2C14	1.50	4.44	18.156	7.00	6.00	188.0
15	102 1/2A15	1.50	168.0	102 1/2C15	1.50	4.44	19.431	7.00	6.00	209.0
16	102 1/2A16	1.50	191.0	102 1/2C16	1.50	4.44	20.708	7.00	6.00	232.0

Note: Specify 50 Rc minimum tooth hardness when chain is run non-lubricated.

**Sprocket Number 111**

For Union Chain Numbers 111, C-111

<b>4.760 Pitch</b>				<b>1.437 Barrel Diameter 2.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	111A8	1.50	78.0	111C8	1.50	4.44	12.438	7.00	6.25	119.0
9	111A9	1.50	97.0	111C9	1.50	4.44	13.917	7.00	6.25	138.0
10	111A10	1.50	119.0	111C10	1.50	4.44	15.404	7.00	6.25	160.0
11	111A11	1.50	143.0	111C11	1.50	4.44	16.895	7.00	6.25	184.0
12	111A12	1.50	170.0	111C12	1.50	4.44	18.391	7.00	6.25	211.0
13	111A13	1.50	198.0	111C13	1.50	5.44	19.890	8.00	6.25	251.0
14	111A14	1.50	230.0	111C14	1.50	5.44	21.391	8.00	6.25	282.0
15	111A15	1.50	263.0	111C15	1.50	5.44	22.894	8.00	6.25	315.0
16	111A16	1.50	299.0	111C16	1.50	5.44	24.399	8.00	6.25	351.0

Note: Specify 50 Rc minimum tooth hardness when chain is run non-lubricated.

Note: When sprockets are used for Amusement Park applications, specify "AP" (example: 102 1/2 APC16) along with chain number, pitch, and barrel diameter.



# UNION CHAIN DIVISION - STEEL BUSHED CHAIN SPROCKETS

## Sprocket Number 110

For Union Chain Numbers 110, C-110

All dimensions are in inches unless otherwise specified.

<b>6.000 Pitch</b>				<b>1.250 Barrel Diameter 1.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	110A8	1.50	96.0	110C8	1.50	4.44	15.679	7.00	6.00	139.0
9	110A9	1.50	120.0	110C9	1.50	4.44	17.543	7.00	6.00	164.0
10	110A10	1.50	147.0	110C10	1.50	4.44	19.416	7.00	6.00	191.0
11	110A11	1.50	177.0	110C11	1.50	4.44	21.297	7.00	6.00	220.0
12	110A12	1.50	210.0	110C12	1.50	4.44	23.182	7.00	6.00	253.0
13	110A13	1.50	228.0	110C13	1.50	4.44	25.071	7.00	6.00	271.0
14	110A14	1.50	256.0	110C14	1.50	4.44	26.964	7.00	6.00	300.0
15	110A15	1.50	285.0	110C15	1.50	4.44	28.858	7.00	6.00	329.0
16	110A16	1.50	310.0	110C16	1.50	4.44	30.755	7.00	6.00	354.0

Note: Specify 50 Rc minimum tooth hardness when chain is run non-lubricated.

## Sprocket Number 4856

For Union Chain Numbers 4856, 4857

<b>6.000 Pitch</b>				<b>1.750 Barrel Diameter 2.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	4856A8	1.50	151.0	4856C8	1.50	5.44	15.679	8.00	6.75	203.0
9	4856A9	1.50	189.0	4856C9	1.50	5.44	17.543	8.00	6.75	241.0
10	4856A10	1.50	231.0	4856C10	1.50	5.44	19.416	8.00	6.75	283.0
11	4856A11	1.50	278.0	4856C11	1.50	5.94	21.297	9.00	6.75	347.0
12	4856A12	1.50	330.0	4856C12	1.50	5.94	23.182	9.00	6.75	398.0
13	4856A13	1.50	385.0	4856C13	1.50	5.94	25.071	9.00	6.75	454.0
14	4856A14	1.50	446.0	4856C14	1.50	5.94	26.964	9.00	6.75	514.0
15	4856A15	1.50	511.0	4856C15	1.50	5.94	28.858	9.00	6.75	579.0
16	4856A16	1.50	580.0	4856C16	1.50	6.50	30.755	10.00	6.75	666.0

Sprocket number 4856 furnished 50 Rc minimum tooth hardness standard.

## Sprocket Number 4859

For Union Chain Number 4859

<b>6.000 Pitch</b>				<b>2.375 Barrel Diameter 3.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	4859A8	1.50	178.0	4859C8	1.50	6.50	15.679	10.00	7.75	275.0
9	4859A9	1.50	223.0	4859C9	1.50	6.50	17.543	10.00	7.75	320.0
10	4859A10	1.50	273.0	4859C10	1.50	6.50	19.416	10.00	7.75	370.0
11	4859A11	1.50	329.0	4859C11	1.50	6.50	21.297	10.00	7.75	425.0
12	4859A12	1.50	389.0	4859C12	1.50	6.50	23.182	10.00	7.75	486.0
13	4859A13	1.50	456.0	4859C13	1.50	6.50	25.071	10.00	7.75	552.0
14	4859A14	1.50	527.0	4859C14	1.50	6.50	26.964	10.00	7.75	624.0
15	4859A15	1.50	604.0	4859C15	1.50	7.00	28.858	11.00	7.75	721.0
16	4859A16	1.50	686.0	4859C16	1.50	7.00	30.755	11.00	7.75	803.0

Sprocket Number 4859 furnished 50 Rc minimum tooth hardness standard.

Note: When sprockets are used for Amusement Park applications, specify "AP" (example: 102 1/2APC16) along with chain number, pitch, and barrel diameter.

**Sprocket Number 150X**

For Union Chain Number 150X

All dimensions are in inches unless otherwise specified.

<b>6.050 Pitch</b>				<b>1.750 Barrel Diameter 2.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	150XA8	1.50	153.0	150XC8	1.50	5.44	15.809	8.00	6.75	205.0
9	150XA9	1.50	192.0	150XC9	1.50	5.94	17.689	9.00	6.75	260.0
10	150XA10	1.50	235.0	150XC10	1.50	5.94	19.578	9.00	6.75	304.0
11	150XA11	1.50	283.0	150XC11	1.50	5.94	21.474	9.00	6.75	351.0
12	150XA12	1.50	335.0	150XC12	1.50	5.94	23.375	9.00	6.75	404.0
13	150XA13	1.50	395.0	150XC13	1.50	5.94	25.280	9.00	6.75	460.0
14	150XA14	1.50	453.0	150XC14	1.50	6.50	27.188	10.00	6.75	539.0
15	150XA15	1.50	519.0	150XC15	1.50	6.50	29.099	10.00	6.75	605.0
16	150XA16	1.50	590.0	150XC16	1.50	6.50	31.011	10.00	6.75	676.0

**Sprocket Number 4864**

For Union Chain Number 4864

<b>7.000 Pitch</b>				<b>2.375 Barrel Diameter 3.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	4864A8	1.50	242.0	4864C8	1.50	6.50	18.292	10.00	7.75	339.0
9	4864A9	1.50	304.0	4864C9	1.50	6.50	20.467	10.00	7.75	400.0
10	4864A10	1.50	372.0	4864C10	1.50	6.50	22.652	10.00	7.75	469.0
11	4864A11	1.50	447.0	4864C11	1.50	6.50	24.846	10.00	7.75	544.0
12	4864A12	1.50	530.0	4864C12	1.50	6.50	27.046	10.00	7.75	627.0
13	4864A13	1.50	620.0	4864C13	1.50	6.50	29.250	10.00	7.75	717.0
14	4864A14	1.50	717.0	4864C14	1.50	7.00	31.458	11.00	7.75	835.0
15	4864A15	1.50	822.0	4864C15	1.50	7.00	33.668	11.00	7.75	939.0
16	4864A16	1.50	933.0	4864C16	1.50	7.00	35.881	11.00	7.75	1,051.0

Sprocket Number 4864 furnished 50 Rc minimum tooth hardness standard.

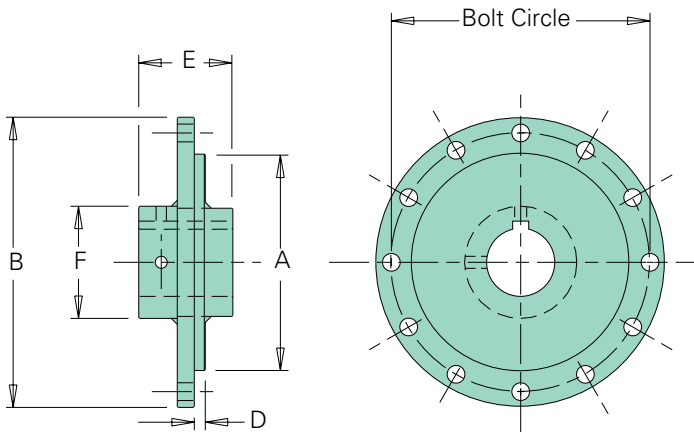


# Segmental Rim Sprockets

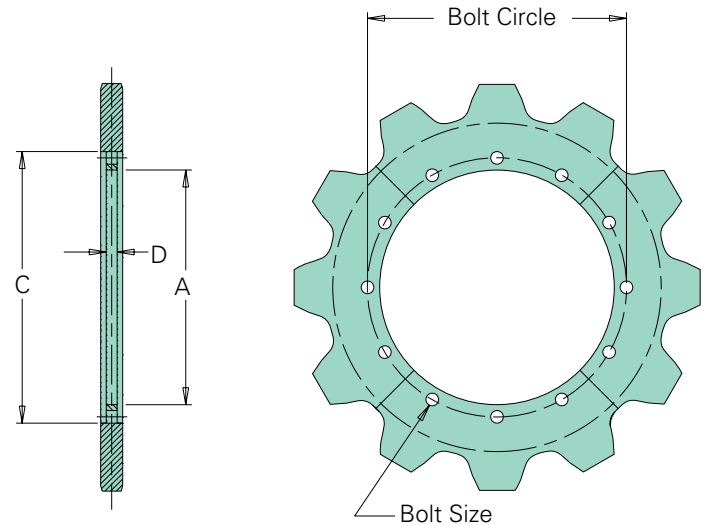
Segmental rim sprockets and traction wheels are split rings (two or more pieces) that generally fasten by bolting to a standard hub body. Segmental rims are usually applied when ease of replacement is desired because the chain, shaft, and bearings do not have to be disturbed during sprocket replacement. When downtime is critical in an operation, consider segmental rim sprockets and traction wheels.

Segmental rims are made of special steel plate material and heat treated to high hardness levels to achieve long service life. All elevator service segmental rim sprocket teeth are hardened to a 50 Rc minimum hardness level. This high hardness resists abrasive wear common in elevator operation. Consult the Union Engineering Department when material being conveyed is cement, ash, or other high MOH hardness material. Special sprocket tooth hardness is necessary to resist wear from such hard abrasants.

## Hub Body



## Segmental Rim



## Segmental Rim Sprocket Specifications

All dimensions are in inches unless otherwise specified.

Hub Body <sup>1</sup> Number	Bolt Circle Diameter	Bolt Size/ Quantity	Nom.				Standard E	Standard F	Maximum Bore	Approx. Weight (lbs.)
			A	B	C	D				
10	10	.500/12	8.50	11.75	12.25	.625	6.00	7.00	4.44	78
12	12	.625/12	10.50	13.75	14.25	.750	6.25	8.00	5.44	115
16	16	.750/12	14.50	17.75	18.25	.750	6.50	9.00	5.94	175
20	20	.750/12	18.50	21.75	22.25	.875	7.75	11.00	7.00	325
25	25	1.000/12	23.00	27.75	28.25	1.000	9.00	13.00	9.00	570

<sup>1</sup>Hub body number indicates bolt circle diameter and does not ensure interchangeability between manufacturers. Call Union for details.

**Traction Wheel Rims<sup>1, 2</sup> (with nuts, bolts and washers)**

All dimensions are in inches unless otherwise specified.

Traction wheels are generally used as drivers only. Traction wheels are generally not used at the tail shaft or boot.

Chain Number	Outside Diameter	Equivalent <sup>3</sup> Sprocket Size (Teeth)	Use Hub Body Number	Face Width	Bolt Diameter	Maximum Bolt Torque (lbs./ft.)	Approximate Weight per Set (lbs.)
110 <sup>4</sup>	16.29	9	12	1.75	.63	180.0	46.0
	18.17	10	12	1.75	.63	180.0	77.0
	21.93	12	16	1.75	.75	320.0	93.0
	23.82	13	16	1.75	.75	320.0	134.0
	24.00	—	16	1.75	.75	320.0	137.0
	29.51	16	16	1.75	.75	320.0	212.0
4856 <sup>4</sup> & 4857 <sup>4</sup>	17.67	10	12	2.75	.63	180.0	97.0
	20.00	—	12	2.75	.63	180.0	149.0
	21.43	12	16	2.75	.75	320.0	116.0
	22.00	—	16	2.75	.75	320.0	124.0
	23.32	13	16	2.75	.75	320.0	178.0
	24.00	—	16	2.75	.75	320.0	186.0
	26.00	—	20	2.75	.75	320.0	155.0
	27.11	15	20	2.75	.75	320.0	209.0
	28.00	—	20	2.75	.75	320.0	228.0
29.01	16	20	2.75	.75	320.0	287.0	
4859 <sup>4</sup>	20.81	12	16	3.25	.75	320.0	101.0
	22.70	13	16	3.25	.75	320.0	165.0
	24.00	—	16	3.25	.75	320.0	197.0
	26.00	—	20	3.25	.75	320.0	164.0
	26.48	15	20	3.25	.75	320.0	182.0
	28.38	16	20	3.25	.75	320.0	276.0
	30.28	17	20	3.25	.75	320.0	331.0
4864 <sup>4</sup>	24.67	12	16	3.25	.75	320.0	238.0
	26.00	—	20	3.25	.75	320.0	164.0
	26.88	13	20	3.25	.75	320.0	196.0
	30.00	—	20	3.25	.75	320.0	325.0
	31.29	15	20	3.25	.75	320.0	413.0
	33.51	16	20	3.25	.75	320.0	525.0
	35.72	17	25	3.25	.75	320.0	540.0

**Sprocket Rims (with nuts, bolts and washers)**

Sprocket rims other than those listed are available upon request.

Chain Number	Number of Teeth	Pitch Diameter	Use Hub Body Number	Face Width	Bolt Diameter	Maximum Bolt Torque (lbs./ft.)	Approximate Weight per Set (lbs.)
110 <sup>4</sup>	9	17.543	12	1.75	.63	180.0	56.0
	10	19.416	12	1.75	.63	180.0	83.0
	12	23.182	16	1.75	.75	320.0	100.0
	13	25.071	16	1.75	.75	320.0	136.0
	16	30.755	20	1.75	.75	320.0	206.0
4856 <sup>4</sup> & 4857 <sup>4</sup>	10	19.416	12	2.75	.63	180.0	132.0
	12	23.182	16	2.75	.75	320.0	157.0
	13	25.071	16	2.75	.75	320.0	218.0
	15	28.858	20	2.75	.75	320.0	256.0
4859 <sup>4</sup>	16	30.755	20	2.75	.75	320.0	332.0
	12	23.182	16	3.25	.75	320.0	169.0
	13	25.071	16	3.25	.75	320.0	235.0
	15	28.858	20	3.25	.75	320.0	275.0
	16	30.755	20	3.25	.75	320.0	357.0
4864 <sup>4</sup>	17	32.653	20	3.25	.75	320.0	444.0
	12	27.046	16	3.25	.75	320.0	309.0
	13	29.250	16	3.25	.75	320.0	399.0
	15	33.668	20	3.25	.75	320.0	493.0
	16	35.881	20	3.25	.75	320.0	604.0
	17	38.095	25	3.25	.75	320.0	534.0

<sup>1</sup>Caution: Do not use traction wheels where ambient conditions are potentially flammable.

<sup>2</sup>Avoid use of traction wheels where: A) heavy digging exists, B) conveyed material inhibits traction, C) conveyed material has heavy density.

<sup>3</sup>Many sizes listed above are equal to sprockets and would not affect elevator capacity when changing from sprocket to traction wheel.

<sup>4</sup>Furnished 50 Rc minimum tooth hardness standard.



# Welded Steel Chain Sprockets

## Sprocket Number WH-78

For Union Chain Numbers WH-78, W-78, C188

All dimensions are in inches unless otherwise specified.

Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	WH-78A8	.94	9.0	WH-78C8	.94	2.94	6.817	4.75	3.13	19.0
9	WH-78A9	1.25	11.0	WH-78C9	1.25	3.19	7.628	5.25	3.88	28.0
10	WH-78A10	1.25	14.0	WH-78C10	1.25	3.19	8.442	5.25	3.88	31.0
11	WH-78A11	1.25	17.0	WH-78C11	1.25	3.19	9.260	5.25	3.88	34.0
12	WH-78A12	1.25	20.0	WH-78C12	1.25	3.19	10.080	5.25	3.88	37.0
13	WH-78A13	1.50	23.0	WH-78C13	1.50	3.44	10.901	5.50	4.25	44.0
14	WH-78A14	1.50	27.0	WH-78C14	1.50	3.44	11.724	5.50	4.25	47.0
15	WH-78A15	1.50	31.0	WH-78C15	1.50	3.44	12.548	5.50	4.25	51.0
16	WH-78A16	1.50	35.0	WH-78C16	1.50	3.44	13.373	5.50	4.25	56.0

**.875 Barrel Diameter**  
**.875 Plate Thickness**

### 2.609 Pitch

## Sprocket Number WH-82

For Union Chain Numbers WH-82, W-82, W-82H, WH-82H

Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	WH-82A8	1.25	16.0	WH-82C8	1.25	3.19	8.035	5.25	3.88	32.0
9	WH-82A9	1.25	20.0	WH-82C9	1.25	3.19	8.991	5.25	3.88	36.0
10	WH-82A10	1.25	25.0	WH-82C10	1.25	3.19	9.951	5.25	3.88	40.0
11	WH-82A11	1.25	30.0	WH-82C11	1.25	3.19	10.915	5.25	3.88	45.0
12	WH-82A12	1.25	35.0	WH-82C12	1.25	3.19	11.881	5.25	3.88	51.0
13	WH-82A13	1.50	41.0	WH-82C13	1.50	3.44	12.849	5.50	4.25	60.0
14	WH-82A14	1.50	48.0	WH-82C14	1.50	3.44	13.819	5.50	4.25	67.0
15	WH-82A15	1.50	55.0	WH-82C15	1.50	3.44	14.790	5.50	4.25	74.0
16	WH-82A16	1.50	62.0	WH-82C16	1.50	3.44	15.762	5.50	4.25	81.0

**1.062 Barrel Diameter**  
**1.125 Plate Thickness**

### 3.075 Pitch

Note: When sprockets are used for Amusement Park applications, specify "AP" (example: WH-124APC16) along with chain number, pitch, and barrel diameter.

**Sprocket Number WH-124**

For Union Chain Numbers WH-124, W-124, W-124SS

All dimensions are in inches unless otherwise specified.

<b>4.000 Pitch</b>				<b>1.250 Barrel Diameter 1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	WH-124A8	1.50	30.0	WH-124C8	1.50	3.44	10.453	5.50	4.25	49.0
9	WH-124A9	1.50	38.0	WH-124C9	1.50	3.44	11.695	5.50	4.25	56.0
10	WH-124A10	1.50	47.0	WH-124C10	1.50	3.44	12.944	5.50	4.25	65.0
11	WH-124A11	1.50	56.0	WH-124C11	1.50	3.94	14.198	6.50	5.00	89.0
12	WH-124A12	1.50	67.0	WH-124C12	1.50	3.94	15.455	6.50	5.00	99.0
13	WH-124A13	1.50	78.0	WH-124C13	1.50	3.94	16.714	6.50	5.00	111.0
14	WH-124A14	1.50	90.0	WH-124C14	1.50	3.94	17.976	6.50	5.00	123.0
15	WH-124A15	1.50	103.0	WH-124C15	1.50	3.94	19.239	6.50	5.00	136.0
16	WH-124A16	1.50	117.0	WH-124C16	1.50	3.94	20.503	6.50	5.00	150.0

**Sprocket Number WH-124H**

For Union Chain Numbers WH-124H, W-124H

<b>4.063 Pitch</b>				<b>1.625 Barrel Diameter 1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	WH-124HA8	1.50	38.0	WH-124HC8	1.50	3.94	10.617	6.50	5.00	68.0
9	WH-124HA9	1.50	47.0	WH-124HC9	1.50	3.94	11.879	6.50	5.00	78.0
10	WH-124HA10	1.50	58.0	WH-124HC10	1.50	3.94	13.148	6.50	5.00	88.0
11	WH-124HA11	1.50	70.0	WH-124HC11	1.50	3.94	14.421	6.50	5.00	100.0
12	WH-124HA12	1.50	82.0	WH-124HC12	1.50	4.44	15.698	7.00	6.00	129.0
13	WH-124HA13	1.50	96.0	WH-124HC13	1.50	4.44	16.978	7.00	6.00	143.0
14	WH-124HA14	1.50	112.0	WH-124HC14	1.50	4.44	18.259	7.00	6.00	158.0
15	WH-124HA15	1.50	128.0	WH-124HC15	1.50	4.44	19.542	7.00	6.00	174.0
16	WH-124HA16	1.50	145.0	WH-124HC16	1.50	4.44	20.826	7.00	6.00	191.0

**Sprocket Number WH-111**

For Union Chain Numbers WH-111, W-111

<b>4.760 Pitch</b>				<b>1.375 Barrel Diameter 2.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	WH-111A8	1.50	78.0	WH-111C8	1.50	4.44	12.438	7.00	6.25	119.0
9	WH-111A9	1.50	97.0	WH-111C9	1.50	4.44	13.917	7.00	6.25	138.0
10	WH-111A10	1.50	119.0	WH-111C10	1.50	4.44	15.404	7.00	6.25	160.0
11	WH-111A11	1.50	143.0	WH-111C11	1.50	4.44	16.895	7.00	6.25	184.0
12	WH-111A12	1.50	170.0	WH-111C12	1.50	4.44	18.391	7.00	6.25	211.0
13	WH-111A13	1.50	198.0	WH-111C13	1.50	5.44	19.890	8.00	6.25	251.0
14	WH-111A14	1.50	230.0	WH-111C14	1.50	5.44	21.391	8.00	6.25	282.0
15	WH-111A15	1.50	263.0	WH-111C15	1.50	5.44	22.894	8.00	6.25	315.0
16	WH-111A16	1.50	299.0	WH-111C16	1.50	5.44	24.399	8.00	6.25	351.0

Note: When sprockets are used for Amusement Park applications, specify "AP" (example: WH-124APC16) along with chain number, pitch, and barrel diameter.



# UNION CHAIN DIVISION - WELDED STEEL CHAIN SPROCKETS

## Sprocket Number WH-106

For Union Chain Numbers WH-106, W-106

All dimensions are in inches unless otherwise specified.

6.000 Pitch				1.250 Barrel Diameter 1.500 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	WH-106A8	1.50	69.0	WH-106C8	1.50	4.44	15.679	7.00	6.00	117.0
9	WH-106A9	1.50	86.0	WH-106C9	1.50	4.44	17.543	7.00	6.00	135.0
10	WH-106A10	1.50	105.0	WH-106C10	1.50	4.44	19.416	7.00	6.00	154.0
11	WH-106A11	1.50	126.0	WH-106C11	1.50	5.44	21.297	8.00	6.25	193.0
12	WH-106A12	1.50	150.0	WH-106C12	1.50	5.44	23.182	8.00	6.25	216.0
13	WH-106A13	1.50	158.0	WH-106C13	1.50	5.44	25.071	8.00	6.25	224.0
14	WH-106A14	1.50	176.0	WH-106C14	1.50	5.44	26.964	8.00	6.25	242.0
15	WH-106A15	1.50	198.0	WH-106C15	1.50	5.44	28.858	8.00	6.25	265.0
16	WH-106A16	1.50	214.0	WH-106C16	1.50	5.44	30.755	8.00	6.25	280.0

## Sprocket Number WH-720S

For Union Chain Numbers WH-720S, W-720S, W-720SH, WH-720SH

6.000 Pitch				1.437 Barrel Diameter 1.250 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
9	WH-720SA9	1.50	77.0	WH-720SC9	1.50	3.94	17.543	6.50	5.00	118.0
10	WH-720SA10	1.50	95.0	WH-720SC10	1.50	3.94	19.416	6.50	5.00	138.0
11	WH-720SA11	1.50	114.0	WH-720SC11	1.50	3.94	21.296	6.50	5.00	159.0
19 HT	WH-720SA19 HT	1.50	86.0	WH-720SC19 HT	1.50	3.94	18.479	6.50	5.00	128.0
21 HT	WH-720SA21 HT	1.50	104.0	WH-720SC21 HT	1.50	3.94	20.356	6.50	5.00	148.0
23 HT	WH-720SA23 HT	1.50	124.0	WH-720SC23 HT	1.50	3.94	22.239	6.50	5.00	170.0

Note: When sprockets are used for Amusement Park applications, specify "AP" (example: WH-124APC16) along with chain number, pitch, and barrel diameter.

**Sprocket Number WH-132**

For Union Chain Numbers WH-132, W-132, WC132, WH-132SS, W-150, WH-150, C132 All dimensions are in inches unless otherwise specified.

<b>6.050 Pitch</b>				<b>1.750 Barrel Diameter 2.500 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	WH-132A8	1.50	153.0	WH-132C8	1.50	5.44	15.809	8.00	6.75	205.0
9	WH-132A9	1.50	192.0	WH-132C9	1.50	5.44	17.689	8.00	6.75	244.0
10	WH-132A10	1.50	235.0	WH-132C10	1.50	5.44	19.578	8.00	6.75	287.0
11	WH-132A11	1.50	283.0	WH-132C11	1.50	5.94	21.474	9.00	6.75	352.0
12	WH-132A12	1.50	335.0	WH-132C12	1.50	5.94	23.375	9.00	6.75	404.0
13	WH-132A13	1.50	392.0	WH-132C13	1.50	5.94	25.280	9.00	6.75	461.0
14	WH-132A14	1.50	453.0	WH-132C14	1.50	5.94	27.188	9.00	6.75	522.0
15	WH-132A15	1.50	519.0	WH-132C15	1.50	5.94	29.099	9.00	6.75	588.0
16	WH-132A16	1.50	590.0	WH-132C16	1.50	6.50	31.011	10.00	6.75	697.0

**Sprocket Number WH-155**

For Union Chain Numbers WH-155, W-155

<b>6.050 Pitch</b>				<b>1.750 Barrel Diameter 2.500 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	WH-155A8	1.50	153.0	WH-155C8	1.50	5.94	15.809	9.00	6.75	287.0
9	WH-155A9	1.50	192.0	WH-155C9	1.50	5.94	17.689	9.00	6.75	261.0
10	WH-155A10	1.50	235.0	WH-155C10	1.50	5.94	19.578	9.00	6.75	304.0
11	WH-155A11	1.50	283.0	WH-155C11	1.50	6.50	21.474	10.00	6.75	390.0
12	WH-155A12	1.50	335.0	WH-155C12	1.50	6.50	23.375	10.00	6.75	443.0
13	WH-155A13	1.50	392.0	WH-155C13	1.50	6.50	25.280	10.00	6.75	500.0
14	WH-155A14	1.50	453.0	WH-155C14	1.50	6.50	27.188	10.00	6.75	561.0
15	WH-155A15	1.50	519.0	WH-155C15	1.50	6.50	29.099	10.00	6.75	627.0
16	WH-155A16	1.50	590.0	WH-155C16	1.50	6.50	31.011	10.00	6.75	697.0

Note: When sprockets are used for Amusement Park applications, specify "AP" (example: WH-124APC16) along with chain number, pitch, and barrel diameter.



# Asphalt Incline Chain Sprockets

## Sprocket Number U-3945

For Union Chain Number U-3945

All dimensions are in inches unless otherwise specified.

4.000 Pitch				1.250 Roller Diameter 1.750 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	U-3945A8	1.50	43.0	U-3945C8	1.50	3.94	10.453	6.50	6.00	80.0
9	U-3945A9	1.50	53.0	U-3945C9	1.50	3.94	11.695	6.50	6.00	90.0
10	U-3945A10	1.50	65.0	U-3945C10	1.50	3.94	12.944	6.50	6.00	102.0
11	U-3945A11	1.50	79.0	U-3945C11	1.50	3.94	14.198	6.50	6.00	116.0
12	U-3945A12	1.50	93.0	U-3945C12	1.50	3.94	15.455	6.50	6.00	130.0

Sprocket number U-3945 furnished 50 Rc minimum tooth hardness standard.

## Sprocket Number U-3952

For Union Chain Number U-3952

4.000 Pitch				1.437 Roller Diameter 1.750 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	U-3952A8	1.50	43.0	U-3952C8	1.50	3.94	10.453	6.50	6.00	80.0
9	U-3952A9	1.50	53.0	U-3952C9	1.50	3.94	11.695	6.50	6.00	90.0
10	U-3952A10	1.50	65.0	U-3952C10	1.50	3.94	12.944	6.50	6.00	102.0
11	U-3952A11	1.50	79.0	U-3952C11	1.50	3.94	14.198	6.50	6.00	116.0
12	U-3952A12	1.50	93.0	U-3952C12	1.50	3.94	15.455	6.50	6.00	130.0

Sprocket number U-3952 furnished 50 Rc minimum tooth hardness standard.

**Sprocket Number U-3940**

For Union Chain Number U-3940

All dimensions are in inches unless otherwise specified.

<b>6.000 Pitch</b>				<b>1.625 Roller Diameter 1.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	U-3940A8	1.50	96.0	U-3940C8	1.50	4.44	15.679	7.00	6.00	139.0
9	U-3940A9	1.50	120.0	U-3940C9	1.50	4.44	17.543	7.00	6.00	164.0
10	U-3940A10	1.50	147.0	U-3940C10	1.50	4.44	19.416	7.00	6.00	191.0
11	U-3940A11	1.50	177.0	U-3940C11	1.50	4.44	21.297	7.00	6.00	220.0
12	U-3940A12	1.50	210.0	U-3940C12	1.50	4.44	23.182	7.00	6.00	253.0

Sprocket number U-3940 furnished 50 Rc minimum tooth hardness standard.

**Sprocket Number U-9856**

For Union Chain Number U-9856

<b>6.000 Pitch</b>				<b>2.750 Roller Diameter 2.750 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
8	U-9856A8	1.50	151.0	U-9856C8	1.50	5.44	15.679	8.00	6.75	203.0
9	U-9856A9	1.50	189.0	U-9856C9	1.50	5.44	17.543	8.00	6.75	241.0
10	U-9856A10	1.50	231.0	U-9856C10	1.50	5.44	19.416	8.00	6.75	283.0
11	U-9856A11	1.50	278.0	U-9856C11	1.50	5.94	21.297	9.00	6.75	347.0
12	U-9856A12	1.50	330.0	U-9856C12	1.50	5.94	23.182	9.00	6.75	398.0

Sprocket number U-9856 furnished 50 Rc minimum tooth hardness standard.





# Drop Forged Rivetless Chain Sprockets

## Sprocket Number X-348

For Union Chain Numbers X-348, 348, S-348

All dimensions are in inches unless otherwise specified.

3.015 Pitch				.625 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
5	X-348A5	1.25	13.0	X-348C5	1.25	2.44	9.757	4.00	2.75	20.0
6	X-348A6	1.25	19.0	X-348C6	1.25	2.44	11.649	4.00	2.75	26.0
7	X-348A7	1.25	26.0	X-348C7	1.25	2.44	13.549	4.00	2.75	32.0
8	X-348A8	1.25	33.0	X-348C8	1.25	2.94	15.454	4.75	3.13	45.0
9	X-348A9	1.25	42.0	X-348C9	1.25	2.94	17.363	4.75	3.13	53.0
10	X-348A10	1.25	52.0	X-348C10	1.25	2.94	19.273	4.75	3.13	63.0
11	X-348A11	1.25	63.0	X-348C11	1.25	2.94	21.185	4.75	3.13	74.0
12	X-348A12	1.25	74.0	X-348C12	1.25	2.94	23.099	4.75	3.13	86.0

All above sprockets can be furnished with either of 2 tooth profiles, relief or straight pocket styles. Specify "Relief Pocket" when additional clearances are required at the bottom diameter.

## Sprocket Number X-458

For Union Chain Numbers X-458, 458, S-458

4.031 Pitch				.875 Plate Thickness						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
5	X-458A5	1.50	33.0	X-458C5	1.50	3.44	13.045	5.50	4.25	54.0
6	X-458A6	1.50	47.0	X-458C6	1.50	3.44	15.575	5.50	4.25	68.0
7	X-458A7	1.50	64.0	X-458C7	1.50	3.44	18.115	5.50	4.25	85.0
8	X-458A8	1.50	83.0	X-458C8	1.50	3.94	20.662	6.50	5.00	120.0
9	X-458A9	1.50	105.0	X-458C9	1.50	3.94	23.214	6.50	5.00	141.0
10	X-458A10	1.50	130.0	X-458C10	1.50	3.94	25.768	6.50	5.00	166.0
11	X-458A11	1.50	157.0	X-458C11	1.50	3.94	28.325	6.50	5.00	193.0
12	X-458A12	1.50	186.0	X-458C12	1.50	3.94	30.883	6.50	5.00	222.0

All above sprockets can be furnished with either of 2 tooth profiles, relief or straight pocket styles. Specify "Relief Pocket" when additional clearances are required at the bottom diameter.

**Sprocket Number X-678**

For Union Chain Numbers X-678, 678, S-678

All dimensions are in inches unless otherwise specified.

<b>6.031 Pitch</b>				<b>1.000 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
5	X-678A5	1.50	85.0	X-678C5	1.50	4.44	19.517	7.00	6.00	137.0
6	X-678A6	1.50	121.0	X-678C6	1.50	4.44	23.302	7.00	6.00	173.0
7	X-678A7	1.50	137.0	X-678C7	1.50	4.44	27.103	7.00	6.00	188.0
8	X-678A8	1.50	173.0	X-678C8	1.50	5.44	30.914	8.00	6.25	243.0
9	X-678A9	1.50	194.0	X-678C9	1.50	5.44	34.731	8.00	6.25	264.0
10	X-678A10	1.50	236.0	X-678C10	1.50	5.44	38.553	8.00	6.25	306.0
11	X-678A11	1.50	283.0	X-678C11	1.50	5.94	42.378	9.00	6.50	379.0
12	X-678A12	1.50	316.0	X-678C12	1.50	5.94	46.205	9.00	6.50	412.0

All above sprockets can be furnished with either of 2 tooth profiles, relief or straight pocket styles. Specify "Relief Pocket" when additional clearances are required at the bottom diameter.

**Sprocket Number 698**

For Union Chain Numbers 698, S-698

<b>6.031 Pitch</b>				<b>1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
5	698A5	1.50	106.0	698C5	1.50	5.44	19.517	8.00	6.25	173.0
6	698A6	1.50	151.0	698C6	1.50	5.44	23.302	8.00	6.25	218.0
7	698A7	1.50	187.0	698C7	1.50	5.94	27.103	9.00	6.50	279.0
8	698A8	1.50	227.0	698C8	1.50	5.94	30.914	9.00	6.50	318.0
9	698A9	1.50	271.0	698C9	1.50	5.94	34.731	9.00	6.50	363.0
10	698A10	1.50	326.0	698C10	1.50	6.50	38.553	10.00	6.75	446.0
11	698A11	1.50	365.0	698C11	1.50	6.50	42.378	10.00	6.75	484.0
12	698A12	1.50	434.0	698C12	1.50	6.50	46.205	10.00	6.75	553.0

All above sprockets can be furnished with either of 2 tooth profiles, relief or straight pocket styles. Specify "Relief Pocket" when additional clearances are required at the bottom diameter.

**Sprocket Number 998**

For Union Chain Numbers 998, S-998

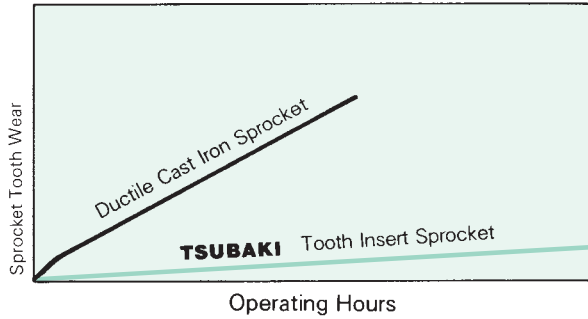
<b>9.031 Pitch</b>				<b>1.250 Plate Thickness</b>						
Type A				Type C						
Number of Teeth	Catalog Number	Stock Bore	Approx. Wgt. (lbs.)	Catalog Number	Stock Bore	Max. Bore	Pitch Dia.	Hub Dia.	L.T.B.	Approx. Wgt. (lbs.)
5	998A5	1.50	211.0	998C5	1.50	5.94	29.225	9.00	6.50	302.0
6	998A6	1.50	274.0	998C6	1.50	5.94	34.893	9.00	6.50	366.0
7	998A7	1.50	345.0	998C7	1.50	6.50	40.585	10.00	6.75	465.0
8	998A8	1.50	397.0	998C8	1.50	6.50	46.291	10.00	6.75	516.0
9	998A9	1.50	518.0	998C9	1.50	6.50	52.007	10.00	6.75	638.0
10	998A10	1.50	583.0	998C10	1.50	6.50	57.730	10.00	6.75	703.0

All above sprockets can be furnished with either of 2 tooth profiles, relief or straight pocket styles. Specify "Relief Pocket" when additional clearances are required at the bottom diameter.

# Specialty Chain Sprockets

## Tooth Insert Sprockets

### Sprocket Wear



Tooth Insert Sprockets greatly outperform cast iron sprockets by at least 300%, as shown above.

### BENEFITS

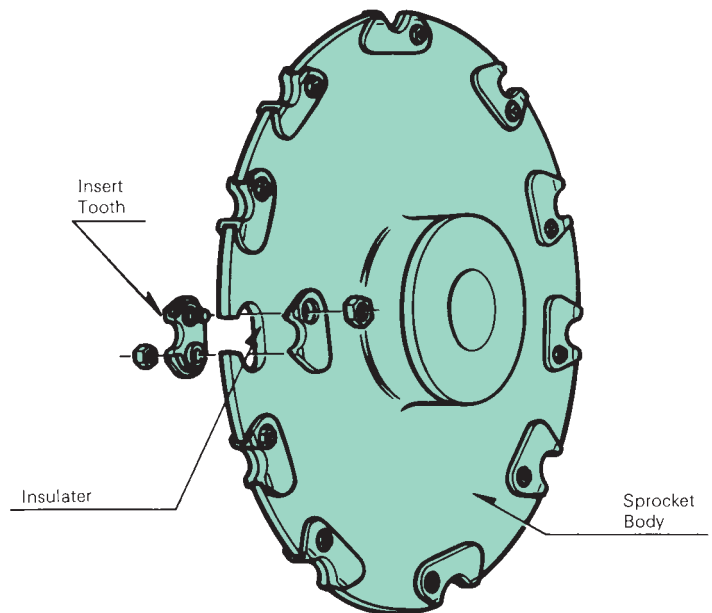
- **Reliable Performance**
- **Corrosion Protection**
- **Superb Wear Resistance**
- **Low-Cost Maintenance**

### Stainless steel tooth insert sprockets for Sanitation Chain

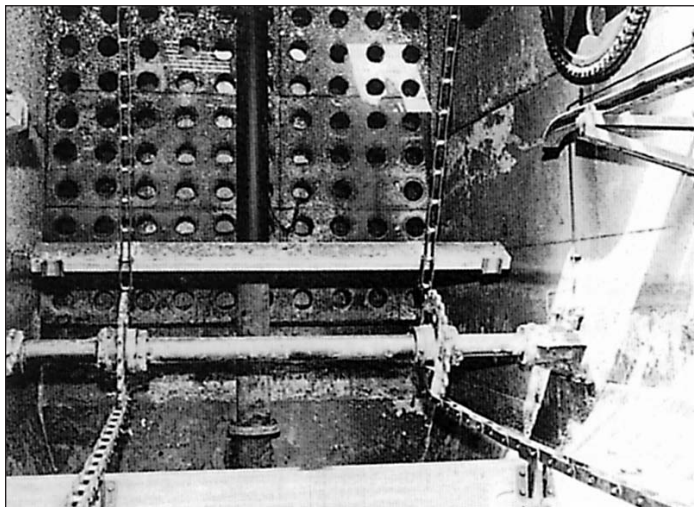
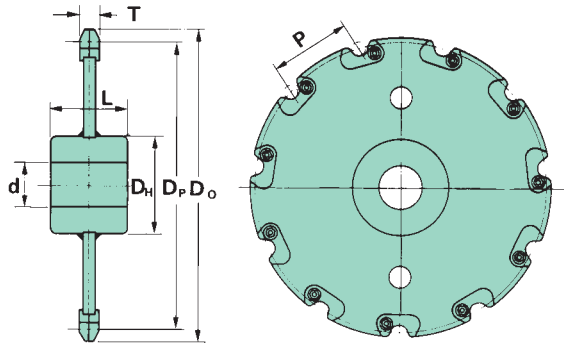
Sand and dirt scrapers create special problems for chains and for sprockets, which must offer reliable performance, a long working life, and resistance against corrosion and wear.

Stainless Steel Tooth Insert Sprockets used with Sanitation Chain keep sand and dirt scrapers operating efficiently. The stainless steel insert teeth prevent galvanic corrosion and offer superb wear and corrosion resistance. You get efficiency, economy, and performance.

### Construction



# ACR Type Collector Tank Sprockets

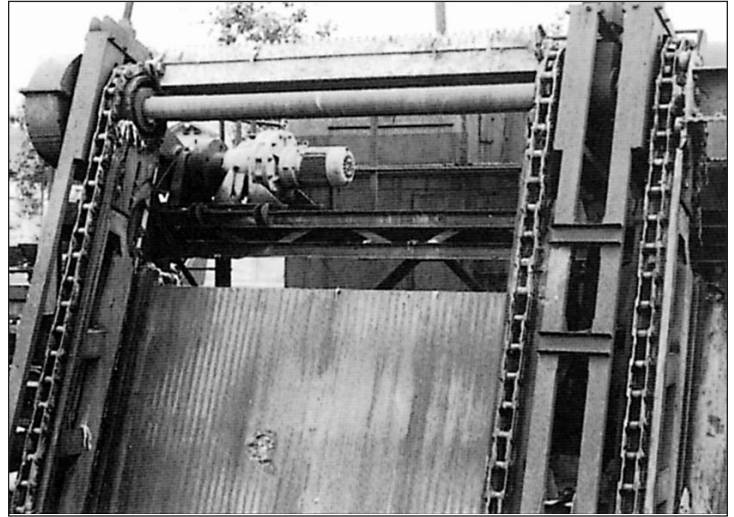
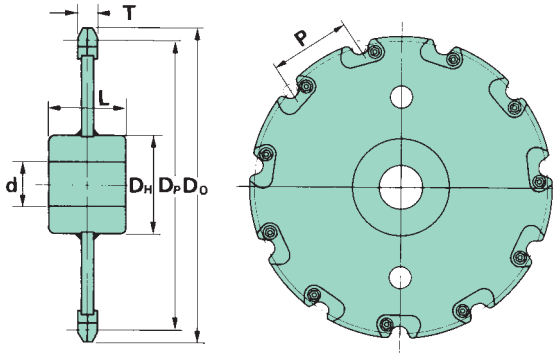


**ACR810 Collector Tank Sprockets**

All dimensions are in inches unless otherwise specified.

6.000 Pitch								
No. of Teeth	Outside Diameter	Pitch Diameter	Bore Diameter		Hub Diameter	Hub Length	Tooth Thickness	Approximate Weight (lbs./piece)
			Minimum	Maximum				
	D <sub>O</sub>	D <sub>P</sub>	d	d	D <sub>H</sub>	L	T	
9	18.504	17.543	2.362	3.937	5.906	5.512	.709	62
9	18.504	17.543	3.150	4.724	7.087	5.512	.709	75
9	18.504	17.543	3.543	5.512	8.268	5.512	.709	93
10	20.353	19.417	2.362	3.937	5.906	5.512	.709	66
10	20.353	19.417	3.150	4.724	7.087	5.512	.709	79
10	20.353	19.417	3.543	5.512	8.268	5.512	.709	97
11	22.244	21.295	2.362	3.937	5.906	5.512	.709	73
11	22.244	21.295	3.150	4.724	7.087	5.512	.709	86
11	22.244	21.295	3.543	5.512	8.268	5.512	.709	104
12	24.094	23.181	2.362	3.937	5.906	5.512	.709	82
12	24.094	23.181	3.150	4.724	7.087	5.512	.709	95
12	24.094	23.181	3.543	5.512	8.268	5.512	.709	112

## JAC Type Bar Screen Sprockets



### JAC08152-S Bar Screen Sprockets

All dimensions are in inches unless otherwise specified.

#### 6.000 Pitch

No. of Teeth	Outside Diameter	Pitch Diameter	Bore Diameter		Hub Diameter	Hub Length	Tooth Thickness	Approximate Weight (lbs./piece)
			Minimum	Maximum				
	<b>D<sub>O</sub></b>	<b>D<sub>P</sub></b>	<b>d</b>	<b>d</b>	<b>D<sub>H</sub></b>	<b>L</b>	<b>T</b>	
9	18.583	17.543	1.967	3.150	5.118	3.937	.866	55
9	18.583	17.543	2.362	3.543	5.512	3.937	.866	57
9	18.583	17.543	2.756	3.937	5.906	3.937	.866	59
10	20.433	19.417	1.967	3.150	5.118	3.937	.866	62
10	20.433	19.417	2.362	3.543	5.512	3.937	.866	64
10	20.433	19.417	2.756	3.937	5.906	3.937	.866	66
11	22.323	21.295	2.362	3.937	5.906	4.724	.866	81
11	22.323	21.295	2.756	4.331	6.299	4.724	.866	84
11	22.323	21.295	3.150	4.724	7.087	4.724	.866	92
12	24.173	23.181	2.362	3.937	5.906	4.724	.866	90
12	24.173	23.181	2.756	4.331	6.299	4.724	.866	92
12	24.173	23.181	3.150	4.724	7.087	4.724	.866	101

Note: Sprockets with different number of teeth are available upon request.

**JAC10152-S Bar Screen Sprockets**

All dimensions are in inches unless otherwise specified.

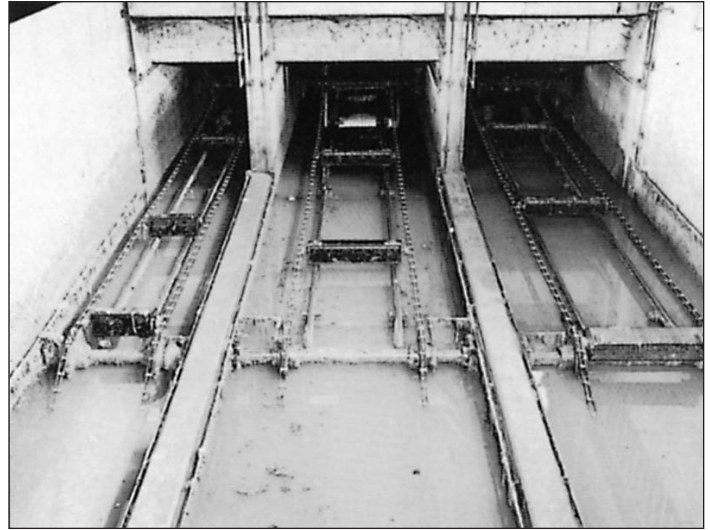
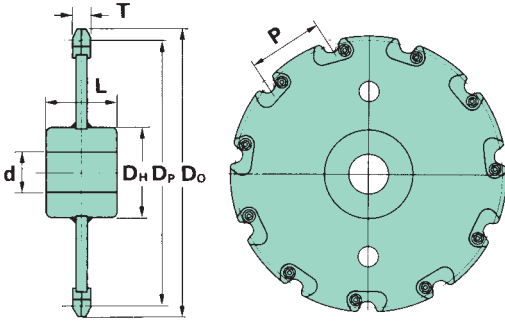
<b>6.000 Pitch</b>								
No. of Teeth	Outside Diameter	Pitch Diameter	Bore Diameter		Hub Diameter	Hub Length	Tooth Thickness	Approximate Weight (lbs./piece)
			Minimum	Maximum				
	<b>D<sub>O</sub></b>	<b>D<sub>P</sub></b>	<b>d</b>	<b>d</b>	<b>D<sub>H</sub></b>	<b>L</b>	<b>T</b>	
9	18.504	17.543	2.362	3.937	5.906	4.724	.945	66
9	18.504	17.543	2.756	4.331	6.299	4.724	.945	68
9	18.504	17.543	3.150	4.724	7.087	4.724	.945	75
10	20.354	19.417	2.362	3.937	5.906	4.724	.945	73
10	20.354	19.417	2.756	4.331	6.299	4.724	.945	75
10	20.354	19.417	3.150	4.724	7.087	4.724	.945	84
11	22.244	21.295	2.756	4.331	6.299	5.118	.945	86
11	22.244	21.295	3.150	4.724	7.087	5.118	.945	95
11	22.244	21.295	3.543	5.118	7.480	5.118	.945	99
12	24.094	23.181	2.756	4.331	6.299	5.118	.945	95
12	24.094	23.181	3.150	4.724	7.087	5.118	.945	103
12	24.094	23.181	3.543	5.118	7.480	5.118	.945	108

**JAC6205-S Bar Screen Sprockets**

<b>6.000 Pitch</b>								
No. of Teeth	Outside Diameter	Pitch Diameter	Bore Diameter		Hub Diameter	Hub Length	Tooth Thickness	Approximate Weight (lbs./piece)
			Minimum	Maximum				
	<b>D<sub>O</sub></b>	<b>D<sub>P</sub></b>	<b>d</b>	<b>d</b>	<b>D<sub>H</sub></b>	<b>L</b>	<b>T</b>	
9	18.898	17.543	2.756	4.331	6.299	5.118	1.181	84
9	18.898	17.543	3.150	4.724	7.087	5.118	1.181	88
9	18.898	17.543	3.543	5.118	7.480	5.118	1.181	95
10	20.748	19.417	2.756	4.331	6.299	5.118	1.181	92
10	20.748	19.417	3.150	4.724	7.087	5.118	1.181	97
10	20.748	19.417	3.543	5.118	7.480	5.118	1.181	103
11	22.598	21.295	3.543	5.118	7.480	6.299	1.181	128
11	22.598	21.295	3.937	5.512	8.268	6.299	1.181	143
11	22.598	21.295	4.331	5.906	9.055	6.299	1.181	152
12	24.449	23.181	3.543	5.118	7.480	6.299	1.181	139
12	24.449	23.181	3.937	5.512	8.268	6.299	1.181	152
12	24.449	23.181	4.331	5.906	9.055	6.299	1.181	165



## ACS Type Heavy Duty Collector Tank Sprockets



### ACS13103W Heavy Duty Collector Tank Sprockets

All dimensions are in inches unless otherwise specified.

#### 4.063 Pitch

No. of Teeth	Outside Diameter	Pitch Diameter	Bore Diameter		Hub Diameter	Hub Length	Tooth Thickness	Approximate Weight (lbs./piece)
			Minimum	Maximum				
	<b>D<sub>O</sub></b>	<b>D<sub>P</sub></b>	<b>d</b>	<b>d</b>	<b>D<sub>H</sub></b>	<b>L</b>	<b>T</b>	
9	12.913	11.878	1.969	3.150	5.118	4.331	.866	37
9	12.913	11.878	2.362	3.543	5.512	4.331	.866	40
9	12.913	11.878	2.756	3.937	5.906	4.331	.866	42
10	14.173	13.148	1.969	3.150	5.118	4.331	.866	42
10	14.173	13.148	2.362	3.543	5.512	4.331	.866	44
10	14.173	13.148	2.756	3.937	5.906	4.331	.866	46
11	15.433	14.421	1.969	3.150	5.118	4.331	.866	44
11	15.433	14.421	2.362	3.543	5.512	4.331	.866	46
11	15.433	14.421	2.756	3.937	5.906	4.331	.866	48
12	16.693	15.697	1.969	3.150	5.118	4.331	.866	48
12	16.693	15.697	2.362	3.543	5.512	4.331	.866	51
12	16.693	15.697	2.756	3.937	5.906	4.331	.866	53
13	17.992	16.976	1.969	3.150	5.118	4.331	.866	55
13	17.992	16.976	2.362	3.543	5.512	4.331	.866	57
13	17.992	16.976	2.756	3.937	5.906	4.331	.866	59

Note: Sprockets with different number of teeth are available upon request.

**ACS13152W Heavy Duty Collector Tank Sprockets**

All dimensions are in inches unless otherwise specified.

<b>6.000 Pitch</b>								
No. of Teeth	Outside Diameter	Pitch Diameter	Bore Diameter		Hub Diameter	Hub Length	Tooth Thickness	Approximate Weight (lbs./piece)
			Minimum	Maximum				
	<b>D<sub>O</sub></b>	<b>D<sub>P</sub></b>	<b>d</b>	<b>d</b>	<b>D<sub>H</sub></b>	<b>L</b>	<b>T</b>	
9	18.543	17.543	2.362	3.937	5.906	5.118	.866	66
9	18.543	17.543	2.756	4.331	6.693	5.118	.866	75
9	18.543	17.543	3.150	4.724	7.087	5.118	.866	79
10	20.394	19.417	2.362	3.937	5.906	5.118	.866	73
10	20.394	19.417	2.756	4.331	6.693	5.118	.866	81
10	20.394	19.417	3.150	4.724	7.087	5.118	.866	86
11	22.283	21.295	2.362	3.937	5.906	5.118	.866	81
11	22.283	21.295	2.756	4.331	6.693	5.118	.866	90
11	22.283	21.295	3.150	4.724	7.087	5.118	.866	95
12	23.134	23.181	2.362	3.937	5.906	5.118	.866	92
12	23.134	23.181	2.756	4.331	6.693	5.118	.866	101
12	23.134	23.181	3.150	4.724	7.087	5.118	.866	106

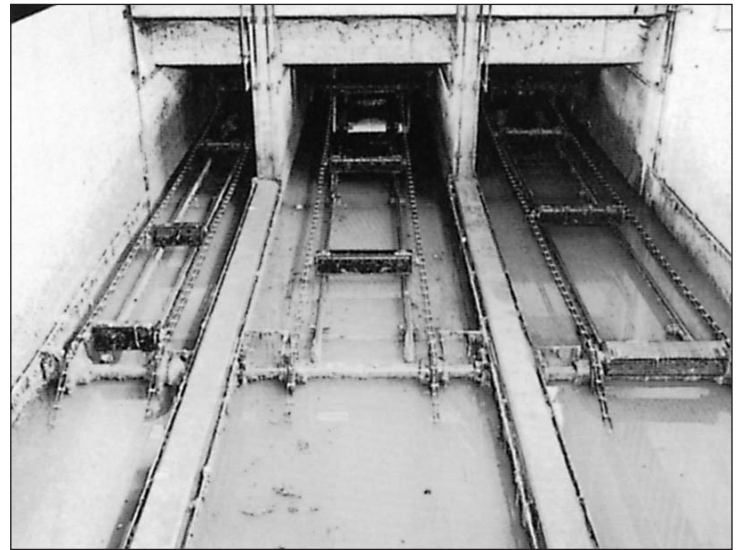
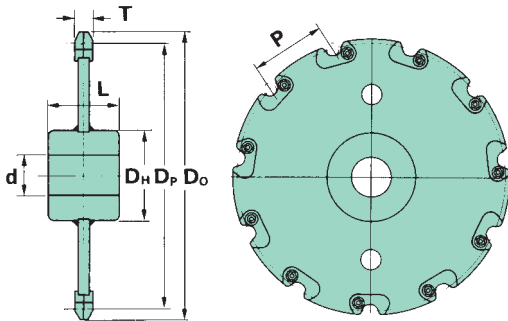
**ACS15152W Heavy Duty Collector Tank Sprockets**

<b>6.000 Pitch</b>								
No. of Teeth	Outside Diameter	Pitch Diameter	Bore Diameter		Hub Diameter	Hub Length	Tooth Thickness	Approximate Weight (lbs./piece)
			Minimum	Maximum				
	<b>D<sub>O</sub></b>	<b>D<sub>P</sub></b>	<b>d</b>	<b>d</b>	<b>D<sub>H</sub></b>	<b>L</b>	<b>T</b>	
9	18.504	17.543	2.362	3.937	5.906	5.118	.866	66
9	18.504	17.543	2.756	4.331	6.693	5.118	.866	75
9	18.504	17.543	3.150	4.724	7.087	5.118	.866	79
10	20.354	19.417	2.362	3.937	5.906	5.118	.866	73
10	20.354	19.417	2.756	4.331	6.693	5.118	.866	81
10	20.354	19.417	3.150	4.724	7.087	5.118	.866	86
11	22.244	21.295	2.362	3.937	5.906	5.118	.866	81
11	22.244	21.295	2.756	4.331	6.693	5.118	.866	90
11	22.244	21.295	3.150	4.724	7.087	5.118	.866	95
12	24.094	23.181	2.362	3.937	5.906	5.118	.866	92
12	24.094	23.181	2.756	4.331	6.693	5.118	.866	101
12	24.094	23.181	3.150	4.724	7.087	5.118	.866	106



# ACS Type Heavy Duty Collector Tank Sprockets

(Continued)



## ACS19152W Heavy Duty Collector Tank Sprockets

All dimensions are in inches unless otherwise specified.

### 6.000 Pitch

No. of Teeth	Outside Diameter	Pitch Diameter	Bore Diameter		Hub Diameter	Hub Length	Tooth Thickness	Approximate Weight (lbs./piece)
			Minimum	Maximum				
	<b>D<sub>O</sub></b>	<b>D<sub>P</sub></b>	<b>d</b>	<b>d</b>	<b>D<sub>H</sub></b>	<b>L</b>	<b>T</b>	
9	18.504	17.543	3.150	4.724	7.087	5.512	.984	81
9	18.504	17.543	3.543	5.118	7.480	5.512	.984	86
9	18.504	17.543	3.937	5.512	8.268	5.512	.984	97
10	20.354	19.417	3.150	4.724	7.087	5.512	.984	88
10	20.354	19.417	3.543	5.118	7.480	5.512	.984	92
10	20.354	19.417	3.937	5.512	8.268	5.512	.984	103
11	22.244	21.295	3.150	4.724	7.087	5.512	.984	97
11	22.244	21.295	3.543	5.118	7.480	5.512	.984	101
11	22.244	21.295	3.937	5.512	8.268	5.512	.984	112
12	24.094	23.181	3.150	4.724	7.087	5.512	.984	106
12	24.094	23.181	3.543	5.118	7.480	5.512	.984	110
12	24.094	23.181	3.937	5.512	8.268	5.512	.984	121

Note: Sprockets with different number of teeth are available upon request.

**ACS25152W Heavy Duty Collector Tank Sprockets**

All dimensions are in inches unless otherwise specified.

<b>6.000 Pitch</b>								
No. of Teeth	Outside Diameter	Pitch Diameter	Bore Diameter		Hub Diameter	Hub Length	Tooth Thickness	Approximate Weight (lbs./piece)
			Minimum	Maximum				
	<b>D<sub>O</sub></b>	<b>D<sub>P</sub></b>	<b>d</b>	<b>d</b>	<b>D<sub>H</sub></b>	<b>L</b>	<b>T</b>	
9	18.504	17.543	3.150	4.724	7.087	5.512	.984	81
9	18.504	17.543	3.543	5.118	7.480	5.512	.984	86
9	18.504	17.543	3.937	5.512	8.268	5.512	.984	97
10	20.354	19.417	3.150	4.724	7.087	5.512	.984	88
10	20.354	19.417	3.543	5.118	7.480	5.512	.984	92
10	20.354	19.417	3.937	5.512	8.268	5.512	.984	103
11	22.244	21.295	3.150	4.724	7.087	5.512	.984	97
11	22.244	21.295	3.543	5.118	7.480	5.512	.984	101
11	22.244	21.295	3.937	5.512	8.268	5.512	.984	112
12	24.094	23.181	3.150	4.724	7.087	5.512	.984	106
12	24.094	23.181	3.543	5.118	7.480	5.512	.984	110
12	24.094	23.181	3.937	5.512	8.268	5.512	.984	121

**ACS35152W Heavy Duty Collector Tank Sprockets**

<b>6.000 Pitch</b>								
No. of Teeth	Outside Diameter	Pitch Diameter	Bore Diameter		Hub Diameter	Hub Length	Tooth Thickness	Approximate Weight (lbs./piece)
			Minimum	Maximum				
	<b>D<sub>O</sub></b>	<b>D<sub>P</sub></b>	<b>d</b>	<b>d</b>	<b>D<sub>H</sub></b>	<b>L</b>	<b>T</b>	
9	18.898	17.543	3.150	4.724	7.087	5.512	1.260	101
9	18.898	17.543	3.543	5.118	7.480	5.512	1.260	106
9	18.898	17.543	3.937	5.512	8.268	5.512	1.260	114
10	20.748	19.417	3.150	4.724	7.087	5.512	1.260	110
10	20.748	19.417	3.543	5.118	7.480	5.512	1.260	114
10	20.748	19.417	3.937	5.512	8.268	5.512	1.260	123
11	22.598	21.295	3.150	4.724	7.087	5.512	1.260	123
11	22.598	21.295	3.543	5.118	7.480	5.512	1.260	128
11	22.598	21.295	3.937	5.512	8.268	5.512	1.260	136
12	24.449	23.181	3.150	4.724	7.087	5.512	1.260	136
12	24.449	23.181	3.543	5.118	7.480	5.512	1.260	141
12	24.449	23.181	3.937	5.512	8.268	5.512	1.260	150

# Sprocket Selection Guidelines

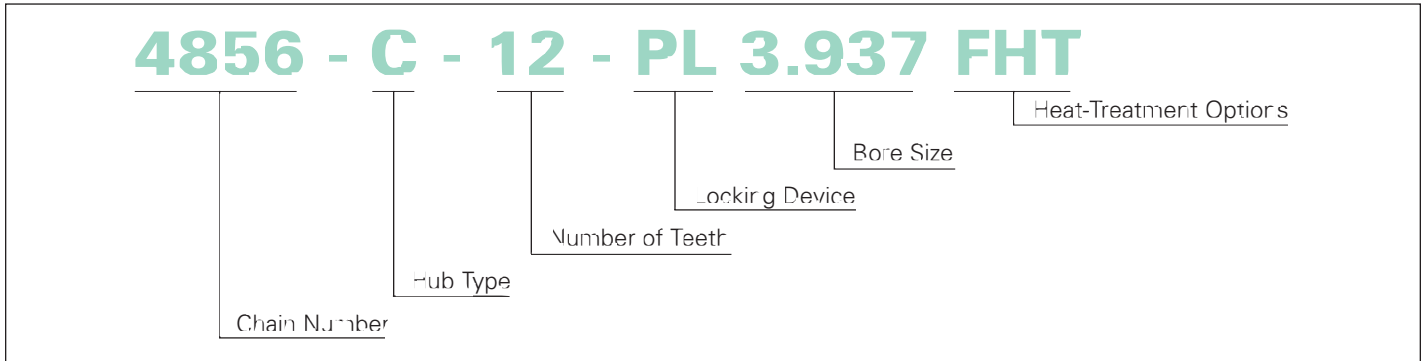
**Table 1 — Information Necessary to Order Sprockets**

1. Chain Size	Number, type, or drawing number of the chain to be used on the sprocket. (The suitability of a sprocket depends on specific chain dimensions: chain pitch, rollers, bushing diameter, inside width of chain or roller face.)								
2. Teeth	The number of actual teeth on the sprocket. If applicable, the number of working teeth, mid-pitch relief, or gap-toothed construction should be specified. This is necessary when driving conveyors with special through-rods or attachments which will interfere with the engagement. Special outer diameters are sometimes required to clear attachments.								
3. Material	<ul style="list-style-type: none"> <li>a. Steel Plate welded hub, plain or with flame hardened teeth</li> <li>b. Cast Iron, plain, or hard rim</li> <li>c. Cast Steel, plain or with flame hardened teeth</li> <li>d. Special materials such as stainless steel, bronze, etc.</li> </ul> State preference and alternate if acceptable								
4. Hub Type	<table border="1"> <thead> <tr> <th>Plate Only</th> <th>Hub One Side</th> <th>Hub Both Sides</th> <th>Offset Hubs on Both Sides</th> </tr> </thead> <tbody> <tr> <td>Type A</td> <td>Type B</td> <td>Type C</td> <td>Type C Offset</td> </tr> </tbody> </table> <p>           Shear Pin Hubs: Type A is entirely self-contained with sprocket bored for running fit over flanged hub.            Type B has sprocket bored for running fit over shaft.            Material: Steel plate welded hub.         </p>	Plate Only	Hub One Side	Hub Both Sides	Offset Hubs on Both Sides	Type A	Type B	Type C	Type C Offset
Plate Only	Hub One Side	Hub Both Sides	Offset Hubs on Both Sides						
Type A	Type B	Type C	Type C Offset						
5. Exact Diameter of Shaft Bore	Show special tolerances; keyway size; keyway location when required. If not a standard keyway, specify: straight, tapered, square or flat and dimensions.								
6. Set Screws	If not a standard, specify type. If more than one is required or special position indicate the number and location.								
7. Hub Dimensions	These measurements are usually manufacturer's standard. However, for special orders, outside diameter and through length should be specified. For Type C Offset sprockets specify the length from the centerline of the chain to each side and the total through length.								

To make ordering as easy as possible, Table 1 shows the general information you need to provide. On your order form, indicate the Sprocket Order No. This number is composed of

the chain number, the hub type, the number of teeth, the locking device (if any is required), and the bore size. An example is shown below.

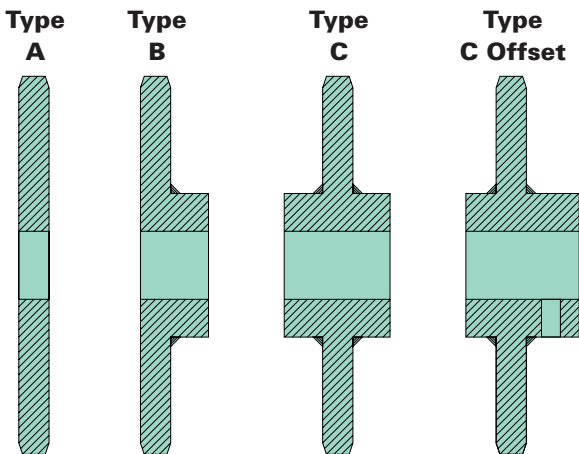
### Sprocket Order Number



**Chain Number** indicates the type and size of chain which is to run on the sprocket.

**Hub Type** indicates the core of the sprocket. Each type is designed for a specific need.

- Type A does not have a hub as part of the sprocket wheel. The wheel must be mounted on a flange, hub, or other holding device.
- Type B has the hub extending on one side from the wheel. This type is usually found on small and intermediate size sprockets.
- Type C has the hub equal distance on both sides of the wheel. Type C is the most common and is generally found on large-diameter sprockets.
- Type C Offset indicates a two-sided hub that is slightly off center.



**Number of Teeth** is determined by the chain pitch and size.

**Locking Device** is an important consideration. Two set screws and a single keyway are standard on every sprocket, unless you specify something else. Set screws are placed over key and at 90° to the key. The standard keyway and set screw sizes are shown in Table 2. Tolerances for straight and tapered keyways are width +.002-.000; depth +.010-.000. Specify POWER-LOCK® (PL) for extra holding power or keyway and set screw (KW & SS) for standard holding.

**Bore Size** (in inches) is indicated in the Sprocket Tables and furnished to the tolerances shown in Table 3. Bore sizes larger than listed may be supplied, if requested. Specify plain bores, if required, when ordering. If only the bore size is given, sprockets are automatically keywayed and set screws are installed. If you wish to bore your own sprockets, a discount is available. Make sure to indicate the size you are going to bore to so the proper sized hub can be installed.

**Heat-Treatment Options.** Specify FHT for flame-hardened teeth or N for non-heat-treated.

**Table 2 — Standard Keyways and Set Screws**

All dimensions are in inches unless otherwise specified.

Diameter of Shaft	Keyseat		Diameter of Set Screw
	Width	Depth	
1/2–9/16	1/8	1/16	1/8
5/8–7/8	3/16	3/32	3/10
15/16–1 1/4	1/4	1/8	1/4
1 5/16–1 3/8	5/16	5/32	5/16
1 7/16–1 3/4	3/8	3/16	3/8
1 13/16–2 1/4	1/2	1/4	1/2
2 5/16–2 3/4	5/8	5/16	5/8
2 13/16–3 1/4	3/4	3/8	5/8
3 5/16–3 3/4	7/8	7/16	3/4
3 13/16–4 1/2	1	1/2	3/4
4 9/16–5 1/2	1 1/4	5/8	7/8

**Table 3 — Tolerances for Boring Sprockets**

Diameter of Shaft	Tolerances	
1" Diameter and under	Nominal	plus .001"
Over 1" to 2"	Nominal	plus .002"
Over 2" to 3"	Nominal	plus .003"
Over 3" to 4"	Nominal	plus .004"
4" and over	Nominal	plus .005"

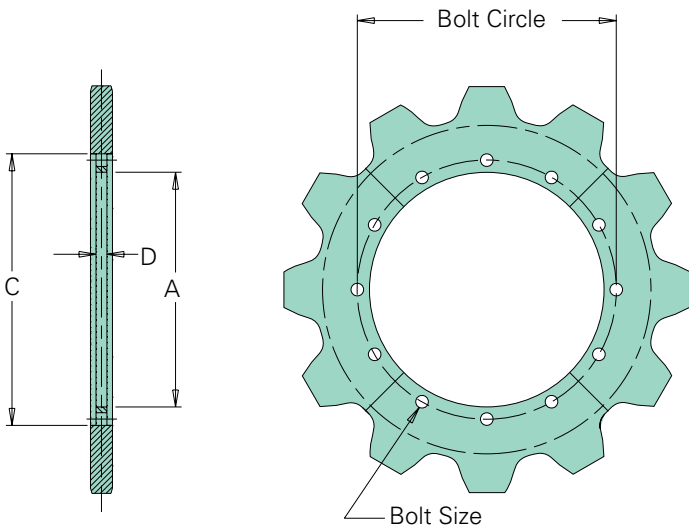
## Sprocket Specifications

Union Sprockets are carefully designed and manufactured to provide exceptional service in all applications. Each sprocket has certain variable construction characteristics that can be tailored to your specific operation. Union Sprockets can be furnished with a variety of special features. Standard and special features are shown in Table 4. It is important to identify any special requirements when placing your order.

## Types of Sprockets Available

Union offers a wide variety of sprocket styles to meet your operational needs.

### Segmental Rim Sprockets



Segmental Rim Sprockets are designed to save time and money. They eliminate costly downtime during installation and adjustment. The segmented rim is bolted to a solid or split body. That means bodies or entire sprockets may be replaced without removing shaft or bearings, saving maintenance time and money.

### Split Construction

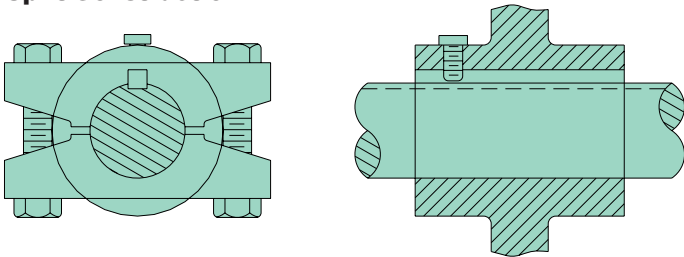
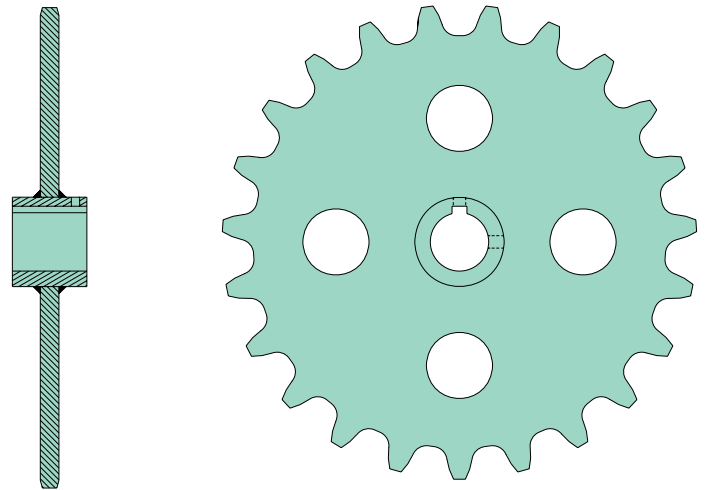


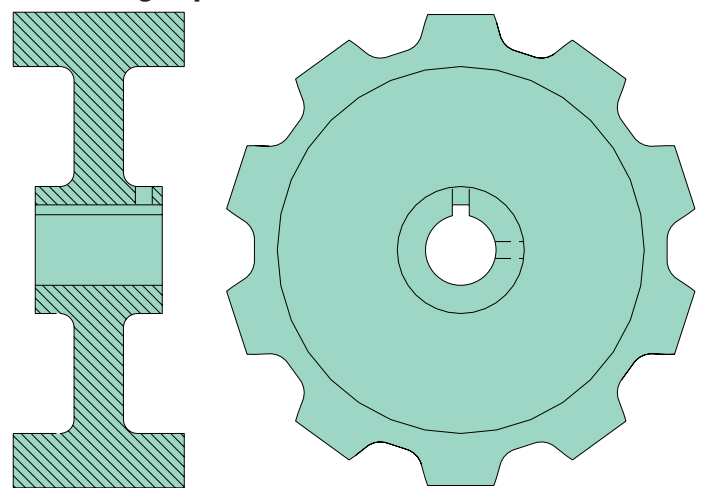
Plate Center Sprockets with split construction make it easier to mount or remove a sprocket from the shaft without disturbing either the shaft or the bearings. Split construction may also provide extra holding power, depending on your application. Split wheels are fabricated, machined, and then split so the sprocket forms a solid construction when bolted together. Rim lugs are used when the diameter or the wheel makes them necessary. Because wheels are fabricated in one piece and then split, it is necessary to specify the bore size required.

### Lightening Hole Sprockets



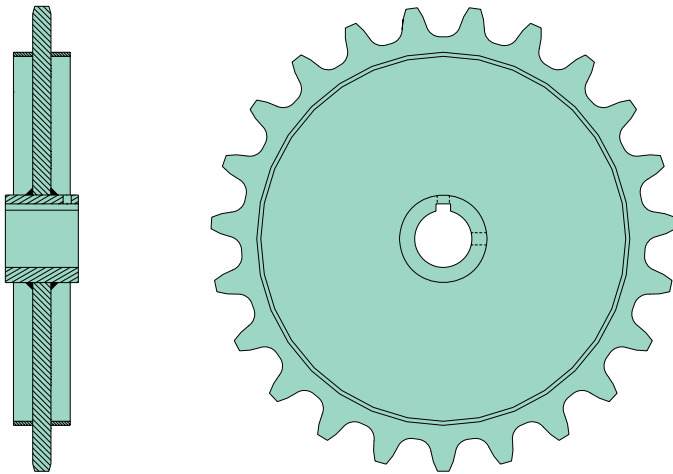
Reduce the weight of a large sprocket and facilitate handling with lightening holes. These are indicated on the appropriate Sprocket Tables when provided.

### Wide Flange Sprockets



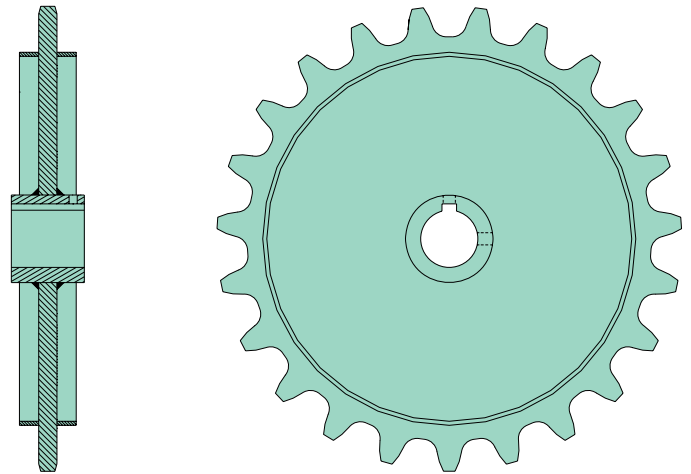
These sprockets are used in welded steel drag conveyors, and are made of special cast alloys that resist abrasion. Although they are not listed in this catalog, they are available on a made-to-order basis. Call for more specific information.

### Chain Saver Sprockets



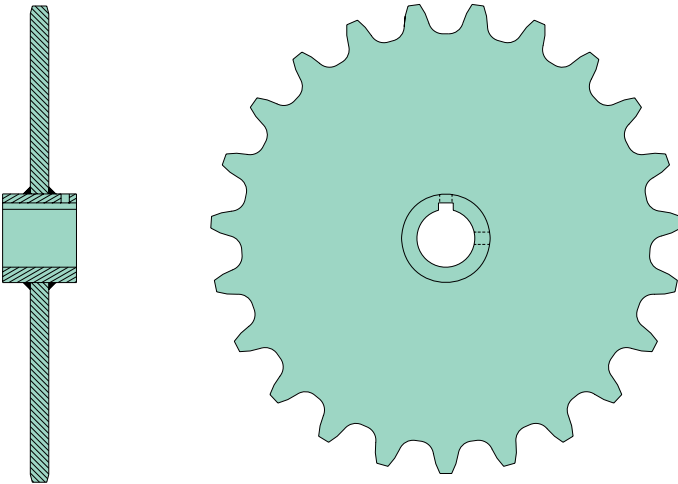
The special flange construction on the rim of Chain Saver Sprockets extends the life of the chain. Chain sidebars rest on the flange as the chain wraps around the sprocket. This keeps the chain on the true pitch line and distributes wear over a greater contact area.

### Hunting Tooth Chain Saver Sprockets



Hunting Tooth Chain Saver Sprockets combine the special construction of Hunting Tooth Sprockets with Chain Saver Sprockets for super long wear. The chain engages one set of teeth with each rotation, and the special flange construction adds extra support, keeping the chain on true pitch and distributing wear over a greater contact area.

### Hunting Tooth Sprockets



The special construction of Hunting Tooth Sprockets makes them last twice as long as regular sprockets. Hunting Tooth Sprockets have an odd number of teeth and are half the pitch of the chain. Every time the sprocket makes a revolution, the chain engages with one set of teeth, ahead of the previously engaged set. Each tooth makes contact with the chain only half as many times as it would on a regular sprocket, extending the useful life of the sprocket two times that of regular sprockets.

## Other Factors

When ordering sprockets, there are some additional factors to consider.

### Hub Length

Standard hub lengths are shown in the Sprocket Tables in this catalog. We offer longer hubs on a made-to-order basis.

### Overload Protection

Shear Pin Hubs and Shock Relay are used as safety devices to protect machinery from overload.

The Shear Pin Hub is keyed to the shaft and connected to the loose wheel by a pin, which will transmit only the normal power requirements plus a predetermined overload. If this

overload is exceeded, the pin shears, stopping the line. Normally a shear pin rated at slightly more than twice the torque requirements is the proper size to use. We offer two types of Shear Pin Hubs.

- Style 1 is the most popular because it is smaller and more compact than Style 2. The wheel is mounted on the flange hub and held in place by a collar.
- Style 2 is larger than Style 1 and costs less. It consists of a loose wheel and the flange hub. Place a bearing or set collar against the free side of the wheel.

The Shock Relay is an “electronic Shear Pin Hub.” Set the overload protection you want for your operation, and this sensitive electronic monitor stops the line before damage

**Table 4 — Features of Standard and Special Sprockets**

Feature	Standard	Special <sup>1</sup>
Sprocket Type	Falls within sizes listed in the catalog, including segmental rims and W720S hunting tooth.	Any type other than listed which may have special features such as special lightening holes, mud relief, chain saver hub, etc.
Split Construction	Not available as standard	All Split Sprockets [D (detachable)]
Hub Type	A, B, C, C Offset	Hub Bodies Shear Pin Hubs Bronze Bushed
Key Seating	Standard keyway as specified by the table standard keys and setscrews (Table 2)	Extra Keyseats Keyseating in special locations Keyseating in line
Set Screws	One pair furnished standard sizes	More than one pair or non-standard sizes
Boring	Up to and including the maximum bore size listed in the catalog sprocket tables for a given hub size (Table 3)	Plain bore for close tolerance Over size bores (larger hub)
Machine Faced Hubs	Not available as standard	Facing to exacting tolerance on L.T.B.
Hub Lengths	Length as listed	Longer than standard

<sup>1</sup>Unless you specify special sprocket features, we'll quote to our standard.

can occur. After the problem is corrected, the Shock Relay can be re-set at the touch of a button, increasing efficiency and reducing downtime.

**Traction Wheels**

Traction Wheels are available in a wide range of sizes and types to fit most chains. They are usually used as drivers only. They are not generally used at the tail shaft or boot.

**Tooth Hardness**

Union sprockets are designed to last. Each sprocket meets—or exceeds—the stringent hardness parameters shown in Table 5. When ordering, indicate the type of application to make sure you get the right product for your operation.

**Table 5 — Sprocket Tooth Hardness**

Application	Tooth Hardness (Rc Minimum)
Drive	35
Conveyor	35
Elevator, Cement or Clinker Ash	57

**TO DETERMINE ENGINEERING CLASS SPROCKETS**

**Step 1: Calculate Pitch Diameter**

To obtain pitch diameter of a sprocket, multiply the constant for the number of teeth (Table 6) by the chain pitch.

**Table 6 — Sprocket Pitch Diameter Constants**

To obtain pitch diameter of a sprocket, multiply the constant for the number of teeth from the table by the chain pitch.									
Number of Teeth	Constant	Number of Teeth	Constant	Number of Teeth	Constant	Number of Teeth	Constant	Number of Teeth	Constant
6	2.000	35	11.156	64	20.380	93	29.608	122	38.837
7	2.305	36	11.474	65	20.698	94	29.927	123	39.156
8	2.613	37	11.792	66	21.016	95	30.245	124	39.475
9	2.924	38	12.110	67	21.335	96	30.563	125	39.794
10	3.236	39	12.428	68	21.653	97	30.882	126	40.112
11	3.550	40	12.746	69	21.971	98	31.200	127	40.430
12	3.864	41	13.064	70	22.289	99	31.518	128	40.748
13	4.179	42	13.382	71	22.607	100	31.836	129	41.066
14	4.494	43	13.700	72	22.926	101	32.154	130	41.384
15	4.810	44	14.018	73	23.244	102	32.473	131	41.702
16	5.126	45	14.336	74	23.562	103	32.791	132	42.020
17	5.442	46	14.654	75	23.880	104	33.109	133	42.338
18	5.759	47	14.972	76	24.198	105	33.427	134	42.656
19	6.076	48	15.290	77	24.517	106	33.746	135	42.975
20	6.393	49	15.608	78	24.835	107	34.064	136	43.293
21	6.710	50	15.926	79	25.153	108	34.382	137	43.611
22	7.027	51	16.244	80	25.471	109	34.701	138	43.930
23	7.344	52	16.562	81	25.790	110	35.019	139	44.249
24	7.661	53	16.880	82	26.108	111	35.337	140	44.567
25	7.979	54	17.198	83	26.426	112	35.655	141	44.885
26	8.296	55	17.517	84	26.744	113	35.974	142	45.203
27	8.614	56	17.835	85	27.063	114	36.292	143	45.521
28	8.932	57	18.153	86	27.381	115	36.610	144	45.840
29	9.249	58	18.471	87	27.699	116	36.929	145	46.158
30	9.567	59	18.789	88	28.017	117	37.247	146	46.477
31	9.885	60	19.107	89	28.336	118	37.565	147	46.796
32	10.202	61	19.426	90	28.654	119	37.883	148	47.114
33	10.520	62	19.744	91	28.972	120	38.201	149	47.432
34	10.838	63	20.062	92	29.290	121	38.519	150	47.750



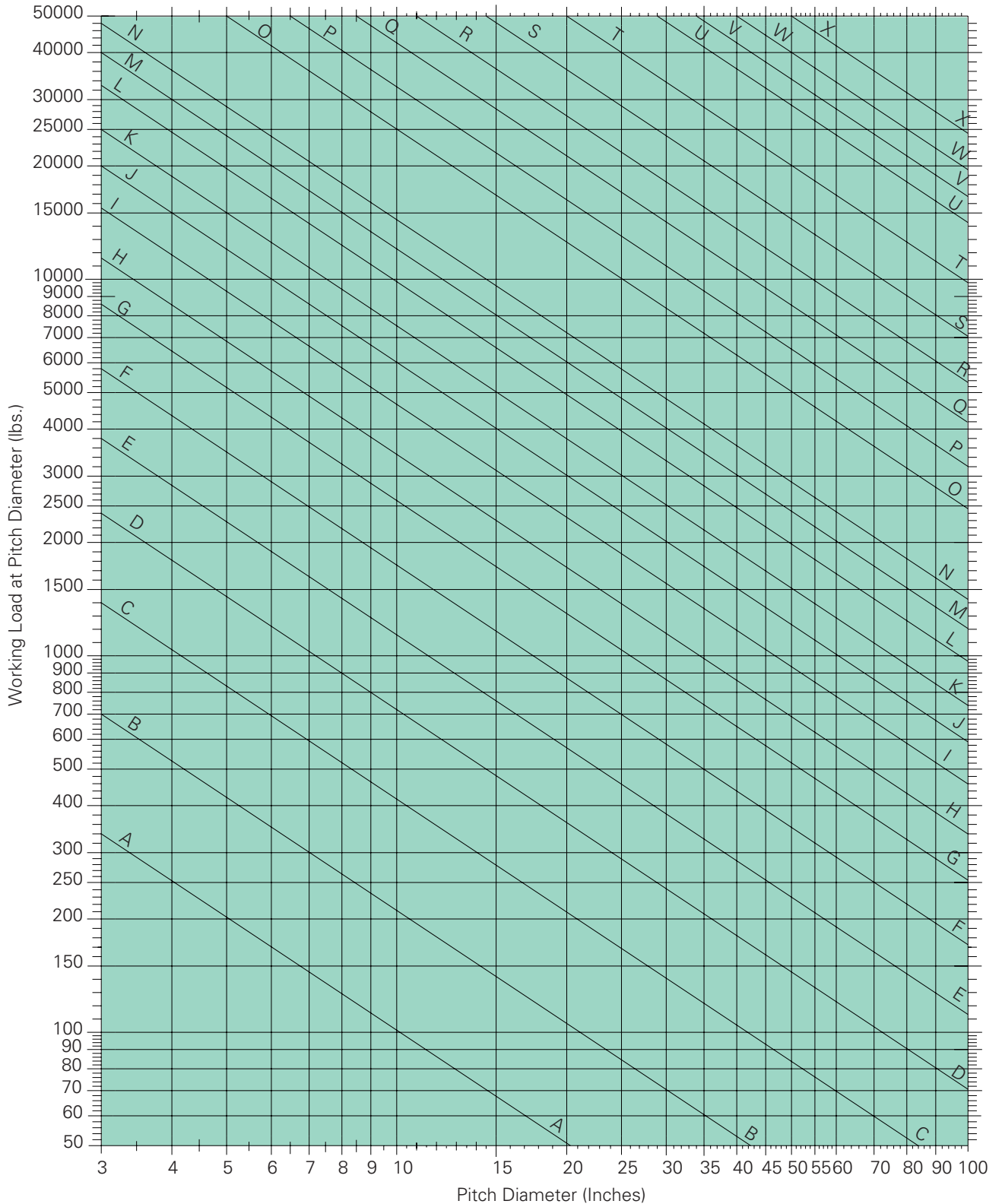


# UNION CHAIN DIVISION - SPROCKET SELECTION GUIDELINES

## Step 2: Select Hub Class

Using the Quick Selector Chart (Table 7), plot the pitch diameter of the sprocket obtained in Step 1. Then plot the working load of the chain. Suggested hub selection is found at the point of intersection.

**Table 7 — Quick Selection Chart**



C - SPROCKETS AND ACCESSORIES

### Step 3: Determine Length and Diameter of Hub

Using the information obtained in Step 2, plot the hub class on Table 8. Then plot the bore of the wheel. The point of intersection indicates the diameter of the hub. Length-through bore

(L.T.B.) is found at the bottom of the appropriate hub diameter column. If you do not know the bore size, refer to Shaft Selection Procedure in the Engineering Section of this catalog.

**Table 8 — Hub Diameter Selection Table**

All dimensions are in inches unless otherwise specified.

Standard Hub Diameters for Steel Sprockets																															
Bore of Wheel	Sq. Key Size	Set Screw Size	Allowable Torque in Inch Pounds and Hub Class																								Minimum Hubs for Loose or Set-Screwed Sprockets	Dia.	Lgth.		
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X				Y	Z
			Diameter of Keyseated Hubs																												
1 <sup>1</sup> / <sub>16</sub>	1/4	3/8	1 3/4																									1 3/4			
1 <sup>1</sup> / <sub>8</sub>	1/4	3/8	2	2	2																							2			
1 <sup>1</sup> / <sub>4</sub>	3/8	3/8	2 1/4	2 1/4	2 1/2	2 3/4																						2 1/4			
1 <sup>1</sup> / <sub>2</sub>	3/8	3/8	2 3/4	2 3/4	2 3/4	3	3																					2 3/4			
1 <sup>5</sup> / <sub>16</sub>	1/2	1/2	3	3	3	3 1/4	3 1/4	3 1/4																				3			
2 <sup>1</sup> / <sub>16</sub>	1/2	1/2	3 1/4	3 1/4	3 1/4	3 1/2	3 1/2	3 1/2	3 3/4																			3 1/4			
2 <sup>1</sup> / <sub>8</sub>	5/8	5/8	3 3/4	3 3/4	3 3/4	3 3/4	4	4	4 1/4	4 1/4																		3 3/4			
2 <sup>1</sup> / <sub>4</sub>	5/8	5/8	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 3/4	4 3/4													4 1/4			
2 <sup>3</sup> / <sub>16</sub>	3/4	5/8	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 3/4	4 3/4	5	5																4 1/2			
3 <sup>1</sup> / <sub>16</sub>	3/4	5/8	4 3/4	4 3/4	4 3/4	4 3/4	4 3/4	4 3/4	5	5	5 1/4	5 1/4	5 1/4															4 3/4			
3 <sup>1</sup> / <sub>8</sub>	7/8	3/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/2	5 1/2	5 3/4	5 3/4														5 1/4			
3 <sup>1</sup> / <sub>4</sub>	7/8	3/4			5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 3/4	5 3/4	6	6	6													5 1/2			
3 <sup>15</sup> / <sub>16</sub>	1	3/4			6	6	6	6	6	6	6 1/4	6 1/4	6 1/2	6 1/2	6 1/2	6 1/2												6			
4 <sup>1</sup> / <sub>16</sub>	1	3/4				6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 3/4	6 3/4	7	7	7	7	7											6 1/2			
4 <sup>1</sup> / <sub>8</sub>	1 1/4	7/8				7 1/4	7 1/4	7 1/4	7 1/4	7 1/4	7 1/4	7 1/4	7 1/2	7 1/2	7 1/2	8	8											7 1/4			
5 <sup>1</sup> / <sub>16</sub>	1 1/4	7/8						8	8	8	8	8	8	8	8	8	8 1/2	8 1/2	8 1/2	8 1/2									8		
5 <sup>1</sup> / <sub>8</sub>	1 1/2	1							9	9	9	9	9	9	9	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2	10	10	10	10	10	10	10	10	9 1/2		
6 1/2	1 1/2	1								9 1/2	9 1/2	9 1/2	9 1/2	9 1/2	10	10	10	10	10	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10			
7	1 1/2	1									10	10	10	10	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2			
7 1/2	1 3/4	1 1/4										11	11	11	11	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11			
8	1 3/4	1 1/4											11 1/2	11 1/2	12	12	12	12	12	12	12	12	12	12 1/2	12 1/2	12 1/2	12 1/2	11 1/2			
8 1/2	1 3/4	1 1/4												12	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12			
9	1 3/4	1 1/4													13	13	13	13	13	13	13	13	13	13 1/2	13 1/2	13 1/2	13 1/2	12			
9 1/2	1 3/4	1 1/4														13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13			
10	2	1 1/4															14 1/2	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2	13 1/2			
Length Through Bore			1	1																											
			1 1/4	1 1/2	1 3/4	2	2 1/2	2 3/4	3 1/4	3 1/2	4	4 1/4	4 1/2	5	5 1/4	5 1/2	6	6 1/2	7	7 3/4	8 1/2	9 1/2	10	10 1/2	11	11 1/2	12	12 1/2			

Chain and sprockets are stronger than shafts

Chain and sprockets will not transmit full torque value of shaft

Length is determined same as for Key-seated Sprockets

<sup>1</sup>Hubs on one side only.  
All dimensions are inches.

### Notes

1. The diagonal solid block of figures on the Hub Diameter Selection Table (Table 8) represent a condition of balance between torque and keyway with bore sizes. When the hub class requirements and the bore size intersect in the blank space below and to the left of the solid block, it indicates that chain and sprocket will not transmit the full torque value of the keyed shaft. When the hub class and the bore size intersect above and to the right of the solid block, it indicates that

chain and sprocket are stronger than the keyed shaft. The Hub Diameter Selection Table also serves as a design check on the shaft sizes as well.  
2. For loose-fitting sprockets only (no keyway or set screw), the minimum hub diameter and length are shown at the right end of the shaft size row and at the bottom of the hub class columns.

## Other Considerations

When determining Engineering Class Sprockets, consider the following important points.

### Chain Interaction

The chain-sprocket interaction is the criterion upon which most users make their judgments about replacing sprockets. If the chain engages and disengages the sprocket smoothly without hanging up or snapping into place, most people will not replace it. If a chain does start to hang up on the sprocket, damaging chain overload conditions can develop rapidly. We suggest replacing sprockets before hang up develops.

### Reversible

Almost all sprockets are reversible. The key to being able to reverse sprockets is symmetry. If the sprockets are symmetrical from side to side, then they can be reversed. Reversing is not suggested in most circumstances, especially with those applications that wear the sprocket bottom diameter.

### New Chain

We suggest you order new sprockets when chain is replaced. New sprockets ensure proper chain interaction and also provide maximum wear performance.

### Attachment Clearance

Any time an attachment is in the area between, above, or below the sidebars, make sure the attachment does not interfere with sprocket action.

### Relief Pocket (Mud Relief)

In applications where material build up may be a problem, the bottom of the tooth pocket can be beveled on the side to allow the material to "squeeze" out. This reduction of contact area is not critical because the pressure on the bottom of the pocket is very light in horizontal conveyors. Other relief styles may be necessary for vertical conveyors.

### Advantages of Using Larger Sprockets

Choose the largest sprocket that will fit your application. Small sprockets cause greater shock and consequently more wear on both chain and sprockets. There are several reasons for this.

1. To engage small sprockets, chain must flex more which causes increased rotation of the pin in the bushing. Since this is one of the major causes of chain wear, this flexing action should be minimized.
2. Small sprockets with fewer teeth wear out much faster than sprockets with more teeth. More teeth provide an opportunity to distribute the wearing action.
3. Larger sprockets cause smoother operation because the greater number of teeth will pick up the load more frequently.

### Chordal Action

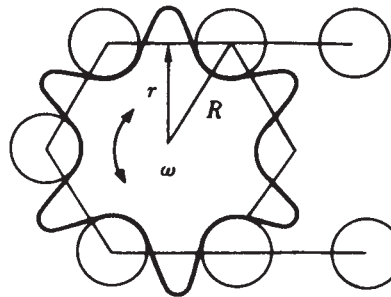
Chordal action is a very important concept in sprocket function. A sprocket is a collection of chords, or straight segments, that approximate a circle. The more teeth a sprocket has, the closer the chords are to a circle.

The problem with a chordal form is that the lineal output is not consistent. Since the sprocket is not a perfect circle, the distance from the shaft center to the chain center-line varies. As this distance varies, so does the lineal output (assuming a constant shaft rotational speed).

A hexagon inscribed by a circle represents the 6-tooth sprocket shown below. You can see that the distance from the center to the corner is different than from the center to the middle of the side. The corner would be the equivalent to the chain joint center, and the side is equivalent to the chain centerline at mid-pitch.

#### Minimum Chain Speed

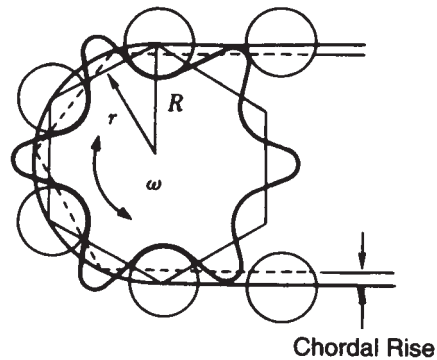
$$V_{\min} = r\omega$$



$$V_1 = .2618 (PD) \cos (180/T) N$$

#### Maximum Chain Speed

$$V_{\max} = R\omega$$



$$V_2 = .2618 (PD) N$$

Where

$V_1$  and  $V_2$  in fpm,

$N$  in r.p.m.,

$PD$  in pitch diameter, in inches.



# Shear Pin Hubs

## Torque Ratings<sup>1</sup> of Shear Pins Based on Actual Ultimate Shear Values

All dimensions are in inches unless otherwise specified.

Shaft Dia.	Shear Pin Diameters (in.)													
	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	
1 5/16	2,150	4,430												
1 3/16	2,150	4,430	8,550											
1 7/16	2,150	4,430	8,550											
1 11/16	2,600	5,300	10,300	15,700										
1 15/16		5,300	10,300	15,700	17,200	27,900								
2 3/16		6,650	12,800	19,700	21,500	24,900								
2 7/16		6,650	12,800	19,700	21,500	34,900	40,900							
2 11/16		7,500	14,500	22,300	24,300	39,500	46,300	68,000						
2 15/16			14,500	22,300	24,300	39,500	46,300	68,000	73,500	88,000				
3 3/16			17,100	26,200	28,600	46,500	54,500	80,000	86,500	103,500				
3 7/16			17,100	26,200	28,600	24,600	54,500	80,000	86,500	103,500	130,000			
3 11/16				30,100	32,900	53,500	62,700	92,000	99,500	119,000	148,000			
3 15/16					32,900	53,500	62,700	92,000	99,500	119,000	148,000			
4 7/16						60,500	70,900	104,000	112,500	135,000	167,000	202,000		
4 15/16						67,400	70,900	116,000	125,500	150,000	186,000	226,000	309,000	
5 7/16							87,200	128,000	138,500	166,000	205,000	249,000	341,000	
5 15/16								95,300	140,000	151,000	181,000	224,000	273,000	373,000

<sup>1</sup>Ratings in inch-pounds

## Shear Pin Hubs

Dimensions (in.)									Approximate Weight Each (lbs.)					
Shaft Diameter											Hub Flange		Pad Cast On Wheel	
A	B	C	D	E	F	G	H	J	Style 1	Style 2	Style 1	Style 2	Style 1	Style 2
1 5/16	2 5/8	2	2 1/2	3 5/16	1 1/2	1 13/16	3/4	7/8	9.3	8.0	8.5	7.4	0.7	0.9
1 3/16	2 5/8	2	2 1/2	3 5/16	1 1/2	1 13/16	3/4	7/8	9.3	8.0	7.3	6.4	0.8	0.8
1 7/16	2 5/8	2	2 1/2	3 5/16	1 1/2	1 13/16	3/4	7/8	8.0	6.0	6.0	5.1	0.7	1.1
1 11/16	3 3/4	3 3/16	3	4 1/8	2 3/8	2 1/2	1	1	18.5	15.0	17.0	12.0	2.0	3.0
1 15/16	3 3/4	3 3/16	3	4 1/8	2 3/8	2 1/2	1	1	16.0	12.0	13.2	10.0	2.5	3.0
2 3/16	4 9/16	4 1/16	3 3/4	5 1/8	3 1/16	3 1/8	1	1	30.0	21.0	26.0	18.0	3.0	3.0
2 7/16	4 9/16	4 1/16	3 3/4	5 1/8	3 1/16	3 1/8	1	1	25.0	17.0	22.0	12.0	3.0	4.0
2 11/16	5 7/16	4 13/16	4 1/4	5 7/8	3 13/16	3 5/8	1 1/4	1 1/8	45.0	34.0	39.0	27.0	4.2	3.5
2 15/16	5 7/16	4 13/16	4 1/4	5 7/8	3 13/16	3 5/8	1 1/4	1 1/8	41.0	30.0	33.0	21.0	3.4	3.2
3 3/16	6 5/16	5 3/4	5	6 3/4	4 1/2	4 1/4	1 5/16	1 7/16	67.0	46.0	-	-	-	-
3 7/16	6 5/16	5 3/4	5	6 3/4	4 1/2	4 1/4	1 5/16	1 7/16	59.0	40.0	53.0	36.0	6.0	3.4
3 11/16	7	6 1/8	5 3/4	7 1/2	4 3/4	4 5/8	1 11/16	1 7/16	82.0	57.0	-	-	-	-
3 15/16	7	6 1/8	5 3/4	7 1/2	4 3/4	4 5/8	1 11/16	1 7/16	76.0	52.0	64.0	47.0	8.0	5.0
4 7/16	7 3/4	7	6 1/2	8 3/8	5 3/4	5 1/8	1 11/16	1 7/16	112.0	75.0	100.0	65.0	10.0	7.5
4 15/16	8 9/16	7 5/8	7 1/4	9 5/16	6 1/8	5 11/16	1 11/16	1 7/16	151.0	93.0	132.0	80.0	14.0	18.0
5 7/16	9 3/4	8 3/8	8	10 3/16	6 5/8	6 1/2	1 11/16	1 7/16	218.0	124.0	193.0	109.0	24.0	14.0
5 15/16	10 13/16	9 1/8	8 3/4	11 1/8	7 1/8	7 5/16	1 11/16	1 7/16	286.0	157.0	261.0	140.0	33.0	17.0



# U.S. Tsubaki Shock Relay

## The Electronic Shear Pin!



### Protect your equipment and your investment with the U.S. Tsubaki Shock Relay.

Unexpected shock loads — overloads and underloads — can damage chains, drives, gears, turbines — the entire mechanical assembly. That means high maintenance, costly repairs, and expensive downtime.

Mechanical devices like shear pins and torque limiters don't provide enough protection. They are just not reliable.

### Electronic Shock Relay from U.S. Tsubaki Acts Before the Damage Occurs

These accurate, adjustable devices can determine if the equipment is operating properly. If the Shock Relay detects a problem, it shuts down the line—fast, safe, and secure. That means big savings in time and money for you or your customers.

### Reset at the Touch of a Button

After the problem is corrected, the Shock Relay can be reset at the touch of a button. No teardown is required. That means improved efficiency and reduced downtime.

C - SPROCKETS AND ACCESSORIES



- Accurate Protection
- Repeatable Performance
- Rapid, Easy Reset
- Quick Installation
- Wide Range of Applications
- Easy Selection

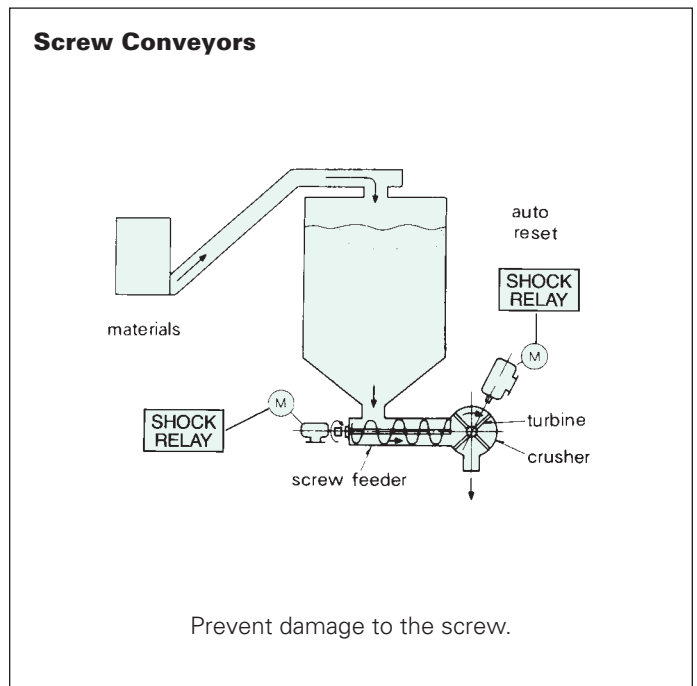
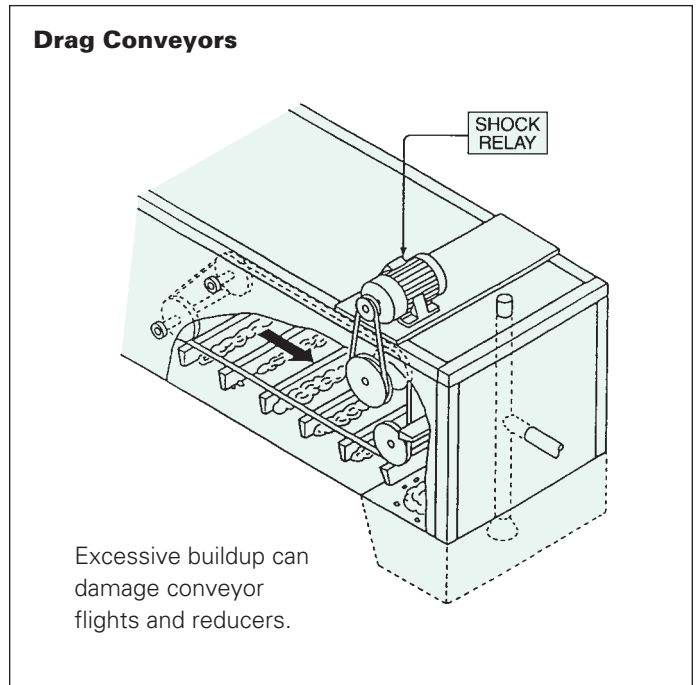
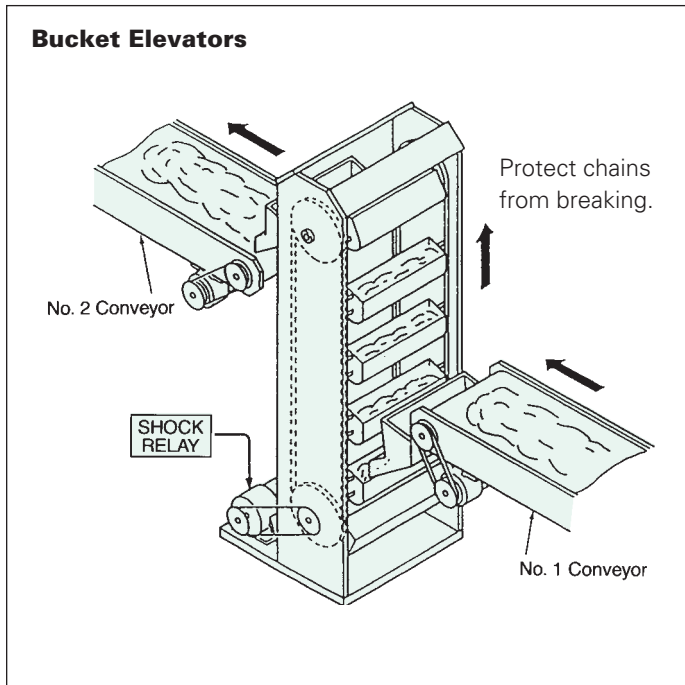


Features	U.S. Tsubaki Shock Relay	Mechanical Device
Stability of operation	excellent	poor
Accuracy of operation	excellent	unsatisfactory
Adjustment of operational range	simple	difficult
Fine adjustment	yes	no
Reset	simply push the <b>Reset</b> button	considerable time and labor is required
Selection	simple	new design for each application required
Life cycle	long	short
Threshold point	low	high



# U.S. Tsubaki Shock Relay

Invented by U.S. Tsubaki, the Shock Relay is a precise electronic protector that adapts to virtually all types of equipment driven by an electric motor. The Shock Relay is installed on applications in the Material Handling Industry, Water Treatment Industry, Food Processing Industry, Agriculture Industry, Machine Tool Industry, Chemical Industry, and others.



C - SPROCKETS AND ACCESSORIES

# Protects Your Application!

- **Material Handling**

Conveyors, Turntables, Elevators

- **Water Treatment Plants**

Pumps, Scrappers, Water Screens

- **Food Machinery**

Pumps, Agitators, Mixers

- **Agriculture**

Screw and Belt Conveyors, Bucket Elevators

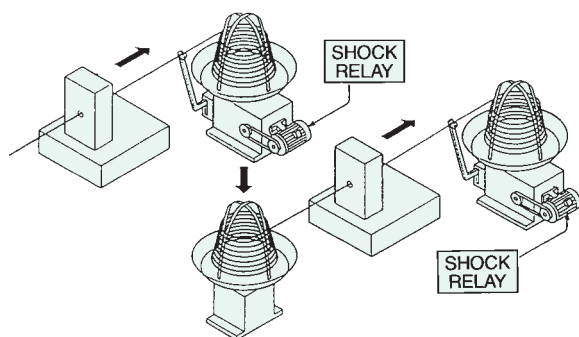
- **Machine Tool**

Tapping Machines, Drill Press

- **Chemical Industry**

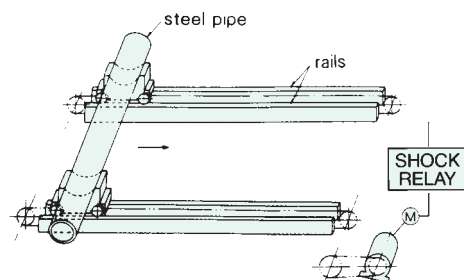
Pumps, Agitators, Packagers

## Winding Applications



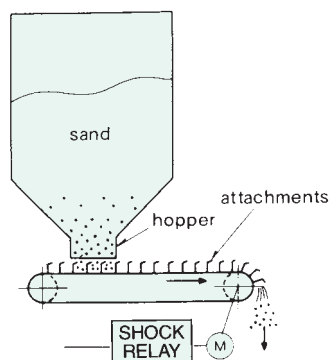
Sense excessive torque and shut off the equipment prior to damage occurring.

## Conveyor Applications



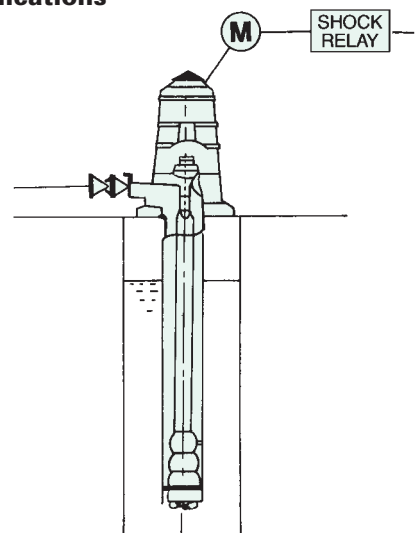
Detect damaging overloads that lead to downtime.

## Chain Feeders



Protect attachments from damage.

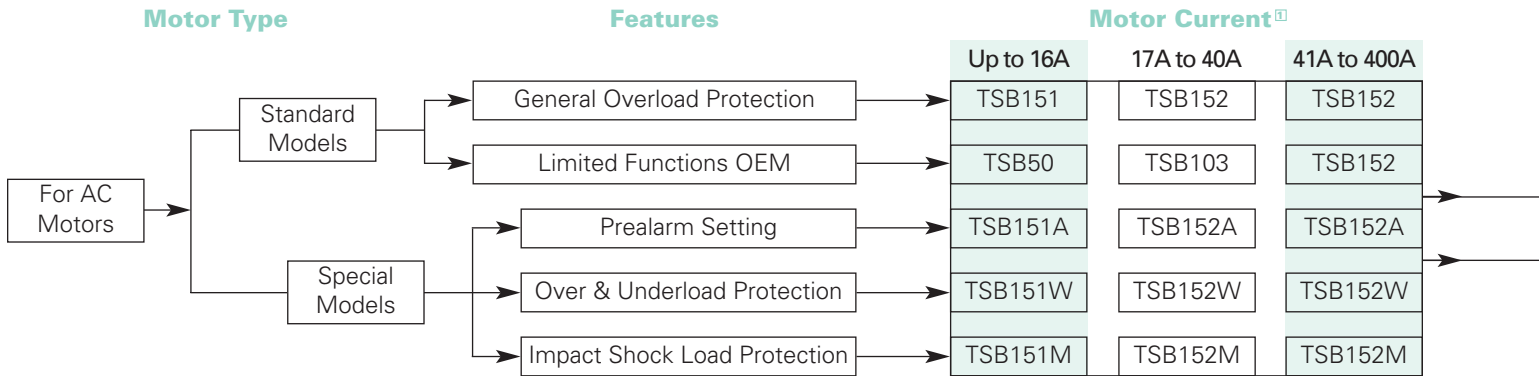
## Pump Applications



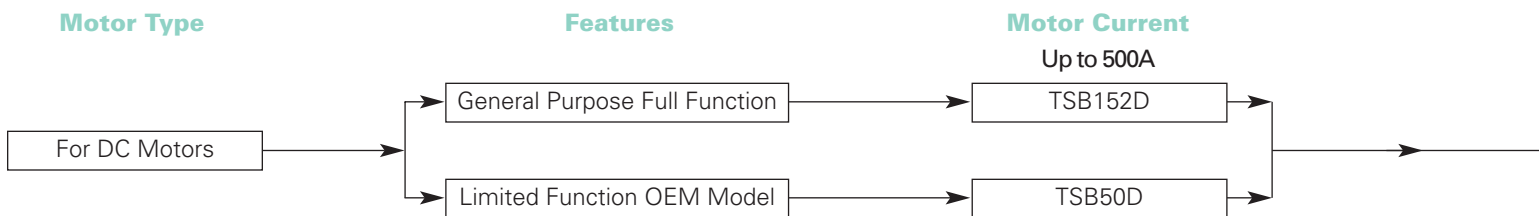
Protect pump from both overloads and underloads.



## Selection Guide



Note: Shock Relay is designed to accept all standard 1 phase and 3 phase AC motors and all DC motors (above 600VAC, contact U.S. Tsubaki).



① If motor normally runs at light duty, use actual amperage measurement under normal operating condition. If actual amperage is not known, use name plate rated current.

② If your amperage does not match the current transformer rated amperage shown on page C-66, choose the next highest rated current transformer.

## Current Transformer Selection

Selection of C.T. (Current Transformer) For																																																																																																																																																																	
Motor Name-Plate amp <sup>①</sup>	Size of Current Transformer																																																																																																																																																																
TSB151/AW/M	Up to 16A — COM-50/151 — included																																																																																																																																																																
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TSB103	17A ~ 40A — COM-5/20 — included																																																																																																																																																																
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TSB152/AW/M	<table border="1"> <thead> <tr> <th></th> <th>100AT</th> <th>120AT</th> <th>150AT</th> <th>200AT</th> <th>250AT</th> <th>300AT</th> <th>400AT</th> </tr> </thead> <tbody> <tr><td>20 amp</td><td>●</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>25 amp</td><td>●</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>30 amp</td><td></td><td>●</td><td>○</td><td></td><td></td><td></td><td></td></tr> <tr><td>33 amp</td><td>●</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>37 amp</td><td></td><td></td><td>●</td><td></td><td></td><td></td><td></td></tr> <tr><td>40 amp</td><td></td><td>●</td><td></td><td>○</td><td></td><td></td><td></td></tr> <tr><td>50 amp</td><td>●</td><td></td><td>○</td><td>○</td><td>○</td><td></td><td></td></tr> <tr><td>60 amp</td><td></td><td>●</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>66 amp</td><td></td><td></td><td></td><td>●</td><td></td><td></td><td></td></tr> <tr><td>75 amp</td><td></td><td></td><td>●</td><td></td><td></td><td></td><td></td></tr> <tr><td>83 amp</td><td></td><td></td><td></td><td></td><td>○</td><td></td><td></td></tr> <tr><td>100 amp</td><td>●</td><td></td><td></td><td>○</td><td></td><td></td><td></td></tr> <tr><td>120 amp</td><td></td><td>●</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>125 amp</td><td></td><td></td><td></td><td></td><td>●</td><td></td><td></td></tr> <tr><td>150 amp</td><td></td><td></td><td>●</td><td></td><td></td><td></td><td></td></tr> <tr><td>200 amp</td><td></td><td></td><td></td><td>●</td><td></td><td></td><td></td></tr> <tr><td>250 amp</td><td></td><td></td><td></td><td></td><td>●</td><td></td><td></td></tr> <tr><td>300 amp</td><td></td><td></td><td></td><td></td><td></td><td>●</td><td></td></tr> <tr><td>400 amp</td><td></td><td></td><td></td><td></td><td></td><td></td><td>●</td></tr> </tbody> </table>		100AT	120AT	150AT	200AT	250AT	300AT	400AT	20 amp	●							25 amp	●							30 amp		●	○					33 amp	●							37 amp			●					40 amp		●		○				50 amp	●		○	○	○			60 amp		●						66 amp				●				75 amp			●					83 amp					○			100 amp	●			○				120 amp		●						125 amp					●			150 amp			●					200 amp				●				250 amp					●			300 amp						●		400 amp							●
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● Primary Current Transformer  
○ Alternative Current Transformer

## Shunt Selection

Motor Current <sup>②</sup>	Shunt No.
1 amp	Shunt 1-50
1.5 amp	Shunt 1.5-50
2 amp	Shunt 2-50
5 amp	Shunt 5-50
10 amp	Shunt 10-50
20 amp	Shunt 20-50
50 amp	Shunt 50-50
100 amp	Shunt 100-50
150 amp	Shunt 150-50
200 amp	Shunt 200-50
250 amp	Shunt 250-50
300 amp	Shunt 300-50
400 amp	Shunt 400-50
500 amp	Shunt 500-50

## AC Motor Full-Load Current List\*

HP	RPM	Amperages	
		230 VAC	460 VAC
1/4	1,800	.95	.48
	1,200	1.14	.70
	900	1.16	.80
1/3	1,800	1.19	.60
	1,200	1.59	.80
	900	1.80	.90
1/2	1,800	1.72	.86
	1,200	2.15	1.08
	900	2.38	1.19
3/4	1,800	2.46	1.23
	1,200	2.92	1.46
	900	3.26	1.63
1	3,600	2.80	1.40
	1,800	3.56	1.78
	1,200	3.76	1.88
	900	4.30	2.15
1 1/2	3,600	4.36	2.18
	1,800	4.86	2.43
	1,200	5.28	2.64
	900	5.60	2.80
2	3,600	5.60	2.80
	1,800	6.40	3.20
	1,200	6.84	3.42
	900	7.90	3.95
3	3,600	8.34	4.17
	1,800	9.40	4.70
	1,200	10.20	5.12
	900	11.40	5.70
5	3,600	13.50	6.76
	1,800	14.40	7.21
	1,200	15.80	7.91
	900	15.90	7.92
7 1/2	3,600	19.50	9.79
	1,800	21.50	10.70
	1,200	21.80	10.90
	900	23.00	11.50

\*Amperages shown are approximates only. Shock Relay can also be used on motors below 1/4 hp and above 125 hp.

## TSB151, TSB152

### SHOCK RELAY FOR OVERLOAD PROTECTION

#### Actual Load Meter

Actual current of the motor is indicated in percentages, which makes it easy to set **Load Current**, regardless of the value of the actual current load.

#### Load Current

This presets the load current at the optimum setting in the range from 30% to 130% of the motor's current. When the actual load current exceeds the preset current for the preset **Shock Time**, the **Shock Relay** trips to break the motor circuit. Audible alarm devices or warning lamps may be installed if desired.

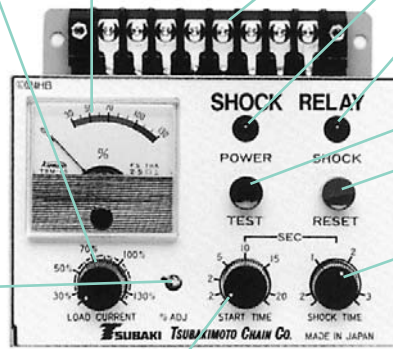
The **Load Current** should be preset by observing the **Actual Load Meter** condition because the motor generally runs under its rated current value.

#### Fine Adjustment

Adjustment is preset at the factory. When fine adjustment of actual load current is required, this may be used to adjust from -5% to +30% of the indicated meter value.

#### Start Time

When starting a motor, the starting current value is greater than the running current. This starting current value continues until the motor reaches normal speed. During this starting period, the time of which mainly depends on the type of load, the function of detecting the overload current is disabled. Adjustable range is from 0.2 to 20 seconds.



#### Terminals for Connection

All terminals are located on the upper surface to provide easy access.

#### Power Indicator

Indicates that the power supply is on.

#### Trip Indicator

Lamp comes on when **Shock Relay** trips.

#### Test Button

This switch is used to verify **Shock Relay** operation.

#### Reset Button (manual)

Reset can be done quickly whenever a cycle restart is desired.

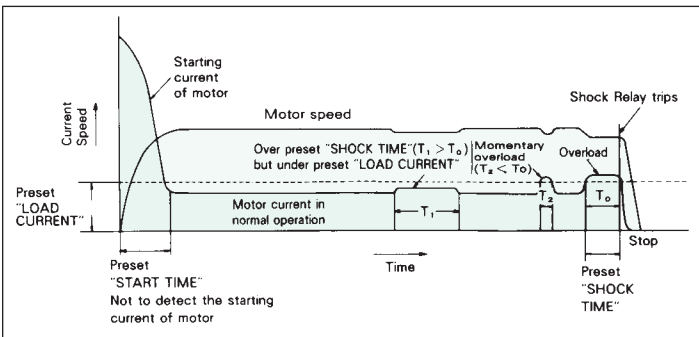
#### Shock Time

This presets the overload period. Range is variable from 0.2 to 3 seconds. Every momentary load over the preset current with a shorter period than the preset period is ignored. When the overload equals the preset period, the **Shock Relay** will trip immediately to break the power supply to the motor.

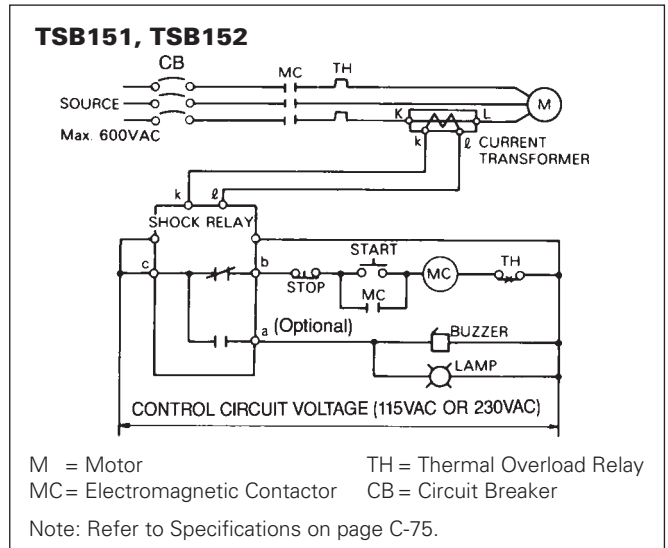


U.S. Tsubaki **Shock Relay** monitors the change in motor current that closely approximates the torque output of the motor. Should the motor current exceed the preset **Load Current** point for a preset length of **Shock Time** (continuous overload time), the **Shock Relay** will shut down the motor power supply.

#### Diagram of Operation



#### Typical Connecting Diagram

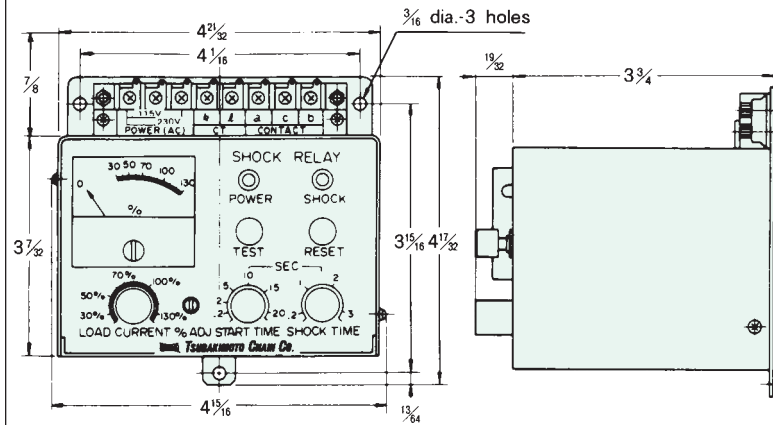


The TSB151 and TSB152 series **Shock Relay** allows easy connection into new or existing applications. For single or three phase motors, simply wire the current transformer that we supply into one line of the motor and the **Shock Relay** into the control circuit (stop-start circuit).

The **Shock Relay** is powered by the same voltage as the control circuit to the motor starter, usually 115V or 230V single phase. If a different control voltage is used, a step down transformer may be required.

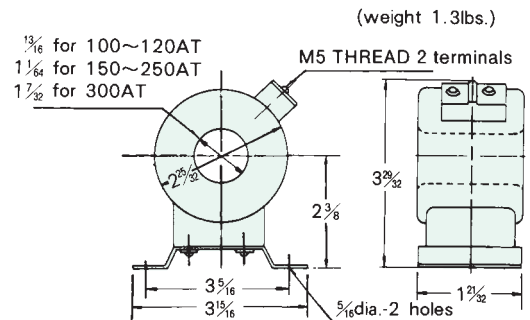
The supplied current transformer is then connected in one line of the motor that is being monitored. Motor voltages above 600 volts require special considerations. Contact U.S. Tsubaki.

### Dimension: TSB151, TSB152, +A/M/W Models



\*TSB151 is shown.

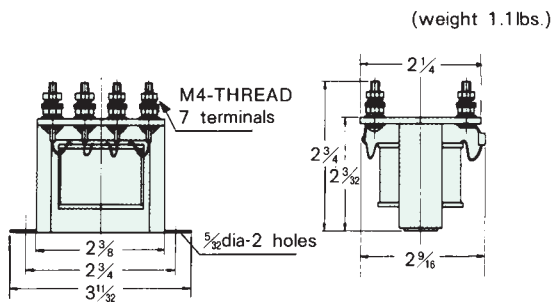
### TSB152 Current Transformer



### For use with TSB152, TSB152A, TSB152M, TSB152W

When ordering the TSB152, please select the correct size current transformer from the chart below. The transformer selected should closely match the motor amperage. U.S. Tsubaki will include the transformer you select with the TSB152 Shock Relay.

### Common Type 50/151 Current Transformer



### For use with TSB151, TSB151A, TSB151M, TSB151W

This current transformer has connections to accept motor amperages up to 16.0 amps. This current transformer is included with the TSB151 and by selecting the correct terminals, accepts the full range of motors acceptable for this Shock Relay.

### Current Transformer for TSB152

Full-Load Current (amps)	Selected CT	Full-Load Current (amps)	Selected CT
20	100AT	100	100AT
25	100AT	120	120AT
30	120AT	125	250AT
33	100AT	150	150AT
37	150AT	200	200AT
40	120AT	250	250AT
50	100AT	300	300AT
60	120AT	400	400AT
83	250AT		

When selecting a Shock Relay and compatible Current Transformer, locate the closest rating to the actual motor current in the list.

### Selection Example

- For 4 pole, 230V, 71/2HP motor: rated current 21.5 amps, choose TSB152, 100AT current transformer.
- For 4 pole 230V, 50HP motor: rated current 124 amps, choose TSB152, 250AT current transformer.



# UNION CHAIN DIVISION - SHOCK RELAY

## TSB50

### OVERLOAD PROTECTION—OEM MODEL

#### A.C. Motors up to 16 amps

##### Terminals for Connection

All terminals are located on the upper surface to provide easy access.

##### Current Flow Indicator

This lamp lights when the load current flows into the **Shock Relay**. Current flows after the fixed 3-second start-up time is complete.



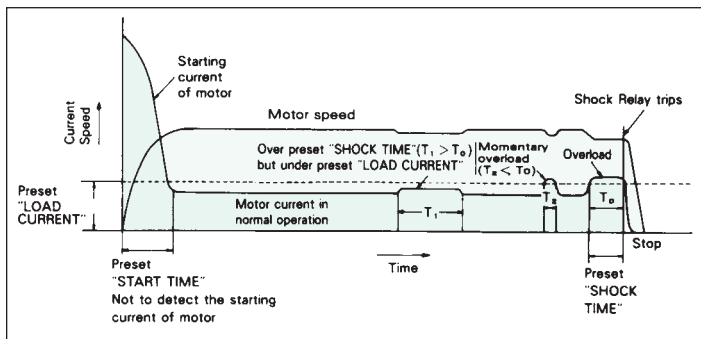
##### Load Current

This presets the load current at the optimum setting in the range from 50% to 130% of the motor's current. When the actual load current exceeds the preset current for the preset **Shock Time**, the **Shock Relay** trips to break the motor circuit. Audible alarm devices or warning lamps may be installed if desired.

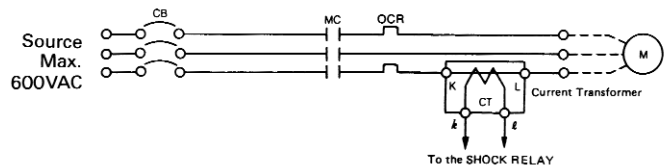
##### Shock Time

This presets the overload period. Range is variable from 0.3 to 3 seconds. Every momentary load over the preset current with a shorter period than the preset period is ignored. When the overload equals the preset period, the **Shock Relay** will trip immediately to break the power supply to the motor.

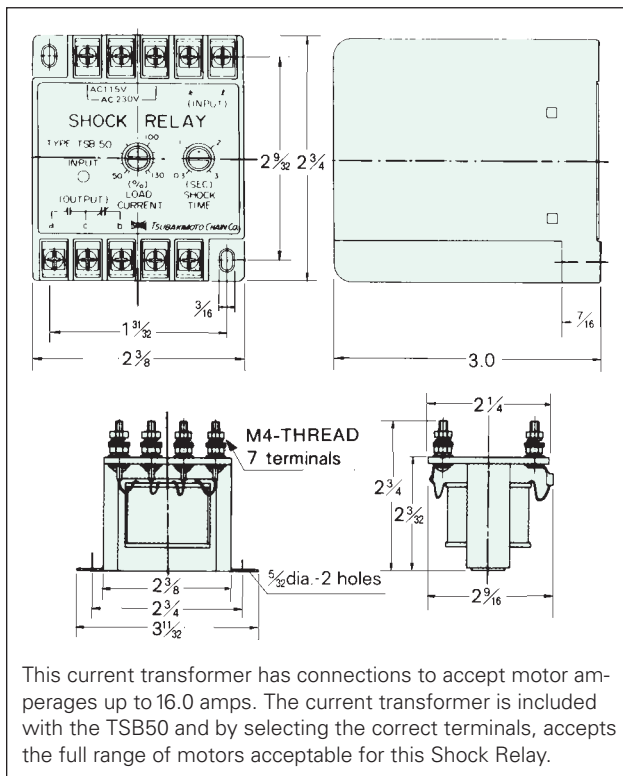
#### Diagram of Operation



#### TSB50 Typical Connecting Diagram



#### Dimensions



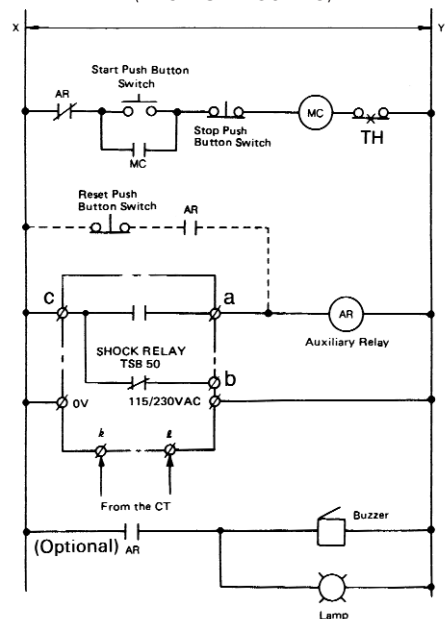
#### CONTROL CIRCUIT VOLTAGE (115V OR 230VAC)

Note: TSB50 automatically resets when the motor power is disconnected. If manual reset is required, add the circuit shown by the dotted line.

Note: Refer to Specifications on page C-75.

M = Motor  
MC = Electromagnetic

Contactor  
TH = Thermal Overload Relay  
CB = Circuit Breaker  
AR = Auxiliary Relay



C - SPROCKETS AND ACCESSORIES

# TSB103

## OVERLOAD PROTECTION—OEM MODEL A.C. Motors between 17 and 40 amps

### Terminals for Connection

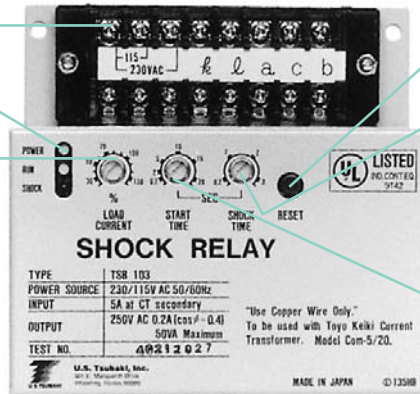
All terminals are located on the upper surface to provide easy access.

### Power Indicator

Indicates that the power supply is on.

### Load Current

This presets the load current at the optimum setting in the range from 30% to 130% of the motor's current. When the actual load current exceeds the preset current for the preset **Shock Time**, the **Shock Relay** trips to break the motor circuit. Audible alarm devices or warning lamps may be installed if desired.



### Reset Button (manual)

Reset can be done quickly, whenever a restart is desired.

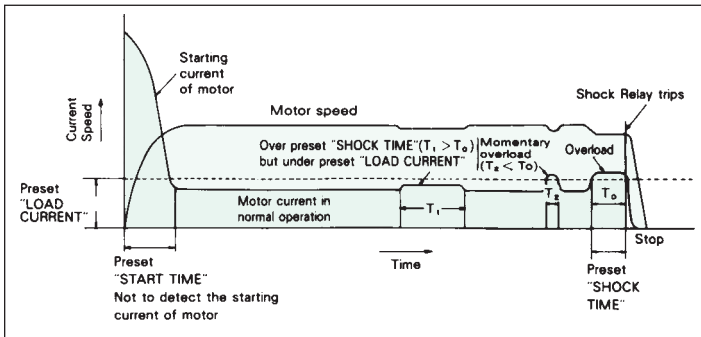
### Shock Time

This presets the overload period. Range is variable from 0.2 to 3 seconds. Every momentary load over the preset current with a shorter period than the preset period is ignored. When the overload equals the preset period, the **Shock Relay** will trip immediately to break the power supply to the motor.

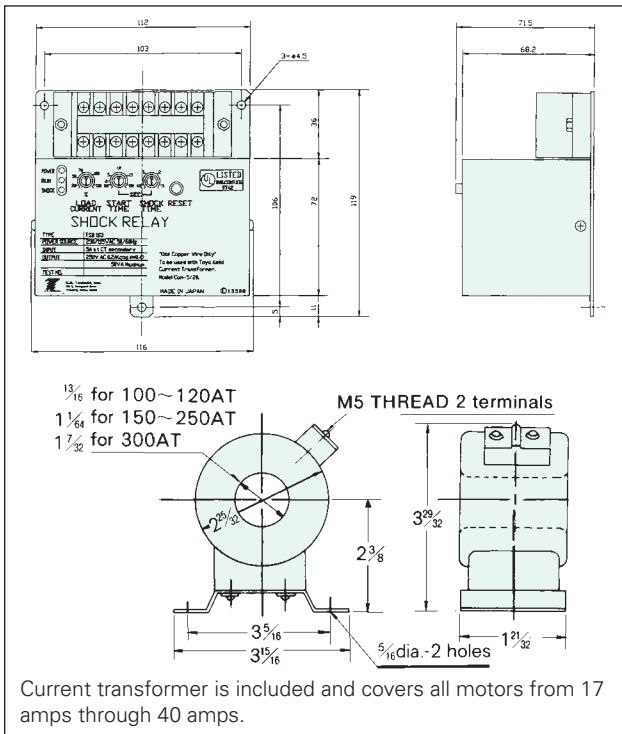
### Start Time

When starting a motor, the starting current value is greater than the running current. This starting current value continues until the motor reaches normal speed. During this starting period, the time of which mainly depends on the type of load, the function of detecting the overload current is disabled. Adjustable range is from 0.2 to 20 seconds.

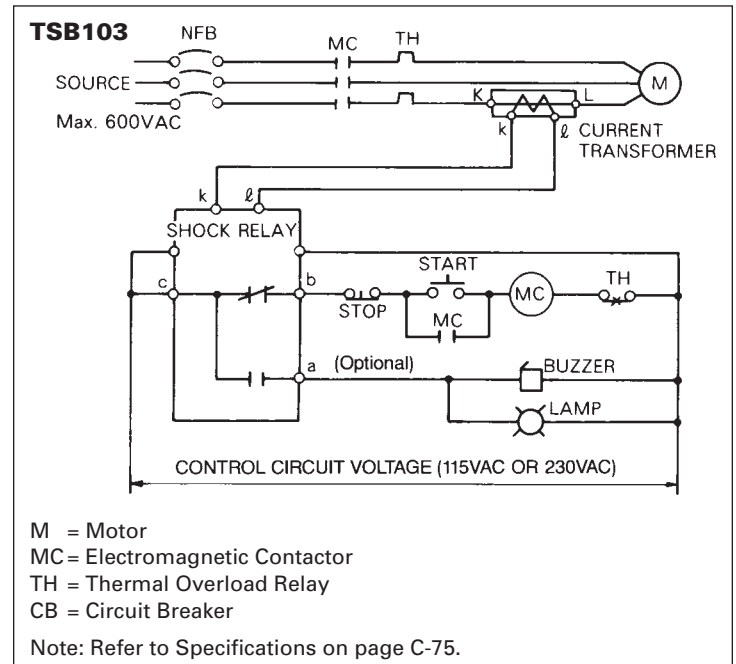
### Diagram of Operation



### Dimensions



### Typical Connecting Diagram



## TSB151A, TSB152A

### OVERLOAD PROTECTION PLUS PRE-ALARM SETTING

#### Actual Load Meter

Actual current of the motor is indicated in percentages, which makes it easy to set **Load Current**, regardless of the value of the actual current load.

#### Load Current

This presets the load current at the optimum setting in the range from 30% to 130% of the motor's current. When the actual load current exceeds the preset current for the preset **Shock Time**, the **Shock Relay** trips to break the motor circuit.

#### Alarm Set Point

This presets the level at which an alarm will sound. The alarm can provide prior warning of an impending problem that may be correctable prior to the need to shut down the equipment.



#### Power Indicator

Indicates that the power supply is on.

#### Trip Indicator

Lamp comes on when **Shock Relay** trips.

#### Test Button

This switch is used to verify **Shock Relay** operation. The TSB151A and TSB152A have a test switch for both the alarm set point and the overload set point.

#### Reset Button (manual)

Reset can be done quickly whenever a restart is desired.

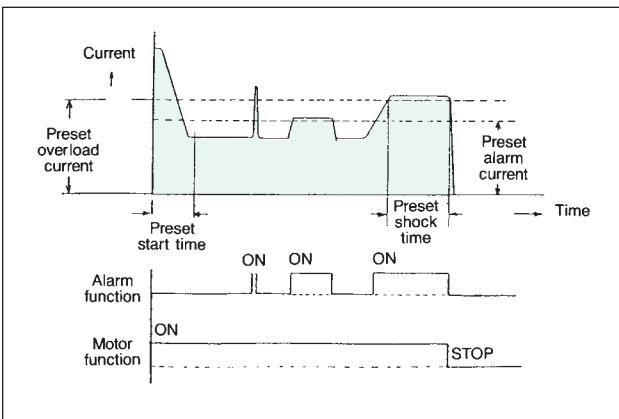
#### Shock Time

This presets the overload period. Range is variable from 0.2 to 3 seconds. Every momentary load over the preset current with a shorter period than the preset period is ignored. When the overload equals the preset period, the **Shock Relay** will trip immediately to break the power supply to the motor.

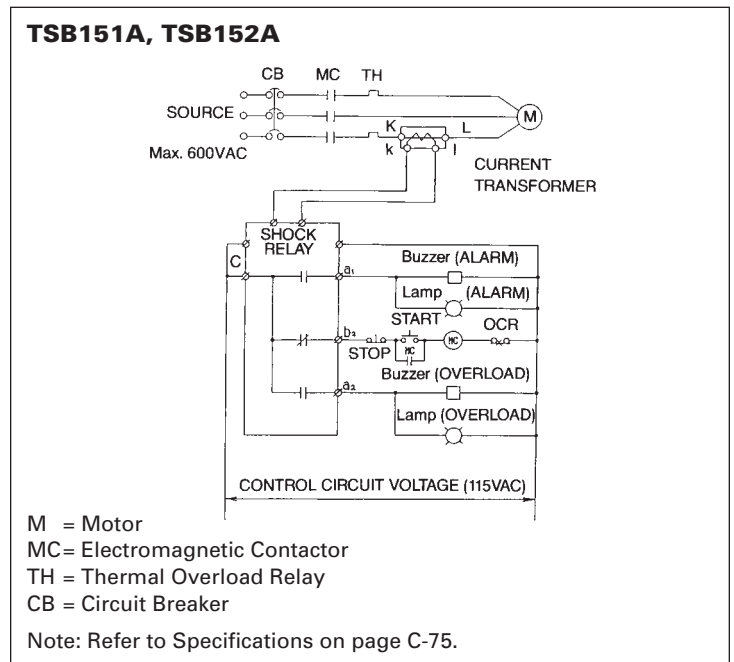
#### Start Time

When starting a motor, the starting current value is greater than the running current. This starting current value continues until the motor reaches normal speed. During this starting period, the time of which mainly depends on the type of load, the function of detecting the overload current is disabled. Adjustable range is from 0.2 to 20 seconds.

#### Diagram of Operation



#### Typical Connecting Diagram



Dimensions and current transformer selection are the same as for the TSB151 and TSB152. Refer to page C-68.



# TSB151M, TSB152M

## OVERLOAD PROTECTION PLUS IMPACT DETECTION

### Actual Load Meter

Actual current of the motor is indicated in percentages, which makes it easy to set **Load Current**, regardless of the value of the actual current load.

### Load Current

This presets the load current at the optimum setting in the range from 30% to 130% of the motor's current. When the actual load current exceeds the preset current for the preset **Shock Time**, the **Shock Relay** trips to break the motor circuit.

### Impact Set Point

This presets the point at which an Impact Shock Load is deemed dangerous. When the actual load current exceeds this level for more than 5/100 of a second, the **Shock Relay** trips to break the motor circuit.

### Power Indicator

Indicates that the power supply is on.

### Trip Indicator

Lamp comes on when **Shock Relay** trips.

### Test Button

This switch is used to verify **Shock Relay** operation.

### Reset Button (manual)

Reset can be done quickly whenever a cycle restart is desired.

### Shock Time

This presets the overload period. Range is variable from 0.2 to 3 seconds. Every momentary load over the preset current with a shorter period than the preset period is ignored. When the overload equals the preset period, the **Shock Relay** will trip immediately to break the power supply to the motor.



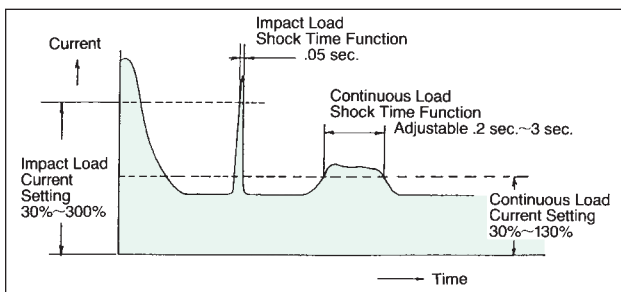
### Specifications

Load Current Setting	For Impact Load	30% ~ 300%
	For Continuous Load	30% ~ 130%
Shock Time Setting	For Impact Load	.05 sec. (fixed)
	For Continuous Load	.2 sec. ~ 3 sec.

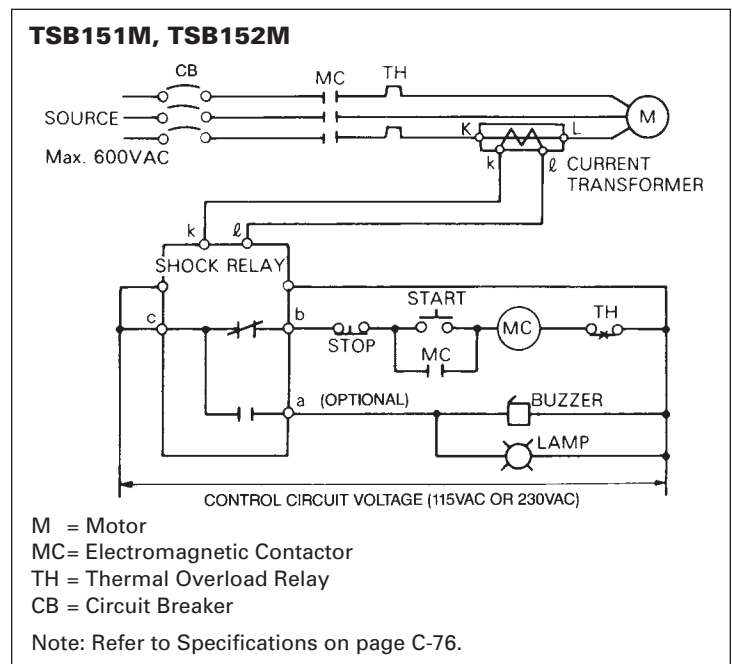
### Start Time

When starting a motor, the starting current value is greater than the running current. This starting current value continues until the motor reaches normal speed. During this starting period, the time of which mainly depends on the type of load, the function of detecting the overload current is disabled. Adjustable range is from 0.2 to 20 seconds.

### Diagram of Operation



### Typical Connecting Diagram



Dimensions and current transformer selection are the same as for the TSB151 and TSB152. Refer to page C-68.



## TSB151W, TSB152W

### OVERLOAD AND UNDERLOAD PROTECTION

#### Actual Load Meter

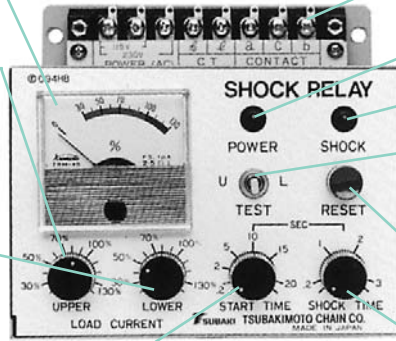
Actual current of the motor is indicated in percentages, which makes it easy to set **Load Current**, regardless of the value of the actual current load.

#### Overload Current

This presets the load current at the optimum setting in the range from 30% to 130% of the motor's current. When the actual load current exceeds the preset current for the preset **Shock Time**, the **Shock Relay** trips to break the motor circuit.

#### Underload Current

This presets the lower acceptable load current limit. When the actual load current falls below this level for the preset **Shock Time**, the **Shock Relay** trips to break the motor circuit.



#### Start Time

When starting a motor, the starting current value is greater than the running current. This starting current value continues until the motor reaches normal speed. During this starting period, the time of which mainly depends on the type of load, the function of detecting the overload current is disabled. Adjustable range is from 0.2 to 20 seconds.

#### Terminals for Connection

All terminals are located on the upper surface to provide easy access.

#### Power Indicator

Indicates that the power supply is on.

#### Trip Indicator

Lamp comes on when **Shock Relay** trips.

#### Test Button

This switch is used to verify **Shock Relay** operation.

TSB151W and 152W have a test switch for both upper and lower levels.

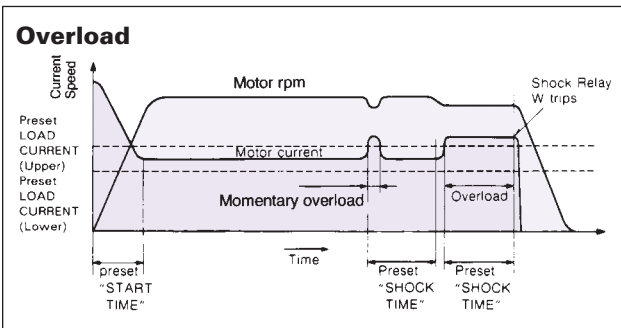
#### Reset Button (manual)

Reset can be done quickly whenever a restart is desired.

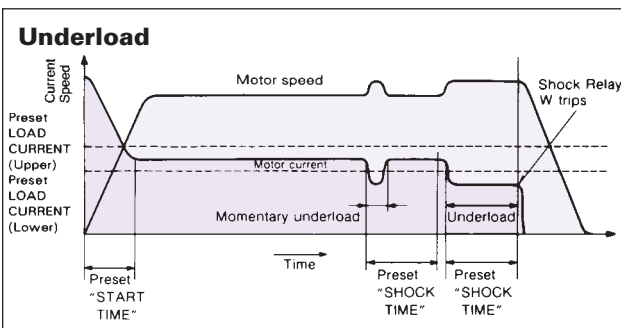
#### Shock Time

This presets the overload period. Range is variable from 0.2 to 3 seconds. Every momentary load over the preset current with a shorter period than the preset period is ignored. When the overload equals the preset period, the **Shock Relay** will trip immediately to break the power supply to the motor.

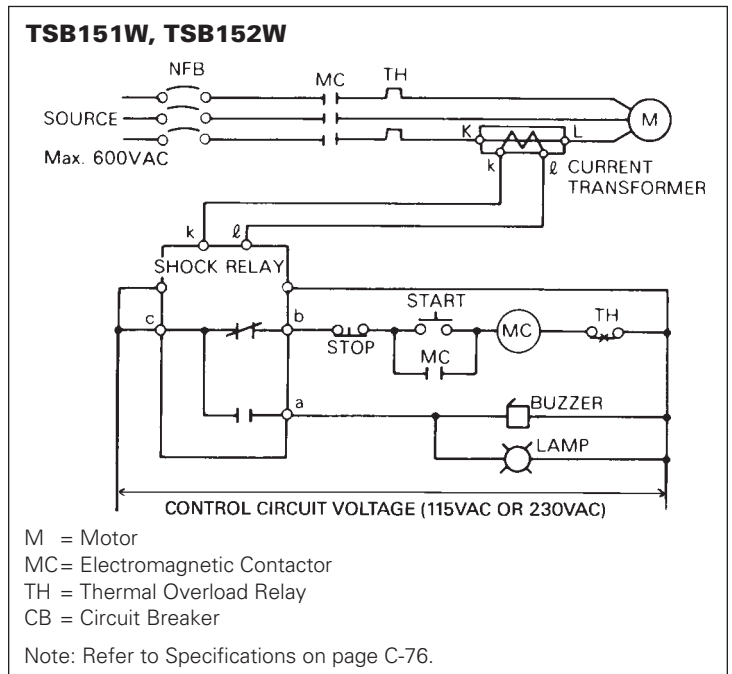
#### Diagram of Operation



#### Diagram of Operation



#### Standard Connecting Diagram



Dimensions and current transformer selection are the same as for the TSB151 and TSB152. Refer to page C-68.

# TSB50D, TSB152D

## OVERLOAD PROTECTION FOR D.C. MOTORS

### Actual Load Meter

Actual current of the motor is indicated in percentages, which makes it easy to set **Load Current**, regardless of the value of the actual current load.

### Load Current

This presets the load current at the optimum setting in the range from 30% to 130% of the motor's current. When the actual load current exceeds the preset current for the preset **Shock Time**, the **Shock Relay** trips to break the motor circuit.

### Start Time

When starting a motor, the starting current value is greater than the running current. This starting current value continues until the motor reaches normal speed. During this starting period, the time of which mainly depends on the type of load, the function of detecting the overload current is disabled. Adjustable range is from 0.2 to 20 seconds.

### Current Flow Indicator

This lamp lights when the load current flows into the **Shock Relay**. This is after the fixed 3-second Start Time.

### Shunt Selection

The D.C. Motor **Shock Relay** has basically the same functions and dimensions as the standard TSB152 and TSB50. Differences exist in that a shunt is required to monitor direct current of the D.C. motor in place of using a current transformer.



### Power Indicator

Indicates that the power supply is on.

### Trip Indicator

Lamp comes on when **Shock Relay** trips.

### Test Button

This switch is used to verify **Shock Relay** operation.

### Reset Button (manual)

Reset can be done quickly whenever a cycle restart is desired.

### Shock Time

This presets the overload period. Range is variable from 0.2 to 3 seconds. Every momentary load over the preset current with a shorter period than the preset period is ignored. When the overload equals the preset period, the **Shock Relay** will trip immediately to break the power supply to the motor.

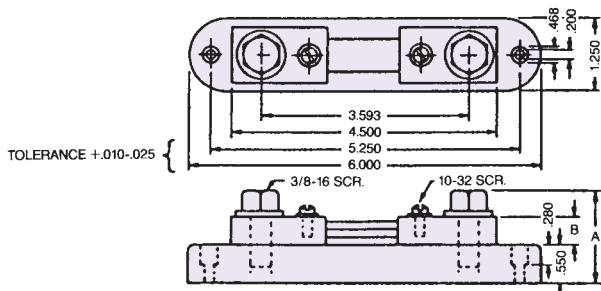
### Load Current Adjustment

Adjustable range is from 50% to 130%.

### Shock Time

Adjustable range is from 0.3 to 3 seconds.

Note: TSB50D automatically resets when the motor power is disconnected. If manual reset is required, it is possible by installing a separate reset button.

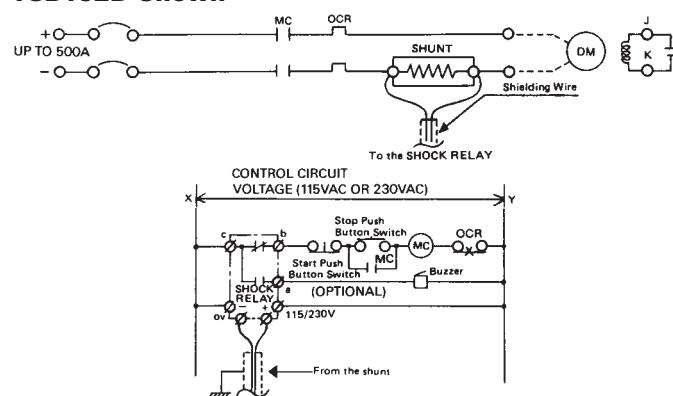


When ordering the TSB152D or TSB50D, select the correct shunt from the chart. The shunt selected should closely match the motor's armature amperage. U.S. Tsubaki will include the shunt you select with the Shock Relay.

Catalog Number	Amp	A	B
Shunt 1-50	1	1.38	.500
Shunt 2-50	2	1.38	.500
Shunt 5-50	5	1.38	.500
Shunt 10-50	10	1.38	.500
Shunt 20-50	20	1.38	.500
Shunt 50-50	50	1.38	.500
Shunt 100-50	100	1.38	.500
Shunt 150-50	150	1.38	.500
Shunt 200-50	200	1.38	.500
Shunt 250-50	250	1.63	.750
Shunt 300-50	300	1.63	.750
Shunt 400-50	400	1.63	.750
Shunt 500-50	500	1.63	.750

### Typical Connecting Diagram

#### TSB152D Shown



M = Motor  
 MC = Electromagnetic Contactor  
 TH = Thermal Overload Relay  
 CB = Circuit Breaker

Note: Refer to Specifications on page C-76.



# UNION CHAIN DIVISION - SHOCK RELAY

## Specifications\*

Features	TSB151	TSB152
Motor Amps	0.25 - 16 amps	17 - 400 amps
Load Current Range	30 - 130%	30 - 130%
Start Time Setting Range	0.2 - 20 seconds	0.2 - 20 seconds
Shock Time Setting Range	0.2 - 3 seconds	0.2 - 3 seconds
Input Voltage for Operation	115/230 Volt 50/60 Hz	115/230 Volt 50/60 Hz
Allowable Input Voltage Fluctuation	10%	10%
Input Current from C.T. Secondary	5mA	5A
Meter Fine Tuning Adjustment	Yes	Yes
Output Contact	Transfer Contact 250VAC 0.2A at inductive load*	Transfer Contact 250VAC 0.2A at inductive load*
Test Button	Yes	Yes
Withstanding Voltage	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure
Surface Color	Munsell 7.5BG4/1.5	Munsell 2.5Y/2
Weight	2.2 lbs.	2.6 lbs.
Power Consumption	1.2VA	1.2VA
Operating Temperature Range	14° F - 122° F	14° F - 122° F
Operating Humidity	85% R.H. or less	85% R.H. or less
Maximum Elevation	1,000m	1,000m
Atmosphere	Free of corrosive gas and dust	Free of corrosive gas and dust

Features	TSB50	TSB103
Motor Amps	0.4 - 16 amps	17 - 40 amps
Load Current Range	50 - 130%	30 - 130%
Start Time Setting Range	3 seconds (fixed)	0.2 - 20 seconds
Shock Time Setting Range	0.3 - 3 seconds	0.2 - 3 seconds
Input Voltage for Operation	115/230 Volt 50/60 Hz	115/230 Volt 50/60 Hz
Allowable Input Voltage Fluctuation	10%	10%
Input Current from C.T. Secondary	5mA	5A
Meter Fine Tuning Adjustment	No	No
Output Contact	Transfer Contact 250VAC 0.1A at inductive load*	Transfer Contact 250VAC 0.2A at inductive load*
Test Button	No	No
Withstanding Voltage	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure
Surface Color	Munsell N - 2.0	Munsell 2.5Y7/2
Weight	0.7 lbs.	1.7 lbs.
Power Consumption	0.5VA	1.2VA
Operating Temperature Range	14° F - 122° F	14° F - 122° F
Operating Humidity	85% R.H. or less	85% R.H. or less
Maximum Elevation	1,000m	1,000m
Atmosphere	Free of corrosive gas and dust	Free of corrosive gas and dust

Features	TSB151A	TSB152A
Motor Amps	0.25 - 16 amps	17 - 400 amps
Load Current Range	30 - 130%	30 - 130%
Alarm Load Current Range	30 - 130%	30 - 130%
Start Time Setting Range	0.2 - 20 seconds	0.2 - 20 seconds
Shock Time Setting Range	0.2 - 3 seconds	0.2 - 3 seconds
Input Voltage for Operation	115 Volt 50/60 Hz	115 Volt 50/60 Hz
Allowable Input Voltage Fluctuation	10%	10%
Input Current from C.T. Secondary	5mA	5A
Meter Fine Tuning Adjustment	Yes	Yes
Output Contact	Transfer Contact 250VAC 0.2A at inductive load*	Transfer Contact 250VAC 0.2A at inductive load*
Test Button	Yes	Yes
Withstanding Voltage	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure
Surface Color	Munsell 7.5BG4/1.5	Munsell 2.5Y7/2
Weight	2.2 lbs.	2.6 lbs.
Power Consumption	1.2VA	1.2VA
Operating Temperature Range	14° F - 122° F	14° F - 122° F
Operating Humidity	85% R.H. or less	85% R.H. or less
Maximum Elevation	1,000m	1,000m
Atmosphere	Free of corrosive gas and dust	Free of corrosive gas and dust

**\*Caution:** If the starter coil in the magnetic contactor (MC) of the monitored motor exceeds the Shock Relay output contact's capacity, an auxiliary relay must be installed to prevent damage to the Shock Relay. The instruction manual included with each Shock Relay details how to add this auxiliary relay if required.

**Specifications\***

Features	TSB151M	TSB152M
Motor Amps	0.25 - 16 amps	17 - 400 amps
Load Current Range	30 - 130%	30 - 130%
Impact Load Current Range	30 - 300%	30 - 300%
Start Time Setting Range	0.2 - 20 seconds	0.2 - 20 seconds
Shock Time Setting Range	0.2 - 3 seconds	0.2 - 3 seconds
Impact Shock Time Setting	0.05 seconds (fixed)	0.05 seconds (fixed)
Input Voltage for Operation	115/230 Volt 50/60 Hz	115/230 Volt 50/60 Hz
Allowable Input Voltage Fluctuation	10%	10%
Input Current from C.T. Secondary	5mA	5A
Meter Fine Tuning Adjustment	Yes	Yes
Output Contact	Transfer Contact 250VAC 0.2A at inductive load*	Transfer Contact 250VAC 0.2A at inductive load*
Test Button	Yes	Yes
Withstanding Voltage	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure
Surface Color	Munsell 7.5BG4/1.5	Munsell 2.5Y7/2
Weight	2.2 lbs.	2.6 lbs.
Power Consumption	1.2VA	1.2VA
Operating Temperature Range	14° F - 122° F	14° F - 122° F
Operating Humidity	85% R.H. or less	85% R.H. or less
Maximum Elevation	1,000m	1,000m
Atmosphere	Free of corrosive gas and dust	Free of corrosive gas and dust

Features	TSB151W	TSB152W
Motor Amps	0.25 - 16 amps	17 - 400 amps
Overload Current Range	30 - 130%	30 - 130%
Underload Current Range	30 - 130%	30 - 130%
Start Time Setting Range	0.2 - 20 seconds	0.2 - 20 seconds
Shock Time Setting Range	0.2 - 3 seconds	0.2 - 3 seconds
Input Voltage for Operation	115/230 Volt 50/60 Hz	115/230 Volt 50/60 Hz
Allowable Input Voltage Fluctuation	10%	10%
Input Current from C.T. Secondary	5mA	5A
Meter Fine Tuning Adjustment	Yes	Yes
Output Contact	Transfer Contact 250VAC 0.2A at inductive load*	Transfer Contact 250VAC 0.2A at inductive load*
Test Button	Yes	Yes
Withstanding Voltage	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure
Surface Color	Munsell 7.5BG4/1.5	Munsell 2.5Y7/2
Weight	2.2 lbs.	2.6 lbs.
Power Consumption	1.2VA	1.2VA
Operating Temperature Range	14° F - 122° F	14° F - 122° F
Operating Humidity	85% R.H. or less	85% R.H. or less
Maximum Elevation	1,000m	1,000m
Atmosphere	Free of corrosive gas and dust	Free of corrosive gas and dust

Features	TSB152D	TSB50D
Motor Amps	Up to 500A	Up to 500A
Load Current Range	30 - 130%	50 - 130%
Start Time Setting Range	0.20 - 20 seconds	3 seconds (fixed)
Shock Time Setting Range	0.2 - 3 seconds	0.3 - 3 seconds
Input Voltage for Operation	115/230 Volt 50/60 Hz	115/230 Volt 50/60 Hz
Allowable Input Voltage Fluctuation	10%	10%
Input Current from C.T. Secondary	50mV	50mV or 100mV
Meter Fine Tuning Adjustment	Yes	No
Output Contact	Transfer Contact 250VAC 0.2A at inductive load*	Transfer Contact 250VAC 0.1A at inductive load*
Test Button	Yes	No
Withstanding Voltage	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure	1,500VAC @ 60 Hz for 1 minute between terminal and enclosure
Surface Color	Munsell 10GY8/4	Munsell N-2.0
Weight	2.2 lbs.	0.7 lbs.
Power Consumption	1.2VA	0.6VA
Operating Temperature Range	14° F - 122° F	14° F - 122° F
Operating Humidity	85% R.H. or less	85% R.H. or less
Maximum Elevation	1,000m	1,000m
Atmosphere	Free of corrosive gas and dust	Free of corrosive gas and dust

**\*Caution:** If the starter coil in the magnetic contactor (MC) of the monitored motor exceeds the Shock Relay output contact's capacity, an auxiliary relay must be installed to prevent damage to the Shock Relay. The instruction manual included with each Shock Relay details how to add this auxiliary relay if required.

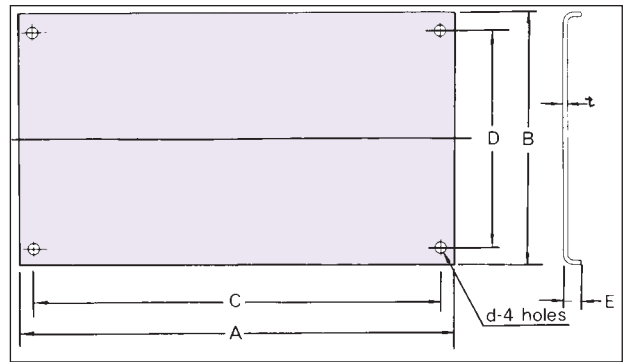
## Shock Relay Accessories

When purchasing Shock Relay, consider these convenient accessories, also available from U.S. Tsubaki.

### Fitting Plate

When mounting Shock Relay in your electrical panel box, save yourself time and money with our fitting plate. Pre-drilled to fit the appropriate model, our fitting plate eliminates the need for you to fabricate and drill your own holes. Refer to the chart below for dimensions.

Fitting Plate



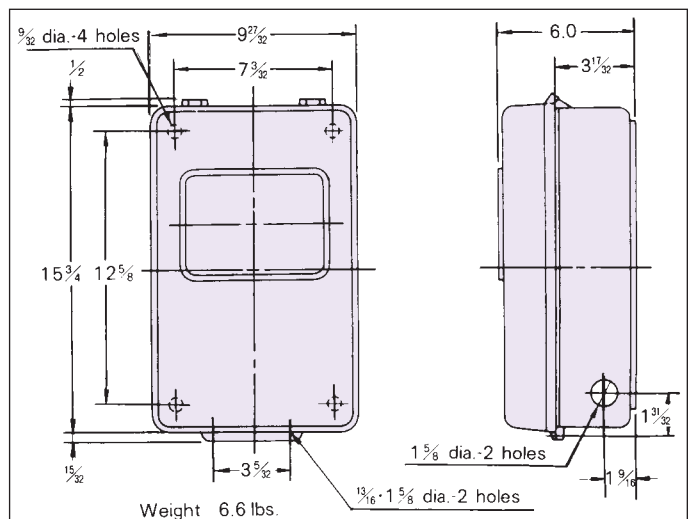
Type	A	B	C	D	E	t	d	Weight
TSB50	7 3/32	4 11/32	6 3/8	3 5/8	13/32	1/16	3/64	.8 lbs.
TSB151-152	9 7/16	5 17/32	8 29/32	4 13/16	13/32	5/64	7/32	1.4 lbs.

### Shock Relay Enclosure

Protect your Shock Relay from casual contact, dust, and intermittent exposure to splashes and spills of water and other chemicals. Includes a window for easy viewing of the meter and settings. Meets ISO IP44 standards.

Available for models TSB151 and TSB152 series units.

Shock Relay Enclosure



 **WARNING****USE CARE TO PREVENT INJURY  
COMPLY WITH THE FOLLOWING  
TO AVOID SERIOUS PERSONAL INJURY**

1. **Disconnect power.** Always lock out power switch before installing, removing, or servicing unit. Comply with Occupational Safety and Health Standards 1910.147 "The Control of Hazardous Energy (Lock Out/Tag Out)."
2. **Install in proper enclosure** in accordance with NEMA 250-1997 "Enclosures for Electrical Equipment (1000 Volts Maximum)" and NFPA 496 1993 edition "Purged and Pressurized Enclosures for Electrical Equipment, 1993 Edition." When revisions of these standards are published, the updated edition shall apply.
3. **Guards must be provided** on all power transmission and conveyor applications in accordance with provisions of ASME B 15.1-1996 "Safety Standards for Mechanical Power Transmission Apparatus" and ASME B 20.1-1996 "Safety Standard for Conveyors and Related Equipment," or other applicable standards. When revisions of these standards are published, the updated edition shall apply.





# U.S. Tsubaki AS Series

## ENTER THE "KEYLESS" SOCIETY

Our POWER-LOCK® solves your problems.

Eliminate backlash damage to keyways from heavy loads...the U.S. Tsubaki POWER-LOCK fits tightly around the shaft/hub and is not affected by load reversals.

End your high machining expenses for long shaft keyways, splined shafts, threads, grooves and steps...the U.S. Tsubaki POWER-LOCK offers exacting, slip-free location.

Erase the headaches of shrink and press fits. The U.S. Tsubaki POWER-LOCK simplifies installation and removal.

This easy-to-install unit slides into position and offers a keyless shaft-hub lock that will simultaneously handle both high torque and thrust while increasing your shaft strength.

The POWER-LOCK is easy to assemble...you only need one tool. It is ideal for locking in large or small sprockets, gears, pulleys, timing cams and rollers. Best of all, the POWER-LOCK is in stock for immediate shipment.

## Features & Applications

### ■ High Durability Against Reversing or Impacting Loads

The POWER-LOCK connection is not affected by torsional load reversal or impact, which damages the key and keyway connection. U.S. Tsubaki POWER-LOCK fits tightly around the shaft/hub and is free of backlash.

### ■ Easy and Precise Positioning

The POWER-LOCK offers 360-degree angular adjustment and is excellent for indexing tables, cam mechanisms, gear drives and double-strand conveyor sprockets.

### ■ Thrust Capability

The U.S. Tsubaki POWER-LOCK can hold axial forces too. Typical applications with these forces include indexing tables and bevel gears.

### ■ Easy Assembly and Disassembly

The POWER-LOCK can be assembled and disassembled frequently, so maintenance or replacement of worn parts is simple and easy as compared to other methods (key and keyway, spline, shrink or press fits, and welding).

### ■ Increased Shaft Strength

By using the POWER-LOCK, no metal needs to be removed from the shaft (such as the cutting of a keyway). The strength of the shaft can be kept at its original diameter. This savings can be especially noted on hollow-shaft applications.

### ■ Eliminates Costly Machining

There is no need for time-consuming machining of keyways. The POWER-LOCK® offers substantial savings on long, heavy shafts.



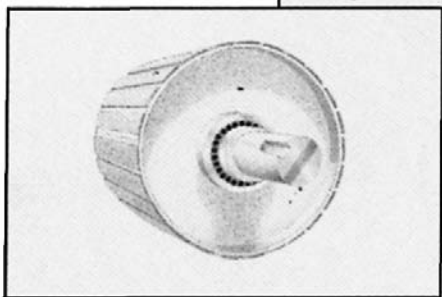
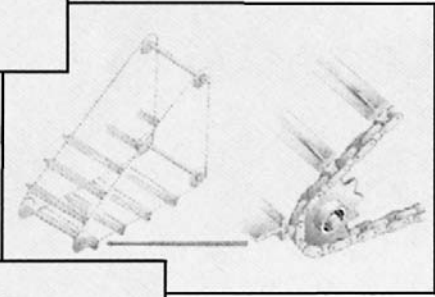
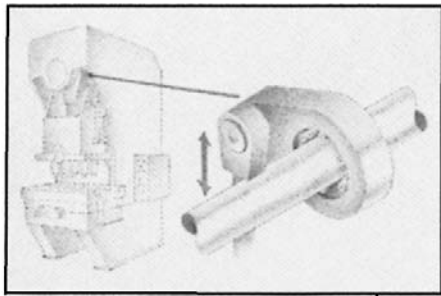
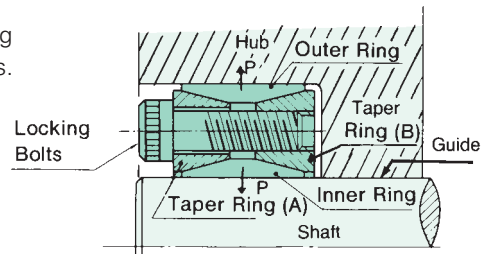
# POWER-LOCK®

## Construction



Locking Bolts    Taper Ring (A)    Outer Ring    Inner Ring    Taper Ring (B)

The POWER-LOCK® is composed of five parts: taper ring (A), taper ring (B), outer ring, inner ring, and locking bolts. Locking is achieved by tightening the bolts.



### Connecting Principle

Taper rings (A) and (B) fit perfectly with the tapered inner and outer rings. By tightening the locking bolts, taper rings (A) and (B) generate clamping pressure ( $P'$  and  $P$ ) against the outer and inner rings to produce the frictional force to join the shaft and hub. A slit is provided to the circumference of the outer and inner rings to secure the clamping force.

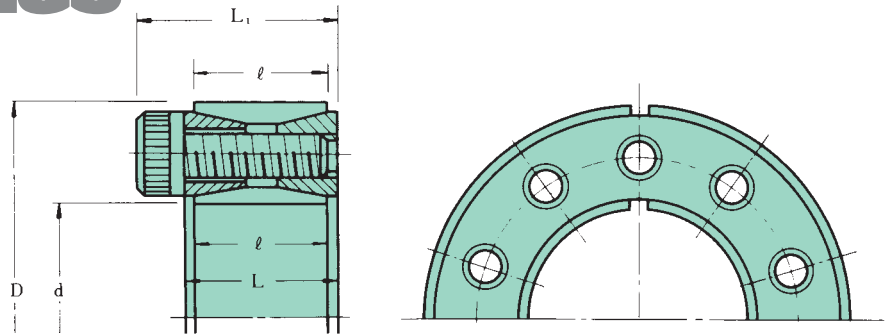
**U.S. Tsubaki POWER-LOCK® Offers a Whole New Approach to Replacing Keyways**



## AS Inch Series

### Model Number

PL 2  
 Shaft Diameter (inch)  
 POWER-LOCK® AS Series



Model Number	Shaft O.D.		Hub Counter I.D.		Dimensions (in.)			Transmissible Torque (ft./lbs.)	Transmissible Thrust (lbs.)	Contact Pressure (psi)		Locking Bolts			Approx. Weight (lbs.)		
	d	t <sub>1</sub>	D	t <sub>2</sub>	L	l	L <sub>1</sub>			Mt	Pax	P	P'	Qty.		Size	Tightening Torque (ft./lbs.)
PL 3/8	.750	-0.0013" +0	1.850	+0.0013" -0	.787	.709	1.024	188	5,940	30,290	12,370	6	M6 X 18	12.3	.462		
PL 1/2	.875		1.850		.787	.709	1.024	217	5,940	26,020	12,370	6	M6 X 18	12.3	.396		
PL 5/8	1.000		1.969		.787	.709	1.024	318	7,480	29,010	14,650	8	M6 X 18	12.3	.484		
PL 1 1/8	1.125		2.165		.787	.709	1.024	354	7,480	25,450	13,370	8	M6 X 18	12.3	.550		
PL 1 3/16	1.1875	-0.0015" +0	2.159	+0.0015" -0	.819	.709	1.055	376	7,480	24,320	13,370	8	M6 X 18	12.3	.528		
PL 1 1/4	1.250		2.362		.787	.709	1.024	499	9,460	29,010	15,360	10	M6 X 18	12.3	.660		
PL 1 1/2	1.375		2.365		.773	.709	1.009	550	9,460	26,310	15,360	10	M6 X 18	12.3	.594		
PL 1 5/8	1.4375		2.559		.787	.709	1.024	637	10,560	27,730	15,500	11	M6 X 18	12.3	.748		
PL 1 3/4	1.500		2.559		.787	.709	1.024	658	10,560	26,590	15,500	11	M6 X 18	12.3	.704		
PL 1 7/8	1.625		2.953		.945	.827	1.260	1,085	15,840	31,570	17,490	9	M8 X 22	29.7	1.232		
PL 1 15/16	1.6875		2.953		.945	.827	1.260	1,122	15,840	30,480	17,490	9	M8 X 22	29.7	1.236		
PL 1 7/8	1.75		2.953		.945	.827	1.260	1,164	15,840	29,940	17,490	9	M8 X 22	29.7	1.227		
PL 1 15/16	1.875		3.150		.945	.827	1.260	1,244	15,840	27,440	16,350	9	M8 X 22	29.7	1.298		
PL 1 15/16	1.9375		3.150		.945	.827	1.260	1,287	15,840	26,590	16,350	9	M8 X 22	29.7	1.232		
PL 2	2.000	-0.0018" +0	3.346	+0.0018" -0	.945	.827	1.260	1,627	19,360	31,570	18,910	11	M8 X 22	29.7	1.474		
PL 2 1/8	2.125		3.346		.945	.827	1.260	1,729	19,360	29,360	18,910	11	M8 X 22	29.7	1.364		
PL 2 1/4	2.1875		3.543		.945	.827	1.260	1,779	19,360	28,870	17,780	11	M8 X 22	29.7	1.584		
PL 2 3/8	2.250		3.543		.945	.827	1.260	1,827	19,360	28,070	17,780	11	M8 X 22	29.7	1.496		
PL 2 1/2	2.375		3.531		1.008	.827	1.323	1,931	19,360	26,590	17,780	11	M8 X 22	29.7	1.408		
PL 2 5/8	2.4375		3.740		.945	.827	1.260	2,170	21,120	28,010	18,340	12	M8 X 22	29.7	1.650		
PL 2 3/4	2.500		3.740		.945	.827	1.260	2,228	21,120	27,300	18,340	12	M8 X 22	29.7	1.584		
PL 2 7/8	2.5625		3.737		.962	.827	1.277	2,278	21,120	26,730	18,340	12	M8 X 22	29.7	1.518		
PL 2 15/16	2.625		4.337		1.073	.984	1.467	3,400	31,020	31,940	19,340	11	M10 X 25	60.1	2.908		
PL 2 15/16	2.6875		4.337		1.073	.984	1.467	3,480	31,020	31,200	19,340	11	M10 X 25	60.1	2.832		
PL 2 3/4	2.750		4.337		1.073	.984	1.467	3,537	31,020	30,430	19,340	11	M10 X 25	60.1	2.662		
PL 2 7/8	2.875		4.528		1.102	.984	1.496	3,732	31,020	29,150	18,490	11	M10 X 25	60.1	2.926		
PL 2 15/16	2.9375		4.528		1.102	.984	1.496	3,812	31,020	28,580	18,490	11	M10 X 25	60.1	2.816		
PL 3	3.000		4.724		1.102	.984	1.496	3,855	31,020	28,010	17,780	11	M10 X 25	60.1	3.190		
PL 3 3/8	3.375		-0.0021" +0		4.921	+0.0021" -0	1.102	.984	1.496	4,745	33,660	27,160	18,630	12	M10 X 25	60.1	3.058
PL 3 1/2	3.4375				5.118		1.102	.984	1.496	4,846	33,660	26,730	17,920	12	M10 X 25	60.1	3.432
PL 3 3/4	3.500	5.118		1.102	.984		1.496	4,933	33,660	26,160	17,920	12	M10 X 25	60.1	3.322		
PL 3 7/8	3.575	5.305		1.151	.984		1.544	5,729	36,520	26,590	18,770	13	M10 X 25	60.1	3.388		
PL 3 15/16	3.9375	5.708		1.302	1.142		1.774	7,378	45,100	26,730	18,490	11	M12 X 30	105	4.598		
PL 4	4.000	5.843		1.299	1.142		1.772	7,522	45,100	26,310	18,060	11	M12 X 30	105	4.796		
PL 4 1/8	4.4375	6.496		1.299	1.142		1.772	9,114	49,280	25,880	17,780	12	M12 X 30	105	6.160		
PL 4 1/4	4.500	6.496		1.299	1.142		1.772	9,258	49,280	25,600	17,780	12	M12 X 30	105	5.984		
PL 4 15/16	4.9375	-0.0025" +0		7.087	+0.0025" -0		1.496	1.339	1.969	12,730	61,600	24,890	17,350	15	M12 X 35	105	8.118
PL 5	5.000			7.087			1.496	1.339	1.969	12,870	61,600	24,600	17,350	15	M12 X 35	105	7.876
PL 5 1/8	5.500		7.492	1.438		1.339	1.910	15,120	65,560	23,750	17,490	16	M12 X 35	106	7.898		
PL 6	6.000		8.268	1.496		1.399	1.969	19,530	77,880	25,880	18,770	19	M12 X 35	105	10.230		
PL 6 1/4	6.500		8.858	1.732		1.575	2.283	24,450	90,200	23,460	17,210	16	M14 X 40	167	13.200		
PL 6 1/2	6.500		8.858	1.732		1.575	2.283	27,990	95,700	23,180	17,490	17	M14 X 40	167	13.240		
PL 7	7.000		9.252	1.732		1.575	2.283	27,990	95,700	23,180	17,490	17	M14 X 40	167	13.240		
PL 7 1/8	7.500	-0.0028" +0	9.823	+0.0028" -0	2.144	1.890	2.695	35,220	112,640	21,330	16,210	20	M14 X 45	167	17.360		
PL 7 1/2	7.875		10.235		2.052	1.890	2.603	38,910	118,360	21,190	16,350	21	M14 X 45	167	18.170		
PL 8	8.000		10.504		2.047	1.890	2.598	39,560	118,360	20,900	15,930	21	M14 X 45	167	19.360		
PL 8 1/4	8.500		11.220		2.205	2.008	2.835	50,050	141,020	22,040	16,640	18	M16 X 50	257	24.860		
PL 9	9.000		11.669		2.205	2.008	2.835	53,020	141,020	20,760	15,930	18	M16 X 50	257	25.620		
PL 9 1/4	9.500		12.154		2.205	2.008	2.835	62,200	156,640	21,900	17,210	20	M16 X 50	257	26.620		
PL 10	10.000		12.795		2.205	2.008	2.835	75,220	180,180	23,890	18,770	23	M16 X 50	257	29.920		
PL 10 1/2	10.500		-0.0032" +0		13.319	+0.0032" -0	2.205	2.008	2.835	78,840	180,180	22,750	18,060	23	M16 X 50	257	30.800
PL 11	11.000				14.000		2.482	2.402	3.191	95,480	207,240	20,900	16,500	22	M18 X 60	351	41.140
PL 11 15/16	11.8125				14.762		2.606	2.402	3.314	111,400	224,400	21,330	17,060	24	M18 X 60	351	43.780

Note: If your application requires slightly larger tolerances than noted, refer to page C-88.

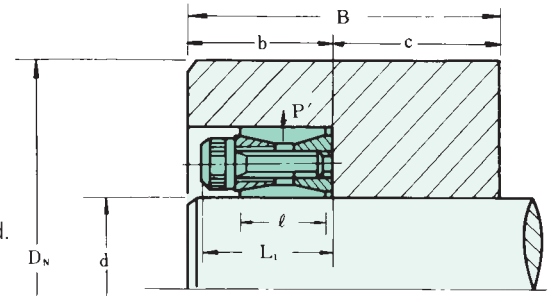
Suggested hub diameter for a single POWER-LOCK®. This table shows the minimum hub diameter  $D_N$ , which can tolerate surface pressure  $P'$  based on:

$$b \geq L_1$$

$$B \geq 21$$

Note: The value,  $d/2$  or more, is to be suggested as the guide length  $c$ .

**<Example>** Hub Material 1,030. Yield Point = 50,000 psi } Min.  $D_N$  = 4.220" required.  
PL2 to be used.



### Minimum Hub Diameter ( $D_N$ in inches)

Model Number	Contact Pressure in the Hub Bore (lbs./inch <sup>2</sup> )	Yield Point of Various Hub Material Y.P. (psi) Y.P. = $\sigma_{0.2}$					
		32,000	35,000	40,000	45,000	50,000	56,000
		Class Number 40 Grade Number 60-30	1015 Class Number 50 Grade Number 65-35	1018, 1020, 1117 Class Number 60 Grade Number 40010	1118 Grade Number 45006	1030 Grade Number 50005 Grade Number 80-65	1040, 1045, 1137, 1141, 1144 Grade Number 60004
	$P'$						
PL 3/8	12,370	2.345	2.295	2.235	2.185	2.150	2.115
PL 7/8	12,370	2.345	2.295	2.235	2.185	2.150	2.115
PL1	14,650	2.615	2.550	2.465	2.400	2.355	2.310
PL1 1/8	13,370	2.790	2.730	2.650	2.590	2.540	2.495
PL1 1/4	13,370	2.790	2.730	2.650	2.590	2.540	2.495
PL1 3/8	15,360	3.180	3.095	2.990	2.910	2.850	2.790
PL1 1/2	15,360	3.185	3.100	2.995	2.915	2.850	2.790
PL1 5/8	15,500	3.455	3.360	3.245	3.160	3.090	3.030
PL1 3/4	15,500	3.455	3.360	3.245	3.160	3.090	3.030
PL1 7/8	17,490	4.155	4.025	3.865	3.745	3.655	3.570
PL1 1 1/8	17,490	4.155	4.025	3.865	3.745	3.655	3.570
PL1 1 1/4	16,305	4.325	4.205	4.050	3.935	3.845	3.760
PL1 1 1/2	16,305	4.325	4.205	4.050	3.935	3.845	3.760
PL1 1 3/4	18,910	4.850	4.685	4.480	4.330	4.220	4.110
PL2 1/8	18,910	4.850	4.685	4.480	4.330	4.220	4.110
PL2 1/4	17,780	5.015	4.855	4.660	4.515	4.405	4.300
PL2 3/8	17,780	5.015	4.855	4.660	4.515	4.405	4.300
PL2 1/2	17,780	4.995	4.840	4.645	4.500	4.390	4.285
PL2 5/8	18,340	5.355	5.180	4.965	4.805	4.680	4.565
PL2 3/4	18,340	5.355	5.180	4.965	4.805	4.680	4.565
PL2 7/8	18,340	5.355	5.175	4.960	4.800	4.675	4.565
PL2 1 1/8	19,340	6.345	6.125	5.850	5.650	5.495	5.355
PL2 1 1/4	19,340	6.345	6.125	5.850	5.650	5.495	5.355
PL2 1 1/2	19,340	6.345	6.125	5.850	5.650	5.495	5.355
PL2 1 3/4	18,490	6.505	6.290	6.020	5.825	5.675	5.535
PL2 1 7/8	18,490	6.505	6.290	6.020	5.825	5.675	5.535
PL3	17,780	6.685	6.475	6.210	6.020	5.870	5.730
PL3 1/8	18,630	7.090	6.855	6.560	6.345	6.180	6.025
PL3 1/4	17,920	7.260	7.035	6.745	6.530	6.370	6.220
PL3 3/8	17,920	7.260	7.035	6.745	6.530	6.370	6.220
PL3 1/2	18,770	7.665	7.410	7.090	6.855	6.675	6.505
PL3 5/8	18,490	8.200	7.930	7.590	7.345	7.155	6.980
PL4	18,060	8.315	8.050	7.715	7.470	7.285	7.110
PL4 1/8	17,780	9.190	8.900	8.540	8.275	8.070	7.880
PL4 1/4	17,780	9.190	8.900	8.540	8.275	8.070	7.880
PL4 3/8	17,350	9.935	9.635	9.255	8.970	8.755	8.555
PL5	17,350	9.935	9.635	9.255	8.970	8.755	8.555
PL5 1/2	17,490	10.535	10.210	9.805	9.505	9.275	9.060
PL6	18,770	11.945	11.545	11.045	10.680	10.400	10.140
PL6 1/8	17,210	12.380	12.010	11.540	11.190	10.925	10.675
PL7	17,490	13.010	12.610	12.105	11.735	11.450	11.185
PL7 1/2	16,210	13.445	13.070	12.590	12.240	11.965	11.710
PL7 3/4	16,350	14.050	13.655	13.150	12.775	12.490	12.220
PL8	15,930	14.295	13.905	13.405	13.035	12.750	12.480
PL8 1/2	16,640	14.495	15.050	14.480	14.060	13.740	13.440
PL9	15,930	15.880	15.445	14.890	14.480	14.165	13.865
PL9 1/2	17,210	16.985	16.475	15.830	15.355	14.990	14.650
PL10	18,770	18.485	17.865	17.090	16.525	16.095	15.690
PL10 1/2	18,060	18.950	18.345	17.585	17.030	16.600	16.205
PL11	16,500	12.280	18.725	18.030	17.510	17.115	16.740
PL11 1 3/8	17,060	20.565	19.955	19.180	18.610	18.170	17.760

Note: Minimum Hub Diameter ( $D_N$ ) calculated based upon the Formula (3) at ( $K_3$ ) = 0.6. Refer to page C-89.

## AS Inch Series

### Minimum Hub Diameter (D<sub>N</sub>) When Using Multiple POWER-LOCK®

Suggested hub outside diameter for two or more POWER-LOCK units. This table shows minimum hub diameters D<sub>N</sub>, which can tolerate surface pressure P'.

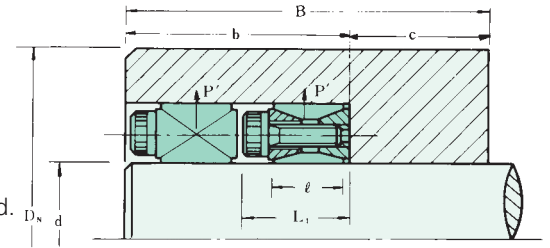
$$b \geq n \cdot L_1$$

$$B \geq n \cdot L_1 + L_1$$

**n: number of POWER-LOCK**  
(2 ≤ n ≤ 4)

Note: The value, d/2 or more, is to be suggested as the guide length c.

**<Example>** Hub Material 1,030. Yield Point = 50,000 psi } Min. D<sub>N</sub> = 4.575" required.  
PL2 to be used.



### Minimum Hub Diameter (D<sub>N</sub> in inches)

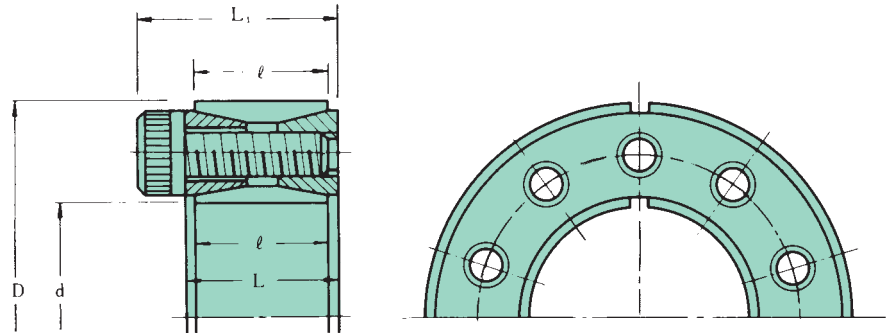
Model Number	Contact Pressure in the Hub Bore (lbs./inch <sup>2</sup> )	Yield Point of Various Hub Material Y.P. (psi) Y.P. = σ <sub>0.2</sub>					
		32,000	35,000	40,000	45,000	50,000	56,000
		Class Number 40 Grade Number 60-30	1015 Class Number 50 Grade Number 65-35	1018, 1020, 1117 Class Number 60 Grade Number 40010	1118 Grade Number 45006	1030 Grade Number 50005 Grade Number 80-65	1040, 1045, 1137, 1141, 1144 Grade Number 60004
	P'						
PL 3/4	12,370	2.550	2.475	2.385	2.315	2.265	2.215
PL 3/8	12,370	2.550	2.475	2.385	2.315	2.265	2.215
PL1	14,650	2.895	2.790	2.665	2.575	2.505	2.435
PL1 1/2	13,370	3.060	2.965	2.840	2.755	2.685	2.620
PL1 1/4	13,370	3.060	2.965	2.840	2.755	2.685	2.620
PL1 3/8	15,360	3.545	3.410	3.245	3.130	3.040	2.955
PL1 1/2	15,360	3.545	3.410	3.250	3.130	3.040	2.960
PL1 3/4	15,500	3.855	3.710	3.530	3.400	3.300	3.210
PL1 1/4	15,500	3.855	3.710	3.530	3.400	3.300	3.210
PL1 1/2	17,490	4.720	4.510	4.255	4.075	3.940	3.815
PL1 3/8	17,490	4.720	4.510	4.255	4.075	3.940	3.815
PL1 1/4	16,305	4.865	4.670	4.425	4.250	4.120	4.000
PL1 3/8	16,305	4.865	4.670	4.425	4.250	4.120	4.000
PL2	18,910	5.595	5.315	4.985	4.750	4.575	4.415
PL2 1/2	18,910	5.595	5.315	4.985	4.750	4.575	4.415
PL2 3/8	17,780	5.715	5.455	5.140	4.915	4.750	4.595
PL2 1/4	17,780	5.715	5.455	5.140	4.915	4.750	4.595
PL2 3/4	17,780	5.695	5.440	5.125	4.900	4.735	4.580
PL2 1/2	18,340	6.140	5.850	5.495	5.250	5.065	4.895
PL2 3/8	18,340	6.140	5.850	5.495	5.250	5.065	4.895
PL2 1/4	19,340	7.355	6.975	6.525	6.210	5.975	5.760
PL2 3/8	19,340	7.355	6.975	6.525	6.210	5.975	5.760
PL2 1/2	19,340	7.355	6.975	6.525	6.210	5.975	5.760
PL2 3/4	18,490	7.470	7.110	6.680	6.375	6.145	5.935
PL2 1/4	18,490	7.470	7.110	6.680	6.375	6.145	5.935
PL3	17,780	7.620	7.275	6.855	6.555	6.330	6.125
PL3 1/2	18,630	8.155	7.755	7.280	6.945	6.695	6.465
PL3 3/8	17,920	8.290	7.910	7.450	7.120	6.875	6.650
PL3 1/4	17,920	8.290	7.910	7.450	7.120	6.875	6.650
PL3 3/4	18,770	8.835	8.400	7.880	7.510	7.240	6.990
PL3 1/2	18,490	9.415	8.960	8.420	8.035	7.745	7.485
PL4	18,060	9.510	9.065	8.530	8.155	7.870	7.610
PL4 1/2	17,780	10.480	10.000	9.425	9.015	8.705	8.425
PL4 3/8	17,780	10.480	10.000	9.425	9.015	8.705	8.425
PL4 1/4	17,350	11.280	10.785	10.180	9.750	9.425	9.130
PL5	17,350	11.280	10.785	10.180	9.750	9.425	9.130
PL5 1/2	17,490	11.975	11.445	10.795	10.335	9.990	9.675
PL6	18,770	13.760	13.085	12.270	11.700	11.275	10.885
PL6 1/2	17,210	14.035	13.425	12.685	12.155	11.755	11.390
PL7	17,490	14.790	14.130	13.335	12.765	12.335	11.945
PL7 1/2	16,210	15.100	14.495	13.755	13.215	12.810	12.440
PL7 3/8	16,350	15.800	15.160	14.375	13.810	13.380	12.985
PL8	15,930	16.015	15.385	14.615	14.055	13.635	13.245
PL8 1/2	16,640	17.475	16.750	15.860	15.225	14.740	14.300
PL9	15,930	17.790	17.095	16.235	15.615	15.145	14.715
PL9 1/2	17,210	19.260	18.420	17.405	16.675	16.125	15.625
PL10	18,770	21.290	20.245	18.990	18.105	17.445	16.845
PL10 1/2	18,060	21.670	20.660	19.445	18.580	17.935	17.345
PL11	16,500	21.710	20.820	19.725	18.940	18.350	17.805
PL11 3/8	17,060	23.285	22.280	21.065	20.195	19.535	18.935

Note: Minimum Hub Diameter (D<sub>N</sub>) calculated based upon the Formula (3) at (K<sub>3</sub>) = 0.8. Refer to page C-89.

# STAINLESS STEEL

## Model Number

PL 2 - SS  
 |  
 | Stainless Series  
 |  
 | Shaft Diameter (inch)  
 |  
 | POWER-LOCK® AS Series



## Features

1. All dimensions are the same as POWER-LOCK® AS Inch Series.
2. All component parts are stainless steel, inner and outer ring are SUS304, the rest are SUS630.
3. POWER-LOCK AS Metric Stainless Series is also available.

Model Number	Shaft O.D.		Hub Counter I.D.		Dimensions (in.)			Transmissible Torque (ft./lbs.)	Transmissible Thrust (lbs.)	Contact Pressure (psi)		Locking Bolts			Approx. Weight (lbs.)
	d	t <sub>1</sub>	D	t <sub>2</sub>	L	l	L <sub>1</sub>			Mt	Pax	P	P'	Qty.	
PL 1/8 SS	.750		1.850		.787	.709	1.024	152	4,870	25,400	10,300	6	M6 X 18	10.1	.462
PL 1/8 SS	.875	-0.0013"	1.850	+0.0013"	.787	.709	1.024	178	4,870	21,770	10,300	6	M6 X 18	10.1	.396
PL1 SS	1.000	+0	1.969	-0	.787	.709	1.024	271	6,490	25,400	12,900	8	M6 X 18	10.1	.484
PL1 1/8 SS	1.125		2.165		.787	.709	1.024	305	6,490	22,580	11,730	8	M6 X 18	10.1	.550
PL1 3/16 SS	1.1875		2.159		.819	.709	1.055	322	6,490	21,390	11,760	8	M6 X 18	10.1	.528
PL1 1/4 SS	1.250		2.362		.787	.709	1.024	423	8,120	25,400	13,440	10	M6 X 18	10.1	.660
PL1 5/16 SS	1.375		2.365		.773	.709	1.009	465	8,120	23,090	13,420	10	M6 X 18	10.1	.594
PL1 3/8 SS	1.4375		2.559		.787	.709	1.024	535	8,930	24,300	13,650	11	M6 X 18	10.1	.748
PL1 1/2 SS	1.500		2.559		.787	.709	1.024	559	8,930	23,280	13,650	11	M6 X 18	10.1	.704
PL1 5/8 SS	1.625	-0.0015"	2.953	+0.0015"	.945	.827	1.260	901	13,300	27,440	15,100	9	M8 X 22	24.6	1.232
PL1 3/4 SS	1.750	+0	2.953	-0	.945	.827	1.260	970	13,300	25,480	15,100	9	M8 X 22	24.6	1.227
PL1 7/8 SS	1.875		3.150		.945	.827	1.260	1,040	13,300	23,780	14,150	9	M8 X 22	24.6	1.298
PL1 1 1/8 SS	1.9375		3.150		.945	.827	1.260	1,074	13,300	23,010	14,150	9	M8 X 22	24.6	1.232
PL2 SS	2.000		3.346		.945	.827	1.260	1,355	16,260	27,250	16,290	11	M8 X 22	24.6	1.474
PL2 1/8 SS	2.125		3.346		.945	.827	1.260	1,440	16,260	25,650	16,290	11	M8 X 22	24.6	1.364
PL2 1/4 SS	2.1875		3.543		.945	.827	1.260	1,482	16,260	24,910	15,380	11	M8 X 22	24.6	1.584
PL2 3/8 SS	2.250		3.543		.945	.827	1.260	1,525	16,260	24,220	15,380	11	M8 X 22	24.6	1.496
PL2 1/2 SS	2.375		3.531		1.008	.827	1.323	1,610	16,260	22,950	15,430	11	M8 X 22	24.6	1.408
PL2 5/8 SS	2.4375	-0.0018"	3.740	+0.0018"	.945	.827	1.260	1,802	17,740	24,390	15,890	12	M8 X 22	24.6	1.650
PL2 3/4 SS	2.500	+0	3.740	-0	.945	.827	1.260	1,848	17,740	23,780	15,890	12	M8 X 22	24.6	1.584
PL2 7/8 SS	2.5625		3.737		.962	.827	1.277	1,894	17,740	23,200	15,910	12	M8 X 22	24.6	1.518
PL2 1 SS	2.750		4.337		1.073	.984	1.467	3,011	26,270	26,910	17,060	11	M10 X 25	50.0	2.662
PL2 1 1/8 SS	2.875		4.528		1.102	.984	1.496	3,147	26,270	25,740	16,340	11	M10 X 25	50.0	2.926
PL2 1 1/4 SS	2.9375		4.528		1.102	.984	1.496	3,216	26,270	25,190	16,340	11	M10 X 25	50.0	2.816
PL2 1 1/2 SS	3.000		4.724		1.102	.984	1.496	3,284	26,270	24,660	15,660	11	M10 X 25	50.0	3.190
PL3 3/8 SS	3.375		4.921		1.102	.984	1.496	4,031	28,660	23,920	16,400	12	M10 X 25	50.0	3.058
PL3 1/2 SS	3.4375		5.118		1.102	.984	1.496	4,105	28,660	23,480	15,770	12	M10 X 25	50.0	3.432
PL3 1/4 SS	3.500	-0.0021"	5.118	+0.0021"	1.102	.984	1.496	4,180	28,660	23,060	15,770	12	M10 X 25	50.0	3.322
PL3 3/4 SS	3.750	+0	5.350	-0	1.151	.984	1.544	4,852	31,050	23,320	16,480	13	M10 X 25	50.0	3.388
PL3 1 1/8 SS	3.9375		5.708		1.302	1.142	1.774	6,275	38,240	23,570	16,260	11	M12 X 30	86.9	4.598
PL4 SS	4.000		5.843		1.299	1.142	1.772	6,375	38,240	23,200	15,880	11	M12 X 30	86.9	4.796

Note: Minimum Hub Diameter. (D<sub>N</sub>) calculated based upon the Formula (3). Refer to page C-89.  
 If your application requires slightly larger tolerances than noted, refer to page C-88.

## AS Metric Series

### Model Number

PL 020 x 047

Outside Diameter (mm)

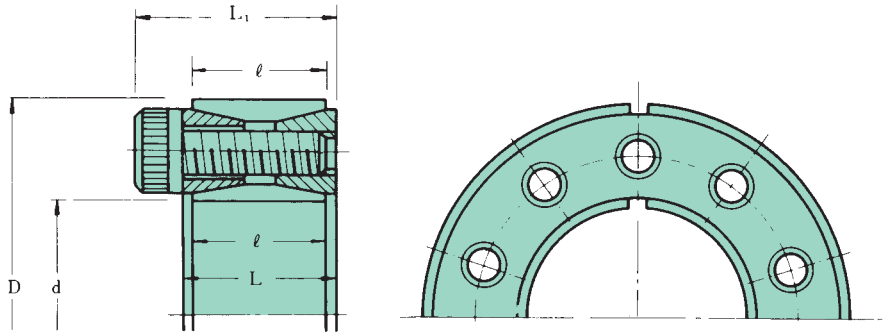
Shaft Diameter (mm)

POWER-LOCK® AS Series

### <Conversion>

1 ft./lbs. = 0.1382 kgf/m = 1.3550 N•m

1 psi = 0.0007 kgf/mm<sup>2</sup> = 0.0069 MPa



Note: AS Metric available in stainless steel in standard sizes up to PL065X095.  
Larger sizes available as special orders.

Model Number Inside Dia. x Outside Dia.	Tolerance		Dimensions (in.)			Transmissible Torque (ft./lbs.)	Transmissible Thrust (lbs.)	Contact Pressure (psi)		Locking Bolts			Approx. Weight (lbs.)
	Shaft O.D.	Hub I.D.	L	l	L <sub>1</sub>			Shaft	Hub Bore	Qty.	Size	Tightening Torque (ft./lbs.)	
dxD	t <sub>1</sub>	t <sub>2</sub>	L	l	L <sub>1</sub>	Mt	Pax	P	P'			Ma	
PL019X047			.7874	.7087	1.0236	180.8	5,960	30,470	12,330	6	M6 X 18	12.3	.442
PL020X047			.7874	.7087	1.0236	195.6	5,960	28,870	12,330	6	M6 X 18	12.3	.442
PL022X047			.7874	.7087	1.0236	217.0	5,960	26,260	12,330	6	M6 X 18	12.3	.419
PL024X050	-0.0013"	+0.0013"	.7874	.7087	1.0236	296.7	7,490	30,620	14,660	8	M6 X 18	12.3	.486
PL025X050	+0	-0	.7874	.7087	1.0236	310.7	7,490	29,460	14,660	8	M6 X 18	12.3	.486
PL028X055			.7874	.7087	1.0236	346.9	7,490	26,129	13,350	8	M6 X 18	12.3	.552
PL030X055 (PL1½)*			.7874	.6299	1.0236	376.4	7,490	24,520	13,350	8	M6 X 18	12.3	.530
PL032X060			.7874	.7087	1.0236	498.9	9,470	28,730	15,380	10	M6 X 18	12.3	.596
PL035X060 (PL1½)*			.7874	.7087	1.0236	549.8	9,470	26,260	15,380	10	M6 X 18	12.3	.596
PL038X065	-0.0015"	+0.0015"	.7874	.7087	1.0236	658.3	10,570	26,550	15,530	11	M6 X 18	12.3	.662
PL040X065	+0	-0	.7874	.7087	1.0236	694.5	10,570	25,250	15,530	11	M6 X 18	12.3	.662
PL042X075			.9449	.8268	1.2598	1,100.0	15,880	31,050	17,560	9	M8 X 22	29.7	1.126
PL045X075			.9449	.8268	1.2598	1,181.0	15,880	29,020	17,560	9	M8 X 22	29.7	1.126
PL048X080			.9449	.8268	1.2598	1,255.0	15,880	27,290	16,400	9	M8 X 22	29.7	1.214
PL050X080			.9449	.8268	1.2598	1,306.0	15,880	26,120	16,400	9	M8 X 22	29.7	1.214
PL055X085			.9449	.8268	1.2598	1,764.0	19,390	29,170	18,860	11	M8 X 22	29.7	1.325
PL060X090 (PL2½)*	-0.0018"	+0.0018"	.9449	.8268	1.2598	1,926.0	19,390	26,700	17,850	11	M8 X 22	29.7	1.413
PL065X095 (PL2½)*	+0	-0	.9449	.8268	1.2598	2,280.0	21,170	26,700	18,280	12	M8 X 22	29.7	1.523
PL070X110 (PL2½)*			1.1024	.9843	1.4961	3,542.0	31,050	30,470	19,300	11	M10 X 25	60.0	2.671
PL075X115			1.1024	.9843	1.4961	3,830.0	31,050	28,440	18,430	11	M10 X 25	60.0	2.804
PL080X120			1.1024	.9843	1.4961	4,052.0	31,050	26,700	17,850	11	M10 X 25	60.0	2.936
PL085X125			1.1024	.9843	1.4961	4,701.0	33,750	27,420	18,570	12	M10 X 25	60.0	3.113
PL090X130	-0.0021"	+0.0021"	1.1024	.9843	1.4961	4,989.0	33,750	25,830	17,850	12	M10 X 25	60.0	3.245
PL095X135 (PL3¼)*	+0	-0	1.1024	.9843	1.4961	5,712.0	36,670	26,560	18,720	13	M10 X 25	60.0	3.400
PL100X145 (PL3¼)*			1.2992	1.1417	1.7717	7,380.0	45,225	26,700	18,430	11	M12 X 30	105.0	4.614
PL110X155			1.2992	1.1417	1.7717	8,192.0	45,225	24,380	17,410	11	M12 X 30	105.0	4.967
PL120X165			1.2992	1.1417	1.7717	9,668.0	49,500	24,380	17,850	12	M12 X 30	105.0	5.342
PL130X180	-0.0025"	+0.0025"	1.4961	1.3386	1.9685	13,140.0	61,650	24,090	17,410	15	M12 X 35	105.0	7.461
PL140X190 (PL5½)*	+0	-0	1.4961	1.3386	1.9685	15,130.0	65,700	23,800	17,560	16	M12 X 35	105.0	7.925
PL150X200			1.4961	1.3386	1.9685	18,230.0	74,020	24,960	18,720	18	M12 X 35	105.0	8.433
PL160X210			1.4961	1.3386	1.9685	20,440.0	78,070	24,670	18,720	19	M12 X 35	105.0	8.896
PL170X225			1.7323	1.5748	2.2835	25,170.0	90,450	22,780	17,270	16	M14 X 40	166.0	12.119
PL180X235			1.7323	1.5748	2.2835	28,340.0	95,850	22,930	17,560	17	M14 X 40	166.0	12.759
PL190X250 (PL7½)*	-0.0028"	+0.0028"	2.0472	1.8898	2.5984	35,130.0	112,950	21,330	16,250	20	M14 X 45	166.0	17.417
PL200X260 (PL7½)*	+0	-0	2.0472	1.8898	2.5984	38,890.0	118,570	21,180	16,400	21	M14 X 45	166.0	18.234
PL220X285			2.2047	2.0079	2.8346	51,000.0	141,300	21,620	16,690	18	M16 X 50	257.0	23.400
PL240X305			2.2047	2.0079	2.8346	61,840.0	157,050	22,060	17,410	20	M16 X 50	257.0	25.386
PL260X325	-0.0032"	+0.0032"	2.2047	2.0079	2.8346	76,750.0	180,670	23,360	18,720	23	M16 X 50	257.0	27.815
PL280X355 (PL11)*	+0	-0	2.5984	2.4016	3.3071	95,200.0	207,670	20,890	16,540	22	M18 X 60	351.0	41.280
PL300X375 (PL11¼)*			2.5984	2.4016	3.3071	111,400.0	225,000	21,330	17,120	24	M18 X 60	351.0	43.929

\*Identical unit with inch size AS POWER-LOCK.

Note: If your application requires slightly larger tolerances than noted, refer to page C-88.

## Minimum Hub Diameter ( $D_N$ ) When Using One POWER-LOCK®

Suggested hub diameter for a single POWER-LOCK. This table shows minimum hub diameter  $D_N$ , which can tolerate surface pressure  $P'$  based on:

$$b \geq L_1$$

$$B \geq 2l$$

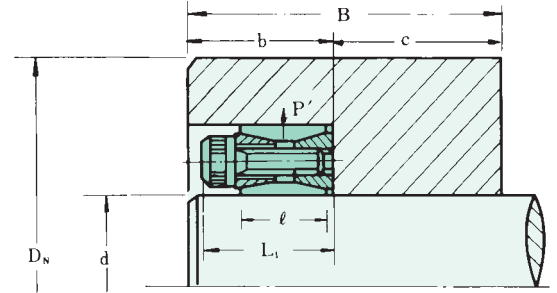
Note: The value,  $d/2$  or more, is to be suggested as the guide length  $c$ .

### <Example>

Hub Material Yield Point = 50,000 psi }  
PL030 x 055 to be used } Min.  $D_N = 2.559"$

### <Conversion>

$$1 \text{ psi} = 0.0007 \text{ kgf/mm}^2 = 0.0069 \text{ Mpa}$$



## Minimum Hub Diameter ( $D_N$ in inches)

Model Number	Contact Pressure in the Hub Bore (psi)	Yield Point of Various Hub Material Y.P. (psi) Y.P. = $\sigma_{0.2}$					
		32,000	35,000	40,000	45,000	50,000	56,000
	$P'$	Class Number 40 Grade Number 60-30	1015 Class Number 50 Grade Number 65-35	1018, 1020, 1117 Class Number 60 Grade Number 40010	1118 Grade Number 45006	1030 Grade Number 50005 Grade Number 80-85	1040, 1045, 1137, 1141, 1144 Grade Number 60004
PL019X047	12,330	2.3622	2.3228	2.2441	2.2047	2.1654	2.1260
PL020X047	12,330	2.3622	2.3228	2.2441	2.2047	2.1654	2.1260
PL022X047	12,330	2.3622	2.3228	2.2441	2.2047	2.1654	2.1260
PL024X050	14,660	2.6378	2.5590	2.4803	2.4016	2.3622	2.3228
PL025X050	14,660	2.6378	2.5590	2.4803	2.4016	2.3622	2.3228
PL028X055	13,350	2.7953	2.7559	2.6772	2.5984	2.5590	2.5200
PL030X055	13,350	2.7953	2.7559	2.6772	2.5984	2.5590	2.5200
PL032X060	15,380	3.1890	3.1102	2.9921	2.9134	2.8740	2.7953
PL035X060	15,380	3.1890	3.1102	2.9921	2.9134	2.8740	2.7953
PL038X065	15,530	3.4646	3.3858	3.2677	3.1890	3.1102	3.0315
PL040X065	15,530	3.4646	3.3858	3.2677	3.1890	3.1102	3.0315
PL042X075	17,560	4.1732	4.0551	3.8976	3.7795	3.6614	3.5827
PL045X075	17,560	4.1732	4.0551	3.8976	3.7795	3.6614	3.5827
PL048X080	16,400	4.3307	4.2126	4.0551	3.9370	3.8583	3.7795
PL050X080	16,400	4.3307	4.2126	4.0551	3.9370	3.8583	3.7795
PL055X085	18,860	4.8425	4.6850	4.4882	4.3307	4.2126	4.1339
PL060X090	17,850	5.0394	4.8819	4.6850	4.5276	4.4094	4.3307
PL065X095	18,280	5.3543	5.1969	4.9606	4.8031	4.6850	4.5669
PL070X110	19,300	6.3386	6.1417	5.8661	5.6693	5.5118	5.3543
PL075X115	18,430	6.4961	6.2992	6.0236	5.8268	5.6693	5.512
PL080X120	17,850	6.6929	6.4961	6.2205	6.0236	5.9055	5.7480
PL085X125	18,570	7.0866	6.8504	6.5748	6.3386	6.1811	6.0236
PL090X130	17,850	7.2835	7.0472	6.7323	6.5354	6.3780	6.2205
PL095X135	18,720	7.6772	7.4409	7.1260	6.8898	6.6930	6.5354
PL100X145	18,430	8.1890	7.9528	7.5984	7.3622	7.1654	7.0079
PL110X155	17,410	8.5827	8.3071	7.9921	7.7559	7.5591	7.4016
PL120X165	17,850	9.2126	8.9370	8.5433	8.3070	8.0709	7.9136
PL130X180	17,410	9.9606	9.6457	9.2913	8.9764	8.7795	8.5827
PL140X190	17,560	10.5512	10.2362	9.8031	9.5276	9.2913	9.0551
PL150X200	18,720	11.3780	10.9843	10.5118	10.1575	9.9213	9.6457
PL160X210	18,720	11.9291	11.5354	11.0630	10.6693	10.3937	10.1575
PL170X225	17,270	12.4016	12.0472	11.5748	11.2205	10.9449	10.7087
PL180X235	17,560	13.0315	12.6378	12.1260	11.7717	11.4567	11.2205
PL190X250	16,250	13.5039	13.1102	12.6378	12.2835	12.0079	11.7323
PL200X260	16,400	14.0945	13.6614	13.1890	12.7953	12.5197	12.2441
PL220X285	16,690	15.5118	15.0787	14.4882	14.0945	13.7795	13.4646
PL240X305	17,410	16.8504	16.3386	15.7087	15.2362	14.8425	14.5276
PL260X325	18,720	18.4646	17.8740	17.0866	16.5354	16.1024	15.7087
PL280X355	16,540	19.2913	18.7402	18.0315	17.5197	17.1260	16.7323
PL300X375	17,120	20.5906	20.0000	19.2126	18.6614	18.1890	17.7953

Note: Minimum Hub Diameter ( $D_N$ ) calculated based upon the Formula (3) at ( $K_3$ ) = 0.6. Refer to page C-89.



## AS Metric Series

### Minimum Hub Diameter ( $D_N$ ) When Using Multiple POWER-LOCK®

Suggested outside hub diameter for two or more POWER-LOCK units.  
This table shows minimum hub diameters  $D_N$ , which can tolerate surface pressure  $P'$  based on:

$$b \geq N \cdot L_1 \quad \text{where } N = \text{number of POWER-LOCK}$$

$$B \geq n \cdot L_1 + L_1 \quad (2 \leq n \leq 4)$$

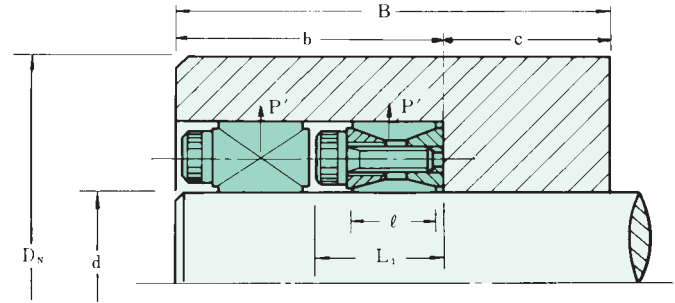
Note: The value,  $d/2$  or more, is to be suggested as the guide length  $c$ .

#### <Example>

Hub Material Yield Point = 50,000 psi }  
PL030 x 055 to be used. } Min.  $D_N = 2.7165"$

#### <Conversion>

1 psi = 0.0007 kgf/mm<sup>2</sup> = 0.0069 Mpa



### Minimum Hub Diameter ( $D_N$ in inches)

Model Number	Contact Pressure in the Hub Bore (psi)	Yield Point of Various Hub Material Y.P. (psi) Y.P. = $\sigma_{0.2}$					
		32,000 Class Number 40 Grade Number 60-30	35,000 1015 Class Number 50 Grade Number 65-35	40,000 1018, 1020, 1117 Class Number 60 Grade Number 40010	45,000 1118 Grade Number 45006	50,000 1030 Grade Number 50005 Grade Number 80-65	56,000 1040, 1045, 1137, 1141, 1144 Grade Number 60004
$P'$							
PL019X047	12,330	2.5591	2.4803	2.4016	2.3228	2.2835	2.2441
PL020X047	12,330	2.5591	2.4803	2.4016	2.3228	2.2835	2.2441
PL022X047	12,330	2.5591	2.4803	2.4016	2.3228	2.2835	2.2441
PL024X050	14,660	2.9134	2.7953	2.6772	2.5984	2.5197	2.4409
PL025X050	14,660	2.9134	2.7953	2.6772	2.5984	2.5197	2.4409
PL028X055	13,350	3.0709	2.9921	2.8740	2.7559	2.7165	2.6378
PL030X055	13,350	3.0709	2.9921	2.8740	2.7559	2.7165	2.6378
PL032X060	15,380	3.5433	3.4252	3.2677	3.1496	3.0709	2.9528
PL035X060	15,380	3.5433	3.4252	3.2677	3.1496	3.0709	2.9528
PL038X065	15,530	3.8583	3.7402	3.5433	3.4252	3.3070	3.2283
PL040X065	15,530	3.8583	3.7402	3.5433	3.4252	3.3070	3.2283
PL042X075	17,560	4.7638	4.5276	4.2913	4.0945	3.9370	3.8189
PL045X075	17,560	4.7638	4.5276	4.2913	4.0945	3.9370	3.8189
PL048X080	16,400	4.8819	4.6850	4.4488	4.2520	4.1339	4.0157
PL050X080	16,400	4.8819	4.6850	4.4488	4.2520	4.1339	4.0157
PL055X085	18,860	5.5906	5.3150	5.0000	4.7638	4.5669	4.4094
PL060X090	17,850	5.7480	5.4724	5.1575	4.9213	4.7638	4.6063
PL065X095	18,280	6.1417	5.8661	5.5118	5.2756	5.0787	4.9213
PL070X110	19,300	7.3622	6.9685	6.5354	6.2205	5.9843	5.7480
PL075X115	18,430	7.4803	7.1260	6.6929	6.3780	6.1417	5.9449
PL080X120	17,850	7.6378	7.2835	6.8848	6.5748	6.3386	6.1417
PL085X125	18,570	8.1496	7.7559	7.2835	6.9685	6.6929	6.4567
PL090X130	17,850	8.2677	7.9134	7.4409	7.1260	6.8898	6.6535
PL095X135	18,720	8.8583	8.4252	7.8740	7.5197	7.2441	7.0079
PL100X145	18,430	9.4094	8.9764	8.4251	8.0315	7.7559	7.4803
PL110X155	17,410	9.7638	9.3307	8.7795	8.4252	8.1496	7.8740
PL120X165	17,850	10.5118	10.0394	9.4488	9.0551	8.7402	8.4646
PL130X180	17,410	11.2992	10.8268	10.1969	9.7638	9.4488	9.1339
PL140X190	17,560	12.0079	11.4567	10.8268	10.3543	10.0000	9.6850
PL150X200	18,720	13.1102	12.4410	11.6429	11.1418	10.7480	10.3543
PL160X210	18,720	13.7402	13.0709	12.2835	11.6929	11.2598	10.9055
PL170X225	17,270	14.0945	13.4646	12.7165	12.1654	11.7717	11.4173
PL180X235	17,560	14.8425	14.1732	13.3858	12.7952	12.3622	11.9685
PL190X250	16,250	15.1575	14.5669	13.8189	13.2677	12.8740	12.4803
PL200X260	16,400	15.8268	15.1964	14.4094	13.8189	13.4252	12.9921
PL220X285	16,690	17.5197	16.7716	15.9055	15.2362	14.7638	14.3307
PL240X305	17,410	19.1732	18.3070	17.2835	16.5354	15.9843	15.5118
PL260X325	18,720	21.2598	20.2362	18.9764	18.1102	17.4409	16.8504
PL280X355	16,540	21.7322	20.8268	19.7244	18.9370	18.3465	17.7953
PL300X375	17,120	23.3465	22.3228	21.1024	20.2362	19.5669	18.9764

Note: Minimum Hub Diameter ( $D_N$ ) calculated based upon the Formula (3) at ( $K_3$ ) = 0.8. Refer to page C-89.

# AS Inch/Metric Series

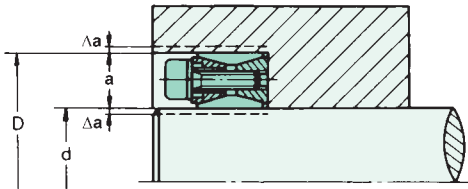
## SPECIAL TOLERANCE INFORMATION

In cases where a slightly larger tolerance is required, the chart below can be used. To use this chart, it is important to understand that the goal is to have the POWER-LOCK® centered in the middle of the machined opening (i.e.:  $\underset{-}{i} a = \underset{-}{i} a$ ). Under these conditions, the POWER-LOCK will transmit the published torque figures.

### Example:

POWER-LOCK PL2

- Inside diameter = 2.0000 inch
- Outside diameter = 3.3460 inch
- Shaft diameter = 1.9976 inch (0.0024 inch undersize)
- Counter-bore diameter = 3.3484 inch (0.0024 inch oversize)



- $d$  = nominal I.D.
- $D$  = nominal O.D.

$\underset{-}{i} a$  = deviation increment from nominal size

Note: Maximum tolerances applicable only when the absolute value of  $\underset{-}{i} a$  of the shaft side is equal to that of the bore side.

Model Number	Model Number	Maximum Clearance (in.)	
		Shaft	Bore
PL 3/4	PL019X047	-0.0020"	+0.0020"
PL1 1/8	PL030X055	+0	-0
PL1 3/16	PL032X060	-0.0025"	+0.0025"
PL1 15/16	PL050X080	+0	-0
PL2	PL055X085	-0.0029"	+0.0029"
PL3	PL080X120	+0	-0
PL3 3/8	PL085X125	-0.0034"	+0.0034"
PL4 1/2	PL120X165	+0	-0
PL4 15/16	PL130X180	-0.0040"	+0.0040"
PL7	PL180X235	+0	-0
PL7 1/2	PL190X250	-0.0045"	+0.0045"
PL10	PL240X305	+0	-0
PL10 1/2	PL260X325	-0.0051"	+0.0051"
PL11 13/16	PL300X375	+0	-0



# AS Inch/Metric Series

## SELECTION GUIDE AND SPECIFICATIONS

### 1. Selection of POWER-LOCK®

a) When only torque is applied:

Compare the maximum transmitting torque (T max) of the devices to be driven with the transmissible torque (Mt) of the POWER-LOCK listed on pages C-81, C-84 and C-85.

Mt ≥ T max...OK

Mt < T max...Select a larger POWER-LOCK or use two or more POWER-LOCK units

The transmissible torque (Mt) of multiple POWER-LOCK units is obtained by multiplying Mt by the number of units used. Peak torque expected should be regarded as T max.

$$T_{max} = \frac{5,252 \cdot HP \cdot s.f.}{n} \quad (\text{ft. lbs.}) \quad \text{--- (1)}$$

n = RPM s.f = Safety Factor

b) When torque and thrust are applied:

Compare Mt with composite torque M<sub>R</sub>.

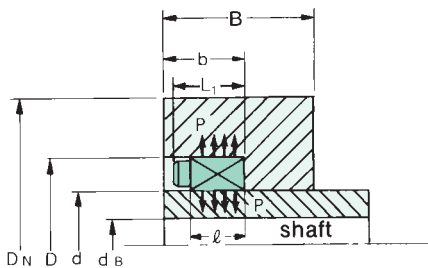
$$M_R = \sqrt{T^2 \text{ max.} + (P \text{ max.} \cdot \frac{d}{2})^2} \leq Mt \quad \text{--- (2)}$$

T max = Maximum torque (ft. lbs.)

P max = Maximum thrust load (lbs.)

d = Shaft O.D. (ft.)

### 2. Hub Diameter Calculation



a) Standard hub diameter (flange coupling, V sheave, etc.):

Minimum hub outside diameters (D<sub>N</sub>) are shown on pages C-82, C-83, C-86 and C-87 based on the yield point of hub material and the length of hub. Hub diameter must be equal to or larger than (D<sub>N</sub>). Special hub diameter can be calculated by the following:

b) Hubs of special material:

Calculate hub diameter using the following formula (not applicable to non-ferrous metals).

$$Y.P. (\text{hub}) \geq 1.4P'$$

$$Y.P. (\text{shaft}) \geq 1.4P$$

$$\text{Minimum hub diameter } D_N \geq D \sqrt{\frac{Y.P. + K_3 \cdot P'}{Y.P. - K_3 \cdot P'}} \quad \text{--- (3)}$$

K<sub>3</sub> = 0.6...Using single unit

$$b \geq L_1, B \geq 21$$

K<sub>3</sub> = 0.8...Using multiple units

$$b \geq n \cdot L_1$$

$$B \geq n \cdot L_1 + L_1$$

K<sub>3</sub> = 1.0...Using single unit

$$1 \leq B < 2 \cdot 1$$

Using multiple units

$$1 + L_1 \leq B < L_1 (n + 1)$$

(n = number of POWER-LOCK)

P' = Surface pressure on hub (psi)

Y.P. = Yield point of hub material (psi)

D = Hub bore inside diameter (in.)

D<sub>N</sub> = Minimum hub diameter (in.)

c) Hollow Shaft Application:

Inside diameter of the hollow shaft: d<sub>B</sub>

Compute inside diameter of hollow shaft.

$$d_B \leq d \sqrt{\frac{Y.P. - 2 \cdot P \cdot K_3}{Y.P.}} \quad \text{--- (4)}$$

d = Outside diameter of shaft (in.)

P = Contact pressure on shaft side (Refer to pages C-81, C-84 and C-85) (psi)

K<sub>3</sub> = 0.6...Using single POWER-LOCK

K<sub>3</sub> = 0.8... Using multiple POWER-LOCK

### 3. Hub Width

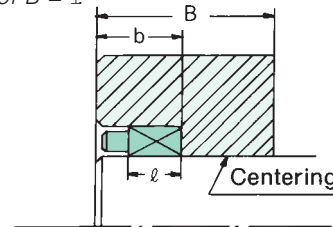
The AS Series POWER-LOCK is not self-aligning. Thus centering (B - b) must be performed. Suggested "guide length" (B - b) is to be equal to or greater than one half of the shaft diameter.

B - b ≥ d/2 (d = shaft diameter)

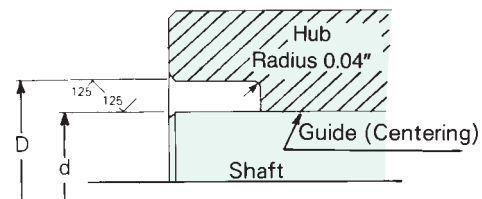
Hub width (B) can be calculated as follows:

$$B \geq b + d/2 \quad \text{--- (5)}$$

Note: POWER-LOCK cannot be centered under the condition of B = 1.

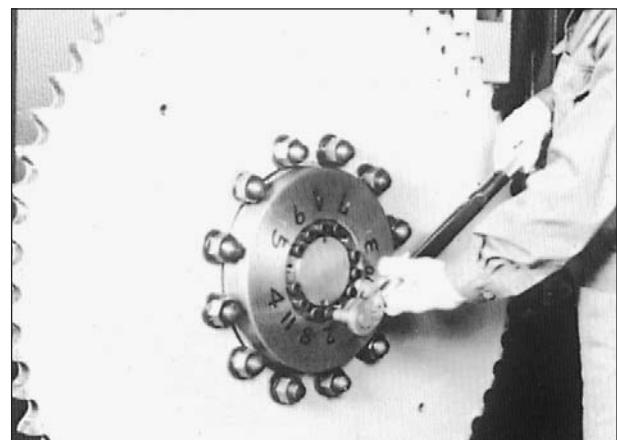


### 4. Machining Tolerance and Surface Roughness



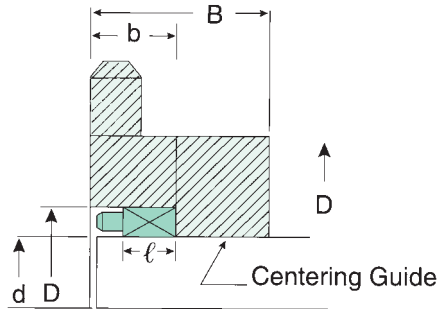
Machining tolerance for counter bore diameter of hub "D" and shaft diameter "d" are listed on pages C-81, C-84 and C-85.

Required surface roughness of 125 RMS. Determine the tolerance of the guide according to the centering accuracy required.



### Example Selection 1

A sprocket to be tightened by a POWER-LOCK® on a shaft.



<Conditions>

- Shaft Diameter (d) = 1 1/2"
- Maximum Required Torque (Tmax) = 400 ft./lbs.
- Sprocket Hub Material 1,144 Y.P. = 56,000 psi
- Sprocket Hub Length (B) = 1.875"
- Sprocket Hub Diameter (D<sub>S</sub>) = 3.5"
- Counter Bore Length (b) = L<sub>1</sub> (Total PL Length)

#### Step 1:

- Select PL 1 1/2 since shaft diameter is 1 1/2"
- See Transmissible Torque (Mt) on page C-81
- Mt (658) ≥ Tmax (400) OK
- POWER-LOCK Outside Diameter (D) = 2.559"
- POWER-LOCK Total Length (L<sub>1</sub>) = 1.024"
- POWER-LOCK Length (l) = 0.709"

#### Step 2:

- Confirm Minimum Hub Diameter (D<sub>N</sub>)
- 2l = 2 • 0.709 = 1.418 B(1.875) ≥ 2l(1.418) OK
- Refer to Minimum Hub Diameter (D<sub>N</sub>) on page C-82
- D<sub>N</sub> = 3.030
- D<sub>S</sub> (3.5) ≥ D<sub>N</sub> (3.030) OK

#### Step 3:

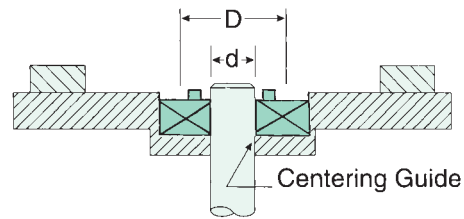
- Confirm Sprocket Hub Length (B)
- Minimum Hub Length (Bmin) =
- $b + \frac{d}{2} = L_1 + \frac{d}{2} = 1.024 + \frac{1.5}{2} = 1.774$
- B(1.875) > Bmin(1.774) OK
- Centering Guide will be 1.875 – b
- = 1.875 – 1.024 = 0.851
- $0.851 > \frac{d}{2}$  (0.75) OK

#### Step 4:

- Machining Tolerance (see page C-81)
- Shaft size d = 1.5" + 0/- .0015"
- Hub Bore Size D = 2.559" + .0015"/ - 0

### Example Selection 2

Turn table to be fixed on a vertical straight shaft by a POWER-LOCK.



<Conditions>

- Shaft Diameter (d) = 2"
- Maximum Required Torque (Tmax) = 500 ft./lbs.
- Total Table Weight (Pmax) = 500 ft./lbs.
- Material for table and hub is 1040 steel

#### Step 1:

- Select PL2 since shaft Diameter is 2"
- See Transmissible Torque (Mt) and Thrust (Pax) on page C-81
- Mt = 1,627 ft./lbs. Pax = 19,360 lbs.

#### Step 2:

- Compare Mt with composite torque MR. Calculate composite torque MR.

$$MR = \sqrt{T^2 \max + (P \max \times \frac{d}{2})^2} = 501.7 \text{ ft./lbs.}$$

$$MR (501.7) \leq Mt (1,627) \quad \text{OK}$$

#### Step 3:

- Hub Dimensions. See page C-82
- Suggested Minimum Diameter (D<sub>N</sub>) = 4.110"
- Suggested Guide Length =  $\frac{d}{2} = 1"$

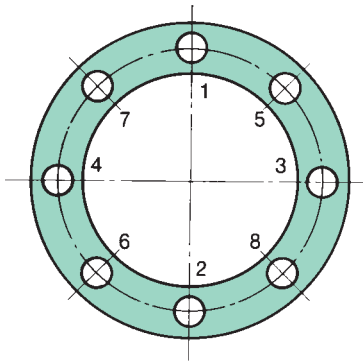
#### Step 4:

- Machining Tolerance. See page C-81
- Shaft Size (d) = 2" + 0/-0.0018"
- Hub Bore Size (D) = 3.346 + 0.0018"/ - 0

## MOUNTING AND REMOVAL

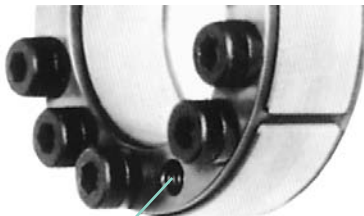
### Mounting

1. Clean and lightly oil or grease the shaft and hub bore. (Do not use oil or grease containing molybdenum disulphide.)
2. Remove the locking bolts from the POWER-LOCK® and clean and lightly oil or grease the contact surfaces. Threads and seats of the locking bolts must also be sufficiently lubricated.
3. Slip the POWER-LOCK and hub onto the shaft, tighten the locking bolts by hand until a slight positive contact is felt, and set them at the predetermined position, just as you would tighten lug bolts on a car wheel. When it is difficult to slip on, loosen the bolts. (Do not strike with a hammer.)
4. Next, determine the relative positioning between the hub and shaft (on the circumference and shaft line), and tighten the four bolts positioned diagonally with 1/4 of the required tightening torque. Proceed to tighten the remaining bolts in the same manner.
5. Increase the tightening torque to half of  $M_A$  and tighten the bolts in the same way as in Step 4.
6. Increase tightening torque to  $M_A$  and tighten the bolts.
7. Check the tightening torque of the locking bolts in sequence. This completes the mounting procedure.

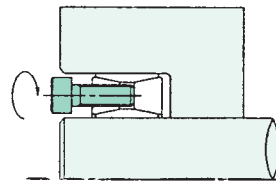


### Removal

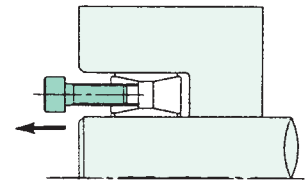
1. Make sure that no torque or thrust is being applied to the shaft and hub. When the shaft and hub are heavy, take them off the shaft carefully.
2. After completing Step 1, loosen the locking bolts. (No definite sequence is required.)
3. If the POWER-LOCK is still locked even after loosening the bolts, insert bolts into the jack screw holes (see photo below) and screw them in until it unlocks.



Jack Screw Holes for Removal



Insert bolts into jack screw holes.



Take out the POWER-LOCK by pulling the bolts.

### Tightening Torque of Locking Bolts (Inch)

Locking Bolt Size	POWER-LOCK® Model Number (in.)	Tightening Torque $M_A$ (ft./lbs.)
M6	PL3/4 ~ PL1 1/2	12.3 (10.1)*
M8	PL1 5/8 ~ PL2 9/16	29.7 (24.6)*
M10	PL2 5/8 ~ PL3 3/4	60.1 (50.5)*
M12	PL3 15/16 ~ PL6	105.0 (87.0)*
M14	PL6 1/2 ~ PL8	167.0
M16	PL8 1/2 ~ PL10 1/2	257.0
M18	PL11 ~ PL11 13/16	351.0

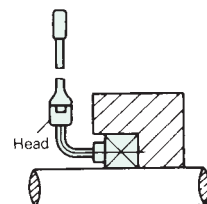
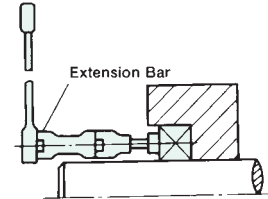
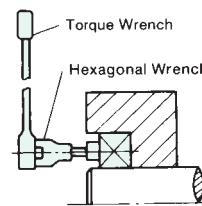
### Tightening Torque of Locking Bolts (Metric)

Locking Bolt Size	POWER-LOCK® Model Number (metric)	Tightening Torque $M_A$ (ft./lbs.)
M6	PL019X047 ~ PL040X065	12.3 (10.1)*
M8	PL042X075 ~ PL065X095	29.7 (24.6)*
M10	PL070X110 ~ PL095 X135	60.1 (50.5)*
M12	PL100X145 ~ PL160X210	105.0 (87.0)*
M14	PL170X225 ~ PL200X260	167.0
M16	PL220X285 ~ PL260X325	257.0
M18	PL250X355 ~ PL300X375	351.0

\*Figures above in parentheses indicate the tightening torque  $M_A$  for stainless steel bolts, which can be supplied upon request.

### Use a Torque Wrench to Tighten Locking Bolts

The POWER-LOCK ensures transmissible torque ( $M_t$ ) and thrust ( $P_{ax}$ ) only when the locking bolts are tightened to the proper torque. For this reason, use a torque wrench to tighten the locking bolts and thus obtain maximum performance from the POWER-LOCK.



## GENERAL INFORMATION

### 1. Shafts with existing keyways:

Transmissible torque and thrust capacities of the POWER-LOCK® must be decreased by 10% when used with a shaft with a keyway such as a motor shaft.

Transmissible torque:  $M_t \bullet 0.9$

Transmissible thrust:  $P_{ax} \bullet 0.9$

### 2. Surface pressure (P) and (P'):

Contact pressure values of shaft (P) and hub bore (P') listed on pages C-81, C-84 and C-85 indicate mean values only.

These rated surface pressures will fluctuate from -20% to +40% due to the variable friction component forces resulting from the locking bolts. Transmissible torque (Mt) and thrust (Pax) are calculated as minimum values, provided that POWER-LOCK is to be used under the listed surface pressures, (P) and (P'). Transmissible torque (Mt) and thrust (Pax) may increase by approximately 70% above the listed ratings in actual applications.

### 3. Radial load applications:

Should POWER-LOCK be subjected to heavy radial loads (Pr) in such applications as wheel drives, calculate surface pressure (Prad) on the shaft and (P'rad) on the hub as follows: POWER-LOCK may be used if the surface pressure on the shaft (Prad) and the surface pressure on the hub (P'rad) is equal to or less than one half of (P) and (P').

$$Prad = \frac{1.3 \bullet Pr}{d \bullet 1} \leq \frac{1}{2} P \quad P'rad = \frac{1.3 \bullet Pr}{D \bullet 1} \leq \frac{1}{2} P'$$

Pr = Radial load (N) (lbs.)

1 = POWER-LOCK inside width (in.)

d = Shaft diameter (in.)

D = Hub bore inside diameter (in.)

P = Surface pressure on shaft (psi)

P' = Surface pressure on hub (psi)

When radial load is applied to POWER-LOCK, the above values of (Prad) and (P'rad) should be added to (P) and (P') respectively in order to calculate the hub outside diameter (DN) or hollow shaft inside diameter (dB).

### 4. Bending moments:

POWER-LOCK is not designed to transmit bending moments. However, POWER-LOCK will tolerate limited bending moments as shown in the table listed below.

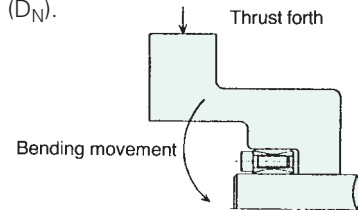
$$M \leq Mo \bullet n^2$$

M = Bending moment working on POWER-LOCK (in./lbs.)

Mo = Allowable bending moment (in./lbs.)

n = Number of POWER-LOCK units (N ≤ 4)

Should bending moment values be close to the allowable bending moments values listed in the table, use (PtM) instead of hub surface pressure (P) when calculating hub outside dia. (DN).



### 5. Allowable value of tightening torque (MA):

Transmissible torque (Mt) and thrust (Pax) values are based on the correct tightening torque of the locking bolts. Acceptable range of the tightening torque is ± 5% of the listed value. Use an accurate torque wrench to tighten it.

### 6. Loosening of locking bolts:

Manufactured of special high-tensile steel, the locking bolts will not loosen due to vibration.

### 7. Influence of temperature:

The use of POWER-LOCK at temperatures above 400° F (200° C) is not suggested, since the tensile strength of the locking bolts may decrease substantially.

### 8. Outdoor use:

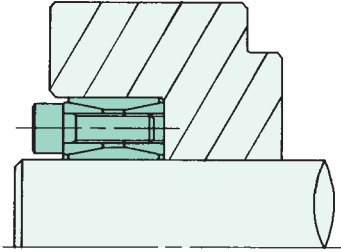
When a standard POWER-LOCK is to be used outdoors, it should be lubricated with grease and a cover should be installed to protect against corrosion. If this is not practical, stainless steel POWER-LOCK (see page C-84) and special coated POWER-LOCK units are available.

Model Number	Allowable Bending Moment Mo (ft./lbs.)	Max. Surface Pressure on Hub P <sub>H</sub> (psi)	Model Number	Allowable Bending Moment Mo (ft./lbs.)	Max. Surface Pressure on Hub P <sub>H</sub> (psi)
PL 3/4	152	16,640	PL2 15/16	1,120	25,030
PL 7/8	195	17,630	PL3	1,310	25,170
PL1	174	19,050	PL3 3/8	1,330	25,880
PL1 1/8	212	18,210	PL3 7/16	1,530	25,880
PL1 3/16	253	19,340	PL3 1/2	1,530	25,880
PL1 1/4	282	21,330	PL3 3/4	1,410	25,740
PL1 3/8	297	21,610	PL3 15/16	2,050	25,600
PL1 7/16	333	22,180	PL4	2,130	25,310
PL1 1/2	434	24,030	PL4 7/16	2,800	26,310
PL1 5/8	434	23,040	PL4 1/2	2,780	26,160
PL1 11/16	434	23,040	PL4 15/16	4,310	26,020
PL1 3/4	434	23,040	PL5	4,300	26,020
PL1 7/8	564	23,040	PL5 1/2	4,910	27,020
PL1 15/16	564	23,040	PL6	5,060	27,590
PL2	506	24,600	PL6 1/2	8,460	27,160
PL2 1/8	506	24,600	PL7	8,900	27,440
PL2 3/16	644	24,600	PL7 1/2	14,000	26,450
PL2 1/4	644	24,600	PL7 7/8	15,600	27,300
PL2 3/8	542	23,640	PL8	16,100	26,880
PL2 7/16	694	25,310	PL8 1/2	18,800	27,300
PL2 1/2	694	25,310	PL9	22,300	28,160
PL2 9/16	665	25,030	PL9 1/2	20,300	27,870
PL2 5/8	866	25,450	PL10	20,800	29,150
PL2 11/16	866	25,450	PL10 1/2	21,800	28,580
PL2 3/4	991	25,450	PL11	37,500	28,440
PL2 7/8	1,120	25,030	PL11 13/16	37,600	28,440

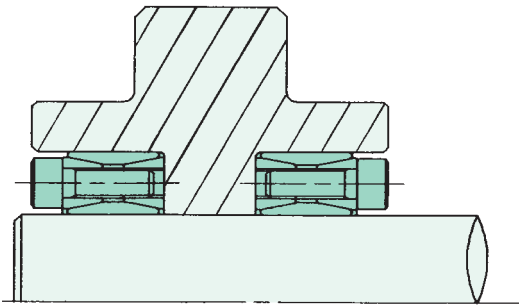
Model Number	Allowable Bending Moment Mo (ft./lbs.)	Max. Surface Pressure on Hub P <sub>H</sub> (psi)	Model Number	Allowable Bending Moment Mo (ft./lbs.)	Max. Surface Pressure on Hub P <sub>H</sub> (psi)
PL019X047	151.3	16,690	PL080X120	1,306.0	25,100
PL020X047	151.3	16,690	PL085X125	1,328.0	25,830
PL022X047	187.5	17,700	PL090X130	1,520.0	25,830
PL024X050	144.6	18,430	PL095X135	1,542.0	26,410
PL025X050	166.1	19,010	PL100X145	2,037.0	25,540
PL028X055	231.0	18,720	PL110X155	2,553.0	25,540
PL030X055	274.5	19,880	PL120X165	2,782.0	26,260
PL032X060	281.9	21,470	PL130X180	4,303.0	26,120
PL035X060	281.9	21,470	PL140X190	4,658.0	26,410
PL038X065	332.1	22,200	PL150X200	4,686.0	29,280
PL040X065	332.1	22,200	PL160X210	5,041.0	27,570
PL042X075	426.6	22,930	PL170X225	8,044.0	25,970
PL045X075	426.6	22,930	PL180X235	8,856.0	29,420
PL048X080	563.8	23,220	PL190X250	14,760.0	27,130
PL050X080	563.8	23,220	PL200X260	15,570.0	27,280
PL055X085	506.3	24,670	PL220X285	18,670.0	27,280
PL060X090	643.5	24,810	PL240X305	20,070.0	28,000
PL065X095	687.1	25,250	PL260X325	20,520.0	29,020
PL070X110	915.1	24,960	PL280X355	29,000.0	28,000
PL075X115	1,107.0	25,100	PL300X375	37,860.0	28,580

## Design Examples

### 1. Hub mounting utilizing one POWER-LOCK®:

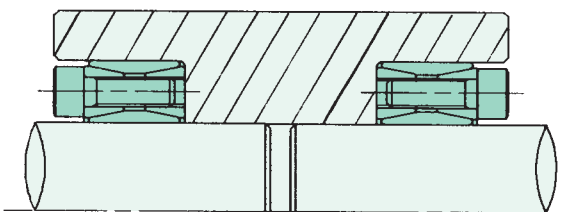
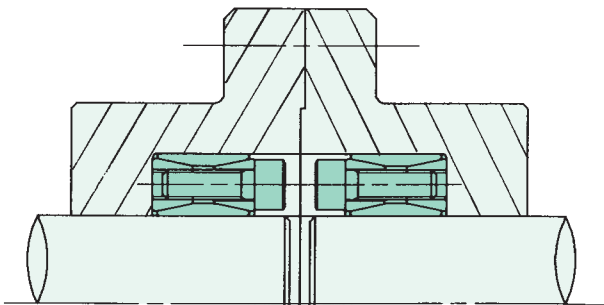


### 2. Hub mounting with POWER-LOCK located on opposite sides of hub:

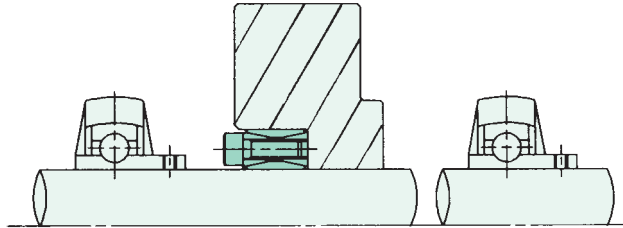


With this arrangement, twice the torque will be transmitted.

### 3. Rigid shaft coupling mounting with two POWER-LOCK units:

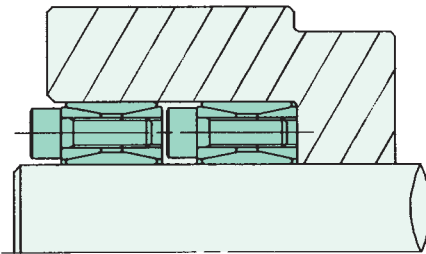


### 4. Hub mounting in the middle of a shaft:



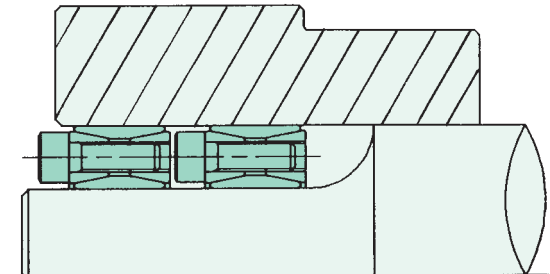
POWER-LOCK can be used at any place on the shaft without a keyway.

### 5. Hub mounting utilizing two POWER-LOCK units:



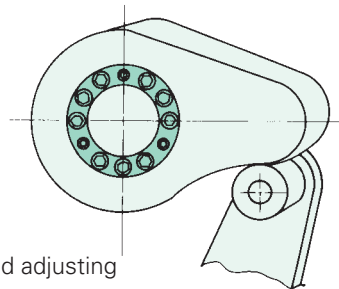
In this arrangement, POWER-LOCK transmits twice the torque.

### 6. Hub mounted on a stepped shaft:



This arrangement is often used in conjunction with thin hub wall applications, for hubs with a straight through bore.

### 7. Lever or cam mounting:



Positioning and adjusting are extremely easy.

## Lock on Corrosion Resistance

### POWER-LOCK® with Ultra-Polymer Coating

U.S. Tsubaki offers AS Series POWER-LOCK with an exclusive Ultra-Polymer coating for corrosion resistance. If your operating environment involves exposure to some chemicals or even sea water, Ultra-Polymer-coated POWER-LOCK offers real value over stainless steel.

The Ultra-Polymer Coating is a complex combination of nickel and Teflon®. It will not corrode or peel. That makes it an excellent choice for food applications. In fact, the coating is approved by the U.S. Department of Agriculture.

And, best of all, AS Series POWER-LOCK with Ultra-Polymer Coating is readily available, which reduces your lead time.

Protect your equipment with POWER-LOCK and protect your POWER-LOCK with Ultra-Polymer Coating. It's a cost-effective way to extend the life of your equipment.

Contact U.S. Tsubaki for information on other types of POWER-LOCK with Ultra-Polymer Coating.

Corrosion Resistance of Stainless Steel Versus Ultra-Polymer Coating		
Substance	Stainless Steel (304)	Ultra-Polymer Coating
Acetone	P	P
Oil (Plant, Mineral)	P	P
Alcohol	P	P
Ammonia Water	P	P
Sodium Chloride	p	P
Sea Water	p	P
Hydrogen Peroxide (10%)	P	P
Caustic Soda (25%)	P	P
Gasoline	P	P
Formic Acid (10%)	X	P
Formaldehyde	P	P
Milk	P	P
Lactic Acid	P	P
Citric Acid	P	P
Chromic Acid (10%)	P	P
Acetic Acid (5%)	P	p
Carbon Tetrachloride	p	P
Potassium Hydroxide (20%)	P	X
Sodium Hydroxide (20%)	P	p
Nitric Acid (5%)	P	X
Vinegar	p	p
Soft Drinks	P	P
Soap & Water Solution	P	P
Paraffin	P	P
Beer	P	P
Fruit Juice	P	P
Wine	P	P
Whiskey	P	P
Benzene	P	P
Water	P	P
Vegetable Juice	P	P
Sulphuric Acid	X	p
Phosphoric Acid (10%)	p	P

- P = Highly corrosion resistant
- p = Marginally corrosion resistant (depending on application conditions)
- X = Not corrosion resistant





## KE Inch Series

### Self-Centering Keyless Locking Power

POWER-LOCK® KE is a self-centering keyless locking device for connecting hubs and shafts. Use KE Series to lock on A-type sprockets and narrow gears. Pre-centering is not required.

#### 1. Self-Centering

Ideal for A-type sprockets and narrow gears, POWER-LOCK KE actually strengthens the shaft. Pre-centering is not required.

#### 2. Strong, Long-Lasting Performance

POWER-LOCK KE has been tested in hundreds of applications. It offers high durability against reversing or impacting loads.

#### 3. Precise Locking

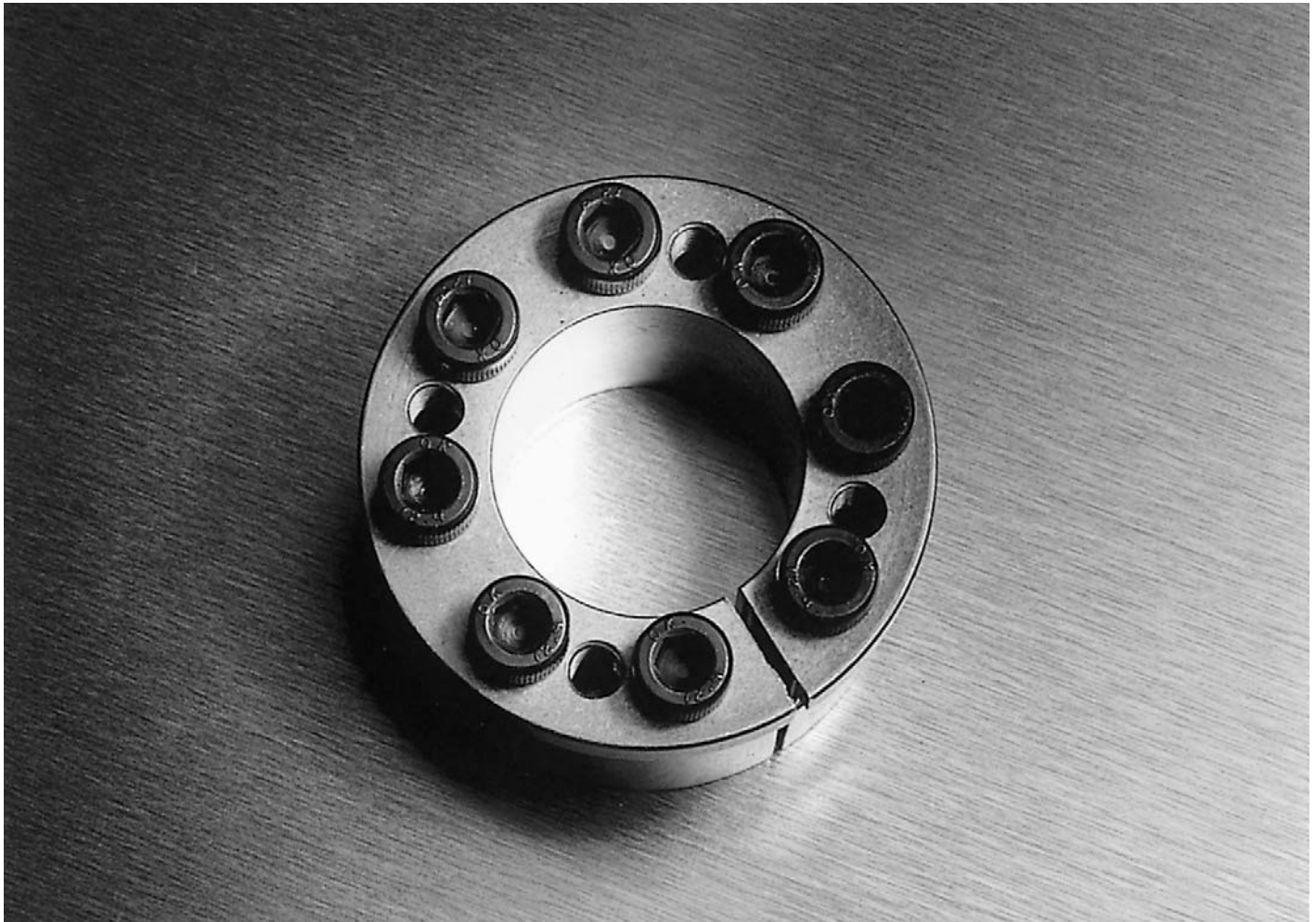
Features a single-taper design with a shallow taper angle that maintains concentricity when you tighten the locking bolts.

#### 4. Wide Tolerance for Shafts

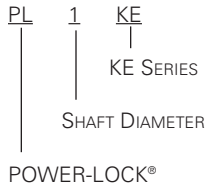
POWER-LOCK KE is designed with a slit construction to yield a wider tolerance of shaft sizes, such as motor shafts.

#### 5. Range of Sizes Available

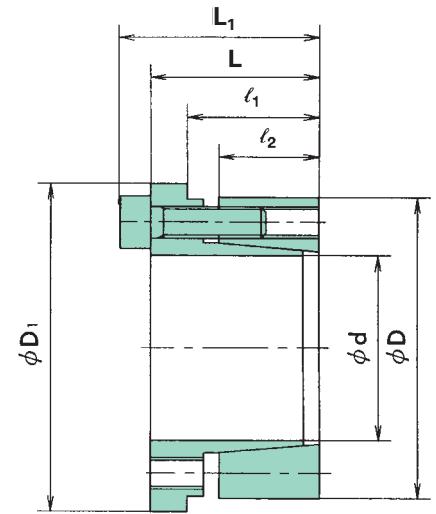
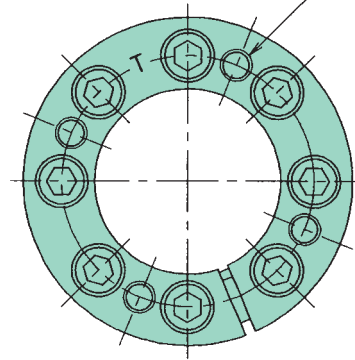
Available in a variety of sizes, including fractional inch sizes for smaller motors or sensors. No costly machining.



### MODEL NUMBER



Jack Screw Holes for Removal



### KE Inch Series POWER-LOCK® Specifications

Model Number	Shaft O.D.			O.D. of KE		Hub Counter I.D.		Length (inches)				Transmissible Torque & Thrust		Contact Pressure psi		Locking Bolts			Approx. Weight lbs.
	d	t <sub>s</sub>	*Special Tolerance t90 Mt & Pax	D <sub>1</sub>	D	t <sub>h</sub>	L <sub>1</sub>	L	l <sub>1</sub>	l <sub>2</sub>	Mt	Pax	P	P'	Qty.	Size	Tightening Torque ft./lbs.		
																		Tolerance	
PL 3/8 KE	0.3750	+0.0006 -0.0009	+0.0006 -0.0023	1.0625	0.9375	-0+0.0013	0.807	0.650	0.563	0.394	22	1,339	28,261	11,304	3	M4X12	3.5	0.09	
PL 1/2 KE	0.5000	+0.0007	+0.0007	1.1875	1.0625	-0+0.0013	0.807	0.650	0.563	0.394	39	1,784	28,261	13,333	4	M4X12	3.5	0.11	
PL 5/8 KE	0.6250	-0.0011	-0.0028	1.3125	1.1875	-0+0.0015	0.965	0.807	0.688	0.472	74	2,679	28,261	14,928	6	M4X16	3.5	0.15	
PL 3/4 KE	0.7500	+0.0008	+0.0008	1.4375	1.3125	-0+0.0015	0.965	0.807	0.688	0.472	89	2,679	23,623	13,478	6	M4X16	3.5	0.18	
PL 7/8 KE	0.8750	-0.0013	-0.0033	1.7500	1.5625	-0+0.0015	1.181	0.984	0.813	0.591	169	4,375	26,377	14,783	6	M5X20	7.2	0.33	
PL1 KE	1.0000			1.8750	1.6875	-0+0.0015	1.181	0.984	0.813	0.591	258	5,834	30,870	18,261	8	M5X20	7.2	0.35	
PL1 1/8 KE	1.1250			2.0000	1.8750	-0+0.0015	1.299	1.102	0.938	0.669	326	6,562	27,246	16,377	9	M5X20	7.2	0.49	
PL1 3/16 KE	1.1875	+0.0010 -0.0015	+0.0010 -0.0039	2.0625	1.9375	-0+0.0015	1.299	1.102	0.938	0.669	382	7,292	28,551	17,536	10	M5X20	7.2	0.51	
PL1 1/4 KE	1.2500			2.1250	2.0000	-0+0.0018	1.299	1.102	0.938	0.669	402	7,292	27,246	16,957	10	M5X20	7.2	0.53	
PL1 3/8 KE	1.3750			2.2500	2.1250	-0+0.0018	1.299	1.102	0.938	0.669	443	7,292	24,783	15,942	10	M5X20	7.2	0.57	
PL1 7/16 KE	1.4375			2.5000	2.3125	-0+0.0018	1.496	1.260	1.063	0.748	523	8,232	23,913	14,783	8	M6X25	12.3	0.84	
PL1 1/2 KE	1.5000			2.5625	2.3750	-0+0.0018	1.496	1.260	1.063	0.748	682	10,290	28,551	18,116	10	M6X25	12.3	0.86	
PL1 5/8 KE	1.6250			2.6875	2.5000	-0+0.0018	1.496	1.260	1.063	0.748	738	10,290	26,377	17,102	10	M6X25	12.3	0.93	
PL1 11/16 KE	1.6875			2.7500	2.5625	-0+0.0018	1.496	1.260	1.063	0.748	767	10,290	25,362	16,812	10	M6X25	12.3	0.95	
PL1 3/4 KE	1.7500			2.8125	2.6250	-0+0.0018	1.496	1.260	1.063	0.748	795	10,290	24,493	16,377	10	M6X25	12.3	0.97	
PL1 7/8 KE	1.8750			2.9375	2.7500	-0+0.0018	1.496	1.260	1.063	0.748	1,022	12,349	27,391	18,696	12	M6X25	12.3	1.04	
PL1 15/16 KE	1.9375			3.0000	2.8125	-0+0.0018	1.496	1.260	1.063	0.748	1,144	13,378	28,841	19,855	13	M6X25	12.3	1.06	
PL2 KE	2.0000	+0.0012 -0.0018	+0.0012 -0.0047	3.0625	2.8750	-0+0.0018	1.594	1.358	1.125	0.748	1,181	13,378	27,826	19,420	13	M6X25	12.3	1.13	
PL2 1/8 KE	2.1250			3.1875	3.0000	-0+0.0018	1.594	1.358	1.125	0.748	1,351	14,405	28,261	20,000	14	M6X25	12.3	1.19	
PL2 3/16 KE	2.1875			3.2500	3.0625	-0+0.0018	1.594	1.358	1.125	0.748	1,391	14,405	27,391	19,565	14	M6X25	12.3	1.21	
PL2 1/4 KE	2.2500			3.3125	3.1250	-0+0.0018	1.594	1.358	1.125	0.748	1,431	14,405	26,667	19,275	14	M6X25	12.3	1.24	
PL2 3/8 KE	2.3750			3.4375	3.2500	-0+0.0021	1.594	1.358	1.125	0.748	1,618	15,434	27,102	19,855	15	M6X25	12.3	1.30	
PL2 7/16 KE	2.4375			3.5000	3.3125	-0+0.0021	1.594	1.358	1.125	0.748	1,661	15,434	26,377	19,420	15	M6X25	12.3	1.32	
PL2 1/2 KE	2.5000			3.5625	3.3750	-0+0.0021	1.594	1.358	1.125	0.748	1,703	15,434	25,797	19,130	15	M6X25	12.3	1.35	
PL2 5/8 KE	2.6250			3.6875	3.5000	-0+0.0021	1.594	1.358	1.125	0.748	1,789	15,434	24,493	18,406	15	M6X25	12.3	1.41	
PL2 11/16 KE	2.6875			3.9375	3.7500	-0+0.0021	1.909	1.594	1.250	0.866	2,708	22,814	30,580	22,319	12	M8X30	29.7	2.01	
PL2 3/4 KE	2.7500			4.0000	3.8125	-0+0.0021	1.909	1.594	1.250	0.866	2,770	22,814	29,855	21,594	12	M8X30	29.7	2.21	
PL2 7/8 KE	2.8750			4.1250	3.9375	-0+0.0021	1.909	1.594	1.250	0.866	2,896	22,814	28,551	20,870	12	M8X30	29.7	2.30	
PL2 15/16 KE	2.9375			4.1875	4.0000	-0+0.0021	1.909	1.594	1.250	0.866	2,959	22,814	27,971	20,580	12	M8X30	29.7	2.34	
PL3 KE	3.0000			4.1875	4.0625	-0+0.0021	1.909	1.594	1.250	0.866	3,022	22,814	27,391	20,290	12	M8X30	29.7	2.36	
PL3 3/8 KE	3.3750	+0.0014 -0.0021	+0.0014 -0.0055	4.6250	4.4375	-0+0.0021	1.949	1.634	1.313	0.866	3,967	26,619	28,406	21,594	14	M8X30	29.7	2.69	
PL3 7/16 KE	3.4375			4.6875	4.5000	-0+0.0021	1.949	1.634	1.313	0.866	4,041	26,619	27,826	21,304	14	M8X30	29.7	2.74	
PL3 1/2 KE	3.5000			5.0000	4.7500	-0+0.0025	2.520	2.126	1.688	1.142	6,532	42,265	33,044	24,348	14	M10X40	60.0	4.39	
PL3 3/4 KE	3.7500			5.2500	5.0625	-0+0.0025	2.520	2.126	1.688	1.142	6,999	42,265	30,725	22,754	14	M10X40	60.0	4.92	
PL3 15/16 KE	3.9375			5.5000	5.2500	-0+0.0025	2.520	2.126	1.688	1.142	7,348	42,265	28,275	22,029	14	M10X40	60.0	5.14	
PL4 KE	4.0000			5.5000	5.3125	-0+0.0025	2.520	2.126	1.688	1.142	7,465	42,265	28,841	21,739	14	M10X40	60.0	5.21	

\*When you apply this wider tolerance to your shaft, transmissible torque Mt and Thrust Pax will be 90% of the rating.





## KE Inch Series

Calculate the minimum hub diameter using the following formula. (This does not apply to nonferrous metals.)

$$\begin{aligned} \text{Y.P. (hub)} &\geq 1.2 P' \\ \text{Y.P. (shaft)} &\geq 1.2 P \end{aligned}$$

$$\text{Min. hub dia. } D_N \geq D \sqrt{\frac{\text{Y.P.} + K_3 \cdot P'}{\text{Y.P.} - K_3 \cdot P'}}$$

Where

- P' = Surface pressure on hub (psi)
- P = Surface pressure on shaft (psi)
- B = Length thru hub or sprocket
- Y.P. = Yield point of hub material (psi)

$$K_3 = 0.8 \quad B \geq 2 \cdot \frac{1}{2}$$

(Use table below.)

$$K_3 = 1.0 \quad \frac{1}{4} \geq B < 2 \cdot \frac{1}{2}$$

(Use table on the following page.)

$\frac{1}{4}$  and  $\frac{1}{2}$  are defined in the drawing on the previous page.  
If  $B < \frac{1}{4}$ , consult U.S. Tsubaki.

### Min. Hub Dia. ( $D_N$ in inches) $K_3 = 0.8$

Model Number	Contact Pressure in the Hub Bore (lbs./inch <sup>2</sup> )	Yield Point of Various Hub Material Y.P. (psi) Y.P. = $\sigma_{0.2}$					
		32,000	35,000	40,000	45,000	50,000	56,000
		Class Number 40 Grade Number 60-30	1015 Class Number 50 Grade Number 65-35	1018, 1020, 1117 Class Number 60 Grade Number 40010	1118 Grade Number 45006	1030 Grade Number 50005 Grade Number 80-65	1040, 1045 1137, 1141, 1144 Grade Number 50005
	<b>P'</b>						
PL $\frac{3}{8}$ KE	11,304	1.2535	1.2212	1.1800	1.1493	1.1256	1.1034
PL $\frac{1}{2}$ KE	13,333	1.5026	1.4555	1.3964	1.3529	1.3195	1.2885
PL $\frac{5}{8}$ KE	14,928	1.7577	1.6944	1.6157	1.5585	1.5150	1.4747
PL $\frac{3}{4}$ KE	13,478	1.8637	1.8046	1.7303	1.6758	1.6340	1.5951
PL $\frac{7}{8}$ KE	14,783	2.3030	2.2211	2.1192	2.0450	1.9885	1.9361
PL1 KE	18,261	2.7626	2.6321	2.4748	2.3633	2.2800	2.2040
PL1 $\frac{1}{8}$ KE	16,377	2.8966	2.7789	2.6345	2.5305	2.4520	2.3797
PL1 $\frac{3}{16}$ KE	17,536	3.1008	2.9625	2.7945	2.6748	2.5849	2.5027
PL1 $\frac{1}{4}$ KE	16,957	3.1444	3.0105	2.8470	2.7299	2.6417	2.5608
PL1 $\frac{3}{8}$ KE	15,942	3.2404	3.1134	2.9569	2.8439	2.7583	2.6794
PL1 $\frac{7}{16}$ KE	14,783	3.4085	3.2872	3.1364	3.0266	2.9430	2.8655
PL1 $\frac{1}{2}$ KE	18,116	3.8703	3.6896	3.4714	3.3166	3.2008	3.0951
PL1 $\frac{5}{8}$ KE	17,102	3.9479	3.7779	3.5705	3.4221	3.3104	3.2080
PL1 $\frac{11}{16}$ KE	16,812	4.0110	3.8422	3.6358	3.4878	3.3762	3.2738
PL1 $\frac{3}{4}$ KE	16,377	4.0552	3.8905	3.6882	3.5427	3.4328	3.3316
PL1 $\frac{7}{8}$ KE	18,696	4.5646	4.3416	4.0738	3.8849	3.7441	3.6158
PL1 $\frac{15}{16}$ KE	19,855	4.8480	4.5886	4.2814	4.0670	3.9084	3.7649
PL2 KE	19,420	4.8852	4.6326	4.3317	4.1210	3.9646	3.8227
PL2 $\frac{1}{8}$ KE	20,000	5.1962	4.9151	4.5826	4.3510	4.1798	4.0249
PL2 $\frac{3}{16}$ KE	19,565	5.2286	4.9551	4.6300	4.4026	4.2340	4.0811
PL2 $\frac{1}{4}$ KE	19,275	5.2849	5.0147	4.6924	4.4662	4.2983	4.1458
PL2 $\frac{3}{8}$ KE	19,855	5.6021	5.3024	4.9474	4.6997	4.5164	4.3505
PL2 $\frac{7}{16}$ KE	19,420	5.6286	5.3375	4.9909	4.7481	4.5679	4.4044
PL2 $\frac{1}{2}$ KE	19,130	5.6809	5.3937	5.0506	4.8095	4.6302	4.4674
PL2 $\frac{5}{8}$ KE	18,406	5.7561	5.4812	5.1501	4.9159	4.7410	4.5815
PL2 $\frac{11}{16}$ KE	22,319	7.0403	6.5843	6.0613	5.7064	5.4484	5.2180
PL2 $\frac{3}{4}$ KE	21,594	6.9743	6.5474	6.0526	5.7139	5.4664	5.2444
PL2 $\frac{7}{8}$ KE	20,870	7.0237	6.6172	6.1416	5.8133	5.5721	5.3550
PL2 $\frac{15}{16}$ KE	20,580	7.0648	6.6651	6.1955	5.8705	5.6312	5.4153
PL3 KE	20,290	7.1051	6.7120	6.2487	5.9269	5.6895	5.4751
PL3 $\frac{3}{8}$ KE	21,594	8.1176	7.6207	7.0448	6.6506	6.3625	6.1041
PL3 $\frac{7}{16}$ KE	21,304	8.1486	7.6609	7.0935	6.7037	6.4183	6.1618
PL3 $\frac{1}{2}$ KE	24,348	9.6311	8.9899	8.0866	7.5500	7.1666	6.8286
PL3 $\frac{3}{4}$ KE	22,754	9.6570	9.0099	8.2726	7.7749	7.4144	7.0933
PL3 $\frac{15}{16}$ KE	22,029	9.7537	9.1361	8.4248	7.9403	7.5874	7.2716
PL4 KE	21,739	9.7682	9.1365	8.4641	7.9861	7.6372	7.3245



**Min. Hub Dia. (DN in inches)  $K_3 = 1.0$**

Model Number	Contact Pressure in the Hub Bore (lbs./inch <sup>2</sup> ) <b>P</b>	Yield Point of Various Hub Material Y.P. (psi) Y.P. = $\sigma_{0.2}$					
		32,000	35,000	40,000	45,000	50,000	56,000
		Class Number 40 Grade Number 60-30	1015 Class Number 50 Grade Number 65-35	1018, 1020, 1117 Class Number 60 Grade Number 40010	1118 Grade Number 45006	1030 Grade Number 50005 Grade Number 80-65	1040, 1045 Grade Number 1137, 1141, 1144 Grade Number 50005
PL 3/8 KE	11,304	1.3561	1.3105	1.2535	1.2119	1.1800	1.1504
PL 1/2 KE	13,333	1.6558	1.5869	1.5026	1.4421	1.3964	1.3544
PL 5/8 KE	14,928	1.9688	1.8729	1.7577	1.6764	1.6157	1.5605
PL 3/4 KE	13,478	2.0566	1.9698	1.8637	1.7877	1.7303	1.6777
PL 7/8 KE	14,783	2.5756	2.4519	2.3030	2.1978	2.1192	2.0476
PL1 KE	18,261	3.2276	3.0101	2.7626	2.5956	2.4748	2.3672
PL1 1/8 KE	16,377	3.2294	3.1143	2.8966	2.7457	2.6345	3.5341
PL1 3/16 KE	17,536	3.5856	3.3605	3.1008	2.9236	2.7945	2.6789
PL1 1/4 KE	16,957	3.6080	3.3939	3.1444	2.9728	2.8470	2.7340
PL1 3/8 KE	15,942	3.6717	3.4742	3.2404	3.0774	2.9569	2.8478
PL1 7/16 KE	14,783	3.8119	3.6288	3.4085	3.2527	3.1364	3.0305
PL1 1/2 KE	18,116	4.5123	4.2125	3.8703	3.6390	2.4714	3.3219
PL1 5/8 KE	17,102	4.5386	4.2655	3.9479	3.7300	3.5705	3.4272
PL1 11/16 KE	16,812	4.5939	4.3250	4.0110	3.7946	3.6358	3.4929
PL1 3/4 KE	16,377	4.6192	4.3600	4.0552	3.8439	3.6882	3.5478
PL1 7/8 KE	18,696	5.3682	4.9906	4.5646	4.2794	4.0738	3.8914
PL1 15/16 KE	19,855	5.8115	5.3526	4.8480	4.5169	4.2814	4.0744
PL2 KE	19,420	5.8125	5.3732	4.8852	4.5624	4.3317	4.1282
PL2 1/8 KE	20,000	6.2450	5.7446	5.1962	4.8374	4.5826	4.3589
PL2 3/16 KE	19,565	6.2364	5.7581	5.2286	4.8793	4.6300	4.4104
PL2 1/4 KE	19,275	6.2730	5.8057	5.2849	4.9396	4.6924	4.4740
PL2 3/8 KE	19,855	6.7155	6.1852	5.6021	5.2195	4.9474	4.7082
PL2 7/16 KE	19,420	6.6970	6.1909	5.6286	5.2567	4.9909	4.7564
PL2 1/2 KE	19,130	6.7270	6.2331	5.6809	5.3138	5.0506	4.8177
PL2 5/8 KE	18,406	6.7396	6.2790	5.7561	5.4043	5.1501	4.9239
PL2 11/16 KE	22,319	8.8827	7.9727	7.0403	6.4605	6.0613	5.7184
PL2 3/4 KE	21,594	8.6522	7.8333	6.9743	6.4308	6.0526	5.7254
PL2 7/8 KE	20,870	8.5818	7.8296	7.0237	6.5056	6.1416	5.8245
PL2 15/16 KE	20,580	8.5830	7.8530	7.0648	6.5550	6.1955	5.8816
PL3 KE	20,290	8.5847	7.8761	7.1051	6.6036	6.2487	5.9379
PL3 3/8 KE	21,594	10.0706	9.1175	8.1176	7.4850	7.0448	6.6640
PL3 7/16 KE	21,304	10.0457	9.1240	8.1486	7.5274	7.0935	6.7170
PL3 1/2 KE	24,348	12.8898	11.2119	9.6311	8.7042	8.0866	7.5680
PL3 3/4 KE	22,754	12.3196	10.9941	9.6570	8.8350	8.2726	7.7917
PL3 15/16 KE	22,029	12.2209	11.0083	9.7537	8.9681	8.4248	7.9567
PL4 KE	21,739	12.1576	10.9888	9.7682	8.9986	8.4641	8.0024

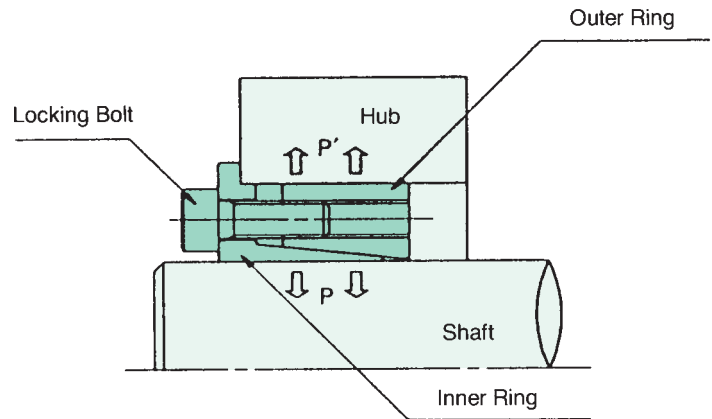
# AE Metric Self-Centering Series



19mm ~ 150mm Shaft Size Available

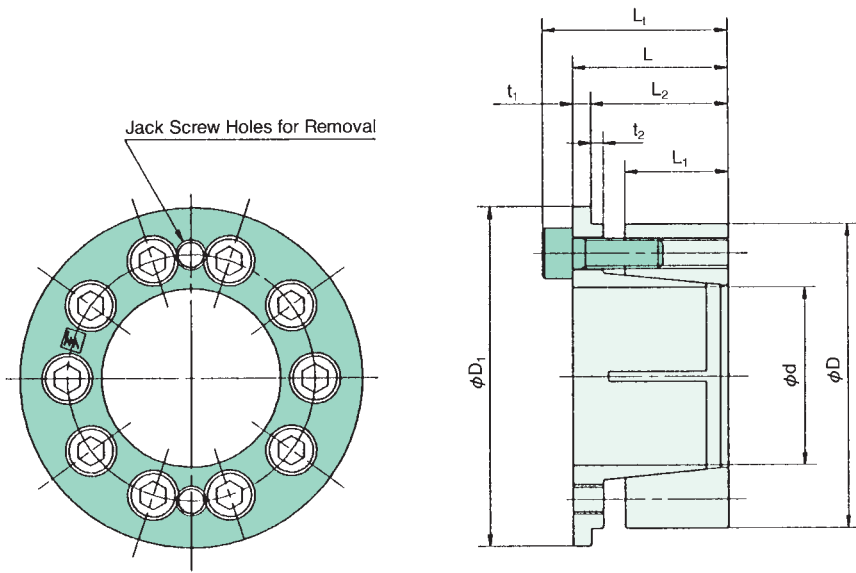
## Features and Applications

- **Self-Centering Function**  
Straight and narrow hubs can be used with AE Series POWER-LOCK®.
- **Interchangeable with POWER-LOCK AS Metric Series**  
Same size inside diameter and outside diameter as AS Series POWER-LOCK.
- **Easy and Precise Positioning**
- **Simple Construction**



### Model Number

PL 019 X 047 AE  
 |           |           |  
 |           |           | AE Series  
 |           |           | Outside Diameter (mm)  
 |           |           | Shaft Size (mm)  
 |           |           | POWER-LOCK



**<Conversion>**

1 ft./lbs. = 0.1382 kgfm = 1.3550 N•m

1 psi = 0.0007 kgf/mm<sup>2</sup> = 0.0069 MPa

unit: mm

Model Number Inside x Outside Dia. Dia.	Tolerance		Dimensions (in.)							Trans- missible Torque (ft./lbs.)	Trans- missible Thrust (lbs.)	Contact Pressure (psi)		Locking Bolts			Approx. Wt. (lbs.)
	Shaft O.D.	Hub I.D.	L <sub>1</sub>	L <sub>2</sub>	L	L <sub>t</sub>	t <sub>1</sub>	t <sub>2</sub>	D <sub>1</sub>			Mt	Pax	P	P'	Qty.	
dxD	t <sub>1</sub>	t <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>	L	L <sub>t</sub>	t <sub>1</sub>	t <sub>2</sub>	D <sub>1</sub>	Mt	Pax	P	P'	Qty.	Size	Tight- ening Torque (ft./lbs.)	Ma
PL019X047 AE	-0.0013" +0	+0.0013" -0	.7480	.9764	1.0748	1.3110	0.0984	0.0787	2.0866	195.6	6,320	41,640	13,490	6	M6 X 18	12.3	0.618
PL020X047 AE			.7480	.9764	1.0748	1.3110	0.0984	0.0787	2.0866	202.2	6,320	39,470	13,490	6	M6 X 18	12.3	0.596
PL022X047 AE			.7480	.9764	1.0748	1.3110	0.0984	0.0787	2.0866	224.4	6,320	35,980	13,490	6	M6 X 18	12.3	0.574
PL024X050 AE			.7480	.9961	1.0945	1.3307	0.0984	0.0787	2.2441	289.3	7,380	39,760	14,800	7	M6 X 18	12.3	0.640
PL025X050 AE			.7480	.9961	1.0945	1.3307	0.0984	0.0787	2.2441	304.1	7,380	40,920	14,800	7	M6 X 18	12.3	0.640
PL028X055 AE			.7480	.9961	1.1260	1.3622	0.1299	0.0787	2.4409	383.0	8,440	39,030	15,380	8	M6 X 18	12.3	0.773
PL030X055 AE	.7480	.9961	1.1260	1.3622	0.1299	0.0787	2.4409	412.5	8,440	36,420	15,380	8	M6 X 18	12.3	0.751		
PL032X060 AE	-0.0015" +0	+0.0015" -0	.8070	1.0748	1.2165	1.4528	0.1417	0.0984	2.6378	549.8	10,570	38,740	16,400	10	M6 X 18	12.3	0.971
PL035X060 AE			.8070	1.0748	1.2165	1.4528	0.1417	0.0984	2.6378	607.4	10,570	35,400	16,400	10	M6 X 18	12.3	0.905
PL038X065 AE			.8070	1.0827	1.2244	1.4606	0.1417	0.0984	2.8740	658.3	10,570	33,080	15,090	10	M6 X 18	12.3	1.060
PL040X065 AE			.8070	1.0827	1.2244	1.4606	0.1417	0.0984	2.8740	687.1	10,570	31,490	15,090	10	M6 X 18	12.3	0.993
PL042X075 AE			.9252	1.2126	1.3701	1.6850	0.1575	0.1181	3.2677	1,210.0	17,590	41,350	18,860	9	M8 X 22	29.7	1.678
PL045X075 AE			.9252	1.2126	1.3701	1.6850	0.1575	0.1181	3.2677	1,292.0	17,590	38,600	18,860	9	M8 X 22	29.7	1.567
PL048X080 AE	.9252	1.2205	1.3780	1.6929	0.1575	0.1181	3.4646	1,520.0	19,550	40,630	19,730	10	M8 X 22	29.7	1.788		
PL050X080 AE	-0.0018" +0	+0.0018" -0	.9252	1.2205	1.3780	1.6929	0.1575	0.1181	3.4646	1,594.0	19,550	39,130	19,730	10	M8 X 22	29.7	1.700
PL055X085 AE			.9252	1.2126	1.3701	1.6850	0.1575	0.1181	3.7008	1,734.0	19,550	35,110	18,570	10	M8 X 22	29.7	1.854
PL060X090 AE			.9252	1.2126	1.3701	1.6850	0.1575	0.1181	3.8976	1,882.0	19,550	31,780	17,700	10	M8 X 22	29.7	1.987
PL065X095 AE			.9252	1.2126	1.3701	1.6850	0.1575	0.1181	4.0946	2,458.0	23,390	35,690	19,880	12	M8 X 22	29.7	2.119
PL070X110 AE			1.1024	1.4370	1.6142	2.0079	0.1772	0.1575	4.7244	3,542.0	30,900	35,840	19,150	10	M10 X 25	60.0	3.753
PL075X115 AE			1.1024	1.4370	1.6142	2.0079	0.1772	0.1575	4.9213	3,764.0	30,900	33,370	18,280	10	M10 X 25	60.0	3.951
PL080X120 AE	1.1024	1.4370	1.6142	2.0079	0.1172	0.1575	5.1181	4,849.0	37,080	37,080	21,040	12	M10 X 25	60.0	4.172		
PL085X125 AE	-0.0021" +0	+0.0021" -0	1.1024	1.4370	1.6142	2.0079	0.1772	0.1575	5.3150	5,136.0	37,080	35,400	20,170	12	M10 X 25	60.0	4.371
PL090X130 AE			1.1024	1.4763	1.6929	2.0866	0.2165	0.1575	5.5118	5,498.0	37,080	34,970	19,440	12	M10 X 25	60.0	4.746
PL095X135 AE			1.1024	1.4763	1.6929	2.0866	0.2165	0.1575	5.7087	6,723.0	43,480	38,740	21,910	14	M10 X 25	60.0	4.945
PL100X145 AE			1.3386	1.7323	1.9685	2.3622	0.2362	0.1575	6.1024	7,601.0	46,570	31,595	17,850	15	M10 X 25	60.0	6.777
PL110X155 AE			1.3386	1.7323	1.9685	2.3622	0.2362	0.1575	6.5748	8,413.0	46,570	28,730	16,830	15	M10 X 25	60.0	7.395
PL120X165 AE			1.3386	1.7323	1.9685	2.3622	0.2362	0.1575	6.9685	10,996.0	55,840	31,595	18,860	18	M10 X 25	60.0	7.925
PL130X180 AE	-0.0025" +0	+0.0025" -0	1.4961	1.9685	2.2441	2.7165	0.2756	0.2362	7.6772	14,460.0	67,770	31,050	18,720	15	M12 X 35	105.0	11.126
PL140X190 AE			1.4961	1.9685	2.2441	2.7165	0.2756	0.2362	8.0709	15,570.0	67,770	28,730	17,850	15	M12 X 35	105.0	11.876
PL150X200 AE			1.4961	1.9685	2.2835	2.7559	0.3150	0.2362	8.4646	19,930.0	81,230	32,070	20,310	18	M12 X 35	105.0	12.826

Note: If your application requires slightly larger tolerances than noted, refer to page C-88.

# AE Metric Self-Centering Series

## Minimum Hub Diameter ( $D_N$ ) When Using Hub With Guide

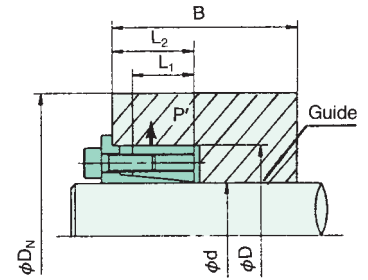
This table shows minimum hub  $D_N$ , which can tolerate surface pressure  $P'$ .  
Based on  $B \geq 2L_1$

### <Example>

Hub Material Yield Point = 50,000 psi } Min.  $D_N = 2.7953"$   
PL030 X 055 AE

### <Conversion>

1 psi = 0.0007 kgf/mm<sup>2</sup> = 0.0069 MPa



## Minimum Hub Diameter ( $D_N$ in inches)

Model Number	Contact Pressure in the Hub Bore (psi) $P'$	Yield Point of Various Hub Material Y.P. (psi) Y.P. = $\sigma_{0.2}$					
		32,000	35,000	40,000	45,000	50,000	56,000
		Class Number 40 Grade Number 60-30	1015 Class Number 50 Grade Number 65-35	1018, 1020, 1117 Class Number 60 Grade Number 40010	1118 Grade Number 45006	1030 Grade Number 50005 Grade Number 80-65	1040, 1045, 1137, 1141, 1144 Grade Number 60004
PL019X047 AE	13,490	2.6378	2.5591	2.4409	2.3622	2.3228	2.2835
PL020X047 AE	13,490	2.6378	2.5591	2.4409	2.3622	2.3228	2.2835
PL022X047 AE	13,490	2.6378	2.5591	2.4409	2.3622	2.3228	2.2835
PL024X050 AE	14,800	2.9134	2.8346	2.6772	2.5984	2.5197	2.4409
PL025X050 AE	14,800	2.9134	2.8346	2.6772	2.5984	2.5197	2.4409
PL028X055 AE	15,380	3.2677	3.1496	2.9921	2.8740	2.7953	2.7165
PL030X055 AE	15,380	3.2677	3.1496	2.9921	2.8740	2.7953	2.7165
PL032X060 AE	16,400	3.6614	3.5039	3.3465	3.1890	3.1102	3.0315
PL035X060 AE	16,400	3.6614	3.5039	3.3465	3.1890	3.1102	3.0315
PL038X065 AE	15,090	3.8189	3.7008	3.5039	3.3858	3.3071	3.1890
PL040X065 AE	15,090	3.8189	3.7008	3.5039	3.3858	3.3071	3.1890
PL042X075 AE	18,860	4.9606	4.6850	4.4094	4.2126	4.0551	3.8976
PL045X075 AE	18,860	4.9606	4.6850	4.4094	4.2126	4.0551	3.8976
PL048X080 AE	19,730	5.4331	5.1181	4.8031	4.5669	4.3701	4.2126
PL050X080 AE	19,730	5.4331	5.1181	4.8031	4.5669	4.3701	4.2126
PL055X085 AE	18,570	5.5512	5.2756	4.9606	4.7244	4.5669	4.4094
PL060X090 AE	17,700	5.7087	5.4724	5.1575	4.9213	4.7638	4.6063
PL065X095 AE	19,880	6.4567	6.1417	5.7087	5.4331	5.1969	5.0394
PL070X110 AE	19,150	7.3220	6.9291	6.4961	6.1811	5.9449	5.7480
PL075X115 AE	18,280	7.4409	7.0866	6.6535	6.3780	6.1417	5.9449
PL080X120 AE	21,040	8.5039	7.9921	7.4016	7.0079	6.7323	6.4567
PL085X125 AE	20,170	8.5827	8.1102	7.5591	7.1654	6.8898	6.6535
PL090X130 AE	19,440	8.7008	8.2677	7.7165	7.3622	7.0866	6.8110
PL095X135 AE	21,910	9.8425	9.2126	8.5039	8.0315	7.6772	7.3622
PL100X145 AE	17,850	9.2520	8.8189	8.3071	7.9528	7.6772	7.4409
PL110X155 AE	16,830	9.5669	9.1732	8.6614	8.3071	8.0709	7.7953
PL120X165 AE	18,860	10.8661	10.3150	9.6850	9.2126	8.8976	8.5827
PL130X180 AE	18,720	11.7717	11.2205	10.5118	10.0394	9.6850	9.3307
PL140X190 AE	17,850	12.0866	11.5354	10.8661	10.3937	10.0394	9.7244
PL150X200 AE	20,310	13.7795	13.0315	12.1260	11.4961	11.0630	10.6299

Note: Minimum Hub Diameter ( $D_N$ ) calculated based upon the Formula (3) at (K) = 0.8. Refer to page C-89.

## Minimum Hub Diameter ( $D_N$ )

### 1. When Using Hub with Guide

Based on:  $L_2 < B < 2L_1$

or

### 2. When Using Hub without Guide

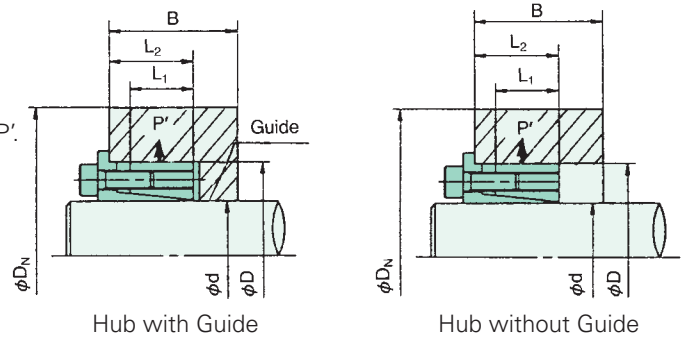
This table shows minimum hub  $D_N$ , which can tolerate surface pressure  $P'$ .

#### <Example>

Hub Material Yield Point = 50,000 psi } Min.  $D_N = 2.9921"$   
 PL030 X 055 AE

#### <Conversion>

1 psi = 0.0007 kgf/mm<sup>2</sup> = 0.0069 MPa



### Minimum Hub Diameter ( $D_N$ in inches)

Model Number	Contact Pressure in the Hub Bore (psi)	Yield Point of Various Hub Material Y.P. (psi) Y.P. = $\sigma_{0.2}$					
		32,000	35,000	40,000	45,000	50,000	56,000
		Class Number 40 Grade Number 60-30	1015 Class Number 50 Grade Number 65-35	1018, 1020, 1117 Class Number 60 Grade Number 40010	1118 Grade Number 45006	1030 Grade Number 50005 Grade Number 80-65	1040, 1045, 1137, 1141, 1144 Grade Number 60004
	$P'$						
PL019X047 AE	13,490	2.9134	2.7953	2.6378	2.5147	2.4409	2.3622
PL020X047 AE	13,490	2.9134	2.7953	2.6378	2.5197	2.4409	2.3622
PL022X047 AE	13,490	2.9134	2.7953	2.6378	2.5197	2.4409	2.3622
PL024X050 AE	14,800	3.2678	3.1102	2.9134	2.7953	2.6772	2.5984
PL025X050 AE	14,800	3.2678	3.1102	2.9134	2.7953	2.6772	2.5984
PL028X055 AE	15,380	3.6614	3.5039	3.2677	3.1102	2.9921	2.8740
PL030X055 AE	15,380	3.6614	3.5039	3.2677	3.1102	2.9921	2.8740
PL032X060 AE	16,400	4.1732	3.9370	3.6614	3.4646	3.3465	3.2283
PL035X060 AE	16,400	4.1732	3.9370	3.6614	3.4646	3.3465	3.2283
PL038X065 AE	15,090	4.2913	4.0945	3.8189	3.6614	3.5039	3.3858
PL040X065 AE	15,090	4.2913	4.0945	3.8189	3.6614	3.5039	3.3858
PL042X075 AE	18,860	5.8268	5.3937	4.9606	4.6457	4.4094	4.2126
PL045X075 AE	18,860	5.8268	5.3937	4.9606	4.6457	4.4094	4.2126
PL048X080 AE	19,730	6.4961	5.9843	5.4331	5.0394	4.8031	4.5669
PL050X080 AE	19,730	6.4961	5.9843	5.4331	5.0394	4.8031	4.5669
PL055X085 AE	18,570	6.4961	6.0630	5.5512	5.1969	4.9606	4.7244
PL060X090 AE	17,700	6.6142	6.1811	5.7087	5.3937	5.1575	4.9213
PL065X095 AE	19,880	7.7559	7.1260	6.4567	6.0236	5.7087	5.4331
PL070X110 AE	19,150	8.6614	8.0315	7.3228	6.8504	6.4961	6.1811
PL075X115 AE	18,280	8.7008	8.1102	7.4409	6.9685	6.6535	6.3780
PL080X120 AE	21,040	10.3937	9.4882	8.5039	7.8740	7.4016	7.0472
PL085X125 AE	20,170	10.3543	9.4882	8.5827	7.9921	7.5591	7.2047
PL090X130 AE	19,440	10.3937	9.6063	8.7008	8.1496	7.7165	7.3622
PL095X135 AE	21,910	12.2835	11.1024	9.8425	9.0551	8.5039	8.0315
PL100X145 AE	17,850	10.7480	10.0394	9.2520	8.7008	8.3071	7.9528
PL110X155 AE	16,830	10.9843	10.3150	9.5667	9.0551	8.6614	8.3465
PL120X165 AE	18,860	12.7953	11.8898	10.8661	10.1575	9.2520	9.2520
PL130X180 AE	18,720	13.8583	12.8740	11.7717	11.0630	10.5118	10.0394
PL140X190 AE	17,850	14.0551	13.1496	12.0866	11.3780	10.8661	10.4331
PL150X200 AE	20,310	16.6929	15.3150	13.7795	12.8346	12.1260	11.5354

Note: Minimum Hub Diameter ( $D_N$ ) calculated based upon the Formula (3) at (K) = 1.0. Refer to page C-89.

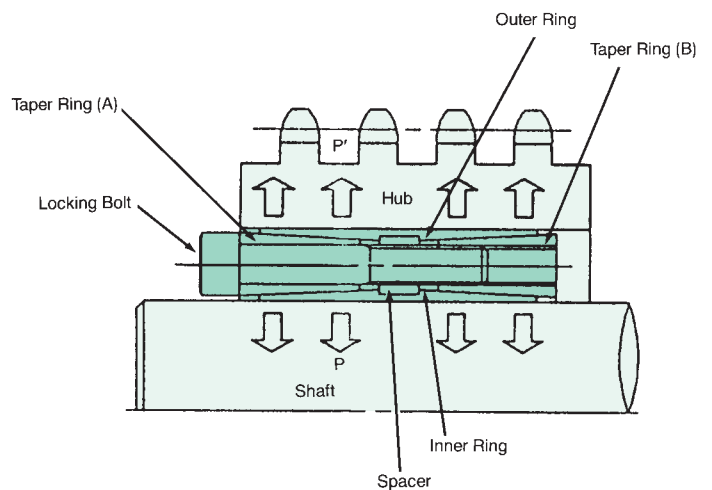
# AD Metric Double Torque Series



45mm ~ 300 mm shaft size available

## Features and Applications

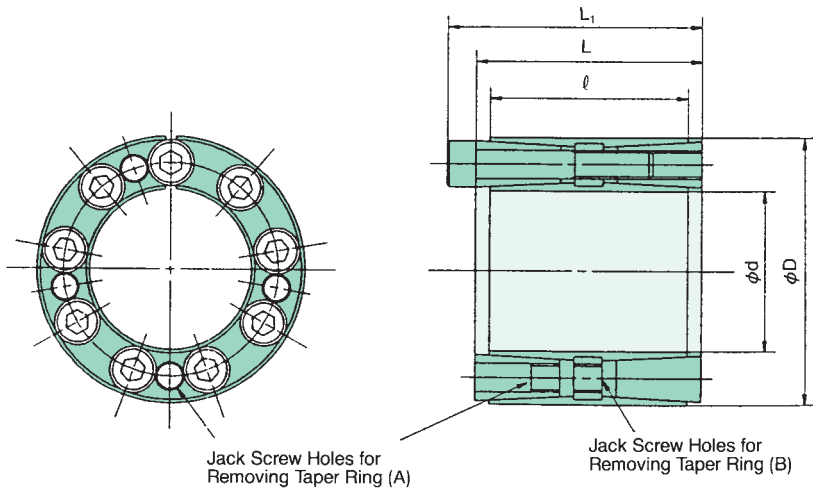
- **More than Twice the Transmissible Torque than that of AS Metric Series**
- **Interchangeable with POWER-LOCK® AS Metric Series**  
Same size inside and outside diameter as AS Series POWER-LOCK®
- **Self-Centering Function**  
Straight and narrow hubs can be used with AD Series POWER-LOCK
- **Easy and Precise Positioning**



### Model Number

PL 045 X 075 AD  
 |           |           |  
 |           |           AD Series  
 |           |           Outside Diameter (mm)  
 |           |           Shaft Size (mm)  
 |           |           POWER-LOCK





**<Conversion>**

1 ft./lbs. = 0.1382 kgfm = 1.3550 N•m  
 1 psi = 0.0007 kgf/mm<sup>2</sup> = 0.0069 MPa

Model Number Inside x Outside Dia. Dia.	Tolerance		Dimensions (in.)			Trans- missible Torque (ft./lbs.)	Trans- missible Thrust (lbs.)	Contact Pressure (psi)		Locking Bolts			Approx. Weight (lbs.)
	Shaft O.D.	Hub I.D.	1	L	L <sub>1</sub>			Shaft	Hub Bore	Qty.	Size	Tightening Torque (ft./lbs.)	
<b>dxD</b>	<b>t<sub>1</sub></b>	<b>t<sub>2</sub></b>				<b>Mt</b>	<b>Pax</b>	<b>P</b>	<b>P'</b>			<b>Ma</b>	
PL045X075 AD	-0.0015" +0	+0.0015" -0	2.2047	2.5197	2.8346	2,819	38,180	25,970	15,670	9	M8 X 50	29.7	2.759
PL048X080 AD			2.2047	2.5197	2.8346	3,004	38,180	24,380	14,660	9	M8 X 50	29.7	3.113
PL050X080 AD			2.2047	2.5197	2.8346	3,107	38,180	23,510	14,660	9	M8 X 50	29.7	2.980
PL055X085 AD	-0.0018" +0	+0.0018" -0	2.2047	2.5197	2.8346	3,402	38,180	21,330	13,780	9	M8 X 50	29.7	3.201
PL060X090 AD			2.2047	2.5197	2.8346	4,553	46,790	23,940	15,960	11	M8 X 50	29.7	3.422
PL065X095 AD			2.2047	2.5197	2.8346	4,989	46,790	18,860	12,910	11	M8 X 50	29.7	4.238
PL070X110 AD			2.7560	3.0709	3.4646	8,561	74,390	25,970	16,540	11	M10 X 70	60.0	6.865
PL075X115 AD			2.7560	3.0709	3.4646	9,077	74,390	24,230	15,820	11	M10 X 70	60.0	7.241
PL080X120 AD			2.7560	3.0709	3.4646	10,630	81,010	24,810	16,540	12	M10 X 70	60.0	7.616
PL085X125 AD	-0.0021" +0	+0.0021" -0	2.7560	3.0709	3.4646	11,290	81,010	23,360	15,820	12	M10 X 70	60.0	8.013
PL090X130 AD			2.7560	3.0709	3.4646	12,920	87,850	23,940	16,540	13	M10 X 70	60.0	8.389
PL095X135 AD			2.7560	3.0709	3.4646	13,650	87,850	22,640	15,960	13	M10 X 70	60.0	8.764
PL100X145 AD			3.5433	3.9370	4.4094	19,560	119,600	22,780	15,670	12	M12 X 90	104.8	13.510
PL110X155 AD			3.5433	3.9370	4.4094	23,390	129,800	22,490	15,961	13	M12 X 90	104.8	14.614
PL120X165 AD			3.5433	3.9370	4.4094	29,450	149,700	23,800	17,270	15	M12 X 90	104.8	15.717
PL130X180 AD	-0.0025" +0	+0.0025" -0	4.0945	4.5670	5.1181	37,420	175,500	22,200	16,110	13	M14 X 90	166.1	21.943
PL140X190 AD			4.0945	4.5670	5.1181	46,420	202,600	23,800	17,560	15	M14 X 90	166.1	23.400
PL150X200 AD			4.0945	4.5670	5.1181	53,060	216,100	23,800	17,850	16	M14 X 90	166.1	24.724
PL160X210 AD			4.0945	4.5670	5.1181	60,150	229,600	23,650	17,850	17	M14 X 90	166.1	26.270
PL170X225 AD			5.2756	5.7480	6.3780	78,230	280,400	21,180	15,960	15	M16 X 120	256.8	39.514
PL180X235 AD			5.2756	5.7480	6.3780	88,560	300,200	21,330	16,400	16	M16 X 120	256.8	41.722
PL190X250 AD	-0.0028" +0	+0.0028" -0	5.2756	5.7480	6.3780	98,890	317,900	21,470	16,400	17	M16 X 120	256.8	48.124
PL200X260 AD			5.2756	5.7480	6.3780	104,100	317,900	20,310	15,670	17	M16 X 120	256.8	50.331
PL220X285 AD			5.2756	5.7480	6.3780	135,100	375,300	21,770	17,120	20	M16 X 120	256.8	54.746
PL240X305 AD			5.2756	5.7480	6.3780	162,400	412,800	21,910	17,410	22	M16 X 120	256.8	64.680
PL260X325 AD	-0.0032" +0	+0.0032" -0	5.2756	5.7480	6.3780	175,600	412,800	16,540	13,200	22	M16 X 120	256.8	85.430
PL280X355 AD			6.4960	6.9685	7.7560	268,600	585,000	21,770	17,120	20	M20 X 150	498.9	107.064
PL300X375 AD			6.4960	6.9685	7.7560	316,600	644,600	22,350	17,850	22	M20 X 150	498.9	113.687



# AD Metric Double Torque Series

## Minimum Hub Diameter ( $D_N$ ) When Using Hub With Guide

Suggested hub diameter for a single POWER-LOCK® AD. This table shows minimum hub  $D_N$ , which can tolerate surface pressure  $P'$  based on:

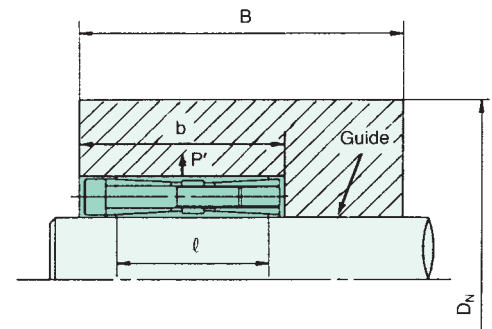
$$B \geq 2l$$

### <Example>

$$\left. \begin{array}{l} \text{Hub Material Yield Point} = 50,000 \text{ psi} \\ \text{PL060 X 090AD} \end{array} \right\} \text{Min. } D_N = 4.330''$$

### <Conversion>

$$1 \text{ psi} = 0.0007 \text{ kgf/mm}^2 = 0.0069 \text{ MPa}$$



Hub with guide

## Minimum Hub Diameter ( $D_N$ in inches)

Model Number	Contact Pressure in the Hub Bore (psi)	Yield Point of Various Hub Material Y.P. (psi) Y.P. = $\sigma_{0.2}$					
		32,000	35,000	40,000	45,000	50,000	56,000
	$P'$	Class Number 40 Grade Number 60-30	1015 Class Number 50 Grade Number 65-35	1018, 1020, 1117 Class Number 60 Grade Number 40010	1118 Grade Number 45006	1030 Grade Number 50005 Grade Number 80-65	1040, 1045, 1137, 1141, 1144 Grade Number 60004
PL045X075 AD	15,670	4.02	3.90	3.78	3.66	3.58	3.50
PL048X080 AD	14,660	4.17	4.09	3.94	3.86	3.78	3.70
PL050X080 AD	14,660	4.17	4.09	3.94	3.86	3.78	3.70
PL055X085 AD	13,780	4.37	4.29	4.13	4.06	3.98	3.90
PL060X090 AD	15,960	4.84	4.72	4.53	4.41	4.33	4.21
PL065X095 AD	12,910	4.80	4.69	4.57	4.45	4.37	4.33
PL070X110 AD	16,540	5.98	5.83	5.59	5.43	5.31	5.20
PL075X115 AD	15,820	6.18	5.98	5.79	5.63	5.51	5.39
PL080X120 AD	16,540	6.54	6.34	6.10	5.94	5.79	5.67
PL085X125 AD	15,820	6.69	6.50	6.30	6.10	5.98	5.87
PL090X130 AD	16,540	7.09	6.85	6.61	6.42	6.26	6.14
PL095X135 AD	15,960	7.24	7.05	6.81	6.61	6.46	6.34
PL100X145 AD	15,670	7.76	7.52	7.28	7.09	6.93	6.77
PL110X155 AD	15,960	8.31	8.11	7.80	7.60	7.44	7.28
PL120X165 AD	17,270	9.09	8.82	8.46	8.23	8.03	7.83
PL130X180 AD	16,110	9.69	9.41	9.09	8.82	8.62	8.46
PL140X190 AD	17,560	10.55	10.24	9.80	9.53	9.29	9.06
PL150X200 AD	17,850	11.18	10.83	10.39	10.04	9.80	9.57
PL160X210 AD	17,850	11.73	11.34	10.91	10.55	10.28	10.04
PL170X225 AD	15,960	12.09	11.73	11.34	11.02	10.79	10.55
PL180X235 AD	16,400	12.72	12.36	11.89	11.57	11.30	11.06
PL190X250 AD	16,400	13.54	13.15	12.68	12.32	12.05	11.77
PL200X260 AD	15,670	13.86	13.50	13.03	12.68	12.40	12.13
PL220X285 AD	15,670	15.67	15.20	14.61	14.17	13.82	13.54
PL240X305 AD	17,410	16.85	16.34	15.71	15.24	14.84	14.53
PL260X325 AD	13,200	16.50	16.14	15.67	15.31	15.04	14.76
PL280X355 AD	17,120	19.53	18.94	18.19	17.64	17.24	16.85
PL300X375 AD	17,850	20.94	20.28	19.45	18.82	18.39	17.95

Note: Minimum Hub Diameter ( $D_N$ ) calculated based upon the Formula (3) at (K) = 0.6. Refer to page C-89.

## Minimum Hub Diameter ( $D_N$ )

### 1. When Using Hub with Guide

Based on:  $b < B < 21$

or

### 2. When Using Hub without Guide

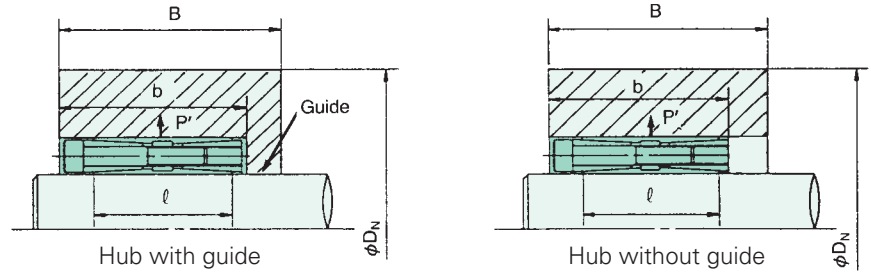
This table shows minimum hub  $D_N$ , which can tolerate surface pressure  $P'$ .

#### <Example>

Hub Material Yield Point = 50,000 psi } Min.  $D_N = 4.960''$   
 PL060 X 090AD

#### <Conversion>

1 psi = 0.0007 kgf/mm<sup>2</sup> = 0.0069 MPa



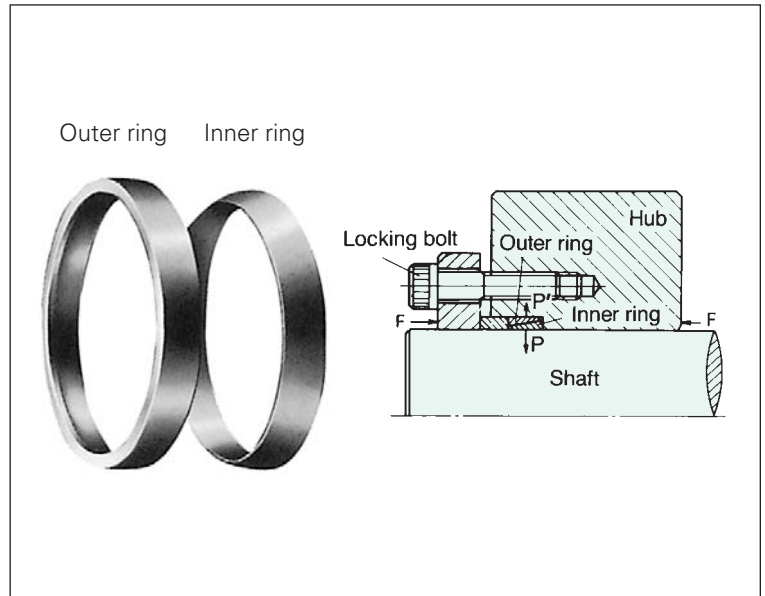
## Minimum Hub Diameter ( $D_N$ in inches)

Model Number	Contact Pressure in the Hub Bore (psi)	Yield Point of Various Hub Material Y.P. (psi) Y.P. = $\sigma_{0.2}$					
		32,000	35,000	40,000	45,000	50,000	56,000
	$P'$	Class Number 40 Grade Number 60-30	1015 Class Number 50 Grade Number 65-35	1018, 1020, 1117 Class Number 60 Grade Number 40010	1118 Grade Number 45006	1030 Grade Number 50005 Grade Number 80-65	1040, 1045, 1137, 1141, 1144 Grade Number 60004
PL045X075 AD	15,670	5.08	4.80	4.49	4.25	4.09	3.94
PL048X080 AD	14,660	5.20	4.92	4.65	4.45	4.29	4.13
PL050X080 AD	14,660	5.20	4.92	4.65	4.45	4.29	4.13
PL055X085 AD	13,780	5.31	5.08	4.80	4.61	4.45	4.33
PL060X090 AD	15,960	6.14	5.83	5.43	5.16	4.96	4.76
PL065X095 AD	12,910	5.75	5.51	5.24	5.04	4.88	4.76
PL070X110 AD	16,540	7.68	7.24	6.73	6.38	6.14	5.91
PL075X115 AD	15,820	7.80	7.40	6.89	6.54	6.30	6.06
PL080X120 AD	16,540	8.39	7.91	7.36	6.97	6.69	6.42
PL085X125 AD	15,820	8.46	8.03	7.48	7.13	6.85	6.61
PL090X130 AD	16,540	9.09	8.58	7.95	7.56	7.24	6.97
PL095X135 AD	15,960	9.21	8.70	8.11	7.72	7.40	7.13
PL100X145 AD	15,670	9.76	9.25	8.66	8.23	7.91	7.64
PL110X155 AD	15,960	10.55	10.00	9.33	8.86	8.50	8.19
PL120X165 AD	17,270	11.89	11.18	10.31	9.76	9.33	8.94
PL130X180 AD	16,110	12.36	11.65	10.87	10.31	9.92	9.53
PL140X190 AD	17,560	13.86	12.99	12.01	11.30	10.83	10.35
PL150X200 AD	17,850	14.80	13.82	12.76	12.01	11.46	10.98
PL160X210 AD	17,850	15.55	14.53	13.39	12.60	12.01	11.54
PL170X225 AD	15,960	15.31	14.53	13.54	12.83	12.36	11.89
PL180X235 AD	16,400	16.30	15.39	14.33	13.58	13.03	12.52
PL190X250 AD	16,400	17.36	16.38	15.24	14.45	13.86	13.31
PL200X260 AD	15,670	17.52	16.57	15.51	10.79	14.17	13.66
PL220X285 AD	17,120	20.39	19.17	17.76	16.77	16.06	15.39
PL240X305 AD	17,410	22.13	20.75	19.17	18.07	17.28	16.57
PL260X325 AD	13,200	19.84	19.06	18.03	17.32	16.77	16.30
PL280X355 AD	17,120	25.39	23.90	22.09	20.87	20.00	19.17
PL300X375 AD	17,850	27.72	25.94	23.86	22.48	21.46	20.55

Note: Minimum Hub Diameter ( $D_N$ ) calculated based upon the Formula (3) at (K) = 1.0. Refer to page C-89.

# EL Metric Series

POWER-LOCK® EL is a frictional keyless shaft-hub locking device for connecting hubs and shafts subject to large torque variations. The EL series POWER-LOCK is a simple structure consisting of two tapered rings.



### Compact

POWER-LOCK EL is very compact and lightweight, and does not require a wide fitting space.

### Design Versatility

Proven performance and reliability in hundreds of applications worldwide.

### Easy Angular and Axial Positioning

Extremely easy to position, and can be used at any place on the shaft.

### Completely Tight Fit with no Backlash

POWER-LOCK EL provides completely tight fit, so there is no backlash and no seizure.

### Balances

Being a complete ring with no slit, POWER-LOCK EL provides a well-balanced fitting.

### Easy Assembly and Disassembly

POWER-LOCK EL has no moving parts, and wear is negligible. Frequent disassembly and reassembly is possible.

### Connecting Principle

When locking force  $F$  is applied to POWER-LOCK EL, it pushes the inner ring and outer ring together, generating radial direction pressures ( $P$ ,  $P'$ ) on the shaft and to the hub bore.

These pressures ( $P$ ,  $P'$ ) create the frictional connection. When the locking bolt is loosened, POWER-LOCK EL can be easily disassembled and removed.

### Model Number

PL 015 X 019 E  
 |                    |                    |  
 |                    |                    | EL Series  
 |                    |                    | Outside Diameter (mm)  
 |                    |                    | Shaft Size (mm)  
 |                    |                    |  
 |                    |                    | POWER-LOCK

## Innovative POWER-LOCK® Solutions

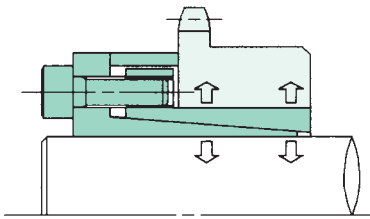
Consider these additional types of POWER-LOCK for your operation. Each is designed to provide keyless locking power for special applications.

### TF Series



Applicable shaft size: 18 to 90 mm

- Designed for hubs with smaller outside diameters.
- Self-centering function aligns the hub and shaft during installation.

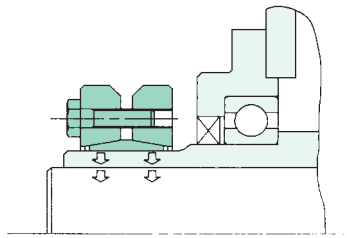


### SL Series



Applicable shaft size: 19 to 245 mm

- Connects to the outside of the hub.
- Suited for applications where a thick hub is not possible.
- High transmissible torque.

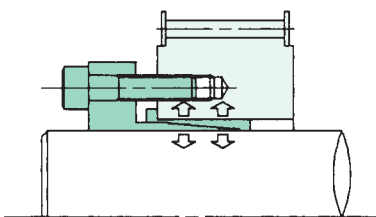


### EF Series



Applicable shaft size: 10 to 120 mm

- Same inner and outer diameter as the EL Series.
- Small ratio between inner and outer diameters allows for smaller hub diameters.

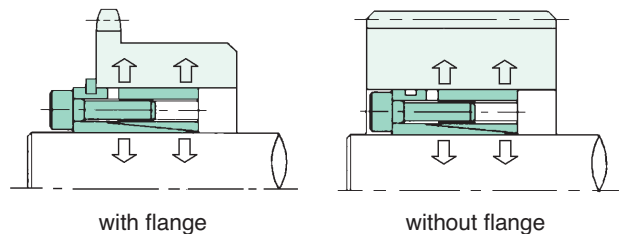


### RE Series



Applicable shaft size: 5 to 50 mm

- Stainless steel construction.
- Designed with a convenient removable flange.
- Excellent for small shaft diameters.





# ONE-TOUCH INSPECTION DOOR®

## Fast, Reliable Line Access

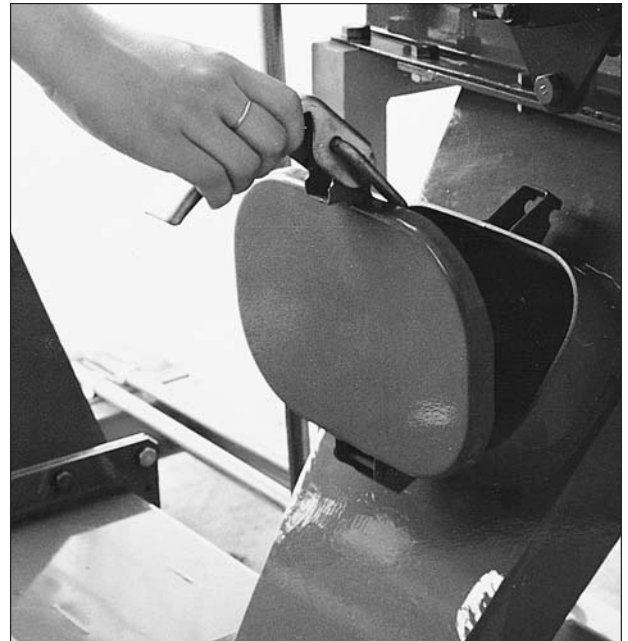
Our prefabricated steel doors seal out dust and rain but permit line inspections simply by lifting the handle — with no bolts to loosen and no covers to misplace. A variety of sizes and styles are in-stock and ready-to-go for quick and easy installation at the jobsite. You can't build better access to your lines.

- Easy to install
- Easy to open and close
- Durable and trouble-free
- Dust- and rain-tight

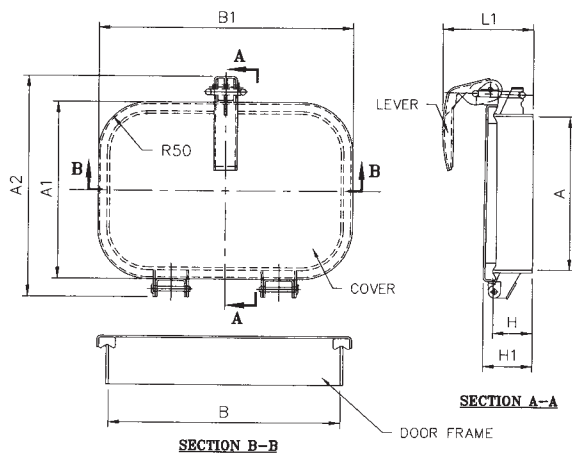
*Need a special size or extra handles?*

*Do you want to change the location of handles or hinges?*

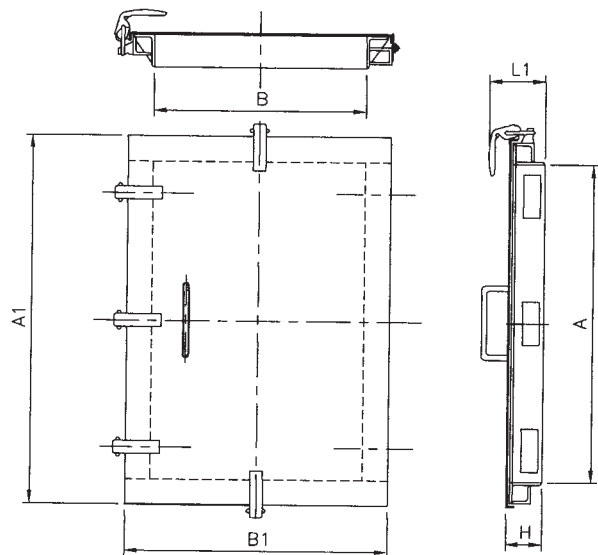
*Contact U.S. Tsubaki. We can work with you on special requirements.*



## Standard Model



## Large Model



## ONE-TOUCH INSPECTION DOOR® Standard Model Specifications

### Material Thickness

Frame: 10 gauge  
Cover: 13 gauge

### Component Composition

Model Number	Body Material	Handle Material
P Series	Mild steel	Chrome-plated
Q Series	304 Stainless	Chrome-plated
R Series	304 Stainless	304 Stainless
QS Series*	316L Stainless	Chrome-plated
RS Series*	316L Stainless	304 Stainless

### Gasket Options

Polyethylene (SG)  
Epichlorhydrin (ECH)  
Silicon Rubber (HT)

### Temperature Range

-95° F to 175° F  
-40° F to 275° F  
-67° F to 400° F

\*Call for availability.

## Standard ONE-TOUCH INSPECTION DOOR Specifications

Dimensions are in inches unless otherwise indicated.

Style/ Model Number		Door Frame				Cover					Lever			Approx. Weight (lbs.)	
		A	B	Std.	High Neck	A1	A2	B1	Std.	High Neck	H1	Std.	High Neck		
Regular	High Neck													H	H1
<b>Mild Steel Body, Chrome-Plated Handle</b>															
P1	P1H	5	8	2	4	6 1/4	8 1/2	9	2 1/2	4 1/2	4 1/2	6 1/2	1	4.5	6
P2	P2H	8	12	2	4	9	11 1/4	13	2 1/2	4 1/2	4 1/2	6 1/2	1	6.6	9.2
P3	P3H	13 3/4	19 3/4	2	4	15	17 1/4	20 3/4	2 1/2	4 1/2	4 1/2	6 1/2	2	13.2	17.6
P4		19 3/4	23 1/2	3	N/A	20 3/4	23 1/4	24 3/4	3 1/2	5 1/2	4 1/2	N/A	2	24.2	N/A
<b>304 Stainless Steel Body, Chrome-Plated Handle</b>															
Q1	Q1H	5	8	2	4	6 1/4	8 1/2	9	2 1/2	4 1/2	4 1/2	6 1/2	1	4.5	6
Q2	Q2H	8	12	2	4	9	11 1/4	13	2 1/2	4 1/2	4 1/2	6 1/2	1	6.6	9.2
Q3	Q3H	13 3/4	19 3/4	2	4	15	17 1/4	20 3/4	2 1/2	4 1/2	4 1/2	6 1/2	2	13.2	17.6
Q4		19 3/4	23 1/2	3	N/A	20 3/4	23 1/4	24 3/4	3 1/2	5 1/2	4 1/2	N/A	2	24.2	N/A
<b>304 Stainless Steel Body, 304 Stainless Steel Handle</b>															
R1	R1H	5	8	2	4	6 1/4	8 1/2	9	2 1/2	4 1/2	4 1/2	6 1/2	1	4.5	6
R2	R2H	8	12	2	4	9	11 1/4	13	2 1/2	4 1/2	4 1/2	6 1/2	1	6.6	9.2
R3	R3H	13 3/4	19 3/4	2	4	15	17 1/4	20 3/4	2 1/2	4 1/2	4 1/2	6 1/2	2	13.2	17.6
R4		19 3/4	23 1/2	3	N/A	20 3/4	23 1/4	24 3/4	3 1/2	5 1/2	4 1/2	N/A	2	24.2	N/A
<b>316L Stainless Steel Body, Chrome-Plated Handle</b>															
QS1	QS1H	5	8	2	4	6 1/4	8 1/2	9	2 1/2	4 1/2	4 1/2	6 1/2	1	4.5	6
QS2	QS2H	8	12	2	4	9	11 1/4	13	2 1/2	4 1/2	4 1/2	6 1/2	1	6.6	9.2
QS3	QS3H	13 3/4	19 3/4	2	4	15	17 1/4	20 3/4	2 1/2	4 1/2	4 1/2	6 1/2	2	13.2	17.6
<b>316L Stainless Steel Body, 304 Stainless Steel Handle</b>															
RS1	RS1H	5	8	2	4	6 1/4	8 1/2	9	2 1/2	4 1/2	4 1/2	6 1/2	1	4.5	6
RS2	RS2H	8	12	2	4	9	11 1/4	13	2 1/2	4 1/2	4 1/2	6 1/2	1	6.6	9.2
RS3	RS3H	13 3/4	19 3/4	2	4	15	17 1/4	20 3/4	2 1/2	4 1/2	4 1/2	6 1/2	2	13.2	17.6

Note: Dimensions are rounded to the nearest 1/4".

## ONE-TOUCH INSPECTION DOOR Large Model Specifications

### Material Thickness

Frame: 1/4"  
Cover: 10 gauge

### Component Composition

L Series	Options
Body material	Mild steel, Stainless steel*
Lever material	Mild steel, Stainless steel*
Body finish	Rust-proof, one-coat
Handle finish	Chrome-plated
Gasket options	Neoprene rubber, Silicon rubber

### Gasket Options

Neoprene Rubber  
Silicon Rubber (HT)

### Temperature Range

-20° F to 160° F  
-80° F to 550° F

\*Call for availability.

## Large ONE-TOUCH INSPECTION DOOR Specifications

All dimensions are in inches unless otherwise indicated.

Model Number	Door Opening		Cover			Lever	Quantity	Approximate Weight (lbs.)
	A	B	A1	B1	H	L1		
L1	29 1/2	19 3/4	34 1/4	24 1/2	3 1/4	5 1/4	5	80
L2	39 1/4	25 1/2	44	30 1/4	3 1/4	5 1/4	6	111
L3	47 1/4	31 1/2	52	36 1/4	3 1/4	5 1/4	8	140.8

Note: Dimensions rounded to the nearest 1/4".

ONE-TOUCH INSPECTION DOOR® is a registered trademark of Tsubaki Conveyor of America, Inc.

# Pro-Align™ Laser Alignment System

## The Laser Solution for Maximum System Performance

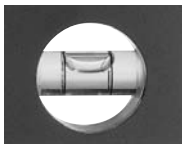
Pro-Align lets you align all power transmission devices faster, easier, and more effectively than ever before. System misalignment is a leading cause of premature chain wear. Our advanced laser technology ensures precise chain-sprocket interaction for maximum performance.

- Chain life is extended
- Shafts and bearings last longer
- Friction and vibration is lower, using less energy
- Cost and inventory levels are reduced

## Increase Productivity

Conventional alignment methods can be difficult to position, inaccurate, and produce erratic results — costing you valuable production time. Pro-Align gets the job done fast. It sets up easily — even in tight spaces — and eliminates the backlash effects of water, shock, and corrosion. You get reliable readings right away and can quickly get back to business.

- Requires minimal downtime, maintenance, and training
- Adapts to your equipment with no costly reconfiguration
- Accurate within 1/8" in 100 feet for precision applications
- Maintains accuracy under the toughest operating conditions
- Compact, lightweight, portable unit



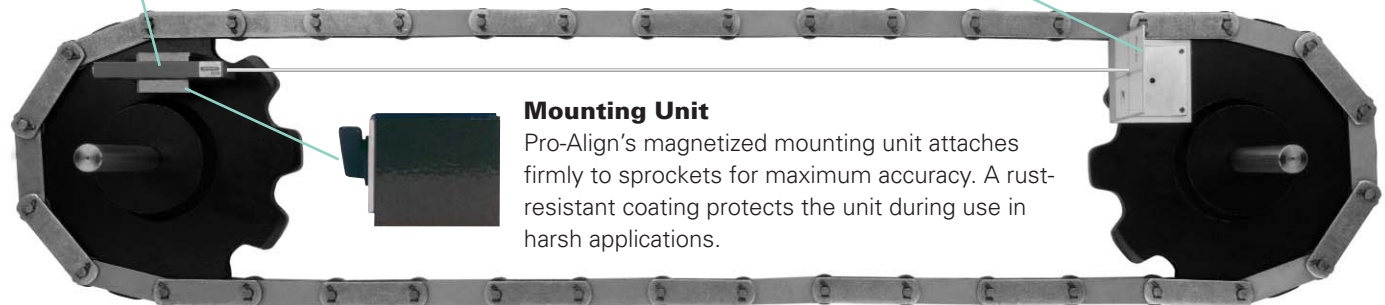
### Laser

The Pro-Align laser activates with a simple twisting motion. The level adapts to horizontal, vertical, inclined, or restricted-measurement units with no costly reconfiguration.



### Target

Pro-Align's custom aluminum target is specifically calibrated to the laser to provide immediate, reliable readings.



### Mounting Unit

Pro-Align's magnetized mounting unit attaches firmly to sprockets for maximum accuracy. A rust-resistant coating protects the unit during use in harsh applications.



# Drive Chains

## Design Considerations

Drive chains are used for power transmission and speed reduction. Horsepower, which is 33,000 foot-pounds of work per minute, is the unit of measurement of power.

Horsepower (mechanical)

$$HP = \frac{T(RPM)}{63,000}$$

$$HP = \frac{P(FPM)}{33,000}$$

Where:

T = Torque (in.-lb.)

P = Net chain pull (lbs.)

RPM = Shaft speed (rev./min.)

FPM = Chain speed (ft./min.)

Chain Speed (In FPM)

$$FPM = \frac{RPM \text{ (no. of teeth) (pitch in inches)}}{12}$$

Horsepower (electric motor)

$$HP \text{ (3 Phase)} = \frac{\text{Volts} \times \text{Amperes} \times 1.732 \times \text{Efficiency} \times \text{Power Factor}}{746}$$

$$HP \text{ (1 Phase)} = \frac{\text{Volts} \times \text{Amperes} \times \text{Efficiency} \times \text{Power Factor}}{746}$$

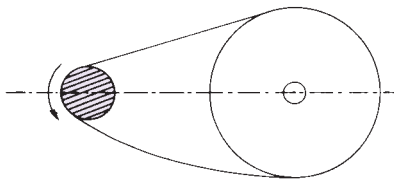
## Alignment

Accurate alignment of shafts and sprocket tooth faces provides uniform distribution of the load across the entire chain width. Uniform distribution of the load contributes substantially to optimum drive life. Be sure that the shaft, bearings, and foundations are suitable to maintain the initial alignment. Periodic maintenance should include an inspection of alignment to ensure optimum chain life.

## Arrangement

Drive chains are ideally installed with the shaft in the horizontal position, as shown in Figures 1 and 2.

**Figure 1**

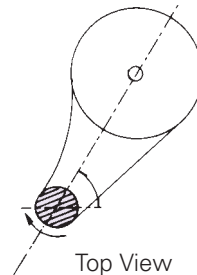


**Figure 2**

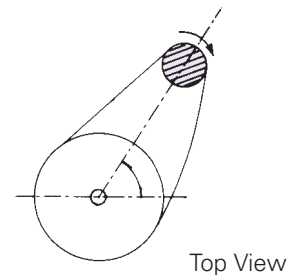


When chains are installed at angles approaching the shaft vertical position, they elongate quickly and may slip off the sprockets. In such cases, make sure the sprockets are adjusted properly. (See Figures 3 and 4.)

**Figure 3**



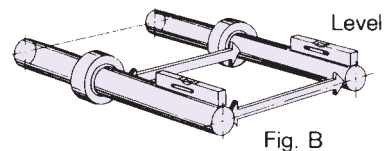
**Figure 4**



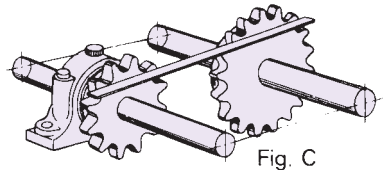
## Position of Sprockets

The two shafts should be parallel and the sprockets should be firmly installed. Use a straight edge to check that the two sprockets are installed along the same horizontal level. This is illustrated in Figures 5 and 6.

**Figure 5**



**Figure 6**





## Lubrication

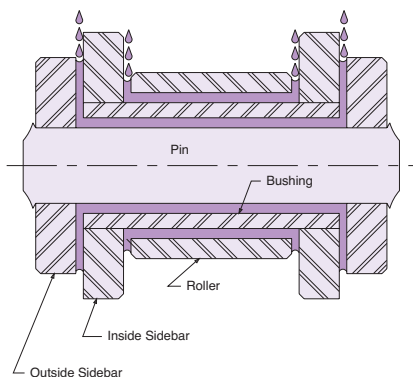
### Lubrication Increases the Service Life

One of the most important factors in getting the best possible performance out of your drive chain is proper lubrication. No matter how well a transmission system is designed, if it is not properly lubricated, its service life will be shortened.

### Lubrication

Wear between the pin and bushing causes drive chain to elongate. These parts should, therefore, be well lubricated, as shown in Figure 7. The gap between the inside sidebar and the outside sidebar on the slack side of the chain should be filled with oil. This oil forms a film which minimizes wear on the pin and bushing, thus increasing the chain's service life. It also reduces noise and acts as a coolant when the chain runs at high speeds.

Figure 7



### Suggested Lubricants

Only high quality oil should be used to lubricate the drive chain. Neither heavy oil nor grease is suitable. The viscosity of the oil used will depend on the chain size, chain speed, and ambient temperature. The lubricants suggested for specific temperature ranges are shown in Table 1.

Table 1 — Lubrication Table

Temperature (F)	Suggested Lubricant
20° - 40°	SAE 20
40° - 100°	SAE 30
100° - 120°	SAE 40
120° - 140°	SAE 50

### Lubrication Systems

The following lubricating systems are suggested:

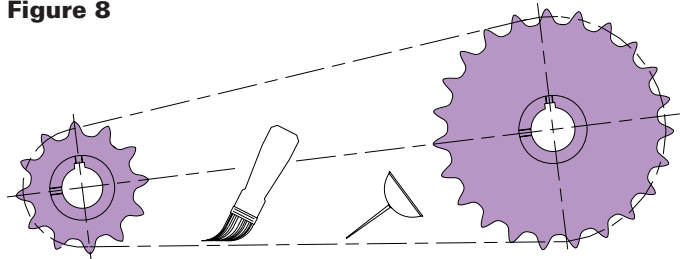
#### Drip Lubrication

Use a simple casing and supply oil by drip feed. Each strand of chain should receive 15 to 120 drops of oil per minute depending on the chain speed.

### Manual Lubrication

On the slack side of the chain apply oil with an oil filler or brush in the gap between the pin link sidebar and roller link sidebar. (See Figure 8.) Reapply every eight hours or as often as necessary to prevent the bearing area of the chain from becoming dry.

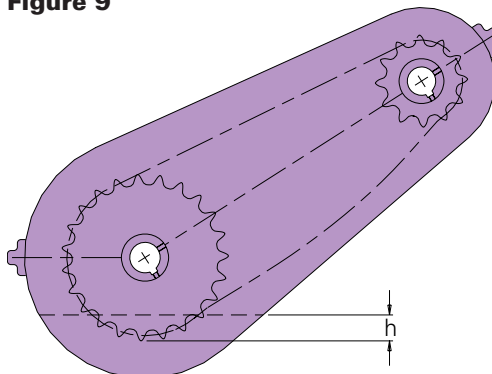
Figure 8



### Oil Bath Lubrication

Install the chain in a leak-free casing (Figure 9). The oil depth (h) should extend only to the middle point of the pin end. The oil will be adversely affected by the generated heat if the oil depth is too great.

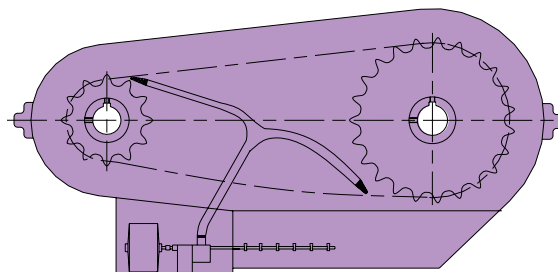
Figure 9



### Lubrication Using a Pump (Oil Stream)

Use a leak-free casing. Circulate the oil with a pump. The number of supply holes should be one more than the number of strands of chain. Supply a constant amount of oil to each hole (Figure 10). The oil should also be cooled in this process.

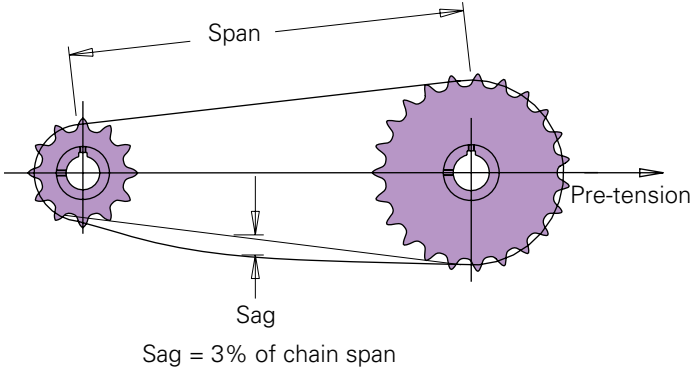
Figure 10



## Catenary Sag

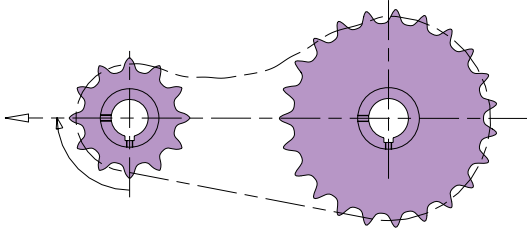
Pre-tension on the slack strand should be adequate to hold chain inward on the sprocket tooth profile. The 3% catenary sag distance on the slack strand achieves correct pre-tension levels, illustrated in Figure 11.

**Figure 11**



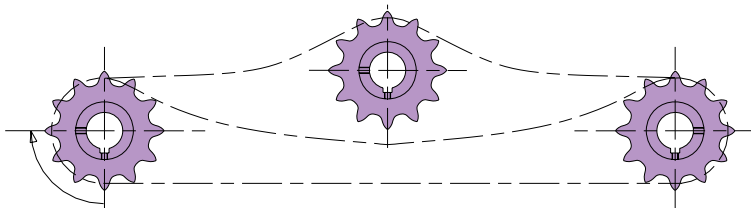
Attention should be paid to the following arrangements. If the slack side is on top, it is necessary to eliminate excessive chain slack. When the center distance is short, chain slack should be adjusted by increasing the center distance illustrated in Figure 12.

**Figure 12**



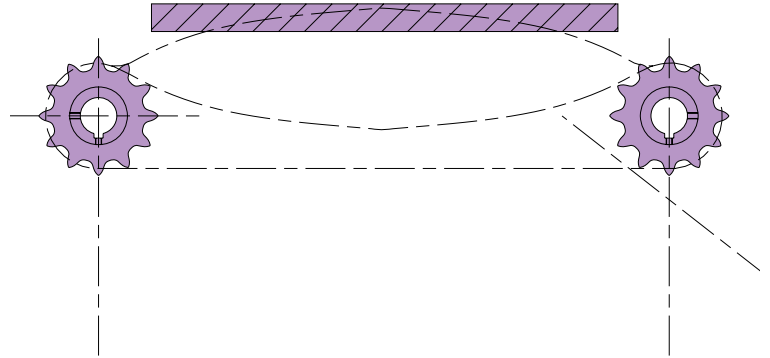
When the center distance is long, chain slack should be adjusted by installing an idler, illustrated in Figure 13.

**Figure 13**



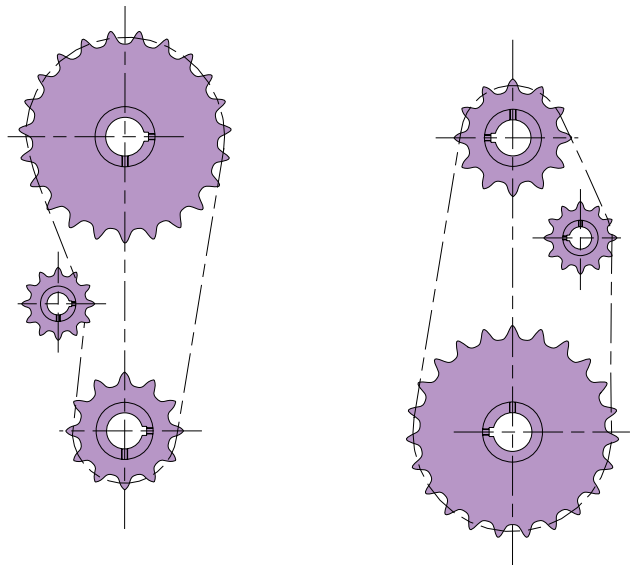
If vibration occurs due to high chain speed, install a guide. This is shown in Figure 14.

**Figure 14**



If the centerline is vertical, install an idler which functions automatically to eliminate extra chain slack. If the driving shaft is on the lower side, an idler must be installed, as shown in Figure 15.

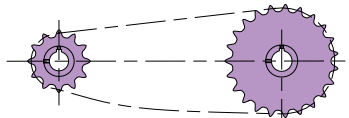
**Figure 15**



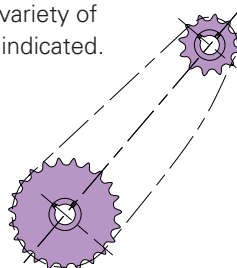
## Drive Chain Arrangements

The position of the drive and driven sprockets can greatly affect the life of the chain drive. Figure 16 illustrates a variety of arrangements with favorable and unfavorable features indicated.

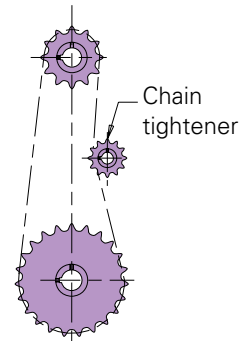
**Figure 16**



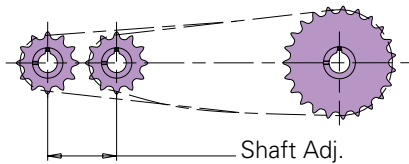
Satisfactory arrangement for drives with short centers.



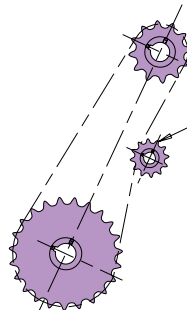
Satisfactory arrangement for drives with short centers.



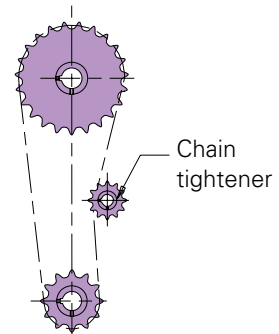
Best arrangement for vertical drives where means for adjusting slack is possible.



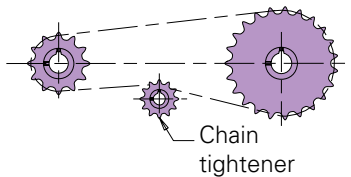
It is best to have one shaft adjustable as shown directly above. Or use a chain tightener as shown in the lower arrangement.



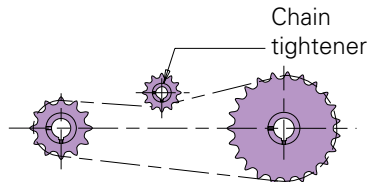
For drives on steep inclines some means must be provided to adjust slack side tension.



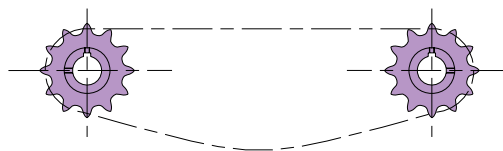
This arrangement, while sometimes used, is not as satisfactory as that shown above.



Chain tightener



When slack side is on top some means must be provided to adjust slack side tension.

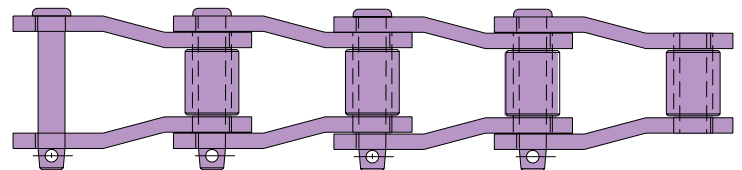
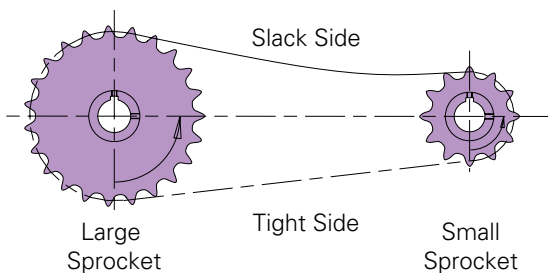


Unsatisfactory arrangement. (No adjustment is provided.)

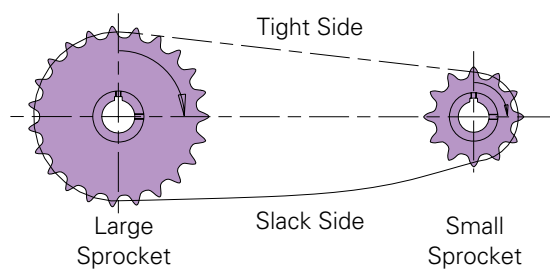
## Direction of Travel

The travel direction affects the wear life of offset drive chains. Figure 17 illustrates the general rule for chain travel direction. It is as follows: The narrow or roller end of links on the tight side should travel toward the small sprocket, regardless if it is a drive or driven sprocket.

**Figure 17**



Narrow Ends of Links →  
(Tight side traveling toward the small sprocket.)



## Chain Elongation

You can estimate the remaining chain life by determining chain elongation. This is illustrated in Figure 18. Measure chain elongation in the following manner.

1. Locate a straight section of chain that is under tension.
2. Using a vernier or scale, measure the inside (L1) and outside (L2) of the pins at both ends of the measured links.
3. Calculate the measurement (L) using the formula:

$$L = \frac{(L1 + L2)}{2}$$

4. Calculate chain elongation.

$$\text{Chain elongation} = \frac{\text{Measured length} - \text{Standard length} \times 100\%}{\text{Standard length}}$$

Where:

Standard length = Chain pitch x Number of links

## When Chains Should Be Replaced

Replace drive chains corresponding to the number of sprocket teeth as shown in Table 2.

**Table 2 — Drive Chain Replacement (Full Wrap)**

% Chain Elongation	Number of Teeth in Large Sprocket
1	≥ 140
2	> 72
3	≤ 72

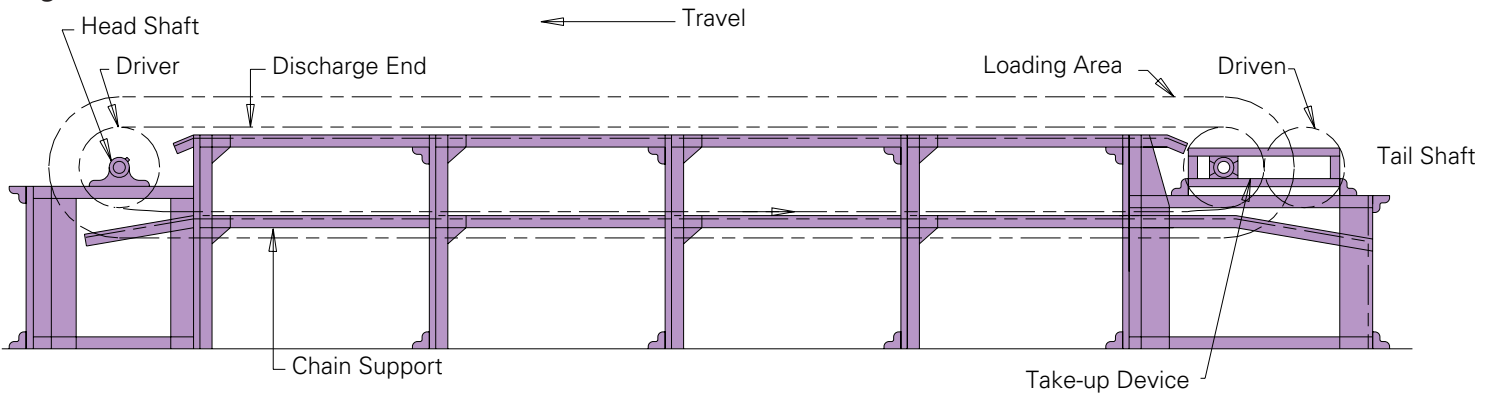
**Figure 18**





# Roller Conveyor Chains

**Figure 1**



Roller Conveyor Chains are used to transfer bulk or unit product from one point to another. A typical conveyor frame is shown in Figure 1.

## Design Considerations

### Drive End

Apply driving power to the discharge end of a conveyor so that only the carrying run is under maximum tension. Apply power to the head sprocket through another chain and sprocket.

### Pre-tension and Take-ups

Provide take-ups in all conveyor installations to ensure slack for installation and maintenance and to compensate for elongation due to wear. Install the catenary take-up at the head end of the conveyor; install all other take-ups at the foot or loading end of the conveyor.

### Points to Consider

1. Ensure that chain is always engaged with at least three sprocket teeth.

2. For long conveyors, use take-up devices to eliminate chain slack. Take-up stroke =  $(C \times 0.02) + S$

Where:

C = Center distance between sprockets

S = Catenary sag allowance

For conveyors shorter than 50 feet, consult Union Engineering.

**(Note:** The above equation is for conveyors longer than 50 ft.)

### Long Shaft Center Distances

For unusually long shaft centers, either use two conveyors with a transfer point or use bearing roller chain. Contact Union Engineering for more information.

### Return Chain Supports

On chain conveyors more than fifteen feet long, support the return strand on a track or guide to minimize pulsation and whip and to prevent the sagging chain from striking obstacles.

### Operating Temperatures

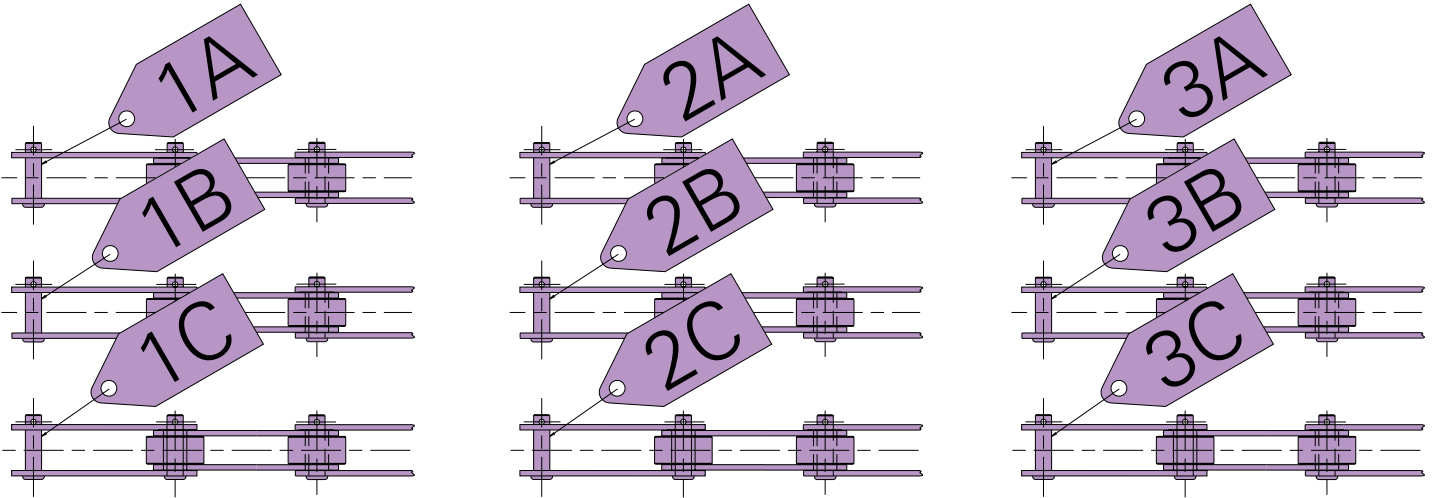
Standard conveyor chain can be operated normally in ambient temperatures between 15°F and 140°F. Select the appropriate chain for conditions outside of this range, including operation in freezing chambers or heat-treatment ovens.

### Matched Strands

For multiple strand operation, specify "matched and tagged chain" along with the number of strands required. The factory will match the chain for uniform length and accurate attachment

alignment. In this multiple strand case, all sprocket teeth on the head shaft should be aligned. Strand matching and tagging are shown in Figure 2.

Figure 2

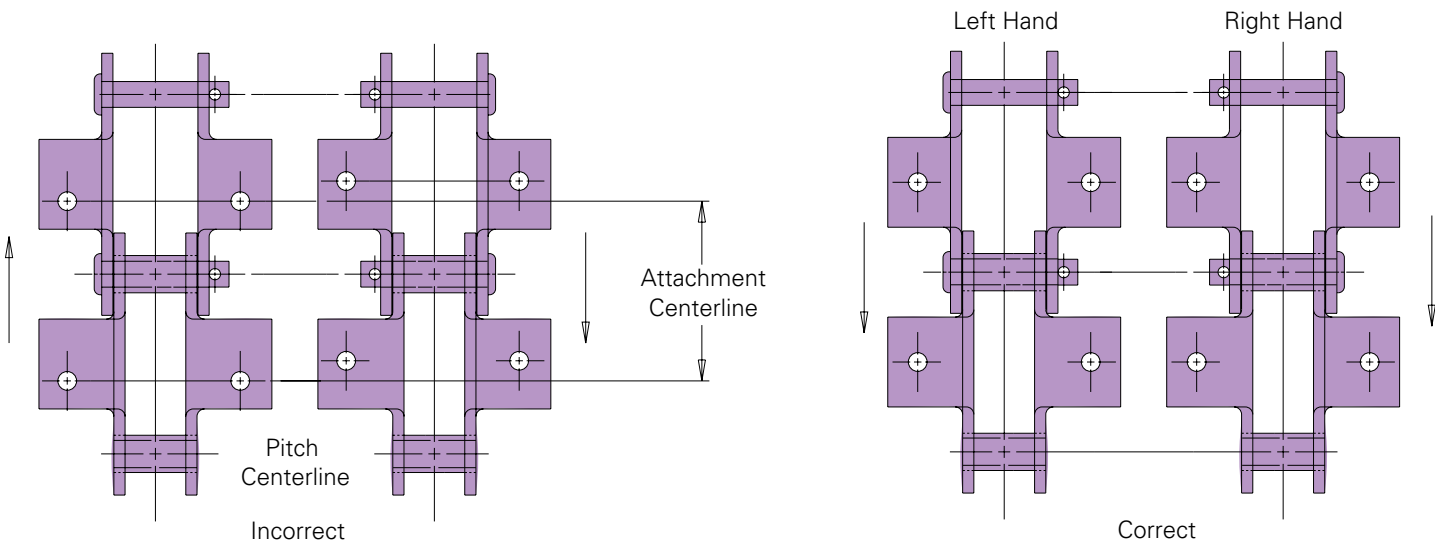


### Right- and Left-hand Strands

Right- and left-hand strands are required in all multiple strand installations where the chain attachments, slots, or lugs are not symmetrical. Many conveyors must have cotters on the inside

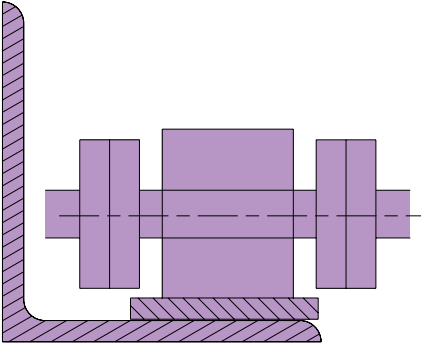
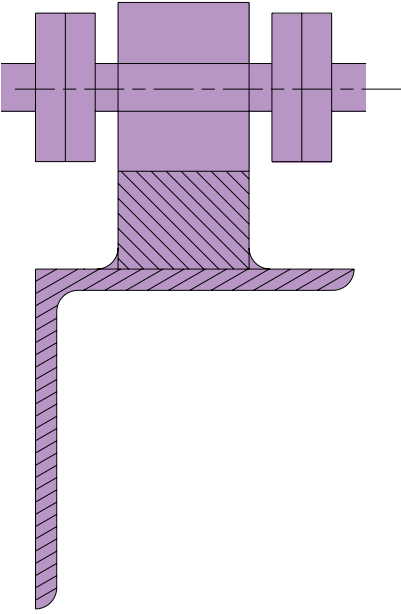
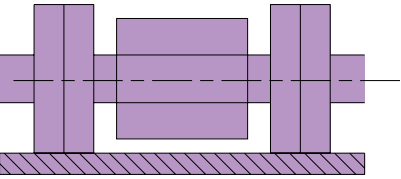
to clear guide rails and angle frames with the pin head on the outside, see Figure 3.

Figure 3



## Rail Layout and Roller Type

**Table 1 — Construction Considerations**

Method of Chain Travel	Type of Roller	Features
<p><b>Chain Rolling (Horizontal or Vertical)</b></p> 	<p><b>Carrier roller type</b></p> <ul style="list-style-type: none"> <li>• Heavy in chain weight</li> <li>• Greater allowable roller load</li> <li>• Less roller wear</li> </ul>	<ul style="list-style-type: none"> <li>• Smooth operation</li> <li>• Less vibration</li> <li>• Lower friction and less power required</li> <li>• Generally used for lengths more than 35 ft. and speeds greater than 70 ft./min.</li> </ul>
<p><b>Chain Rolling</b></p> 	<p><b>Small roller type</b></p> <ul style="list-style-type: none"> <li>• Lightweight</li> <li>• Lower allowable roller load</li> </ul>	<ul style="list-style-type: none"> <li>• Generally used for lengths less than 35 ft. and speeds less than 70 ft./min.</li> </ul>
<p><b>Chain Sliding</b></p> 		<ul style="list-style-type: none"> <li>• Suitable for impact conditions</li> <li>• Suitable for dirty conditions</li> <li>• Economical</li> <li>• Impact resistant</li> <li>• Greater power required</li> </ul>



## Roller Conveyor Speeds

Conveyor speed is dictated by the nature of the load, how it is loaded and unloaded on the conveyor, and what is done to the load during conveying. Table 2 shows the basic conveyors and their typical operating speeds.

**Table 2 — Typical Operating Speeds**

Conveyor	Speed (ft./min.)
Continuous bucket elevator	75 to 150
Centrifugal bucket elevator	200 to 300
Slat or flat top conveyor	50 to 150
Carrier conveyor <sup>1</sup>	50 to 150
Assembly line conveyor	5 to 15
Drag and scraper conveyors	50 to 100
Apron conveyors	10 to 60

<sup>1</sup>Material conveyed directly on chain

## Roller Conveyor Installation and Operation

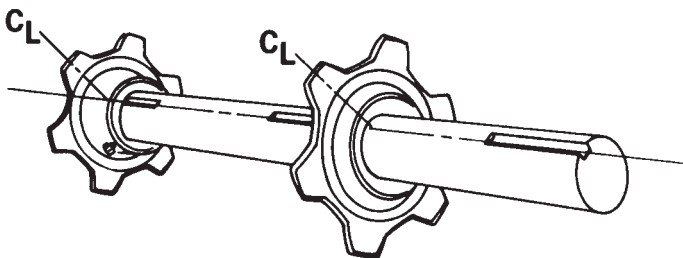
### Shaft Alignment

Shaft alignment is ensured by rigidly supporting shafts in properly designed bearings. Align the shafts horizontally with a leveling device. Head and tail shafts must be parallel and at 90° to the direction of travel of the conveyor. Take-ups provide the means for shaft alignment and chain tension adjustment.

### Sprocket Alignment

Sprockets must be in a line and not offset on the shafts. When two or more strands of chain operate as a single unit, as in a double-strand conveyor, the sprocket teeth on the head shaft must be timed to pick up the load on each chain simultaneously. First align the keyways in the shaft. Then align the keyways of the sprockets on tooth centerline. Sprockets should be "keywayed-in-line and matched in pairs." Since the tail shaft is an idling shaft, key it to only one sprocket. The other sprocket is held in alignment by set collars and is allowed to turn freely. In this way the sprocket can position itself if uneven wear takes place in the chain strands.

### Headshaft Sprockets Keyed In Line



### Chain

Place the chain around the sprockets with the free ends meeting one another. When assembling straight sidebar chains, insert the connecting link and then the closing bar over the pins. Drive the closing bar onto both pins at the same time, taking care not to bend the link. Most chains are designed with a "press-fit" between the pins and sidebars. Do not grind away a pin end so that it fits loosely in the chain sidebar.

### Freedom from Interference

The chain should not come into contact with adjacent objects. Clearance should provide for normal chain sag and take-up movement. Guides and tracks should be smooth and free of foreign objects.

### Start-Up

Adjust the chain tension. For high-temperature applications, adjust the chain while cold. Jog the conveyor through one complete cycle. Start the conveyor and run with no load, making certain that all chain joints flex freely.

For oil-lubricated applications, lubricate each chain joint well with a good grade of nondetergent petroleum base oil. The oil should be applied between the sidebars at each joint and be of a viscosity such that it will flow freely into the pin-bushing area. Grease may be used if it can be forced directly into the pin-bushing area.

A break-in running period of 8 to 12 hours under no load will allow the chain joints to seat properly. After this initial running period adjust take-ups again to compensate for initial elongation of chain.

### Chain Tension

Make sure you have the correct amount of chain slack; when the chain is too tight the working parts of the chain carry a much heavier load.

### Frequency of Adjustment

The chain will elongate at the beginning of operation due to slight distortion of its component parts. After this initial change in the chain, it elongates slightly, but constantly, due to normal wear. Maintain the proper chain tension by adjustments made according to the following suggested schedule (Table 3).

**Table 3 — Suggested Adjustment Schedule**

Time in Operation	Frequency of Adjustment
Week 1	Once a day
Weeks 2-4	Twice a week
After week 4	Twice a month

Note: This frequency schedule is based on eight hours of operation per day. For longer operation days, adjust the schedule accordingly.

## Even Adjustment of Take-up

Even adjustment of take-up can be easily obtained with screw type or counter-weight take-ups. Where two parallel chains are adjusted by two independently operated take-ups, ensure even stroke on both the left and right side. An uneven adjustment will cause an overload when the link plate and the side of the sprocket teeth interfere with each other.

## Insufficient Take-up Adjustment

If the chain is still too long after the take-up adjustment, take out one or two pitches to shorten the chain.

## Loading Conveyors

Support the loading area as much as possible to minimize loading shock to the system. Reduce impact by loading as gently as possible. Slide load onto the conveyor when possible to reduce surges caused by rough loading. Unload a conveyor before shutting it down. Starting a loaded conveyor places extra strain on the system. Run the conveyor occasionally during extended shut-down periods to keep the system free from corrosion.

## Installation of Bucket Elevator Chains, Sprockets, and Traction Wheels

Position foot take-ups at the top position of travel and head take-ups at the bottom position to provide maximum adjustment once the chain is installed.

Install chain from the top of the elevator casing when possible. Assemble the chain to form a single strand without buckets attached. Establish a lifting point slightly off center of the strand so that one leg is long enough to go around the foot sprocket and up to the inspection door.

Lower the chain from its lifting point into the elevator casing. Once the longer leg has been drawn around the foot sprocket and up close to the inspection door, block the head sprocket from moving. Disconnect the lifting hook and re-connect it to the long leg of the chain about two links short of the end. Draw chain ends together and attach them with the connecting pin. Adjust take-ups to create proper tension on the chain. Install buckets through rear panel door. Be sure to prick punch the bolt threads at the nuts to prevent them from loosening.

Adjust take-ups or check functioning of gravity take-ups before putting elevator into operation. Start the elevator chain by jogging the system through one complete cycle. Then run the chain for about four hours without a load. After this break-in period, begin regular operation.

## Of Special Note

- Material should not be allowed to build up in the boot by overloading. Properly regulating flow, within the capacity of the buckets, will extend service life and prevent surging caused by the buckets digging out the boot.
- During normal operation start the elevator empty. This prevents overload of the chain and alleviates the danger of backrun.
- For traction wheels, securely mount the solid or split hub to the shaft. Bolt the traction wheel segments or segmental rim sprockets in place loosely. Tighten with a torque wrench. All segmental rim bolts must have nuts tightened to not more than the maximum torque values suggested on page C-34.

## Special Environments

Standard conveyor chain can be operated normally in ambient temperatures between 15°F and 140°F without trouble.

When the chain is operated in very low or high temperatures, or in an abrasive or corrosive atmosphere, the following should be taken into account (Table 4).

- (1) Under very low or high temperatures:  
Chain must be selected in a different manner when it is operated in freezing chambers, cold areas, when it passes through a heat-treatment furnace, or is affected by heat from the material conveyed.
- (2) In wet conditions:  
When chain is exposed to water, e.g., in a sterilizer or water screen, excessive wear due to insufficient lubrication and rust may shorten chain life. In these cases, a larger chain size provides less bearing pressure and stainless steel or plated chain will provide rust prevention.
- (3) In corrosive conditions:  
When chain is exposed to an acidic or alkaline solution and/or operated in a corrosive atmosphere, excessive wear may occur due to chemical corrosion on the chain parts in addition to mechanical wear. Hydrogen embrittlement may also occur in an acidic atmosphere. Conveyor chain is more affected by acid than alkali. In special cases, electrochemical corrosion may occur on the chain due to sea or mine water. Refer to Table 6 "Corrosion Resistance Guide" for the corrosion resistance of various materials.
- (4) In dusty conditions:  
When conveyor chain is operated in dusty conditions, e.g., in the presence of coke, metal powder, and sand, etc. the chain wears more because foreign material gets between the parts of the chain and also the engaging surfaces of the sprocket teeth and chain. In such cases, select a larger chain size to reduce the bearing pressure or choose a chain especially designed for high wear resistance.

The foregoing information is intended to provide general guidelines for conveyor chain selection. Please consult Union Chain for specific application problems.

**Table 4 — Considerations for Use in Special Environments**

Temperatures	Chain Selection	Caution
-60°F ~ -20°F	<ul style="list-style-type: none"> <li>•-20°F or less, ANSI 300 Series stainless steel chains and 600 Series stainless steel chains are suggested.</li> <li>•Carbon chains are not suggested.</li> </ul>	(1) Low temperature embrittlement may occur on link plates of carbon steel chain. (2) Freezing of lubricant. (3) Rust due to water condensation. (4) Seizure due to freezing.
-20°F ~ 15°F	The chain should be selected on the basis of the corrected working load, Table 5.	
140°F ~ 300°F	Special lubrication is required.	
300°F ~ 480°F	The chain should be selected on the basis of the corrected working load, below. Selection of the next larger pitch chain over the originally selected one is suggested.	(1) Excessive wear due to decrease of hardness of pin and bushing. (2) Poor lubrication due to deterioration and carbonization.
480°F or greater	Consult Union Engineering.	

**Table 5 — Corrected Working Load**

Temperature	Corrected Working Load
-20°F ~ -4°F	(Maximum allowable load in catalog) x 0.25
-4°F ~ 15°F	(Maximum allowable load in catalog) x 0.3
15°F ~ 300°F	(Maximum allowable load in catalog) x 1.0
300°F ~ 390°F	(Maximum allowable load in catalog) x 0.75
390°F ~ 480°F	(Maximum allowable load in catalog) x 0.5





# UNION CHAIN DIVISION - ENGINEERING INFORMATION - ROLLER CONVEYOR CHAINS

## Corrosion Resistance Guide

Determine the corrosion-resistant properties of materials using this information as a guide. When making final specifications of chain, be sure to consider all operating conditions.

If you have any questions, contact Union Engineering. This table shows properties of materials at 68°F unless otherwise noted.

Fluid	Steel	300 Stainless Steel	400 Stainless Steel	600 Stainless Steel	UHMW	Delrin or EPC78 STP
Acetic Acid (5%)	N	R	R	L	R	N
Acetic Acid (10%)	N	R	R	*	R	R
Acetone	N	R	R	N	R	R
Alcohol	R	R	R	R	R	R
Ammonia Water	L	R	R	*	*	R
Aqueous Ammonia	L	R	R	R	R	R
Beer	L	R	R	R	R	R
Benzene	R	R	R	R	L	R
Boric Acid (5%)	N	R	R	*	*	*
Butyric Acid	*	R	R	*	*	R
Calcium Hydroxide (20% Boiling Point)	*	R	R	*	*	R
Calcium Hypochlorite	N	R	N	*	*	N
Caustic Soda (25%)	N	R	R	R	R	R
Carbolic Acid	*	R	R	*	*	N
Carbon Tetrachloride	L	L	L	L	L	R
Carbonated Water	N	R	R	R	R	R
Chlorine Gas (wet)	N	N	N	N	*	*
Citric Acid	N	R	L	L	R	L
Formaldehyde	R	R	R	R	*	R
Formic Acid	N	R	R	N	R	N
Formic Acid Aldehyde	R	R	R	R	R	R
Fruit Juice	N	R	L	L	R	R
Gasoline	R	R	R	R	L	R
Glycerin	R	R	R	*	*	R
Hydrochloric Acid (2%)	N	N	N	N	N	N
Hydrogen Peroxide (30%)	N	R	L	L	R	N
Hypochlorite Soda	N	N	N	N	R	N
Iodine	N	N	N	N	N	N
Kerosene	R	R	R	R	R	L
Lactic Acid	N	R	L	L	R	R
Methyl-Ethyl-Propyl-Butyl Alcohol	R	R	R	R	*	R
Milk	L	R	R	R	R	R
Nitric Acid (5%)	N	R	R	L	L	N
Oils (Vegetable and Mineral)	R	R	R	R	R	R
Oxalic Acid	N	R	L	*	*	*
Paraffin	R	R	R	R	R	R
Petroleum	R	R	R	R	R	R
Phosphoric Acid	N	L	N	N	N	N
Potassium Permanganate	*	R	R	*	*	R
Sea Water	N	L	L	L	R	R
Soapy Water	L	R	R	R	R	R
Sodium Bicarbonate	*	R	R	*	*	R
Sodium Carbonate (saturation Boiling Point)	*	R	R	*	*	*
Sodium Chloride	N	R	L	L	R	R
Sodium Hypochlorite (10%)	N	N	N	N	*	N
Sodium Sulfate (saturation)	*	R	R	*	*	*
Soft Drinks	L	R	R	R	R	R
Sulfuric Acid	N	L	N	N	N	N
Vegetable Juice	L	R	R	R	R	R
Vinegar	N	L	N	N	R	L
Water	L	R	R	R	R	R
Whiskey	L	R	R	R	R	R
Wine	L	R	R	R	R	R

R = Resistant; L = Less resistant; N = Not resistant; \* = Unavailable

## Maintenance Check Points

Check Points	Comments
Centering	A high precision guide rail is essential to ensure proper centering of the conveyor. If centering is not accurate (with no side guide rail), the conveyor chain will wobble and weave resulting in shorter conveyor chain life.
Sprocket alignment	When two or more sprockets are installed in a row, be sure to align the position of the sprocket teeth. If the sprocket teeth are not properly aligned, the working load will not be equally divided and will cause the chain to twist.
Take-up	If take-ups on both sides are uneven, the conveyor chain will not engage smoothly with the sprocket.
Initial chain tension	Maintain adequate chain slack. If chain tension is too high, loss of power will result. This is a dangerous situation and if too loose, the chain will climb the sprocket.
Trial run	Trial run after installation should be made under no load conditions by switching on and off several times intermittently. After inspection, continuous operation may begin.
Stopping conveyor	Stop conveyor under no load conditions, or remaining material will impose an overload when the conveyor starts again.
Lubrication	Lubricate conveyor chain periodically, unless the chain does not require lubrication. Lubrication of reducer, bearing, and driving roller chain is essential.
Securing conveyor parts	Parts fastened to the conveyor such as buckets, aprons, slats, etc., are apt to loosen due to vibration. Pay careful attention to fastening nuts and bolts securely. Be sure to check periodically.
Amount of chain slack	Regularly check and adjust the amount of chain slack.
Temperature and prevention of freezing	When differences in temperatures (summer and winter or between day and night in the winter) are very severe, conveyor damage may occur. Under these circumstances, operate the conveyor carefully, taking any variations in temperature into account.
Conveyor record of use and maintenance	After installing the conveyor, keep a record of the expected capacity to be conveyed, conveyor speed, r.p.m. of main shaft, electric current, voltage, working hours, actual conveying capacity, inspection date, lubricating date, details of trouble, etc. This will serve as protection against unexpected accidents. This record will also be convenient for maintenance and repairs.

## Troubleshooting

Problem	Possible Causes	What to Do
Excessive noise	<ul style="list-style-type: none"> <li>• Misalignment of sprocket</li> <li>• Loose casings or bearings</li> <li>• Too little or too much slack</li> <li>• Chain and/or sprocket wear</li> <li>• Inadequate lubrication or no lubrication</li> <li>• Chain pitch size too large</li> </ul>	<ul style="list-style-type: none"> <li>• Realign sprockets and shafts</li> <li>• Tighten set-bolts</li> <li>• Adjust centers or idler take-up</li> <li>• Replace chain and/or sprocket</li> <li>• Lubricate properly</li> <li>• Replace with correct chain size</li> </ul>
Chain vibration	<ul style="list-style-type: none"> <li>• Resonance to the vibration cycle of machine to be installed</li> <li>• High load fluctuation</li> </ul>	<ul style="list-style-type: none"> <li>• Change vibration cycle of chain or machine</li> <li>• Use torque converter or fluid coupling</li> </ul>
Wear on inside of link plate and one side of sprocket teeth	<ul style="list-style-type: none"> <li>• Misalignment</li> </ul>	<ul style="list-style-type: none"> <li>• Realign sprockets and shafts</li> </ul>
Chain climbs sprockets	<ul style="list-style-type: none"> <li>• Excessive chain slack</li> <li>• Heavy overload</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust centers or idler take-up</li> <li>• Reduce load or install stronger chain</li> </ul>
Broken pins, bushings or rollers or heavy wear of pins, bushings or rollers	<ul style="list-style-type: none"> <li>• Chain speed too high for pitch and sprocket size</li> <li>• Heavy shock or suddenly applied loads</li> <li>• Material build-up in sprocket tooth pockets</li> <li>• Inadequate lubrication</li> <li>• Chain or sprocket corrosion</li> </ul>	<ul style="list-style-type: none"> <li>• Use shorter pitch chain or install larger diameter sprockets</li> <li>• Reduce shock load or install stronger chain</li> <li>• Remove material build-up or install side gashed sprockets</li> <li>• Lubricate properly</li> <li>• Install anti-corrosive chain or sprockets</li> </ul>
Chain clings to sprocket	<ul style="list-style-type: none"> <li>• Center distance too big or high load fluctuation</li> <li>• Excessive chain slack</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust the center distance or install idler take-up</li> <li>• Same as above</li> </ul>
Chain gets stiff	<ul style="list-style-type: none"> <li>• Misalignment</li> <li>• Inadequate lubrication</li> <li>• Corrosion</li> <li>• Excessive load</li> <li>• Material build-up in chain joint</li> <li>• Peening of link plate edges</li> </ul>	<ul style="list-style-type: none"> <li>• Realign sprockets and shafts</li> <li>• Lubricate properly</li> <li>• Replace with anti-corrosive chain</li> <li>• Reduce load or replace with chain of suitable strength</li> <li>• Shield drive from foreign matter</li> <li>• Check for chain interference</li> </ul>
Breakage of link plate	<ul style="list-style-type: none"> <li>• Subjected to shock load</li> <li>• Vibration</li> <li>• Inertia load is too large</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce shock (e.g., install a shock absorber)</li> <li>• Install a device to absorb vibration (e.g., tightener, idler wheel)</li> <li>• Chain section should be checked (increase number of strands or select next larger size chain)</li> </ul>
Camber (curved tracking of straight faced roller chains on long conveyors where chain strands are rigidly attached)	<ul style="list-style-type: none"> <li>• Head shaft sprocket misalignment</li> <li>• Track or rail out of level due to previous chain travel wear</li> <li>• Higher chain tension on one strand than the other strands</li> <li>• Chain strand lengths are different</li> </ul>	<ul style="list-style-type: none"> <li>• Realign head sprockets</li> <li>• Level track or rails</li> <li>• Balance conveyed material load between strands</li> <li>• Specify measured matched and tagged strands</li> </ul>

## Lubrication

Proper lubrication reduces wear, maximizes horsepower, and helps reduce chain pulsation.

Important points of lubrication are shown in Figure 4.

- Between sidebars (for pin and bushing lubrication).
- Between roller and sidebar (for lubrication of roller and bushing).

### Factors to Consider when Lubricating Roller Conveyor Chain

For large diameter rollers or outboard rollers lubricate by self-lubricating sintered metal bushings or by pressure through a grease fitting. Lubrication through pin heads or through rods is suggested only for chains with more than 3/4" pin or rod diameter. When this method is used on through rods, lock collars are provided in place of cotter pins. In severe applications rollers may be equipped with anti-friction bearings that have grease fittings or removable caps for grease packing.

Lubrication with grease requires pressure fittings to port the grease through chain joints. The following examples are methods of porting grease lubrication (Figure 5).

Figure 4

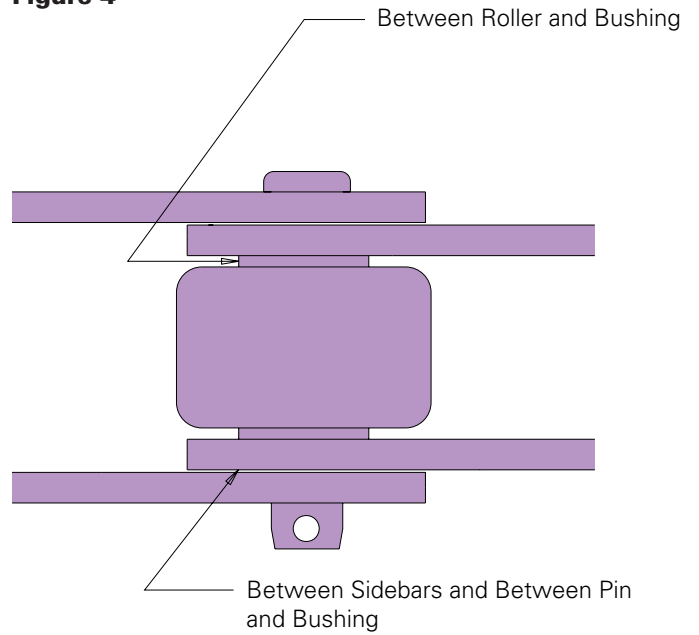
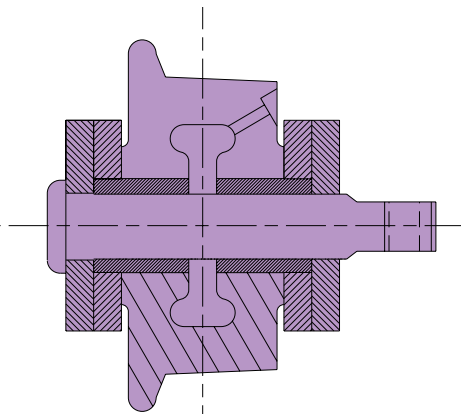
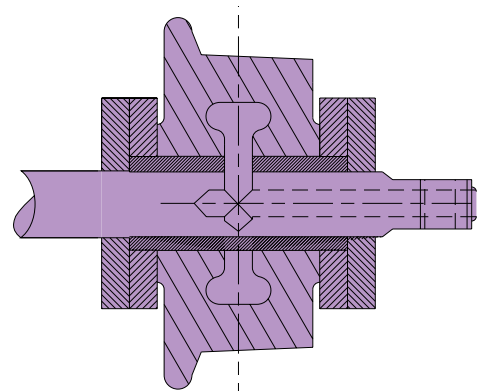


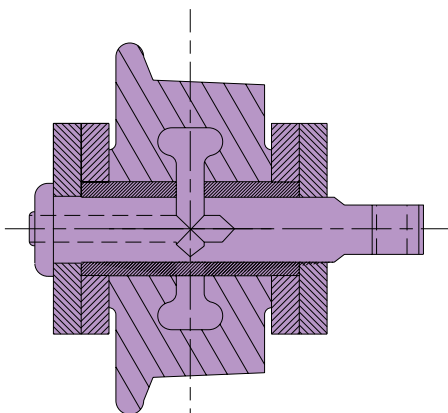
Figure 5



Lubrication through Roller

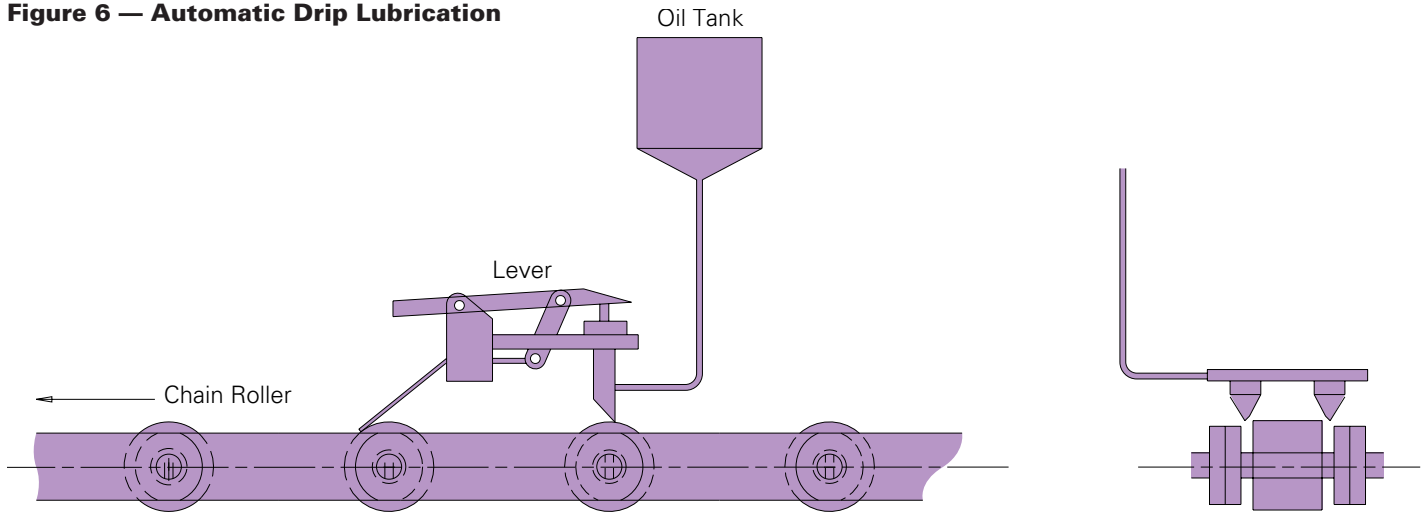


Lubrication through Pin End or Through Rod



Lubrication through Pin Head

**Figure 6 — Automatic Drip Lubrication**



### Automatic Lubrication

Use automatic lubrication to save labor or when manual lubrication is not possible due to the location of the chain.

The automatic drip system shown in Figure 6 utilizes the chain roller as a cam. The roller pushes a pump as it passes by and causes the oil to drip.

Use a mist-type lubricator when the conveyor chain is used as an overhead trolley conveyor or when the chain requires many points to be lubricated.

For coil conveyor chain, an automatic grease feeder is suggested.

Lubrication is ineffective for bulk conveyors that convey powdery and granular materials. It will not work for flow or trough conveyors where the chain buries itself in the material as it moves and dust or other particles become embedded in the chain clearances.

## Inspection

### Lubrication

- Manual: Carefully follow lubrication schedule.
- Drip: Inspect the filling of oiler cups and the rate of feed. Check that the feed cups are not clogged and are properly positioned over the chain.
- Bath: Inspect the oil level and check that there is no sludge. Drain, flush and refill the system as the application requires.

If the chains have not been lubricated properly, the joints may have a brownish (rusty) color and the pins of the connecting link of the chain, when removed, may be a discolored brown. The pins may also be roughened, grooved, or galled. Properly lubricated chains will not show the brownish color at the joints; they will be brightly polished with a high luster.

- Check wear on link plates and sides of sprocket teeth indicating misalignment.
- Check shaft and sprocket alignment to prevent wear.
- Check wear on working faces of sprocket teeth. As the system runs these faces should develop a bright, polished appearance. Scratches, galls, grooves, or visible changes in tooth form are probably caused by lubrication failure or overloading.
- Check and adjust chain tension. An elongation of as much as five percent indicates that the chain is riding near its limit of

allowable height on the sprocket teeth. A gradual increase in chain length is the result of normal wear. A sudden increase in slack indicates one or more of the following:

- Lubrication failure
- Excessive overloading or shock
- Displacement of shaft bearings
- Displacement or failure of take-ups

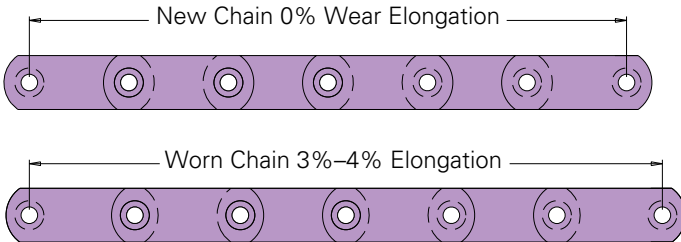
- Check the chain to be sure it is free from dirt, grit or other abrasive material. Clean the chain periodically.
- Check guides, tracks, and the area below the conveyor for buildup of material or dirt which will cause interference or binding of the chain. Exit and entry points of guides and tracks must permit the chain to pass with a minimum amount of impact or interference. Roller chain tracks can be over-lubricated, forcing the rollers to slide rather than roll.
- Exceptionally low chain conveyor speed coupled with high drag friction will occasionally cause surging. A slight increase in speed will correct this problem if the friction can not be reduced.
- Inspect apron and pan bead openings. If the beads have been wedged apart or otherwise distorted, fine material may bleed into moving parts and cause excessive wear.



## Chain Pitch Elongation

As the bearing parts wear, the chain elongates causing the chain to climb to the top of the sprockets and inhibit smooth articulation. This is shown in Figure 7. Conveyor chains should be replaced when chain elongation equals 3% to 4%.

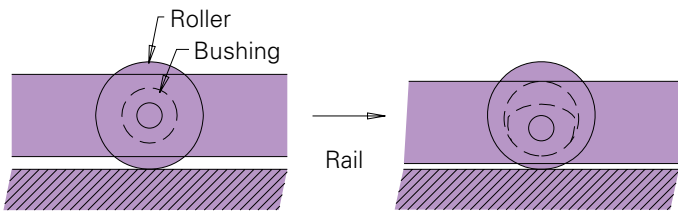
**Figure 7**



## Life of Roller Conveyor Chain and Sprockets

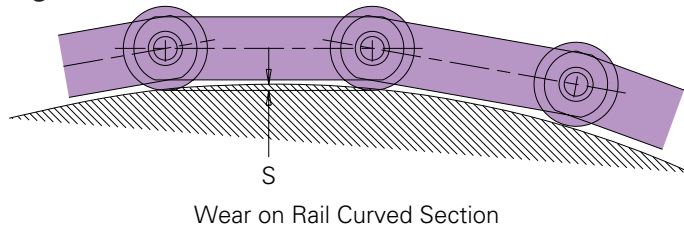
The chain has reached the end of its service life when, due to track wear, rollers do not project from sidebars. The under surface edge of the sidebar may actually touch the track in some cases, causing a significant change in friction and resulting in higher chain tension (Figure 8).

**Figure 8**



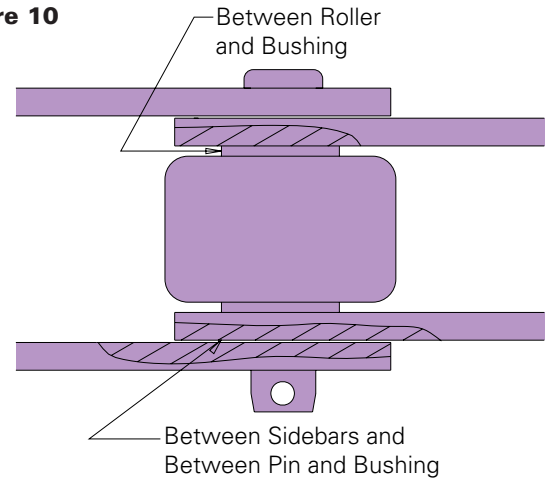
Wear must be inspected even more often with a curved section of rail than with horizontal sections. Decrease the allowed wear amount for a curved section by a dimension equivalent to "S" (Figure 9).

**Figure 9**



Chains should be replaced when the bushing wear, due to conveying abrasive materials, exceeds one-third of the wall thickness. Reciprocal friction between inner and outer sidebars and contact between the side surface of the roller and the inside surface of sidebars cause wear, as shown in Figure 10.

**Figure 10**

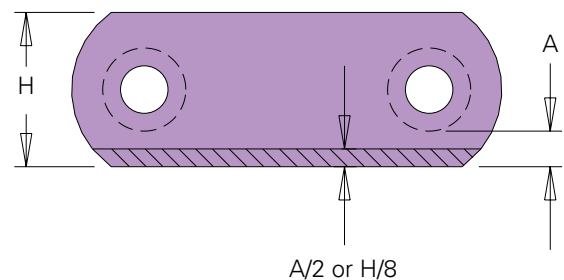


Replace chain when wear exceeds 1/3 of the original plate thickness.

When sidebar wear appears faster than wear of other component parts, misalignment of the conveyor is usually at fault. To ensure proper alignment, check the alignment of driving and driven sprockets, the alignment of shafts in horizontal and vertical planes, and the preciseness of leveling.

The service life of a chain that slides directly in the conveyed material or on a steel plate casing should end when the worn section equals  $A/2$  or  $H/8$ , as shown in Figure 11.

**Figure 11**



Never insert a new link in a chain that has been appreciably elongated by wear. Do not install new chain on badly worn sprockets.

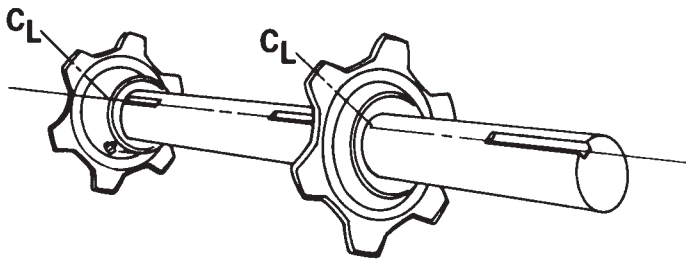
Protect the chain during long periods of idleness. If the chain is to be stored, remove it from the sprockets, clean and re-oil it and cover it with heavy grease. Store the chain where it will be protected from moisture and mechanical injury. Before placing the conveyor in service again, thoroughly clean the chain and sprockets to remove the protective grease and then re-lubricate the chain.

# Sprockets

## Sprockets Keyed In Line

Key driving sprockets on a double-strand chain conveyor or elevator on the head shaft and with the teeth of one sprocket directly in line with teeth of the other. Order "keyed-in-line" and "matched in pairs" to obtain this feature. Key one foot shaft sprocket on its shaft so that the shaft will turn in its bearings. Allow the other sprocket to turn freely, holding it in position by means of set collars. The sprocket can then position itself automatically if uneven wear takes place in the chain strands (Figure 1).

**Figure 1**



## Sprocket Size

Use the largest diameter conveyor sprocket that space and economics permit. This minimizes chain speed variations and pulsations and reduces wear to the chain and sprocket.

## Sprocket Terminology

### Chain Interaction

Schedule replacement of sprockets and/or chain by assessing the chain-sprocket interaction. If the chain enters and exits smoothly without hanging up or snapping into place, replacement is not necessary. If a chain starts to hang up on the sprocket, reverse or replace the sprocket before damaging chain overload conditions can develop.

### Reversible

If the sprockets are symmetrical from side to side they can be reversed. Almost all sprockets are reversible.

### New Chain

New or reversed sprockets are required with any new chain. New sprockets will ensure proper chain interaction and will also provide maximum wear performance.

## Visual Observation

Carefully observe the wear patterns on chains and sprockets. Wear patterns that are smooth and even indicate good chain-sprocket interaction; unbalanced or severe wear indicates that the system needs maintenance.

## Attachment Clearance

Be sure that any attachment in the area between, above, or below the sidebars will not interfere with the sprocket.

## Relief Pocket

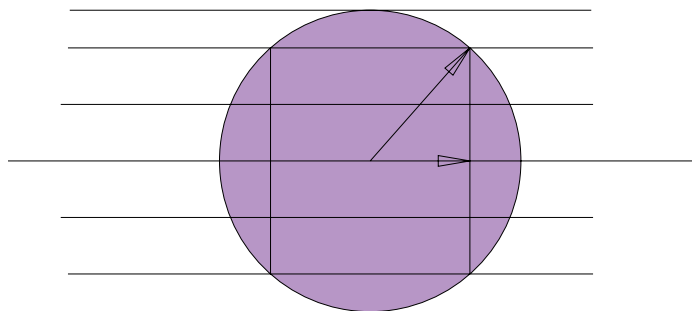
In applications where material build-up may occur, the bottom of the tooth pocket is beveled on the side to allow the material to "squeeze" out.

## Chordal Action

A sprocket is a collection of chords, or straight segments, that approximate a circle. With more teeth the chords approximate a circle better; with fewer teeth the chords do not approximate a circle as well.

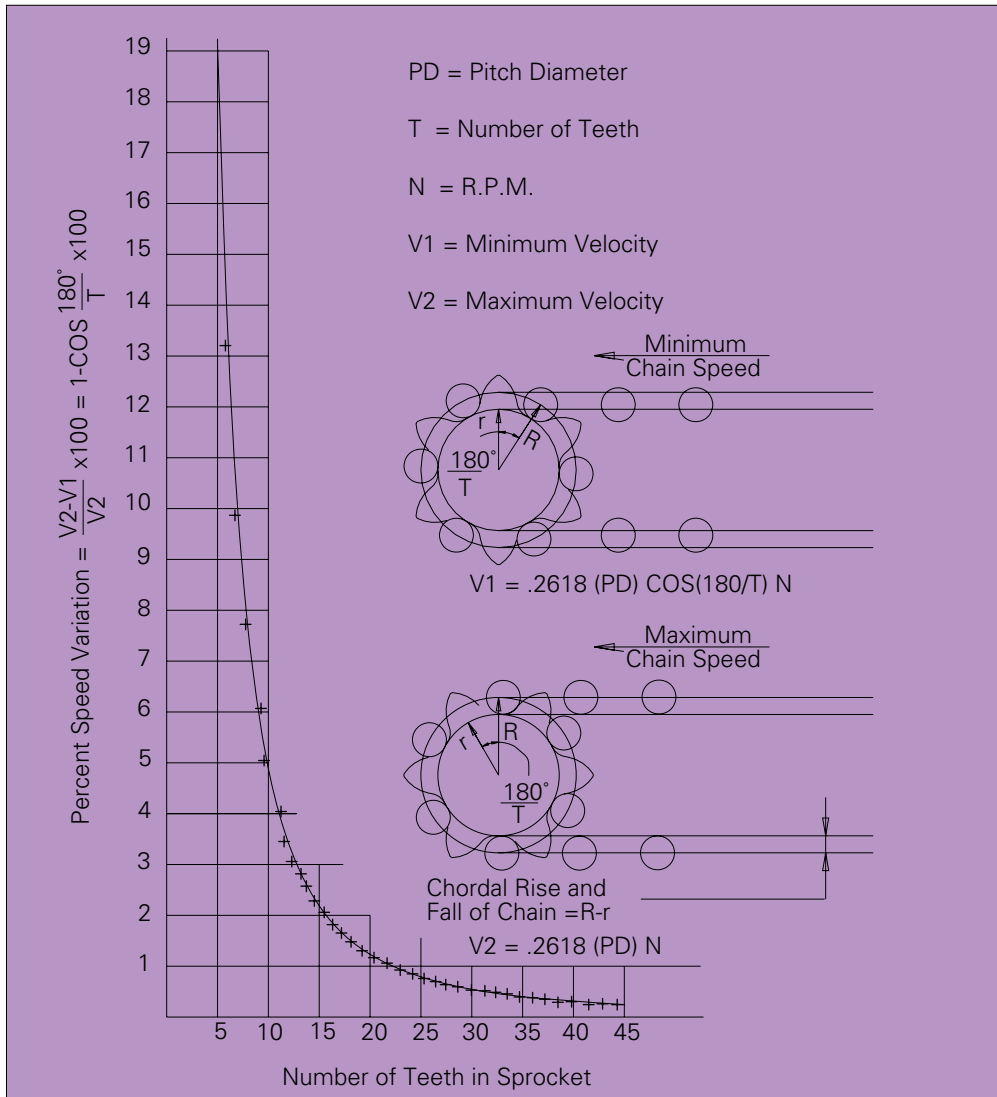
The lineal output from a chordal form is not constant. The square in a circle shown in Figure 2 represents a four-tooth sprocket. Note that the distance from the center to the corner is different than from the center to the middle of the side. The corner would be the equivalent of the chain joint center; the side would be equivalent to the chain centerline at mid-pitch.

**Figure 2**



The resulting velocity variations are a function of the number of teeth, as shown in Figure 3. Due to these variations, care should be taken in considering sprockets with less than 12 teeth.

**Figure 3 — Variations in Chain Speed Due to Chordal Action**

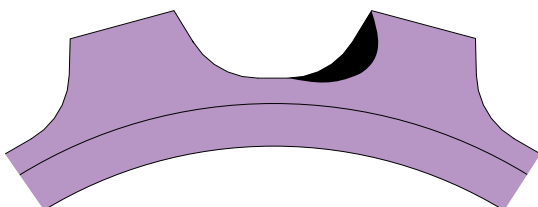


**Sprocket Life**

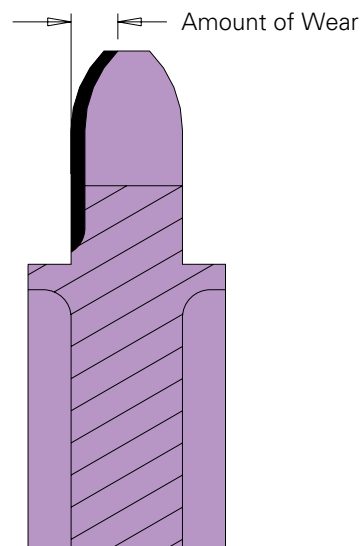
When sprockets are worn, the chain tends to cling to the sprockets or vibrate. The amount of allowable wear depends on the conveyor type and chain size. Wear to a depth of 0.12" (3 mm) to 0.24" (6 mm) is usually a sign that the existing sprocket should be replaced, illustrated in Figure 4.

If the sprocket teeth are worn, the alignment may be incorrect. Proper axial alignment of the sprockets will help reduce or even eliminate wear of sprocket teeth, illustrated in Figure 5.

**Figure 4 — Sprocket Wear**



**Figure 5 — Sprocket Tooth Wear**



## Density of Materials

The weights represent, in many cases, the weights of materials as settled or packed in bins, while lower weights should

generally be figured for materials as slightly agitated or fluffed by handling in elevators, screw conveyors, etc.

Material	Avg. Wgt. of One Cu. ft. (lbs.)	Angle of Repose	Material	Avg. Wgt. of One Cu. ft. (lbs.)	Angle of Repose
Alcohol, proof spirit	58		Coke, Refiners	35-40	
Aluminum, cast, pure	160		Coke, loose, good quality	23-32	30-45
Anthracite, broken, loose	55	27	Concrete, conglomerate, with Portland cement	143-150	
Asbestos	175		Concrete, gravel, with Portland cement	150	
Ash, American White, dry (wood)	47		Concrete, loose, unrammed, weights 5 to 25% lighter, varying with consistency		
Ashes of soft coal, solidly packed	40	40	Copper, cast	542	
Asphaltum	87		Copper, rolled	555	
Barytes	180		Corn, shelled	45	
Batch, Glass	90		Corn, meal	40	
Beans	48		Cork, dry	15	
Benzine	50		Cotton seed	25	
Bauxite, Crushed	80		Cotton seed cake, cracked	41	
Brass (copper and zinc), cast	519		Cotton seed hulls	12	
Brick, best pressed	134		Cotton seed meal	35	
Brick, common and hard	112-125		Cullet	80-120	
Brick, fire	144		Cypress	38	
Brickwork, cement	112		Earth, common load, perfectly dry, loose	72-80	30-45
Bronze, copper 8, tin 1 (gun metal)	552		Earth, common load, perfectly dry, shaken	82-92	30-45
Cedar	24		Elm, perfectly dry	42	
Cement, Portland, per barrel, net, 376 pounds	100		Feldspar, powdered	75	
Cement, Portland, standard proportioning	100		Fir	35	
Chalk	156		Fir, Eastern	25	
Char	45		Flax seed	45	
Charcoal of pines and oaks	20-38		Flour, 196 pounds per barrel, net	35-40	
Cherry, perfectly dry	44		Fuller's earth	35-45	
Chestnut wood, dry	38		Glass	163	
Cinder, blast furnace	57		Granite, solid	166	
Cinders (coal, ashes and clinkers)	40	25-40	Granite, broken	96	
Clay, dry, in lump, loose	75	25-45	Gravel	100	30-40
Clinker, cement	80-95		Gypsum, under 1" crushed	80-100	
Coal, bituminous, solid	84		Gypsum, powdered	60-80	
Coal bituminous, broken, of any size, piled	44-52	35	Hay, baled	24	
Coal, Steam	50		Hemlock, perfectly dry	25	
Coke, Breeze	25-34				

**Density of Materials** (continued)

Material	Avg. Wgt. of One Cu. ft. (lbs.)	Angle of Repose	Material	Avg. Wgt. of One Cu. ft. (lbs.)	Angle of Repose
Hides, green, 85 pounds each	—		Pine, Yellow Northern, perfectly dry	34	
Hickory, perfectly dry	50		Poplar, dry	32	
Ice	56		Quartz	90-100	
Iron, cast	446		Salt, coarse	45	
Iron, wrought	480		Salt, dry, fines	80	
Lead, commercial	709.6		Sand, damp	117-130	
Lignumvitae (dry)	41-83		Sand, dry	90-110	
Limestone, loose	96		Sandstone, quarried and piled	86	
Limestone and Marble	105		Sawdust	13	
Lime, quick	95		Shales	92	
Lime, quick, ground, well shaken	64		Slag	160 -180	
Lime, hydrated	20-45		Slag, furnace, granulated	53	
Locust, dry	46		Slate	175	
Magnesium	109		Slurry, cement	90	
Mahogany	56		Soda	42	
Mahogany Honduras	35		Soda ash	32-67	
Manganese	500		Spruce, dry	25	
Maple, dry	44		Steel	486.5	
Marble, crushed	90		Straw, baled	24	
Marl	79		Sugar, refined	55	
Oak, live, perfectly dry, .88-1.02	72		Sulphur	125	
Oak, white, perfectly dry	50		Tar	62.4	
Oats	26		Tin, cast, 7.2	455	
Oil, linseed	59		Trap rock, crushed	97-107	
Oil, petroleum	51		Turpentine, 300 pounds per barrel	—	
Oil, olive and whale	58		Walnut, Black, perfectly dry	41	
Ore, zinc, crushed	160		Water, pure rain, distilled, at 32 degrees F.,		
Ore, soft iron	150	35	Bar. 30 inches	62.417	
Oxide, Iron Sponge	28-50		Water, sea	64.08	
Phosphate acid	62		Wheat	48	
Phosphate Pebble	100		Zinc or Spelter, cast	428	
Phosphate rock	85				
Pine, white, perfectly dry	32				
Pine, Yellow Southern, perfectly dry	41				



# UNION CHAIN DIVISION - ENGINEERING INFORMATION - SPROCKETS

## Properties of Steels—Strength of Materials

Relation of Hardness to Strength of Steel. Approximate relation of various hardnesses due to influence of size, composition, and heat treatment													
Brinell		Rockwell				Brinell		Rockwell					
Dia. in Mm.	3,000-Kg. Hardness Load Number	C-Scale, Diamond Pyramid		B-Scale, 100-Kg. Load 1/16 In. Dia. Ball	Shore Sclero-Scope Number	Tensile Stgth., 1,000 Lbs. per Sq. In.	Dia. in Mm.	3,000 Kg. Load Hardness Number	C-Scale, Vickers (Firth Diamond)		B-Scale, 100-Kg. Load 1/16 In. Dia. Ball	Shore Sclero-scope Number	Tensile Stgth., 1,000 Lbs. per Sq. In.
		No. 50 No. 50 Kg. Load	Diamond Cone						150-Kg. Load 120-Deg. Load	150-Kg. Load 120-Deg. Load			
2.25	*745	1,050	68		100	368	3.85	248	261	24	101	37	122
2.30	*710	780	63		87	350	3.90	241	253	23	100	36	118
2.35	*682	737	62		84	340	3.95	235	247	22	99	35	115
2.40	*653	697	60		81	330	4.00	229	241	21	98	34	111
2.45	*627	667	59		79	323	4.05	223	234	19	97	33	108
2.50	*601	640	57		77	309	4.10	217	228	18	96	33	105
2.55	*578	615	56		75	297	4.15	212	222	16	96	32	102
2.60	*555	591	55	120	73	285	4.20	207	218	15	95	32	100
2.65	*534	569	54	119	71	274	4.25	201	212	14	94	31	98
2.70	*514	547	53	119	70	263	4.30	197	207	13	93	30	95
2.75	495	539	52	117	69	259	4.35	192	202	12	92	29	93
2.80	477	516	50	117	67	247	4.40	187	196	10	91	28	90
2.85	461	495	49	116	65	237	4.45	183	192	9	90	28	89
2.90	444	474	47	115	63	226	4.50	179	188	8	89	27	87
2.95	429	455	46	115	61	217	4.55	174	182	6	88	26	85
3.00	415	440	45	114	59	210	4.60	170	178	5	87	26	83
3.05	401	425	43	113	58	202	4.65	167	175	4	86	25	81
3.10	388	410	42	112	56	195	4.70	163	171	3	85	25	79
3.15	375	396	40	112	54	188	4.80	156	163	1	83	24	76
3.20	363	383	39	110	52	182	4.90	149	156		81	23	73
3.25	352	372	38	110	51	176	5.00	143	150		79	22	71
3.30	341	360	37	109	50	170	5.10	137	143		76	21	67
3.35	331	350	36	109	48	166	5.20	131	137		74	20	65
3.40	321	339	34	108	47	160	5.30	126	132		72	20	63
3.45	311	328	33	108	46	155	5.40	121	127		70	19	60
3.50	302	319	32	107	45	150	5.50	116	122		68	18	58
3.55	293	309	31	106	43	145	5.60	111	117		66	15	56
3.60	285	301	30	106	42	141	5.70	107	107		64		55
3.65	277	292	29	105	41	137	5.80	103	103		61		53
3.70	269	284	28	104	40	133	5.90	99	99		59		51
3.75	262	276	27	103	39	129	6.00	95	95		56		49
3.80	255	269	25	102	38	126							

\*Tungsten carbide ball  
(ASTM-SAE-ASM Joint Committee)

**Working Loads (Pounds)**

Horse-power	Linear Speed in Feet per Minute												
	12 1/2	25	50	100	200	300	400	500	600	700	800	900	1,000
1/4	660	330	165	83	42	28	21	17	14	12	11	9	8
1/2	1,320	660	330	165	83	55	42	33	28	24	21	18	17
3/4	1,980	990	495	248	124	83	62	50	41	36	31	27	25
1	2,640	1,320	660	330	165	110	83	66	55	47	42	37	33
1-1/2	3,960	1,980	990	495	248	165	124	99	83	71	62	55	50
2	5,280	2,640	1,320	660	330	220	165	132	110	94	83	73	66
2-1/2	6,600	3,300	1,650	825	413	275	206	165	137	118	103	92	83
3	7,920	3,960	1,980	990	495	330	248	198	165	141	124	110	99
4	10,560	5,280	2,640	1,320	660	440	330	264	220	189	165	147	132
5	13,200	6,600	3,300	1,650	825	550	413	330	275	236	206	183	165
7-1/2	19,800	9,900	4,950	2,475	1,238	825	619	495	413	354	310	275	248
10	26,400	13,200	6,600	3,300	1,650	1,100	825	660	550	471	412	367	330
15	39,600	19,800	9,900	4,950	2,475	1,650	1,238	990	825	707	619	550	495
20	52,800	26,400	13,200	6,600	3,300	2,200	1,650	1,320	1,100	943	825	734	660
25	66,000	33,000	16,500	8,250	4,125	2,750	2,063	1,650	1,375	1,178	1,031	917	825
30	79,200	39,600	19,800	9,900	4,950	3,300	2,475	1,980	1,650	1,414	1,238	1,100	990
35	92,400	46,200	23,100	11,550	5,775	3,850	2,888	2,310	1,925	1,650	1,444	1,283	1,155
40	105,600	52,800	26,400	13,200	6,600	4,400	3,300	2,640	2,200	1,885	1,650	1,464	1,320
50	132,000	66,000	33,000	16,500	8,250	5,500	4,125	3,300	2,750	2,357	2,062	1,833	1,650
60	158,400	79,200	39,600	19,800	9,900	6,600	4,950	3,960	3,300	2,829	2,475	2,200	1,980
75	198,000	99,000	49,500	24,750	12,390	8,250	6,195	4,950	4,125	3,536	3,098	2,750	2,475
100	264,000	132,000	66,000	33,000	16,500	11,000	8,250	6,600	5,500	4,714	4,125	3,667	3,300
125	330,000	165,000	82,500	41,250	20,625	13,750	10,313	8,250	6,875	5,893	5,157	4,583	4,125
150	396,000	198,000	99,000	49,500	24,750	16,500	12,375	9,900	8,250	7,071	6,188	5,500	4,950
175	462,000	231,000	115,500	57,750	28,875	19,250	14,438	11,550	9,625	8,250	7,219	6,417	5,775
200	528,000	264,000	132,000	66,000	33,000	22,000	16,500	13,200	11,000	9,429	8,250	7,333	6,600
250	660,000	330,000	165,000	82,500	41,250	27,500	20,625	16,500	13,750	11,786	10,313	9,167	8,250
300	792,000	396,000	198,000	99,000	49,500	33,000	24,750	19,800	16,500	14,143	12,375	11,000	9,900
350	924,000	462,000	231,000	115,000	57,750	38,500	28,875	23,100	19,250	16,500	14,438	12,833	11,500
400	1,056,000	528,000	264,000	132,000	66,000	44,000	33,000	26,400	22,000	18,857	16,500	14,667	13,200



# UNION CHAIN DIVISION - ENGINEERING INFORMATION - SPROCKETS

## Torque Values (Inch Pounds)

RPM	Horsepower									
	1/8	1/4	1/2	3/4	1	1 1/2	2	2 1/2	3	5
0.10	78,871	157,562	315,125	472,687						
0.20	39,390	78,781	157,562	236,343	315,125	472,687				
0.30	26,260	52,520	105,040	157,562	210,083	315,125	420,166			
0.40	19,695	39,390	78,781	118,171	157,562	236,343	315,125	393,906	472,682	
0.50	15,756	31,512	63,025	94,537	126,050	189,075	252,100	315,125	378,150	
0.60	13,130	26,260	52,520	78,781	105,040	157,562	210,083	262,604	315,125	
0.70	11,254	22,508	45,017	67,526	90,035	135,053	180,071	225,089	270,107	450,178
0.80	9,847	19,695	39,390	59,085	78,781	118,171	157,562	196,953	236,343	393,906
0.90	8,753	17,507	35,013	52,520	70,027	105,041	140,055	175,069	210,083	350,138
1.00	7,878	15,756	31,512	47,268	63,025	94,537	126,050	157,562	189,075	315,125
1.25	6,302	12,605	25,210	37,815	50,420	75,630	100,840	126,050	151,260	252,100
1.50	5,252	10,504	21,008	31,512	42,016	63,025	84,033	105,041	126,050	210,083
1.75	4,501	9,003	18,006	27,010	36,014	54,021	72,028	90,035	108,042	180,071
2.00	3,929	7,878	15,756	23,634	31,512	47,268	63,025	78,781	94,537	157,562
2.50	3,151	6,302	12,604	18,907	25,210	37,815	50,420	63,025	76,630	126,050
3.00	2,626	5,252	10,504	15,756	21,008	31,512	42,016	52,520	63,025	105,041
4.00	1,969	3,939	7,878	11,817	15,756	23,634	31,512	39,406	47,268	78,781
5.00	1,575	3,151	6,302	9,453	12,605	18,907	25,210	31,512	37,815	63,025
6.00	1,313	2,626	5,252	7,878	10,504	15,756	21,008	26,260	31,512	52,520
7.00	1,125	2,250	4,501	6,752	9,003	13,505	18,007	22,508	27,010	45,017
8.00	984	1,969	3,939	5,908	7,878	11,817	15,756	19,695	23,634	39,390
9.00	875	1,750	3,501	5,252	7,002	10,504	14,005	17,506	21,008	35,013
10.00	787	1,575	3,151	4,726	6,302	9,453	12,605	15,756	18,907	31,512
12.00	656	1,313	2,626	3,939	5,252	7,878	10,504	13,130	15,756	26,260
14.00	562	1,125	2,250	3,376	4,501	6,752	9,003	11,254	13,505	22,508
16.00	492	984	1,969	2,954	3,939	5,908	7,878	9,847	11,817	19,695
18.00	437	874	1,750	2,626	3,501	5,252	7,002	8,753	10,504	17,506
20.00	393	787	1,575	2,363	3,151	4,826	6,302	7,878	9,453	15,756
25.00	315	630	1,260	1,890	2,521	3,781	5,042	6,302	7,563	12,605
30.00	262	525	1,050	1,575	2,100	3,151	4,201	5,232	6,302	10,504
40.00	197	394	787	1,181	1,575	2,363	3,151	3,940	4,726	7,878
50.00	157	315	630	945	1,260	1,890	2,521	3,151	3,781	6,302
60.00	131	262	525	787	1,050	1,575	2,100	2,626	3,151	5,252
70.00	112	225	450	675	900	1,350	1,800	2,250	2,701	4,501
80.00	98	196	393	590	787	1,181	1,575	1,969	2,363	3,939
90.00	87	175	350	525	700	1,050	1,400	1,750	2,100	3,501
100.00	78	157	315	472	630	945	1,260	1,575	1,890	3,151



**Torque Values (Inch Pounds) (Continued)**

RPM	Horsepower									
	7 1/2	10	15	20	25	30	35	40	50	75
1.00	472,687									
1.25	878,150									
1.50	815,125	420,166								
1.75	270,107	360,142								
2.00	236,343	315,125	472,687							
2.50	189,075	252,100	378,150							
3.00	157,562	210,083	315,125	420,166						
4.00	118,171	157,562	236,343	315,125	393,906	472,687				
5.00	94,537	126,050	189,075	252,100	315,125	378,150	441,175			
6.00	78,781	105,041	157,562	210,083	262,604	315,125	367,645	420,166		
7.00	67,526	90,035	135,053	180,071	225,089	270,107	315,125	360,143	450,178	
8.00	59,058	78,781	118,171	157,562	196,953	236,343	275,734	315,125	393,906	
9.00	52,520	70,027	105,041	140,055	175,069	210,083	245,097	280,111	350,138	
10.00	47,268	63,025	94,537	126,050	157,562	189,075	220,587	252,100	315,125	472,687
12.00	39,390	52,520	78,781	105,041	131,302	157,562	183,823	210,083	262,604	393,906
14.00	33,733	45,017	67,526	90,035	112,544	135,053	157,562	180,071	225,089	337,633
16.00	29,543	39,390	39,058	78,781	98,476	118,172	137,867	157,562	196,953	295,429
18.00	26,260	35,013	52,520	70,027	87,534	105,041	122,548	140,055	175,069	262,604
20.00	23,634	31,512	47,268	63,025	78,781	94,537	110,293	126,050	157,562	236,343
25.00	18,907	25,210	37,815	50,420	63,025	75,630	88,235	100,840	126,050	189,075
30.00	15,756	21,008	31,512	42,016	52,520	63,025	73,529	84,033	105,041	157,562
40.00	11,817	15,756	23,634	31,512	39,390	47,268	55,146	63,025	78,781	118,172
50.00	9,453	12,605	18,907	25,210	31,512	37,815	44,117	50,420	63,025	94,537
60.00	7,878	10,504	15,756	21,008	26,260	31,512	36,764	42,016	52,520	78,781
70.00	6,752	9,003	13,505	18,007	22,508	27,010	31,512	36,014	45,017	67,526
80.00	5,908	7,878	11,817	15,756	19,695	23,634	27,573	31,512	39,390	59,086
90.00	5,252	7,002	10,504	14,005	17,506	21,008	24,509	28,011	35,013	52,520
100.00	4,726	6,302	9,453	12,605	15,756	18,907	22,058	25,210	31,512	47,268

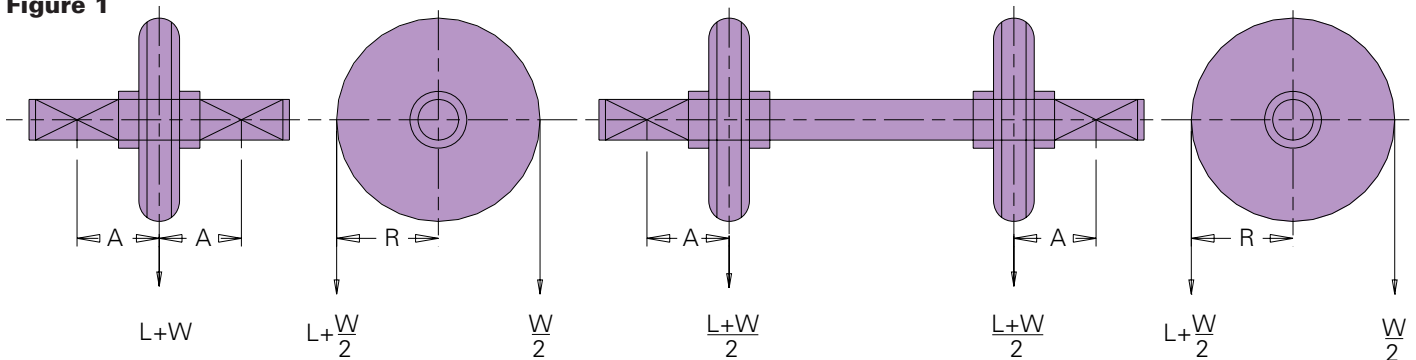
# Shaft Selection

Refer to Selection Charts 1 and 2 developed by the American Society of Mechanical Engineers to simplify selection. Use the charts in conjunction with the Service Factors shown in Table 1 to modify the selection for conditions under which the shaft will operate.

Important factors to consider when calculating shaft size:

- The shaft is subject to a bending moment and a torsional moment.
- A bending moment is that force which tends to bend a shaft.
- Torsional moment is that force which tends to twist a shaft.
- Shaft size is determined by the combined action of the bending and the torsional moments.

**Figure 1**



L = Total unbalanced load in pounds.

W = Total suspended weight of elevator (chain, buckets, etc.,) pounds.

R = Radius of wheel in inches.

B = Bending moment.

T = Torsional moment.

$B = A \frac{L+W}{2}$  inch pounds.

$T = R \times L$  inch pounds.

## Selection Procedure

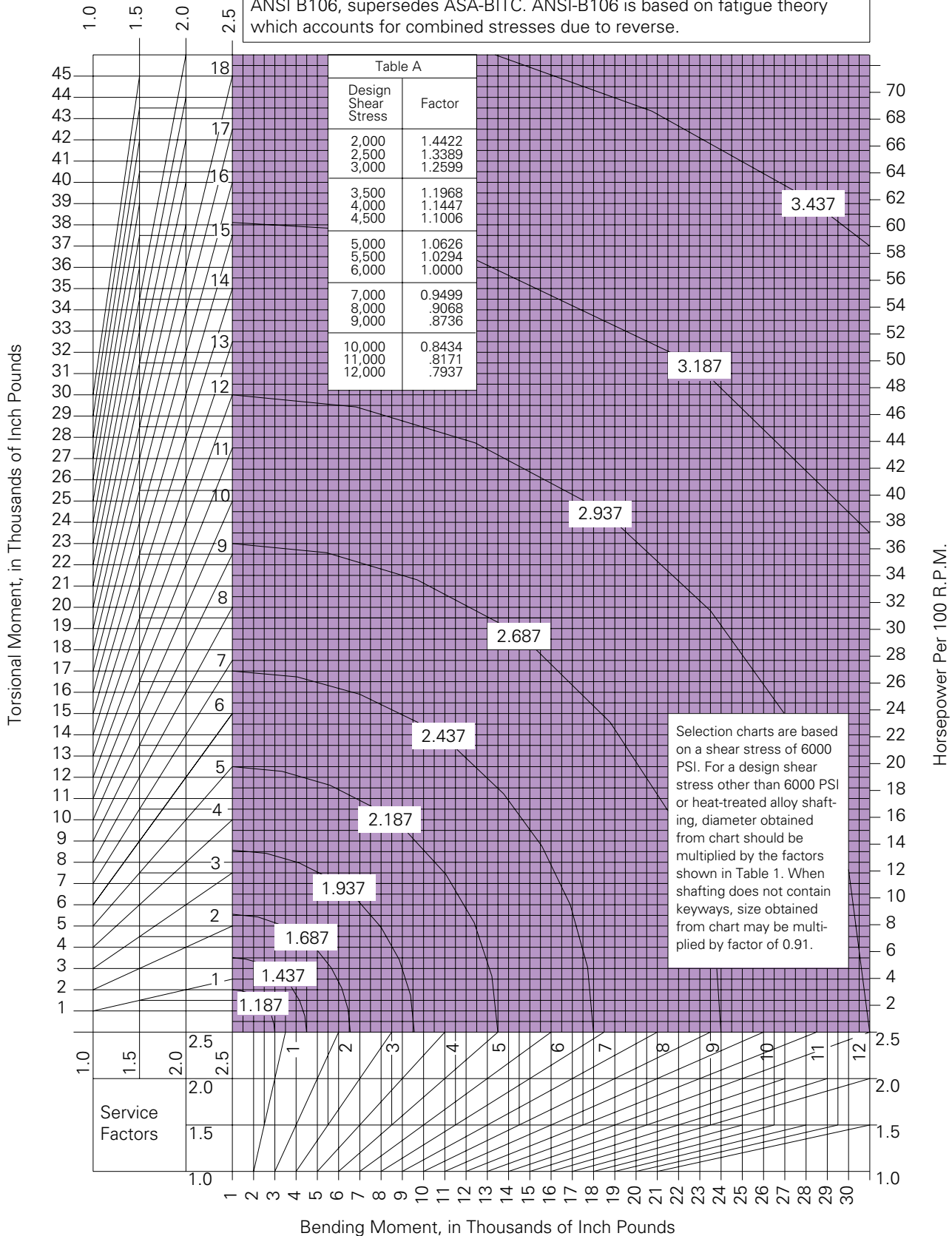
- Compute the bending moment from the formula shown in Figure 1.
  - Determine the service factor for the bending that will suit conditions from Table 1.
  - Compute the torsional moment from the formula, shown in Figure 1.
  - Determine the service factor for torsion that will suit conditions from Table 1.
  - Draw a vertical line across Selection Chart 1 or 2 from the point where the bending moment intersects its selected service factor line.
  - Draw a horizontal line up Selection Chart 1 or 2 from the point where the bending moment intersects its selected service factor line.
  - The intersection of above lines will give required shaft size.
  - For shafts not weakened by keyways, multiply the shaft size obtained by 0.91 for the corrected shaft size. See note embedded in Selection Chart 2.
- Horsepower may be computed directly from the right-hand side of Selection Charts by correcting the figure in line with the horizontal torsional moment line by the speed in RPM.

**Table 1 — Service Factors**

Service Factors	For Bending	For Torsion
<b>Stationary Shafts</b> Gradually applied loads Suddenly applied loads	1.0 1.5 - 2.0	1.0 1.5 - 2.0
<b>Rotating Shafts</b> Gradually applied or steady loads	1.5	1.0
<b>Suddenly Applied Loads</b> Minor shock only	1.5 - 2.0	1.0 - 1.5
<b>Suddenly Applied Loads</b> Heavy shocks	2.0 - 2.5	1.5 - 2.5

**Chart 1 — Quick Selection**

Note: All shaft size selections shown are based on the ASME code, ASA-BITC. This standard is not favored for most applications. A new code, ANSI B106, supersedes ASA-BITC. ANSI-B106 is based on fatigue theory which accounts for combined stresses due to reverse.

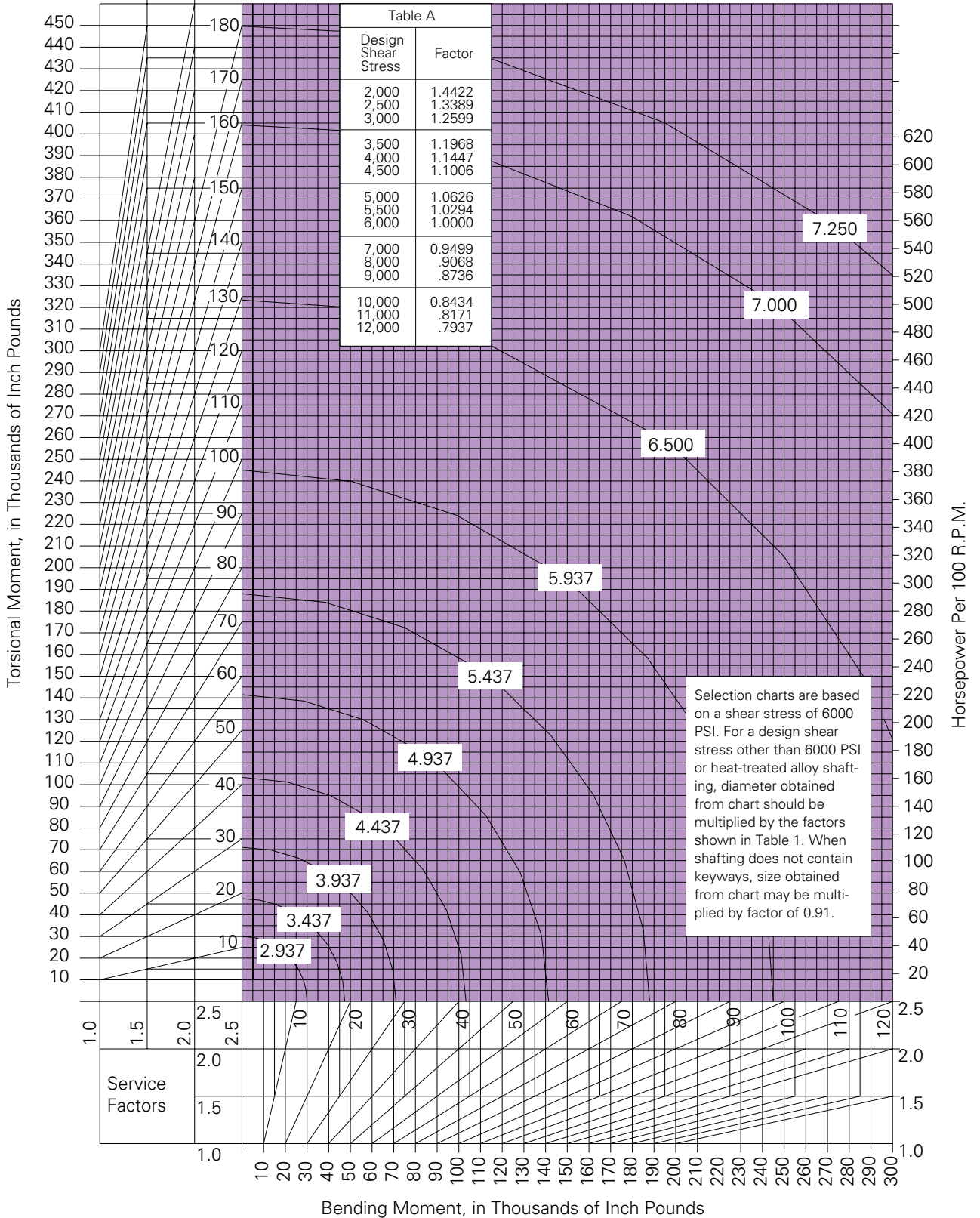




# UNION CHAIN DIVISION - ENGINEERING INFORMATION - SHAFT SELECTION

**Chart 2 — Shaft Selection**

Note: All shaft size selections shown are based on the ASME code, ASA-BITC. This standard is not favored for most applications. A new code, ANSI B106, supersedes ASA-BITC. ANSI-B106 is based on fatigue theory which accounts for combined stresses due to reverse.



## Helpful Formulas

### Horsepower

Horsepower equals 33,000 foot pounds per minute, or 550 foot pounds per second. In terms of chain load and speed

$$HP = \frac{\text{Working Load} \times \text{Ft. per Min.}}{33,000}$$

$$\text{or } HP = \frac{\text{Working Load} \times T \times P \times \text{R.P.M.}}{396,000}$$

Where:

T = Number of sprocket teeth

P = Chain pitch

### Chain Rolling Friction

$$f_r = f_s \frac{d}{D}$$

Where:

$f_r$  = Coefficient of rolling friction

$f_s$  = Coefficient of sliding friction

d = Bushing outside diameter

D = Roller outside diameter

### Chain Working Load

When the horsepower input is known and the chain working load is desired, this can be calculated as follows:

$$\text{Working Load} = \frac{HP \times 33,000}{\text{Ft. per Min.}}$$

$$\text{or Working Load} = \frac{HP \times 396,000}{T \times P \times \text{R.P.M.}}$$

### Factor of Safety

Factor of Safety is determined as follows:

$$F.S. = \frac{\text{Chain Average Ultimate Strength}}{\text{Chain Working Load}}$$

### Chain Speed

Chain Speed can be determined from the following formula:

$$\text{Chain Speed (ft. per min.)} = \frac{T \times \text{R.P.M.}}{K}$$

Where:

T = Number of sprocket teeth

K = Pitches of chain per foot

### Chain Bearing Pressure

Chain Bearing Pressure can be figured as follows:

$$\text{Bearing Pressure (lbs. per sq. in.)} = \frac{\text{Working Load}}{L \times D}$$

Where:

L = Bushing length

D = Pin diameter

### Torque in Inch Pounds

Torque in Inch Pounds is converted into HP by:

$$\frac{\text{Torque} \times \text{R.P.M.}}{63,000} = \text{Horsepower}$$

### Torque in Foot Pounds

Torque in Foot Pounds is converted into HP by:

$$\frac{\text{Torque} \times \text{R.P.M.}}{5,250} = \text{Horsepower}$$

### Kilowatts to HP

To convert Kilowatts to HP:

$$1 \text{ K.W.} = 1 \frac{1}{2} \text{ HP (approx.)}$$

$$HP = \frac{\text{K.W.}}{.746 \times \text{Efficiency}}$$

Efficiency = .9 for generators

Efficiency = .87 for motors (3 phase)

### Chain Lengths in Pitches (Approx.)

$$\text{Chain Length} = \frac{S}{2} + 2C + \frac{.0253 D^2}{C}$$

Where:

S = Sum of teeth, both sprockets

C = Center distance in pitches

D = Difference in number of teeth both sprockets



# Universal Product Cross-Reference

This chart is a quick, easy way to replace your current chains and sprockets with high-quality, reliable products from the Union Chain Division of U.S. Tsubaki, Inc. The list is sorted by chain number, and you'll find the corresponding Union number listed for each.

The chart was compiled with great care and with the latest information available at the time of printing. Because of the possibility of errors in competitors' publications or changes in product specifications, U.S. Tsubaki does not assume responsibility for the accuracy of competitors' information. Please check the chain or sprocket specifications on the corresponding page numbers carefully before ordering.

## Chain Interchangeability Guidelines

There are several degrees of interchangeability for chain replacement between manufacturers' chains.

### 1. Intercoupling of Chains

The pin of one chain can be put through the bushing of another. However, the pin and outside sidebars must be produced by the same manufacturer. When connected, the two chains form one strand.

### 2. Interchanging of Parts

Because each manufacturer has different part designs and tolerances, interchanging parts is not suggested. Due to the differences in tolerances, we suggest you use Union replacement parts for Union chains.

### 3. Running on the Same Sprocket

Many replacement chains will run on the same sprockets even though they are not the same chains. The following dimensions must be equivalent in the original and replacement chains to run on the same sprocket.

- Pitch
- Roller, barrel, or bushing diameter (depending on chain type)
- Inside width

If you have any questions about using the Universal Product Cross-Reference or interchangeability in general, contact Union Engineering. We can help you select the right replacement chain or sprocket for your application.

**Universal Product Cross-Reference**  
**Sorted by Chain Number**

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
JB-2	2.000	D	US-2	B-64		
US-2	2.000	D	US-2	B-64		
3DD	3.075	D	US-3075	A-4	US-3075	C-5
API-3	3.075	D	US-3075	A-4	US-3075	C-5
CHAMP3	3.075	D	US-3075	A-4	US-3075	C-5
4	4.000	RC	94R	A-19	94R	C-13
HP-4	4.063	D	US-1242	A-4	US-1242	C-6
RO-4	4.063	D	US-1242	A-4	US-1242	C-6
SS-4	4.000	RC	94R	A-19	94R	C-13
CC5	6.000	RC	CC5	A-20	CC5	C-17
6	6.000	RC	614R	A-20	CC5	C-17
6-SP	6.000	RC	631R	A-20	626R	C-18
SS-6	6.000	RC	614R	A-20	CC5	C-17
SS-6SP	6.000	RC	631R	A-20	626R	C-18
S-17	2.563	D	520RX	A-4		
RO-25H	2.500	D	RO-25H	A-4		
SS-39	3.075	RC	119R	A-19	119RX	C-12
RO-40	3.075	D	US-1030	A-4	US-3075	C-5
RO-40HYPER	3.075	D	US-3075	A-4	US-3075	C-5
SS-40	3.075	D	US-1030	A-4	US-3075	C-5
SS-40HYPER	3.075	D	US-3075	A-4	US-3075	C-5
SS-40P	3.075	D	US-1031	A-4	US-3075	C-5
XXS-40	3.075	D	US-1031	A-4	US-3075	C-5
R-51A	2.500	D	US-2570	**	US-3075	C-5
53R	3.000	RC	53R	A-19	53R	C-12
C-55	1.631	C	C-55	**		
EC-62	1.654	RC	162R	**	378RX	C-11
SS-62P	1.654	D	US-622	**	378RX	C-11
US-64S	2.500	D	US-64S	A-4	US-64S	C-3
US-64SH	2.500	D	US-64SH	B-64	US-64S	C-3
EPC-78	2.609	Plastic	EPC-78	B-83		
W-78	2.609	WS	W-78	A-66	WH-78	C-35
W-78S	4.125	WS	WH-78S	**		
WH-78	2.609	WS	WH-78	A-66	WH-78	C-35
WR-78	2.609	WS	W-78	A-66	WH-78	C-35
WS-78	2.609	WS	W-78	A-66	WH-78	C-35
WS-78P	2.609	WS	WH-78	A-66	WH-78	C-35
81C	2.609	RC	81X	A-19	81X	C-11
81X	2.609	RC	81X	A-19	81X	C-11
82R	4.000	RC	82R	**	US-90R	C-14
SS-82	6.000	RC	614R	A-20	CC5	C-17
W-82	3.075	WS	W-82	A-66	WH-82	C-35
W-82H	3.075	WS	W-82H	**	WH-82	C-35
WH-82	3.075	WS	WH-82	A-66	WH-82	C-35
WH-82H	3.075	WS	WH-82H	**	WH-82	C-35
WR-82	3.075	WS	W-82	A-66	WH-82	C-35
WS-82	3.075	WS	W-82	A-66	WH-82	C-35
WS-82P	3.075	WS	WH-82	A-66	WH-82	C-35
83R	4.000	RC	83R	A-19	US-90R	C-14
84R	4.000	RC	84R	A-19	84R	C-15
85R	4.000	RC	85R	**		
86R	6.000	RC	86R	A-19	627R	C-16
87R	2.609	RC	87R	A-19	87R	C-11
SS-87	2.609	RC	87R	A-19	87R	C-11
SS-88P	2.609	D	US-881	**	US-882	C-4
89R	4.000	RC	89R	A-19	89R	C-14
US-90R	4.000	RC	US-90R	A-19	US-90R	C-14
91R	4.000	RC	91R	A-19	91R	C-14

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.





# UNION CHAIN DIVISION - UNIVERSAL PRODUCT CROSS-REFERENCE

## Universal Product Cross-Reference (Continued) Sorted by Chain Number

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
93R	3.000	RC	93R	A-19	93R	C-12
94R	4.000	RC	94R	A-19	94R	C-13
95R	4.000	RC	95R	A-19	95R	C-13
96R	6.000	RC	96R	A-20	610R	C-17
96RX	6.000	RC	96RX	A-20	610R	C-17
SS-96	6.000	RC	96R	A-20	610R	C-17
97R	4.000	RC	97R	A-19	97R	C-13
102B	4.000	SB	102B	A-54	102B	C-30
H-102	5.000	WS	WD-102	A-73		
A-102B	4.000	C	C-102B	A-63	102B	C-30
C-102B	4.000	C	C-102B	A-63	102B	C-30
HSB-102B	4.000	SB	102B	A-54	102B	C-30
N-102B	4.000	C	C-102B	A-63	102B	C-30
S-102B	4.000	SB	102B	A-54	102B	C-30
SBS-102B	4.000	SB	102B	A-54	102B	C-30
SS-102B	4.000	SB	102B	A-54	102B	C-30
WD-102	5.000	WS	WD-102	A-73		
WDH-102	5.000	WS	WDH-102	A-73		
WSD-102	5.000	WS	WD-102	A-73		
WSD-102P	5.000	WS	WDH-102	A-73		
102 1/2	4.040	SB	102 1/2	A-54	102 1/2	C-30
HSB-102 1/2	4.040	SB	102 1/2	A-54	102 1/2	C-30
S-102 1/2	4.040	SB	102 1/2	A-54	102 1/2	C-30
SBS-102 1/2	4.040	SB	102 1/2	A-54	102 1/2	C-30
103RC	3.075	D	US-1032	**	US-3075	C-5
H-104	6.000	WS	WD-104	A-73		
WD-104	6.000	WS	WD-104	A-73		
WDH-104	6.000	WS	WDH-104	A-73		
WSD-104	6.000	WS	WD-104	A-73		
WSD-104P	6.000	WS	WDH-104	A-73		
H-106	6.000	WS	W-106	B-40	WH-106	C-37
W-106	6.000	WS	W-106	B-40	WH-106	C-37
WH-106	6.000	WS	WH-106	B-40	WH-106	C-37
WR-106	6.000	WS	W-106	B-40	WH-106	C-37
110	6.000	SB	110	A-54	110	C-31
C-110	6.000	C	C-110	A-63	110	C-31
C-110M	6.000	C	C-110	A-63	110	C-31
HSB-110	6.000	SB	110	A-54	110	C-31
S-110	6.000	SB	110	A-54	110	C-31
SBS-110	6.000	SB	110	A-54	110	C-31
WD-110	6.000	WS	WD-110	A-73		
WDH-110	6.000	WS	WDH-110	A-73		
WSD-110	6.000	WS	WD-110	A-73		
WSD-110P	6.000	WS	WDH-110	A-54		
111	4.760	SB	111	A-54	111	C-30
111SP	4.76X7.24	SB	111 SP	A-54		
A-111	4.760	C	C-111	A-63	111	C-30
C-111	4.760	C	C-111	A-63	111	C-30
C-111M	4.760	C	C-111	A-63	111	C-30
HSB-111	4.760	SB	111	A-54	111	C-30
HSB-111SP	4.76X7.24	SB	111 SP	A-54		
N-111	4.760	C	C-111	A-63	111	C-30
S-111	4.760	SB	111	A-54	111	C-30
S-111SP	4.76X7.24	SB	111 SP	A-54		
SBS-111	4.760	SB	111	A-54	111	C-30
SBS-111SP	4.76X7.24	SB	111 SP	A-54		
SS-111	4.760	SB	111	A-54	111	C-30
SS-111SP	4.76X7.24	SB	111 SP	A-54		

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.



**Universal Product Cross-Reference (Continued)**  
**Sorted by Chain Number**

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
W-111	4.760	WS	W-111	A-66	WH-111	C-36
WH-111	4.760	WS	WH-111	A-66	WH-111	C-36
H-112	8.000	WS	WD-112	A-73		
WD-112	8.000	WS	WD-112	A-73		
WDH-112	8.000	WS	WDH-112	A-73		
WSD-112	8.000	WS	WD-112	A-73		
WSD-112P	8.000	WS	WDH-112	A-73		
H-113	6.000	WS	WD-113	A-73		
WD-113	6.000	WS	WD-113	A-73		
WDH-113	6.000	WS	WDH-113	A-73		
H-116	8.000	WS	WD-116	A-73		
WD-116	8.000	WS	WD-116	A-73		
WDH-116	8.000	WS	WDH-116	A-73		
WSD-116	8.000	WS	WD-116	A-73		
WSD-116P	8.000	WS	WDH-116	A-73		
119R	3.075	RC	119R	A-19	119RX	C-12
119RX	3.075	RC	119RX	A-19	119RX	C-12
WSD-120	6.000	WS	WD-120	**		
WSD-120P	6.000	WS	WDH-120	**		
H-122	8.000	WS	WD-122	**		
WD-122	8.000	WS	WD-122	**		
WDH-122	8.000	WS	WDH-122	**		
WSD-122	8.000	WS	WD-122	**		
WSD-122P	8.000	WS	WDH-122	**		
H-124	4.000	WS	W-124	A-66	WH-124	C-36
H-124HD	4.063	WS	W-124H	A-66	WH-124H	C-36
RO-124	4.063	D	US-1242	A-4	US-1242	C-6
SS-124	4.063	D	US-1242	A-4	US-1242	C-6
SS-124DP	4.063	D	US-1242	A-4	US-1242	C-6
W-124	4.000	WS	W-124	A-66	WH-124	C-36
W-124H	4.063	WS	W-124H	A-66	WH-124H	C-36
WH-124	4.000	WS	WH-124	A-66	WH-124	C-36
WH-124H	4.063	WS	W-124H	A-66	WH-124H	C-36
WH-124HD	4.063	WS	WH-124H	A-66	WH-124H	C-36
WR-124	4.000	WS	W-124	A-66	WH-124	C-36
WR-124HD	4.063	WS	W-124H	A-66	WH-124H	C-36
WS-124	4.000	WS	W-124	A-66	WH-124	C-36
WS-124HD	4.063	WS	W-124H	A-66	WH-124H	C-36
WS124HDP	4.063	WS	WH-124H	A-66	WH-124H	C-36
WS-124P	4.000	WS	WH-124	A-66	WH-124	C-36
131	3.075	SB	131	A-54	131	C-29
C-131	3.075	C	C-131	A-63	131	C-29
HSB-131	3.075	SB	131	A-54	131	C-29
S-131	3.075	SB	131	A-54	131	C-29
SBS-131	3.075	SB	131	A-54	131	C-29
SS-131	3.075	SB	131	A-54	131	C-29
A-132	6.050	C	C-132	A-63	WH-132	C-38
C-132	6.050	C	C-132	A-63	WH-132	C-38
C-132M	6.050	C	C-132	A-63	WH-132	C-38
H-132	6.050	WS	W-132	A-66	WH-132	C-38
N-132	6.050	C	C-132	A-63	WH-132	C-38
W-132	6.050	WS	W-132	A-66	WH-132	C-38
WCH-132	6.050	WS	WCH-132	A-66	WH-132	C-38
WH-132	6.050	WS	WH-132	A-66	WH-132	C-38
WH-132SS	6.050	WS	WH-132SS	A-66	WH-132	C-38
WR-132	6.050	WS	W-132	A-66	WH-132	C-38
WS-132	6.050	WS	W-132	A-66	WH-132	C-38
WS-132P	6.050	WS	WH-132	A-66	WH-132	C-38

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.



# UNION CHAIN DIVISION - UNIVERSAL PRODUCT CROSS-REFERENCE

## Universal Product Cross-Reference (Continued) Sorted by Chain Number

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
134	6.000	SB	US-850	**		
149	4.000	RC	89R	A-19	89R	C-14
MSR-149	4.000	RC	89R	A-19	89R	C-14
150X	6.050	SB	150X	A-54	150X	C-32
HSB-150PLUS	6.050	SB	150X	A-54	150X	C-32
SA-150	6.050	SB	150X	A-54	150X	C-32
SBS-150PLUS	6.050	SB	150X	A-54	150X	C-32
SS-150X	6.050	SB	150X	A-54	150X	C-32
SX-150	6.050	SB	150X	A-54	150X	C-32
W-150	6.050	WS	W-150	A-66	WH-132	C-38
WH-150	6.050	WS	WH-150	A-66	WH-132	C-38
WS-150P	6.050	WS	WH-150	A-66	WH-132	C-38
W-155	6.050	WS	W-155	A-66	WH-155	C-38
WH-155	6.050	WS	WH-155	A-66	WH-155	C-38
160/348	2.000	D	160/348	A-82		
160/458	2.000	D	160/458	A-82		
160/678	2.000	D	160/678	A-82		
162R	1.654	RC	162R	**	378RX	C-11
SS-162P	1.654	RC	378R	A-19	378RX	C-11
180	12.000	RC	B-1264R	A-20	B-1264R	C-25
SR-183	3.000	RC	53R	A-19	53R	C-12
188	2.609	SB	188	A-54	188	C-29
188Z	2.609	C	C-188	A-63	WH-78	C-35
C-188	2.609	C	C-188	A-63	WH-78	C-35
C-188M	2.609	C	C-188	A-63	WH-78	C-35
HSB-188	2.609	SB	188	A-54	188	C-29
S-188	2.609	SB	188	A-54	188	C-29
SBS-188	2.609	SB	188	A-54	188	C-29
SR-188	4.000	RC	1188R	A-19	91R	C-14
SS-188	2.609	SB	188	A-54	188	C-29
SR-194	4.000	RC	US-90R	A-19	US-90R	C-14
DS-196R	6.000	RC	DS-196R	B-33	627R	C-16
SR-196	6.000	RC	US-196R	A-19	627R	C-16
SRD-196	6.000	RC	DS-196R	B-33	627R	C-16
US-196R	6.000	RC	US-196R	A-19	627R	C-16
RF-205	3.075	RC	119R	A-19	119RX	C-12
234PB	3.510	D	351RX	**		
SS-234PLUS	3.510	D	351RX	**		
RX-238	3.500	D	US-3514	A-4	US-3514	C-6
276	12.000	RC	1276R	A-20	E-1263R	C-25
SS-276	12.000	RC	1276R	A-20	E-1263R	C-25
US-278R	2.609	RC	US-278R	A-19	87R	C-11
327R	2.980	RC	327R	**		
344SXX	3.000	D	344SXX	A-4	344SXX	C-4
X-345	3.000	D	344SXX	A-4	344SXX	C-4
S-348	3.015	R	S-348	A-78	X-348	C-41
X-348	3.015	R	X-348	A-76	X-348	C-41
362	1.654	RC	US-620X	**	378RX	C-11
362R	1.654	RC	US-620X	**	378RX	C-11
A-362	1.654	RC	US-620X	**	378RX	C-11
B-362	1.654	RC	162R	**	378RX	C-11
R-362	1.654	RC	162R	**	378RX	C-11
RC-362	1.654	RC	162R	**	378RX	C-11
378R	1.654	RC	378R	A-19	378RX	C-11
378RX	1.654	RC	378RX	A-19	378RX	C-11
R-432	1.654	D	US-622	**	378RX	C-11
RR-432	1.654	RC	378R	A-19	378RX	C-11
SS-433	2.609	D	US-881	**	US-882	C-4

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.

**Universal Product Cross-Reference (Continued)**  
**Sorted by Chain Number**

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
433 1/2	2.609	D	US-881	**	US-882	C-4
433 1/2P	2.609	D	US-882	**	US-882	C-4
R-434	1.654	D	US-622	**	378RX	C-11
450SXX	4.500	D	US-4522	A-4	US-4522	C-8
S-458	4.031	R	S-458	A-78	X-458	C-41
X-458	4.031	R	X-458	A-76	X-458	C-41
462R	1.654	RC	462R	**	378RX	C-11
462RX	1.654	D	US-622	**	378RX	C-11
468	4.031	R	468	A-76		
H-480	8.000	WS	WD-480	A-73		
WD-480	8.000	WS	WD-480	A-73		
WDH-480	8.000	WS	WDH-480	A-73		
WSD-480	8.000	WS	WD-480	A-73		
WSD-480P	8.000	WS	WDH-480	A-73		
R-506	2.300	D	US-770	**		
R-514	2.500	D	US-2570	**		
S-517	2.609	D	US-881	**	US-882	C-4
520P	2.563	D	520RX	A-4		
520RX	2.563	D	520RX	A-4		
A-520	2.563	D	520RX	A-4		
RO-520	2.563	D	520RX	A-4		
S-520	2.563	D	520RX	A-4		
XS-520	2.563	D	520RX	A-4		
A-522	2.640	D	1184RX	**		
SS-522	2.640	D	1184RX	**		
SS-522P	2.640	D	1184RX	**		
527R	3.075	D	US-1031	A-4	US-3075	C-5
527RX	3.075	D	US-1031	A-4	US-3075	C-5
531	4.000	RC	89R	A-19	89R	C-14
S-531	4.000	RC	89R	A-19	89R	C-14
S-554	3.075	D	US-1030	A-4	US-3075	C-5
S-554PLUS	3.075	D	US-1031	A-4	US-3075	C-5
S-557	4.063	D	US-1242	A-4	US-1242	C-6
S-557PLUS	4.063	D	US-1242	A-4	US-1242	C-6
SS-568P	3.067	D	US-3011	A-4	US-3011	C-5
X-568	3.067	D	US-3011	A-4	US-3011	C-5
588RX	2.609	D	US-882	A-4	US-882	C-4
A-588	2.609	D	US-882	A-4	US-882	C-4
R-588	2.609	D	US-882	A-4	US-882	C-4
RO-588	2.609	D	US-882	A-4	US-882	C-4
RR-588	2.609	RC	87R	A-19	87R	C-11
602R	6.000	RC	602R	**		
603R	6.000	RC	603R	A-19	603R	C-16
604R	6.000	RC	604R	A-19	627R	C-16
DS-604R	6.000	RC	604R	A-19	627R	C-16
607R	6.000	RC	607R	A-19	CC5	C-17
610R	6.000	RC	610R	A-20	610R	C-17
SS-610	6.000	RC	610R	A-20	610R	C-17
614R	6.000	RC	614R	A-20	CC5	C-17
LXS-620	1.654	RC	162R	**	378RX	C-11
IS-622	1.654	D	US-622	**	378RX	C-11
LXS-622	1.654	D	US-622	**	378RX	C-11
RO-622	1.654	D	US-622	**	378RX	C-11
IS-624	1.654	RC	162R	**	378RX	C-11
625R	6.000	RC	625R	A-19	625R	C-17
LXS-625	1.654	RC	162R	**	378RX	C-11
626R	6.000	RC	626R	A-20	626R	C-18
627R	6.000	RC	627R	A-19	627R	C-16

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.



# UNION CHAIN DIVISION - UNIVERSAL PRODUCT CROSS-REFERENCE

## Universal Product Cross-Reference (Continued) Sorted by Chain Number

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
LXS-627	1.654	RC	378R	A-19	378RX	C-11
RS-627	1.654	RC	378RX	A-19	378RX	C-11
RX-627	1.654	RC	378RX	A-19	378RX	C-11
628R	6.000	RC	628R	A-19	DS-6272	C-16
629R	6.000	RC	629R	A-19	629R	C-18
631	6.000	RC	631R	A-20	626R	C-18
631R	6.000	RC	631R	A-20	626R	C-18
632R	6.000	RC	632R	**		
633R	6.000	RC	633R	**		
634R	6.000	RC	634R	**	627R	C-16
635A	4.500	D	US-4522	A-4	US-4522	C-8
B-635	4.500	D	US-4522	A-4	US-4522	C-8
RO-635	4.500	D	US-4522	A-4	US-4522	C-8
TXS-635	4.500	D	US-4522	A-4	US-4522	C-8
X-635	4.500	D	US-4522	A-4	US-4522	C-8
XXS-635	4.500	D	US-4522	A-4	US-4522	C-8
SS-658	6.000	RC	625R	A-19	625R	C-17
X-658	6.031	R	X-658	A-76		
B-663R	6.000	RC	B-663R	A-20	629R	C-18
678	6.031	R	678	A-76	X-678	C-42
S-678	6.031	R	S-678	A-78	X-678	C-42
X-678	6.031	R	X-678	A-78	X-678	C-42
698	6.031	R	698	A-76	698	C-42
S-698	6.031	R	S-698	A-78	698	C-42
W-720S	6.000	WS	W-720S	B-84	WH-720S	C-37
W-720SH	6.000	WS	W-720SH	B-84	WH-720S	C-37
WH-720S	6.000	WS	WH-720S	B-84	WH-720S	C-37
WH-720SH	6.000	WS	WH-720SH	B-84	WH-720S	C-37
LXS-770	2.300	D	US-770	**		
R-778	2.609	D	US-881	**	US-882	C-4
RR-778	2.609	RC	US-278R	A-19	87R	C-11
SS-793	6.000	RC	US-196R	A-19	627R	C-16
SS-796	6.000	RC	2178R	**	610R	C-17
800RX	8.000	RC	800RX	A-20	800RX	C-19
SS-800	8.000	RC	800RX	A-20	800RX	C-19
806R	8.000	RC	806R	A-20	806R	C-18
809	9.000	RC	809R	**		
809R	9.000	RC	809R	**		
825	4.000	SB	825	**		
S-825	4.000	SB	825	**		
830	6.000	SB	830	**		
S-830	6.000	SB	830	**		
834R	8.000	RC	834R	**		
F-840	18.000	RC	B-1864R	A-20	B-1864R	C-27
844	6.000	SB	844	**		
844X	6.000	SB	844X	**		
S-850	6.000	SB	US-850	**		
SS-850	6.000	SB	US-850	**		
US-850	6.000	SB	US-850	**		
S-856	6.000	SB	4856	A-54	4856	C-31
856	6.000	SB	4856	A-54	4856	C-31
SX-856	6.000	SB	4856	A-54	4856	C-31
X-857	6.000	SB	4857	A-54	4856	C-31
X-859	6.000	SB	4859	A-54	4859	C-31
IS-881	2.609	D	US-881	**	US-882	C-4
LXS-881	2.609	D	US-881	**	US-882	C-4
RO-881	2.609	D	US-881	**	US-882	C-4
US-881	2.609	D	US-881	**	US-882	C-4

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.

**Universal Product Cross-Reference (Continued)**  
**Sorted by Chain Number**

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
IS-882	2.609	D	US-882	A-4	US-882	C-4
JS-882	2.609	D	US-882	A-4	US-882	C-4
LXS-882	2.609	D	US-882	A-4	US-882	C-4
RO-882	2.609	D	US-882	A-4	US-882	C-4
US-882	2.609	D	US-882	A-4	US-882	C-4
IS-886	2.609	RC	US-278R	A-19	87R	C-11
LXS-886	2.609	RC	US-278R	A-19	87R	C-11
RS-886	2.609	RC	US-278R	A-19	87R	C-11
SX-886	7.000	SB	US-7038	**		
IS-887	2.609	RC	87R	A-19	87R	C-11
LXS-887	2.609	RC	87R	A-19	87R	C-11
RS-887	2.609	RC	87R	A-19	87R	C-11
SS-889	6.000	RC	603R	A-19	603R	C-16
896R	8.000	RC	896R	A-20	896R	C-19
911	9.000	RC	B-912R	A-20	B-912R	C-20
911C	9.000	RC	B-912R	A-20	B-912R	C-20
E-911	9.000	RC	B-912R	A-20	B-912R	C-20
IS-911	9.000	RC	B-912R	A-20	B-912R	C-20
SS-911	9.000	RC	B-912R	A-20	B-912R	C-20
A-912R	9.000	RC	B-912R	A-20	B-912R	C-20
B-912R	9.000	RC	B-912R	A-20	B-912R	C-20
E-912	9.000	RC	B-912R	A-20	B-912R	C-20
SS-912	9.000	RC	B-912R	A-20	B-912R	C-20
E-921	9.000	RC	B-912R	A-20	B-912R	C-20
922	9.000	RC	B-963R	A-20	B-963R	C-21
922C	9.000	RC	B-963R	A-20	B-963R	C-21
E-922	9.000	RC	D-963R	A-20	D-963R	C-21
F-922	9.000	RC	B-963R	A-20	B-963R	C-21
SS-922	9.000	RC	B-963R	A-20	B-963R	C-21
925R	9.000	RC	925R	A-20	925R	C-19
SS-927	9.000	RC	D-963R	A-20	D-963R	C-21
SS-928	9.000	RC	D-963R Special	**		
F-929	9.000	RC	E-963R	A-20	E-963R	C-22
SS-929	9.000	RC	E-963R	A-20	E-963R	C-22
F-930	9.000	RC	B-963R	A-20	B-963R	C-21
SS-930	9.000	RC	B-963R	A-20	B-963R	C-21
932	9.000	RC	E-963R	A-20	E-963R	C-22
F-932	9.000	RC	E-963R	A-20	E-963R	C-22
SS-932	9.000	RC	E-963R	A-20	E-963R	C-22
933	9.000	RC	B-964R	A-20	B-964R	C-22
933C	9.000	RC	B-964R	A-20	B-964R	C-22
F-933	9.000	RC	B-964R	A-20	B-964R	C-22
SS-933	9.000	RC	B-964R	A-20	B-964R	C-22
F-940	9.000	RC	B-964R	A-20	B-964R	C-22
SS-940	9.000	RC	B-964R	A-20	B-964R	C-22
SS-945	6.000	RC	629R	A-19	629R	C-18
951	6.000	RC	626R	A-20	626R	C-18
S-951	6.000	RC	626R	A-20	626R	C-18
SS-951	6.000	RC	626R	A-20	626R	C-18
RS-958	9.000	RC	925R	A-20	925R	C-19
RS-958W	9.000	RC	925R	A-20	925R	C-19
SS-960	6.000	RC	2198RX	A-20	610R	C-17
961R	9.000	RC	961R	A-20		
A-963R	9.000	RC	B-963R	A-20	B-963R	C-21
B-963R	9.000	RC	B-963R	A-20	B-963R	C-21
D-963R	9.000	RC	D-963R	A-20	D-963R	C-21
E-963R	9.000	RC	E-963R	A-20	E-963R	C-22
F-963R	9.000	RC	E-963R	A-20	E-963R	C-22

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.



# UNION CHAIN DIVISION - UNIVERSAL PRODUCT CROSS-REFERENCE

## Universal Product Cross-Reference (Continued)

### Sorted by Chain Number

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
A-964R	9.000	RC	B-964R	A-20	B-964R	C-22
B-964R	9.000	RC	B-964R	A-20	B-964R	C-22
965R	9.000	RC	4009	A-20	4009	C-20
967R	9.000	RC	4004	A-20	4004	C-21
973R	9.000	RC	973R	A-20	973R	C-23
SS-996	6.000	RC	96RX	A-20	610R	C-17
998	9.031	R	998	A-76	998	C-42
S-998	9.031	R	S-998	A-78	998	C-42
1007	6.000	RC	96R	A-20	610R	C-17
1007D	6.000	RC	96R	A-20	610R	C-17
1007DP	6.000	RC	96RX	A-20	610R	C-17
1007P	6.000	RC	96RX	A-20	610R	C-17
1030	3.075	D	US-1030	A-4	US-3075	C-5
1030DW3	3.075	D	US-1032	**	US-3075	C-5
IS-1030	3.075	D	US-1030	A-4	US-3075	C-5
JS-1030	3.075	D	US-1030	A-4	US-3075	C-5
US-1030	3.075	D	US-1030	A-4	US-3075	C-5
IS-1031	3.075	D	US-1031	A-4	US-3075	C-5
JS-1031	3.075	D	US-1031	A-4	US-3075	C-5
LXS-1031	3.075	D	US-1031	A-4	US-3075	C-5
LXS-1031M	3.075	D	US-1031	A-4	US-3075	C-5
RO-1031	3.075	D	US-1031	A-4	US-3075	C-5
US-1031	3.075	D	US-1031	A-4	US-3075	C-5
IS-1032	3.075	D	US-1032	**	US-3075	C-5
LXS-1032	3.075	D	US-1032	**	US-3075	C-5
US-1032	3.075	D	US-1032	**	US-3075	C-5
1033	3.075	D	US-1031	A-4	US-3075	C-5
R-1033	3.075	D	US-1031	A-4	US-3075	C-5
SS-1033	3.075	D	US-1031	A-4	US-3075	C-5
R-1035	3.075	D	US-1032	**	US-3075	C-5
1037	3.075	D	US-3075	A-4	US-3075	C-5
IS-1037	3.075	D	US-3075	A-4	US-3075	C-5
1041AA	2.500	D	US-2570	**		
SS-1088	2.609	RC	81X	A-19	81X	C-11
1094	2.300	D	US-770	**		
1094C	2.300	D	US-770	**		
1095	12.000	RC	1272R	**		
1113R	4.040	RC	1113R	A-19	DS-1113	C-15
SR-1113	4.040	RC	1113R	A-19	DS-1113	C-15
SS-1113	4.040	RC	1113R	A-19	DS-1113	C-15
SR-1114	6.000	RC	627R	A-19	627R	C-16
SS-1114	6.000	RC	627R	A-19	627R	C-16
SS-1116	6.000	RC	604R	A-19	627R	C-16
SS-1116CR	6.000	RC	DS-604R	**	627R	C-16
RR-1120	4.000	RC	95R	A-19	95R	C-13
S-1120	4.000	RC	95R	A-19	95R	C-13
SS-1120	4.000	RC	95R	A-19	95R	C-13
1126	6.000	RC	1126R	A-20	DS-6272	C-16
1126C	6.000	RC	1126RS	A-20	626R	C-18
1126R	6.000	RC	1126R	A-20	DS-6272	C-16
1126RS	6.000	RC	1126RS	A-20	626R	C-18
SS-1126	6.000	RC	1126R	A-20	DS-6272	C-16
SS-1126 1/2	6.000	RC	1126RS	A-20	626R	C-18
1131R	6.000	RC	1131R	A-20	629R	C-18
S-1131	6.000	RC	1131R	A-20	629R	C-18
SS-1131	6.000	RC	1131R	A-20	629R	C-18
S-1183	3.000	RC	53R	A-19	53R	C-12
SR-1183	3.000	RC	53R	A-19	53R	C-12

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.



**Universal Product Cross-Reference (Continued)**  
**Sorted by Chain Number**

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
SS-1183	3.000	RC	53R	A-19	53R	C-12
1184R	2.640	D	1184RX	**		
1184RX	2.640	D	1184RX	**		
1188R	4.000	RC	1188R	A-19	91R	C-14
SS-1188	4.000	RC	1188R	A-19	91R	C-14
1190R	3.075	D	US-1030	A-4	US-3075	C-5
1190R3	3.075	D	US-1032	**	US-3075	C-5
1190RX	3.075	D	US-1031	A-4	US-3075	C-5
1190RXX	3.075	D	US-3075	A-4	US-3075	C-5
1190SXX	3.075	D	US-3075	A-4	US-3075	C-5
SS-1194	4.000	RC	US-90R	A-19	US-90R	C-14
S-1196	6.000	RC	US-196R	A-19	627R	C-16
SS-1196	6.000	RC	US-196R	A-19	627R	C-16
1202P	5.000	D	US-5031	A-4	US-5035	C-8
A-1202	5.000	D	US-5031	A-4	US-5035	C-8
SS-1202	5.000	D	US-5031	A-4	US-5035	C-8
SS-1202P	5.000	D	US-5031	A-4	US-5035	C-8
SS-1204P	5.000	D	US-5031	A-4	US-5035	C-8
XXXS-1205	5.000	D	US-5031	A-4	US-5035	C-8
1207	5.000	D	US-5031	A-4	US-5035	C-8
RO-1207	5.000	D	US-5031	A-4	US-5035	C-8
RX-1207	5.000	D	US-5031	A-4	US-5035	C-8
1211	12.000	RC	B-1212R	A-20	B-1212R	C-23
1211C	12.000	RC	B-1212R	A-20	B-1212R	C-23
1211P	12.000	RC	B-1212R	A-20	B-1212R	C-23
E-1211	12.000	RC	B-1212R	A-20	B-1212R	C-23
SS-1211	12.000	RC	B-1212R	A-20	B-1212R	C-23
1212	6.000	RC	628R	A-19	DS-6272	C-16
A-1212R	12.000	RC	B-1212R	A-20	B-1212R	C-23
B-1212R	12.000	RC	B-1212R	A-20	B-1212R	C-23
E-1212	12.000	RC	B-1212R	A-20	B-1212R	C-23
SS-1212	12.000	RC	B-1212R	A-20	B-1212R	C-23
1222	12.000	RC	B-1263R	A-20	B-1263R	C-24
1222C	12.000	RC	B-1263R	A-20	B-1263R	C-24
E-1222	12.000	RC	D-1263R	A-20	D-1263R	C-24
F-1222	12.000	RC	B-1263R	A-20	B-1263R	C-24
SS-1222	12.000	RC	B-1263R	A-20	B-1263R	C-24
SS-1227	12.000	RC	D-1263R	A-20	D-1263R	C-24
SS-1230	12.000	RC	B-1263R	A-20	B-1263R	C-24
F-1232	12.000	RC	E-1263R	A-20	E-1263R	C-25
RS-1232	12.000	RC	E-1263R	A-20	E-1263R	C-25
SS-1232	12.000	RC	E-1263R	A-20	E-1263R	C-25
1233	12.000	RC	B-1264R	A-20	B-1264R	C-25
1233C	12.000	RC	B-1264R	A-20	B-1264R	C-25
F-1233	12.000	RC	B-1264R	A-20	B-1264R	C-25
RS-1233	12.000	RC	B-1264R	A-20	B-1264R	C-25
SS-1233	12.000	RC	B-1264R	A-20	B-1264R	C-25
SS-1236	12.000	RC	1272R	**		
SS-1240	12.000	RC	B-1264R	A-20	B-1264R	C-25
XXS-1240	4.063	D	US-1242	A-4	US-1242	C-6
1240RXX	4.063	D	US-1242	A-4	US-1242	C-6
1240	4.063	D	US-1242	A-4	US-1242	C-6
LXS-1241M	4.063	D	US-1241	A-4	US-1242	C-6
US-1241	4.063	D	US-1241	A-4	US-1242	C-6
IS-1242	4.063	D	US-1242	A-4	US-1242	C-6
LXS-1242M	4.063	D	US-1242	A-4	US-1242	C-6
LXS-1242	4.063	D	US-1242	A-4	US-1242	C-6
RO-1242	4.063	D	US-1242	A-4	US-1242	C-6

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.



# UNION CHAIN DIVISION - UNIVERSAL PRODUCT CROSS-REFERENCE

## Universal Product Cross-Reference (Continued) Sorted by Chain Number

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
US-1242	4.063	D	US-1242	A-4	US-1242	C-6
F-1244	12.000	RC	1273R	A-20	1273R	C-25
SS-1244	12.000	RC	1273R	A-20	1273R	C-25
1244	12.000	RC	1273R	A-20		
1244	4.063	D	US-1242	A-4	US-1242	C-6
1245SXX	4.073	D	US-1245	A-4	US-1245	C-7
B-1245	4.073	D	US-1245	A-4	US-1245	C-7
IS-1245	4.073	D	US-1245	A-4	US-1245	C-7
J-1245A	4.073	D	US-1245	A-4	US-1245	C-7
LXS-1245	4.073	D	US-1245	A-4	US-1245	C-7
RO-1245	4.073	D	US-1245	A-4	US-1245	C-7
RX-1245	4.073	D	US-1245	A-4	US-1245	C-7
US-1245	4.073	D	US-1245	A-4	US-1245	C-7
XXS-1245	4.073	D	US-1245	A-4	US-1245	C-7
R-1248	4.063	D	US-1242	A-4	US-1242	C-6
1251	12.000	RC	DWG. 14419	**		
1258	6.000	RC	625R	A-19	625R	C-17
A-1263R	12.000	RC	B-1263R	A-20	B-1263R	C-24
B-1263R	12.000	RC	B-1263R	A-20	B-1263R	C-24
D-1263R	12.000	RC	D-1263R	A-20	D-1263R	C-24
E-1263R	12.000	RC	E-1263R	A-20	E-1263R	C-25
A-1264R	12.000	RC	B-1264R	A-20	B-1264R	C-25
B-1264R	12.000	RC	B-1264R	A-20	B-1264R	C-25
1265R	12.000	RC	1265R	A-20	1265R	C-23
B-1266R	12.000	RC	B-1266R	A-20	B-1266R	C-24
1267	12.000	RC	1276R	A-20		
1271R	12.000	RC	1271R	A-20	1273R	C-25
1272R	12.000	RC	1272R	**		
1273	12.000	RC	B-1266R	A-20	B-1266R	C-24
1273R	12.000	RC	1273R	A-20		
1276R	12.000	RC	1276R	A-20		
1288	2.609	RC	81X	A-19	81X	C-11
1297	4.040	RC	1113R	A-19	DS-1113	C-15
R-1305	3.075	D	US-1032	**	US-3075	C-5
A-1306	6.000	D	US-6042	A-4	US-6042	C-10
RO-1306	6.000	D	US-6042	A-4	US-6042	C-10
RO-1307	7.000	D	US-7060	**		
A-1309	7.000	D	US-7080	A-4	US-7080	C-10
X-1311	6.500	D	US-6560	**		
1322	12.000	RC	D-1263R	A-20	D-1263R	C-24
1322C	12.000	RC	D-1263R	A-20	D-1263R	C-24
SS-1326	6.000	RC	DWG. 20463	**		
1338	8.000	RC	DWG. 17758	**		
RO-1343	4.090	D	US-4121	A-4		
X-1343	4.090	D	US-4121	A-4		
X-1345	4.090	D	US-4122	A-4	US-4122	C-7
1347	4.063	D	US-1242	A-4	US-1242	C-6
US-1353	4.090	D	US-1353	A-4		
X-1353	4.090	D	US-1353	A-4		
1378	1.654	RC	378R	A-19	378RX	C-11
1510RXX	5.000	D	US-5031	A-4	US-5035	C-8
RS-1513	3.075	RC	119R	A-19	119RX	C-12
1520	4.000	RC	95R	A-19	95R	C-13
1520C	4.000	RC	95R	A-19	95R	C-13
1535D2	3.075	SB	30702	B-65		
1536M6	3.075	RC	30701	B-63		
1539	3.075	RC	119R	A-19	119RX	C-12
1568	3.067	D	US-3011	A-4	US-3011	C-5

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.



**Universal Product Cross-Reference (Continued)**  
**Sorted by Chain Number**

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
AX-1568	3.065	D	US-3011	A-4	US-3011	C-5
1583	3.000	RC	53R	A-19	53R	C-12
1583C	3.000	RC	53R	A-19	53R	C-12
1588	4.000	RC	1188R	A-19	91R	C-14
1589	4.000	RC	DWG. 14382	**	89R	C-14
1594	4.000	RC	US-90R	A-19	US-90R	C-14
1601A	5.750	D	US-5738	A-4		
1602A	5.000	D	US-5031	A-4	US-5035	C-8
1602AA	5.000	D	US-5031	A-4	US-5035	C-8
RO-1602AA	5.000	D	US-5031	A-4	US-5035	C-8
1604R	6.000	RC	1604R	**		
1605AAA	5.000	D	US-5035	A-4	US-5035	C-8
1606	6.000	RC	603R	A-19	603R	C-16
1606AA	6.000	D	US-6042	A-4	US-6042	C-10
1607AA	7.000	D	US-7060	**		
1613A	2.000	D	US-2065	A-4		
RO-1613AK	2.000	D	US-2065	A-4		
1616A	3.500	D	US-3514	A-4	US-3514	C-6
RO-1616	3.500	D	US-3514	A-4	US-3514	C-6
1617	6.000	RC	CC5	A-20	CC5	C-17
1625A	2.500	D	US-64S	A-4	US-64S	C-3
1626A	6.000	D	US-6042	A-4	US-6042	C-10
1627B	2.500	D	US-64S	A-4	US-64S	C-3
1630A	3.000	D	344SXX	A-4	344SXX	C-4
1630R	6.000	RC	1630R	A-20	CC5	C-17
1640A	3.075	D	US-1032	**	US-3075	C-5
1641AA	2.500	D	US-2570	**		
1645A	4.073	D	US-1245	A-4	US-1245	C-7
1645AB	4.073	D	US-1245	A-4	US-1245	C-7
1702	6.000	RC	628R	A-19	DS-6272	C-16
1706	6.000	RC	614R	A-20	CC5	C-17
1706R	12.000	RC	1706R	B-77		
RO-1706	3.075	D	DWG. 16750	**		
1709	9.000	RC	925R	A-20	925R	C-19
1721	4.000	RC	94R	A-19	94R	C-13
1734	6.000	RC	1131R	A-20	629R	C-18
1743	12.000	RC	B-1266R	A-20	B-1266R	C-24
1743 1/2	12.000	RC	B-1266R	A-20	B-1266R	C-24
1751	9.000	RC	D-963R	A-20	D-963R	C-21
1751C	9.000	RC	D-963R	A-20	D-963R	C-21
SS-1769	6.000	RC	2178RX	A-20	610R	C-17
1796	6.000	RC	US-196R	A-19	627R	C-16
SS-1796	6.000	RC	2178RX	A-20	610R	C-17
1803AB	3.067	D	US-3011	A-4	US-3011	C-5
1807	6.000	RC	2198RX	A-20	610R	C-5
1822	18.000	RC	B-1863R	A-20	B-1863R	C-26
1822C	18.000	RC	B-1863R	A-20	B-1863R	C-26
E-1822	18.000	RC	D-1863R	A-20	D-1863R	C-26
F-1822	18.000	RC	B-1863R	A-20	B-1863R	C-26
SS-1822	18.000	RC	B-1863R	A-20	B-1863R	C-26
1823	6.000	RC	634R	**	627R	C-16
SS-1827	18.000	RC	D-1863R	A-20	D-1863R	C-26
1829	6.000	RC	604R	A-19	627R	C-26
F-1830	18.000	RC	B-1863R	A-20	B-1863R	C-26
SS-1830	18.000	RC	B-1863R	A-20	B-1863R	C-26
1831	18.000	RC	D-1863R	A-20	D-1863R	C-26
1832	18.000	RC	F-1863R	A-20	E-1863R	C-26
F-1832	18.000	RC	F-1863R	A-20	E-1863R	C-26

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.



# UNION CHAIN DIVISION - UNIVERSAL PRODUCT CROSS-REFERENCE

## Universal Product Cross-Reference (Continued)

### Sorted by Chain Number

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
SS-1832	18.000	RC	F-1863R	A-20	E-1863R	C-26
1833	18.000	RC	B-1864R	A-20	B-1864R	C-27
1833C	18.000	RC	B-1864R	A-20	B-1864R	C-27
F-1833	18.000	RC	B-1864R	A-20	B-1864R	C-27
SS-1833	18.000	RC	B-1864R	A-20	B-1864R	C-27
SS-1840	18.000	RC	B-1864R	A-20	B-1864R	C-27
1844	18.000	RC	1873R	A-20	1873R	C-27
F-1844	18.000	RC	1873R	A-20	1873R	C-27
SS-1844	18.000	RC	1873R	A-20	1873R	C-27
1855	18.000	RC	1866R	A-20	1866R	C-27
F-1855	18.000	RC	1866R	A-20	1866R	C-27
SS-1855	18.000	RC	1866R	A-20	1866R	C-27
1862	1.654	RC	378R	A-19	378RX	C-11
1862C	1.654	RC	378R	A-19	378RX	C-11
A-1863R	18.000	RC	B-1863R	A-20	B-1863R	C-26
B-1863R	18.000	RC	B-1863R	A-20	B-1863R	C-26
D-1863R	18.000	RC	D-1863R	A-20	D-1863R	C-26
E-1863R	18.000	RC	F-1863R	A-20	E-1863R	C-26
F-1863R	18.000	RC	F-1863R	A-20	E-1863R	C-26
A-1864R	18.000	RC	B-1864R	A-20	B-1864R	C-27
B-1864R	18.000	RC	B-1864R	A-20	B-1864R	C-27
G-1864R	18.000	RC	G-1864R	A-20	G-1864R	C-27
1866	18.000	RC	1867R	A-20	1866R	C-27
1866R	18.000	RC	1866R	A-20	1866R	C-27
F-1866	18.000	RC	1867R	A-20	1866R	C-27
SS-1866	18.000	RC	1867R	A-20	1866R	C-27
1867R	18.000	RC	1867R	A-20	1866R	C-27
1871R	18.000	RC	1871R	A-20	1873R	C-27
1873R	18.000	RC	1873R	A-20	1873R	C-27
1906	6.000	RC	631R	A-20	626R	C-18
1972BM5	2.609	RC	26001	B-63		
RO-2010	2.500	D	US-2570	**		
LXS-2055	2.000	D	US-2065	A-4		
IS-2065	2.000	D	US-2065	A-4		
IS-2065S	2.000	D	US-2065	A-4		
LXS-2065	2.000	D	US-2065	A-4		
US-2065	2.000	D	US-2065	A-4		
SS-2066	4.000	RC	82R	**	US-90R	C-14
2102	4.000	RC	US-3433	**		
2111	6.000	RC	**	**		
B-2111	6.000	RC	**	**		
RO-2113	4.040	RC	2113R	**	DS-1113	C-15
SS-2113	4.040	RC	2113R	**	DS-1113	C-15
SS-2115	6.000	RC	602R	**		
2124	6.000	RC	96R	A-20	610R	C-17
A-2124	6.000	RC	96RX	A-20	610R	C-17
2126	6.000	RC	604R	A-19	627R	C-16
2130R	6.000	RC	2130R	A-20	CC5	C-17
2146	6.000	RC	U-3940	B-8	U-3940	C-40
S-2174	4.000	RC	U-3952	B-8	U-3952	C-39
2178A	6.000	RC	2178RX	A-20	610R	C-17
2178R	6.000	RC	2178R	**	610R	C-17
2178RX	6.000	RC	2178RX	A-20	610R	C-17
A-2178	6.000	RC	2178RX	A-20	610R	C-17
RF-2178	6.000	RC	2198RX	A-20	610R	C-17
2180	6.000	RC	628R	A-19	DS-6272	C-16
SS-2180	6.000	RC	628R	A-19	DS-6272	C-16
2183	6.000	RC	629R	A-19	629R	C-18

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.

**Universal Product Cross-Reference (Continued)**  
**Sorted by Chain Number**

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
F-2183	6.000	RC	629R Special	**	625R	C-17
2184	6.000	RC	2184R	A-20	629R	C-18
2184P	6.000	RC	2184RX	A-20	629R	C-18
2184R	6.000	RC	2184R	A-20	629R	C-18
2184RX	6.000	RC	2184RX	A-20	629R	C-18
A-2184	6.000	RC	2184RX	A-20	629R	C-18
SS-2184P	6.000	RC	2184R	A-20	629R	C-18
SS-2184	6.000	RC	2184R	A-20	629R	C-18
2188	4.000	RC	91R	A-19	91R	C-14
RS-2188	4.000	RC	91R	A-19	91R	C-14
S-2188	4.000	RC	91R	A-19	91R	C-14
SS-2188	4.000	RC	91R	A-19	91R	C-14
2190	6.000	RC	607R	A-19	CC5	C-17
2190P	6.000	RC	607R	A-19	CC5	C-17
SS-2190	6.000	RC	607R	A-19	CC5	C-17
2198A	6.000	RC	2198RX	A-20	610R	C-17
2198RX	6.000	RC	2198RX	A-20	610R	C-17
A-2198	6.000	RC	2198RX	A-20	610R	C-17
2268	4.083	RC	US-2858	**		
2348	12.000	RC	B-1264R	A-20	B-1264R	C-25
R-2362	1.654	D	US-620X	**	378RX	C-11
2397R	12.000	RC	2397R	B-77		
2507	18.000	RC	1871R	A-20	1873R	C-27
RO-2512	3.067	D	US-3011	A-4	US-3011	C-5
LXS-2560	2.500	D	US-2570	**		
US-2560	2.500	D	US-2570	**		
IS-2570	2.500	D	US-2570	**		
IS-2570A	2.500	D	US-2570	**		
LXS-2570	2.500	D	US-2570	**		
US-2570	2.500	D	US-2570	**		
LXS-2585	2.500	D	RO-1625	**	US-64S	C-3
2614R	12.000	RC	2614R	B-77		
C-2614	12.000	RC	2614R	B-77		
ISS-2625	2.563	D	520RX	A-4		
2800	8.000	RC	800RX	A-20	800RX	C-19
2800PB	8.000	RC	800RX	A-20	800RX	C-19
A-2800	8.000	RC	800RX	A-20	800RX	C-19
RO-2814	3.500	D	US-3514	A-4	US-3514	C-6
SS-2857	6.000	SB	4857	A-54	4856	C-31
US-2858	4.083	RC	US-2858	**		
SS-2859	6.000	SB	4859	A-54	4859	C-31
SS-2864	7.000	SB	4864	A-54	4864	C-32
2995	4.250	D	X-3808	**		
IS-3010	3.067	D	US-3011	A-4	US-3011	C-5
IS-3011	3.067	D	US-3011	A-4	US-3011	C-5
LXS-3011	3.067	D	US-3011	A-4	US-3011	C-5
RO-3011	3.067	D	US-3011	A-4	US-3011	C-5
US-3011	3.067	D	US-3011	A-4	US-3011	C-5
LXS-3013	3.000	RC	53R	A-19	53R	C-12
RS-3013	3.000	RC	53R	A-19	53R	C-12
XS-3013D6	3.000	RC	DWG. 17175	**		
3067X	3.067	D	US-3011	A-4	US-3011	C-5
IS-3075	3.075	D	US-3075	A-4	US-3075	C-5
JS-3075	3.075	D	US-3075	A-4	US-3075	C-5
US-3075	3.075	D	US-3075	A-4	US-3075	C-5
3113	2.000	D	US-2065	A-4		
B-3113	2.000	D	US-2065	A-4		
3125	3.125	D	3125R	**		

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.



# UNION CHAIN DIVISION - UNIVERSAL PRODUCT CROSS-REFERENCE

## Universal Product Cross-Reference (Continued) Sorted by Chain Number

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
3125HY	3.125	D	3125R	**		
3125HY2	3.125	D	D-3125R	**		
3125HY3	3.125	D	T-3125R	**		
3125R	3.125	D	3125R	**		
D-3125	3.125	D	D-3125R	**		
D-3125R	3.125	D	D-3125R	**		
RO-3125	3.125	D	RO-3125	**		
SS-3125HY	3.125	D	3125R	**		
SS-3125	3.125	D	3125R	**		
T-3125	3.125	D	T-3125R	**		
T-3125R	3.125	D	T-3125R	**		
RO-3140	1.750	D	RO-3140	A-4		
3146	3.075	SB	30703	B-63		
RO-3160	2.000	D	RO-3160	**		
RO-3180	2.250	D	RO-3180	A-4		
RO-3200	2.500	D	RO-1625	**	US-64S	C-3
RO-3315	4.073	D	US-1245	A-4	US-1245	C-7
3420	4.040	RC	1113R	A-19	DS-1113	C-15
3433	4.000	RC	3433	B-8		
DF-3498	1.75 X 2.5	BP	DF-3498	A-86	DF-3498	C-28
DF-3500	2.5 X 3.0	BP	DF-3500	A-86	DF-3500	C-28
IS-3514	3.500	D	US-3514	A-4	US-3514	C-6
JS-3514	3.500	D	US-3514	A-4	US-3514	C-6
LXS-3514	3.500	D	US-3514	A-4	US-3514	C-6
US-3514	3.500	D	US-3514	A-4	US-3514	C-6
RO-3618	4.500	D	US-4522	A-4	US-4522	C-8
X-3808	4.250	D	X-3808	**		
DF-3910	3.0 X 3.0	BP	DF-3910	A-86	DF-3910	C-28
U-3940	6.000	RC	U-3940	B-8	U-3940	C-40
U-3945	4.000	RC	U-3945	B-8	U-3945	C-39
U-3952	4.000	RC	U-3952	B-8	U-3952	C-39
US-3957	4.000	RC	US-3957	**		
S-4000	4.000	RC	94R	A-19	94R	C-13
4002	9.000	RC	809R	**	B-963R	C-21
SS-4002	9.000	RC	809R	**	B-963R	C-21
4004	9.000	RC	4004	A-20	4004	C-21
X-4004	9.000	RC	4004	A-20	4004	C-21
4009	9.000	RC	4009	A-20	4009	C-20
LXS-4013	4.000	RC	95R	A-19	95R	C-13
RS-4013	4.000	RC	95R	A-19	95R	C-13
JS-4014	4.063	D	US-1242	A-4	US-1242	C-6
LXS-4019	4.000	RC	94R	A-19	94R	C-13
RS-4019	4.000	RC	94R	A-19	94R	C-13
RO-4020	5.000	D	US-5031	A-4	US-5035	C-8
4023	18.000	RC	1871R	A-20	1873R	C-27
SS-4023	18.000	RC	1871R	A-20	1873R	C-27
US-4028	4.000	D	US-4031	A-4		
US-4031	4.000	D	US-4031	A-4		
4038	12.000	RC	B-1266R	A-20	B-1266R	C-24
SS-4038	12.000	RC	B-1266R	A-20	B-1266R	C-24
SS-4043	12.000	RC	B-1266R	A-20	B-1266R	C-24
4065	9.000	RC	4065	A-20	4065	C-22
JS-4106	4.063	D	US-1242	A-4	US-1242	C-6
JS-4110	4.063	D	US-1241	A-4	US-1242	C-6
LXS-4113	4.000	RC	1188R	A-19	91R	C-14
RS-4113	4.000	RC	1188R	A-19	91R	C-14
LXS-4119	4.000	RC	97R	A-19	97R	C-13
RS-4119	4.000	RC	97R	A-19	97R	C-13

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.

**Universal Product Cross-Reference (Continued)**  
**Sorted by Chain Number**

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
US-4121	4.090	D	US-4121	A-4		
US-4122	4.090	D	US-4122	A-4	US-4122	C-7
RO-4214	4.000	D	DWG. 16751	**		
IS-4216	4.000	RC	US-90R	A-19	US-90R	C-14
LXS-4216	4.000	RC	US-90R	A-19	US-90R	C-14
RS-4216	4.000	RC	US-90R	A-19	US-90R	C-14
RS-4238	4.000	RC	89R	A-19	89R	C-14
LXS-4328	4.000	RC	89R	A-19	89R	C-14
LXS-4328G19	4.000	RC	DWG. 21758	**	89R	C-14
RS-4328	4.000	RC	89R	A-19	89R	C-14
IS-4522	4.500	D	US-4522	A-4	US-4522	C-8
US-4522	4.500	D	US-4522	A-4	US-4522	C-8
RO-4824	6.000	D	US-6042	A-4	US-6042	C-10
SS-4850	12.000	RC	1265R	A-20	1265R	C-23
4851	9.000	RC	4009	A-20	4009	C-20
SS-4851	9.000	RC	4009	A-20	4009	C-20
4852	9.000	RC	4004	A-20	4004	C-21
SS-4852	9.000	RC	4004	A-20	4004	C-21
4856	6.000	SB	4856	A-54	4856	C-31
4857	6.000	SB	4857	A-54	4856	C-31
4859	6.000	SB	4859	A-54	4859	C-31
4864	7.000	SB	4864	A-54	4864	C-32
IS-5022	5.000	D	US-5031	A-4	US-5035	C-8
LXS-5022	5.000	D	US-5031	A-4	US-5035	C-8
US-5022	5.000	D	US-5031	A-4	US-5035	C-8
IS-5028	5.000	D	US-5031	A-4	US-5035	C-8
LXS-5028	5.000	D	US-5031	A-4	US-5035	C-8
US-5028A	5.000	D	US-5031	A-4	US-5035	C-8
US-5028N	5.000	D	US-5031	A-4	US-5035	C-8
US-5028	5.000	D	US-5031	A-4	US-5035	C-8
IS-5031	5.000	D	US-5031	A-4	US-5035	C-8
US-5031	5.000	D	US-5031	A-4	US-5035	C-8
US-5035	5.000	D	US-5035	A-4	US-5035	C-8
US-5042	5.000	D	US-5042	A-4	US-5042	C-9
5208	6.000	RC	DWG. 18708	**		
5520	2.563	D	520RX	A-4		
US-5542	5.500	D	US-5542	A-4	US-5542	C-9
5602	6.000	RC	DS-196R	B-33	627R	C-19
US-5738	5.750	D	US-5738	A-4		
IS-6018	6.000	RC	US-196R	A-19	627R	C-16
LXS-6018	6.000	RC	US-196R	A-19	627R	C-16
RS-6018	6.000	RC	US-196R	A-19	627R	C-16
RS-6018CR	6.000	RC	DS-196R	B-33	627R	C-16
IS-6022	6.000	RC	607R	A-19	607R	C-17
IS-6040	6.000	D	US-6042	A-4	US-6042	C-10
US-6040	6.000	D	US-6042	A-4	US-6042	C-10
IS-6042	6.000	D	US-6042	A-4	US-6042	C-10
JS-6042	6.000	D	US-6042	A-4	US-6042	C-10
US-6042	6.000	D	US-6042	A-4	US-6042	C-10
6053R	6.000	RC	6053R	A-19	6053R	C-15
US-6066	6.000	D	US-6066	A-4	US-6042	C-10
6101	6.000	RC	631R	A-20	627R	C-16
6102B	4.000	SB	102B	A-54	102B	C-30
6102BM	4.000	SB	102B	A-54	102B	C-30
6102 1/2	4.040	SB	102 1/2	A-54	102 1/2	C-30
6110	6.000	SB	110	A-54	110	C-31
6110BM	6.000	SB	110	A-54	110	C-31
6111	4.760	SB	111	A-54	111	C-30

\* Style abbreviations: D = Drive chain; RC = Roller conveyor chain; R = Drop forged rivetless chain; SB = Steel bushed chain; WS = Welded steel chain; C = Cast combination chain; BP = Bar and pin chain.

\*\* Available on a made-to-order basis. Dimensions for this item are not listed in this catalog. Contact the Union Chain Division of U.S. Tsubaki for more information.



# UNION CHAIN DIVISION - UNIVERSAL PRODUCT CROSS-REFERENCE

## Universal Product Cross-Reference (Continued) Sorted by Chain Number

Chain Number	Pitch	Style*	Union Chain Number	Chain Page Number	Union Sprocket Number	Sprocket Page Number
6111M	4.760	SB	111	A-54	111	C-30
6111SP	4.76 X 7.24	SB	111 SP	A-54		
6131	3.075	SB	131	A-54	131	C-29
6150DM	6.050	SB	150X	A-54	150X	C-32
6150P	6.050	SB	150X	A-54	150X	C-32
6188	2.609	SB	188	A-54	188	C-29
6188M	2.609	SB	188	A-54	188	C-29
LXS-6238	6.000	RC	614R	A-20	CC5	C-17
RS-6238	6.000	RC	614R	A-20	CC5	C-17
DS-6272	6.000	RC	DS-6272	B-33	DS-6272	C-16
LXS-6438	6.000	RC	631R	A-20	626R	C-18
RS-6438	6.000	RC	631R	A-20	626R	C-18
US-6560	6.500	D	US-6560	**		
US-6566	6.500	D	US-6566	A-4		
6825	4.000	SB	825	**		
6826	6.000	SB	6826	B-66		
6830	6.000	SB	830	**		
6850	6.000	SB	US-850	**		
6856	6.000	SB	4856	A-54	48561	C-31
6864	7.000	SB	4864	A-54	4864	C-32
6867	6.000	SB	4857	A-54	4856	C-31
6869	6.000	SB	4859	A-54	4859	C-31
JS-7055	7.000	D	US-7060	**		
IS-7060	7.000	D	US-7060	**		
US-7060	7.000	D	US-7060	**		
US-7080	7.000	D	US-7080	A-4	US-7080	C-10
7601	2.800	SB	DWG. 20003	**		
7602	2.609	SB	DWG. 16109	**		
7774MO6	2.609	RC	26001	B-63		
9063RXX	6.000	RC	9063RXX	B-77		
U-9856	6.000	RC	U-9856	B-8	U-9856	C-40
12001	12.000	RC	12001	B-26		
12002	12.000	RC	12002	B-26		
12003	12.000	RC	12003	B-26		
20001	2.000	SB	20001	B-63		
20002	2.000	RC	20002	B-36		
26001	2.609	RC	26001	B-63		
27001	12 X 15	BP	27001	B-27		
30701	3.075	RC	30701	B-63	US-3075	C-5
30702	3.075	SB	30702	B-65	131	C-29
30703	3.075	SB	30703	B-63	131	C-29
40001	4.000	RC	40001	B-16	US-90R	C-14
40002	4.000	RC	40002	B-16		
40003	4.000	RC	40003	B-16		
41001	4.100	WS	41001	B-62		
42501	4.250	RC	42501	B-16		
50001	5.000	RC	50001	A-19		
52501	5.250	RC	52501	B-16		
52502	5.250	RC	52502	B-16		
60001	6.000	RC	60001	A-20		
60002	6.000	RC	60002	B-16	625R	C-17
60175	6.000	RC	60175	B-77		
80002	8.000	RC	80002	B-37		
80003	8.000	RC	80003	B-37		
90001	9.000	RC	90001	B-37		
90002	9.000	RC	90002	B-37		
90003	9.000	RC	90003	B-26		
90004	9.000	RC	90004	B-26	925R	C-19

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