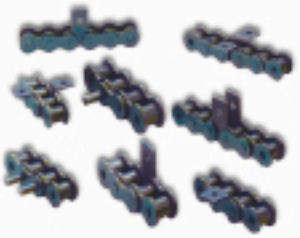
Morse®

Specialty and Attachment Chain *Design Manual*



EMERSON.
Industrial Automation

EMERSON. CONSIDER IT SOLVED.

Morse®

Legendary Quality

For more than 100 years, Emerson Power Transmission has been manufacturing high quality roller chain designed to meet and exceed industry standards. This is accomplished through total quality commitment of our staff and the involvement of our suppliers. We perform constant audits of our products and processes to ensure compliance to our specifications.

Engineered Solutions

Morse® recognizes that not all applications can be serviced from "standard" item. Our Specialty Chain Center has custom design and manufacturing capabilities to support prototype development.

Unmatched Service

Attachment chain is nothing without great service! We have the tools required to address the uniqueness of each attachment chain order while maintaining the quality you expect.

Call us direct at 1-888-EPT-SCC3.

A Wide Variety of Attachment Chain for Quality Conscious Consumers

- Extensive attachment chain selection
- Engineering capabilities
- Dedicated specialty chain center facility
- Outstanding customer service

Choose from straight, bent, extended pin, wide tab and special attachments in your choice of materials:

Carbon Steel Roller CHAIN

Nickel Plated Roller CHAIN

Stainless Steel Roller CHAIN

chain material characteristics

Material	Strength and Working Load (based on published ratings)	Corrosion Resistance			Wear Resistance	Cost
		Water and Salt Water	Acid	Alkali		
Stainless Steel	Fair	Excellent	Excellent	Excellent	Fair	$$$$
Moisture Guard	Excellent	Very Good	Good	Good	Excellent	$$$
Nickel Plated	Excellent	Good	Fair	Fair	Excellent	$$
Carbon Steel	Excellent	Poor	Poor	Poor	Excellent	$

Moisture Guard Roller CHAIN

- Corrosion protection with high strength and lower stretch/wear resistance
- Plated before assembly for uniform corrosion protection
- Outperforms competitive products in salt spray testing

Custom Moisture Guard Roller CHAIN

Have an especially tough attachment chain application?
Let us design the perfect solution.

Contact the Specialty Chain Center at 1-888-EPT-SCC3 for all your attachment chain needs.

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40 R B 2 - 1

1 = One Hole	2 = Two Hole	
2 = Both Sides	1 = One Side	
S = Straight Attachment	B = Bent Attachment	
WS = Wide Tab Straight	WB = Wide Tab Bent	
R = Riveted	C = Cottered	
Chain No.		

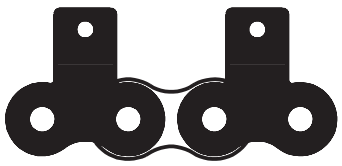
See page 15 for interchange information

For Extended Pin:

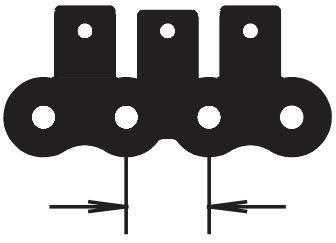
D-1 Extended Pin Every Other Pin
D-3 Extended Pin Every Pin
D-5 Special Large Diameter Extended Pin

Attachment Location:

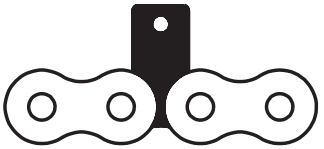
Every Pin Link - Outside



Every Pitch



Every Roller Link - Inside



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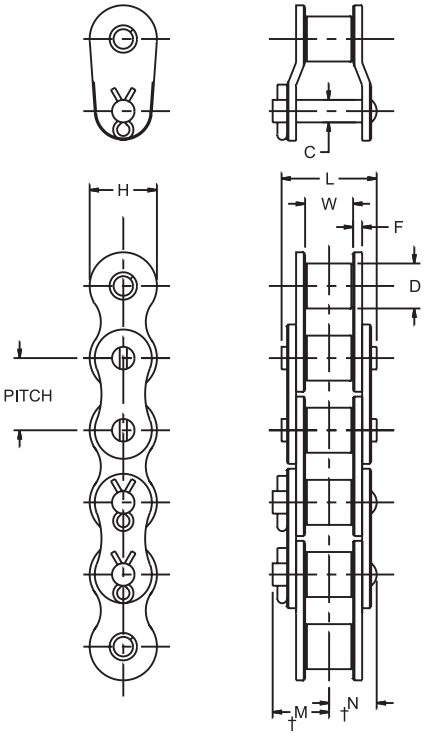
DIMENSIONAL DATA – BASE CHAINS

Basic Chain Construction

High quality Morse roller chain is used as the foundation for an infinite number of attachment chain possibilities.

standard series–single strand

Catalog No.	Dimensions (Inches)									Average Tensile Strength	Weight Per Foot
	Pitch	W-Roller Width	D-Roller Dia.	C-Pin Dia.	F-Plate Thick-ness	L-Width Over Pins	H-Inside Plate Height	† N	† M		
*25	1/4	1/8	.130	.0905	.030	.312	.234	.156	.188	875	.09
*35	3/8	3/16	.200	.141	.050	.466	.350	.233	.267	2100	.21
41	1/2	1/4	.306	.141	.050	.530	.383	.256	.322	2000	.25
40	1/2	5/16	.312	.156	.060	.630	.466	.315	.380	3700	.42
50	5/8	3/8	.400	.200	.080	.790	.584	.395	.460	6100	.69
60	3/4	1/2	.468	.234	.094	.990	.700	.495	.586	8500	1.00
80	1	5/8	.625	.312	.125	1.274	.934	.637	.741	14500	1.71
100	1-1/4	3/4	.750	.375	.156	1.555	1.166	.778	.923	24000	2.58
120	1-1/2	1	.875	.437	.187	1.960	1.400	.980	1.150	34000	3.87
140	1-3/4	1	1.000	.500	.219	2.117	1.634	1.059	1.215	46000	4.95
160	2	1-1/4	1.125	.562	.250	2.522	1.866	1.261	1.451	58000	6.61
200	2-1/2	1-1/2	1.562	.781	.312	3.120	2.250	1.560	1.777	95000	10.96



heavy series–single strand

60-H	3/4	1/2	.468	.234	.125	1.115	.700	.558	.627	8500	1.22
80-H	1	5/8	.625	.312	.156	1.400	.934	.700	.804	14500	2.03
100-H	1-1/4	3/4	.750	.375	.187	1.684	1.166	.842	.986	24000	3.00
120-H	1-1/2	1	.875	.437	.219	2.090	1.400	1.045	1.214	34000	4.30
140-H	1-3/4	1	1.000	.500	.250	2.241	1.634	1.121	1.276	46000	5.50
160-H	2	1-1/4	1.125	.562	.281	2.646	1.866	1.323	1.513	58000	7.20
200-H	2-1/2	1-1/2	1.562	.781	.375	3.374	2.334	1.687	1.904	95000	12.30

*Rollerless.
†For cotter chain and connector link clearance.

conveyor series

Conveyor series double pitch roller chain has heavy series thickness sideplates with full-contact edges for longer wear. This style chain is designed especially for conveyor applications where the chain will slide over a surface. Conveyor series is also available with large rollers to eliminate normal sliding friction losses. Conveyor chains that support the load should have large rollers to minimize the horsepower requirements.

conveyor series–standard rollers

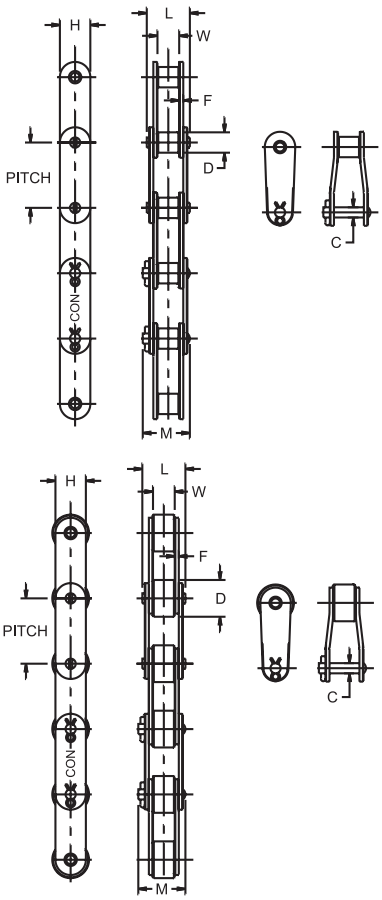
Chain No.	Dimensions (Inches)								Wt. Per Ft. Lbs.	Av. Ult. Strength Lbs.
	Pitch	Roller		Pin Diam. C	Pin Length		Side Plate			
		Diam. D	Width W		Riveted L	Cotter M	Height H	Thick F		
C-2040	1	.312	5/16	.156	.630	.700†	.466	.060	.34	3700
C-2050	1-1/4	.400	3/8	.200	.790	.870†	.584	.080	.56	6100
C-2060H	1-1/2	.468	1/2	.234	1.115	1.207	.700	.125	1.01	8500
C-2080H	2	.625	5/8	.312	1.400	1.504	.934	.156	1.67	14500
C-2100H	2-1/2	.750	3/4	.375	1.684	1.828	1.166	.187	2.47	24000
C-2120H	3	.875	1	.437	2.090	2.259	1.400	.219	3.56	34000

†1" and 1¼" pitches are stocked in rivet type only. Cottered pin length is pin length for connecting link.

conveyor series–large rollers

Chain No.	Dimensions (Inches)								Wt. Per Ft. Lbs.	Av. Ult. Strength Lbs.
	Pitch	Roller		Pin Diam. C	Pin Length		Side Plate			
		Diam. D	Width W		Riveted L	Cotter M	Height H	Thick F		
C-2042	1	.625	5/16	.156	.630	.700	.466	.060	.58	3700
C-2052	1-1/4	.750	3/8	.200	.790	.870	.584	.080	.88	6100
C-2062H	1-1/2	.875	1/2	.234	1.115	1.207	.700	.125	1.48	8500
C-2062H-T*	1-1/2	.875	1/2	.234	1.115	1.207	.700	.125	1.00	8500
C-2082H	2	1.125	5/8	.312	1.400	1.504	.934	.156	2.40	14500
C-2102H	2-1/2	1.562	3/4	.375	1.684	1.828	1.166	.187	3.96	24000
C-2122H	3	1.750	1	.437	2.090	2.259	1.400	.219	5.56	34000

*Morse Thermoplastic Roller Chain offers a smooth, quiet chain with reduced weight.



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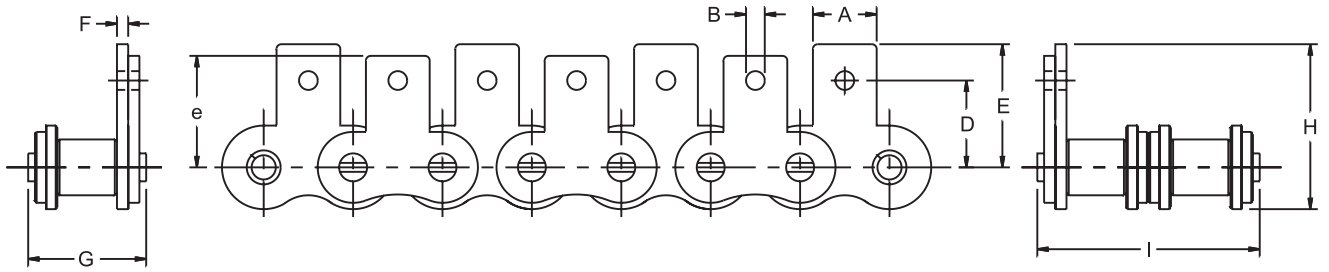
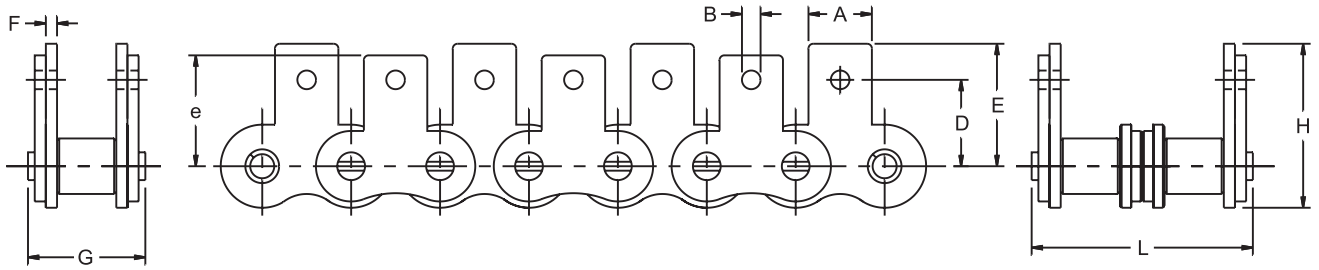


S-1 straight attachments – ANSI roller chain

Chain No.	Pitch	Roller		Pin Diam.	Dimensions (Inches)									Chain Wt. Per Ft. (Lbs.) Single	Chain Wt. Per Ft. (Lbs.) Double	Each S-1 Attach. Wt. (Lbs.)
		Width	Diam.		A	B	D	e	E	F	G	H-Inside Plate Height	I			
†35 & 35-2	3/8	3/16	.200	.141	5/16	7/64	3/8	17/32	17/32	.050	.466	45/64	.866	.21	.40	.002
41	1/2	1/4	.306	.141	3/8	1/8	31/64	45/64	45/64	.050	.512	57/64	-	.25	-	.003
40 & 40-2	1/2	5/16	.312	.156	3/8	9/64	1/2	11/16	3/4	.060	.630	63/64	1.194	.42	.82	.003
50 & 50-2	5/8	3/8	.400	.200	1/2	13/64	5/8	57/64	31/32	.080	.790	1-17/64	1.507	.69	1.36	.008
60 & 60-2	3/4	1/2	.468	.234	5/8	13/64	23/32	1-1/32	1-1/8	.094	.990	1-15/32	1.893	1.00	1.99	.013
80 & 80-2	1	5/8	.625	.312	3/4	17/64	31/32	1-11/32	1-1/2	.125	1.274	1-31/32	2.432	1.71	3.40	.027
100 & 100-2	1-1/4	3/4	.750	.375	1	21/64	1-1/4	1-21/32	1-53/64	.156	1.555	2-13/32	2.963	2.58	5.10	.055
120 & 120-2	1-1/2	1	.875	.437	1-1/8	25/64	1-7/16	1-15/16	2-1/8	.187	1.960	2-53/64	3.749	3.87	7.65	.082
140 & 140-2	1-3/4	1	1.000	.500	1-3/8	29/64	1-3/4	2-9/32	2-1/2	.219	2.117	3-5/16	4.041	4.95	9.80	.141
160 & 160-2	2	1-1/4	1.125	.562	1-1/2	32/64	2	2-39/64	2-7/8	.250	2.522	3-13/16	4.827	6.61	13.10	.198

† Rollerless



S-2 straight attachments – ANSI roller chain

Chain No.	Pitch	Roller		Pin Diam.	Dimensions (Inches)									Chain Wt. Per Ft. (Lbs.) Single	Chain Wt. Per Ft. (Lbs.) Double	Each S-2 Attach. Wt. (Lbs.)
		Width	Diam.		A	B	D	e	E	F	G	H-Inside Plate Height	L			
†35 & 35-2	3/8	3/16	.200	.141	5/16	7/64	3/8	17/32	17/32	.050	.466	45/64	.866	.21	.40	.004
41	1/2	1/4	.306	.141	3/8	1/8	31/64	45/64	45/64	.050	.512	57/64	-	.25	-	.006
40 & 40-2	1/2	5/16	.312	.156	3/8	9/64	1/2	11/16	3/4	.060	.630	63/64	1.194	.42	.82	.006
50 & 50-2	5/8	3/8	.400	.200	1/2	13/64	5/8	57/64	31/32	.080	.790	1-17/64	1.507	.69	1.36	.016
60 & 60-2	3/4	1/2	.468	.234	5/8	13/64	23/32	1-1/32	1-1/8	.094	.990	1-15/32	1.893	1.00	1.99	.026
80 & 80-2	1	5/8	.625	.312	3/4	17/64	31/32	1-11/32	1-1/2	.125	1.274	1-31/32	2.432	1.71	3.40	.054
100 & 100-2	1-1/4	3/4	.750	.375	1	21/64	1-1/4	1-21/32	1-53/64	.156	1.555	2-13/32	2.963	2.58	5.10	.110
120 & 120-2	1-1/2	1	.875	.437	1-1/8	25/64	1-7/16	1-15/16	2-1/8	.187	1.960	2-53/64	3.749	3.87	7.65	.164
140 & 140-2	1-3/4	1	1.000	.500	1-3/8	29/64	1-3/4	2-9/32	2-1/2	.219	2.117	3-5/16	4.041	4.95	9.80	.282
160 & 160-2	2	1-1/4	1.125	.562	1-1/2	33/64	2	2-39/64	2-7/8	.250	2.522	3-13/16	4.827	6.61	13.10	.396

† Rollerless
All sizes available in riveted construction. Sizes 60 and above available in cottered construction. Please specify desired construction when ordering.

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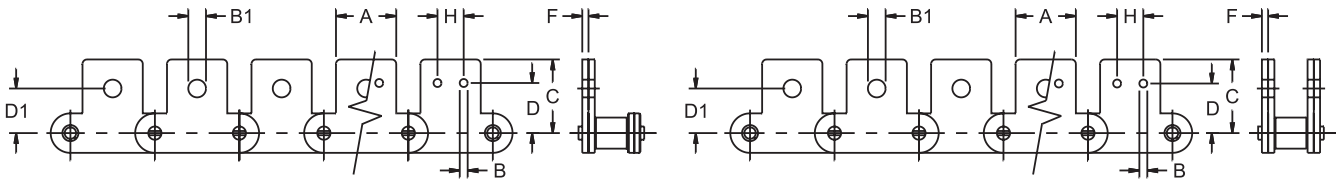
S-1 & S-2 STRAIGHT ATTACHMENTS

Double Pitch Roller Chain, Standard Series

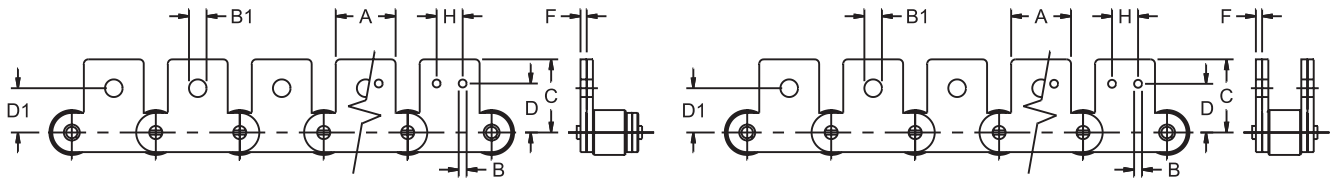


S-1 S-2

conveyor series – standard rollers straight attachments

Chain No.	Pitch	Dimensions (Inches)											Weight in Lbs.		
		Roller		Pin Diam.	A	C	F	†With 1 Hole		†With 2 Holes			Chain Per Ft.	Each Attach.	
		Width	Diam.					B_1	D_1	B	D	H		S-1	S-2
C-2040	1	5/16	.312	.156	3/4	25/32	.060	13/64	7/16	9/64	17/32	3/8	.34	.004	.008
C-2050	1-1/4	3/8	.400	.200	1	63/64	.080	17/64	9/16	13/64	5/8	15/32	.56	.014	.028
C-2060H	1-1/2	1/2	.468	.234	1-1/8	1-11/64	.125	21/64	11/16	13/64	3/4	9/16	1.01	.035	.070
C-2080H	2	5/8	.625	.312	1-1/2	1-37/64	.156	25/64	7/8	17/64	1	3/4	1.67	.074	.148
C-2100H	2-1/2	3/4	.750	.375	1-7/8	1-63/64	.187	33/64	1-1/8	21/64	1-1/4	15/16	2.47	.132	.264
C-2120H	3	1	.875	.437	2-1/4	2-11/32	.219	37/64	1-5/16	25/64	1-15/32	1-1/8	3.56	.216	.432

† When ordering double pitch attachment chain, specify either one hole or two holes in the attachment tab.
All sizes available in riveted construction. Size C2062 and above available in cottered construction. Please specify desired construction when ordering.



S-1 S-2

conveyor series – large rollers straight attachments

Chain No.	Pitch	Dimensions (Inches)											Weight in Lbs.		
		Roller		Pin Diam.	A	C	F	†With One Attach. Hole		†With Two Attach. Holes			Chain Per Ft.	Each Attach.	
		Width	Diam.					B_1	D_1	B	D	H		S-1	S-2
C-2042	1	5/16	.625	.156	3/4	25/32	.060	13/64	7/16	9/64	17/32	3/8	.58	.004	.008
C-2052	1-1/4	3/8	.750	.200	1	63/64	.080	17/64	9/16	13/64	5/8	15/32	.88	.014	.028
C-2062H	1-1/2	1/2	.875	.234	1-1/8	1-11/64	.125	21/64	11/16	13/64	3/4	9/16	1.48	.035	.070
C-2062H-T*	1-1/2	1/2	.875	.234	1-1/8	1-11/64	.125	21/64	11/16	13/64	3/4	9/16	1.00	.035	.070
C-2082H	2	5/8	1.125	.312	1-1/2	1-37/64	.156	25/64	7/8	17/64	1	3/4	2.40	.074	.148
C-2102H	2-1/2	3/4	1.562	.375	1-7/8	1-63/64	.187	33/64	1-1/8	21/64	1-1/4	15/16	4.56	.132	.264
C-2122H	3	1	1.750	.437	2-1/4	2-11/32	.219	37/64	1-5/16	25/64	1-15/32	1-1/8	5.56	.216	.432

* Morse Thermoplastic Roller Chain offers a smooth, quiet chain with reduced weight.
† When ordering double pitch attachment chain, specify either one hole or two holes in the attachment tab.
All sizes available in riveted construction. Size C2062 and above available in cottered construction. Please specify desired construction when ordering.

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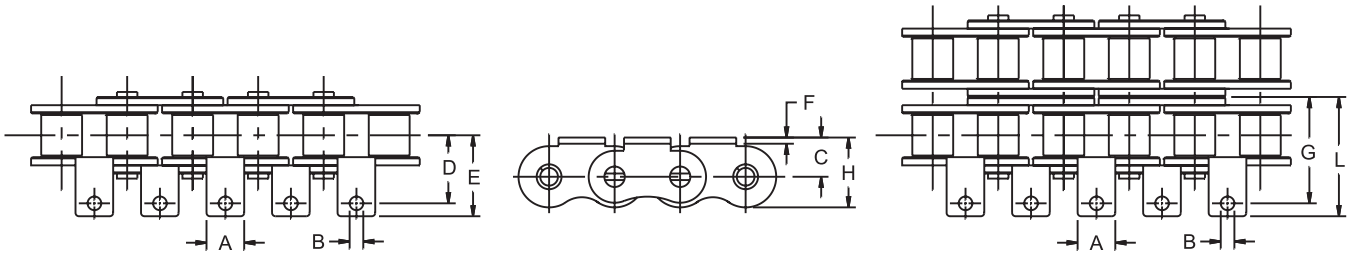
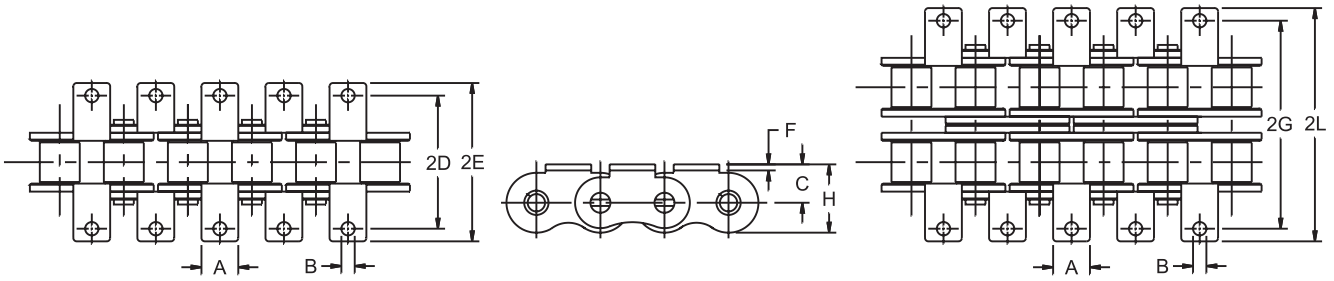


B-1 bent attachments – ANSI roller chain

Chain No.	Pitch	Roller		Pin Diam.	Dimensions (Inches)									Chain Wt. Per Ft. (Lbs.) Single	Chain Wt. Per Ft. (Lbs.) Double	Each B-1 Attach. Wt. (Lbs.)
		Width	Diam.		A	B	C	D	E	F	G	H-Inside Plate Height	L			
†35 & 35-2	3/8	3/16	.200	.141	5/16	7/64	1/4	3/8	17/32	.050	37/64	27/64	47/64	.21	.40	.002
41	1/2	1/4	.306	.141	3/8	1/8	9/32	15/32	11/16	.050	-	15/32	-	.25	-	.003
40 & 40-2	1/2	5/16	.312	.156	3/8	9/64	5/16	1/2	23/32	.060	25/32	35/64	1	.42	.82	.003
50 & 50-2	5/8	3/8	.400	.200	1/2	13/64	13/32	5/8	29/32	.080	63/64	45/64	1-17/64	.69	1.36	.008
60 & 60-2	3/4	1/2	.468	.234	5/8	13/64	15/32	3/4	1-5/64	.094	1-13/64	13/16	1-17/32	1.00	1.99	.013
80 & 80-2	1	5/8	.625	.312	3/4	17/64	5/8	1	1-25/64	.125	1-37/64	1-3/32	1-31/32	1.71	3.40	.027
100 & 100-2	1-1/4	3/4	.750	.375	1	21/64	25/32	1-1/4	1-11/16	.156	1-61/64	1-23/64	2-25/64	2.50	5.10	.055
120 & 120-2	1-1/2	1	.875	.437	1-1/8	25/64	29/32	1-1/2	2-1/16	.187	2-25/64	1-39/64	2-61/64	3.87	7.65	.082
140 & 140-2	1-3/4	1	1.000	.500	1-3/8	29/64	1-1/8	1-3/4	2-17/64	.219	2-23/32	1-15/16	3-15/64	4.95	9.80	.141
160 & 160-2	2	1-1/4	1.125	.562	1-1/2	33/64	1-1/4	2	2-11/16	.250	3-5/32	2-3/16	3-27/32	6.61	13.10	.198

† Rollerless



B-2 bent attachments – ANSI roller chain

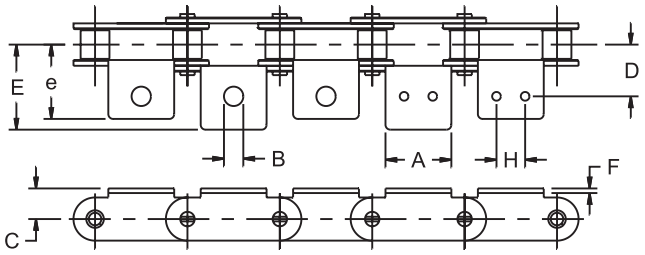
Chain No.	Pitch	Roller		Pin Diam.	Dimensions (Inches)									Chain Wt. Per Ft. (Lbs.) Single	Chain Wt. Per Ft. (Lbs.) Double	Each B-2 Attach. Wt. (Lbs.)
		Width	Diam.		A	B	C	2D	2E	F	2G	H-Inside Plate Height	2L			
†35 & 35-2	3/8	3/16	.200	.141	5/16	7/64	1/4	3/4	1-1/16	.050	1-5/32	27/64	1-1/2	.21	.40	.004
41	1/2	1/4	.306	.141	3/8	1/8	5/16	15/16	1-3/8	.050	-	15/32	-	.25	-	.006
40 & 40-2	1/2	5/16	.312	.156	3/8	9/64	5/16	1	1-7/16	.060	1-9/16	35/64	2	.42	.82	.006
50 & 50-2	5/8	3/8	.400	.200	1/2	13/64	13/32	1-1/4	1-13/16	.080	1-31/32	45/64	2-17/32	.69	1.36	.016
60 & 60-2	3/4	1/2	.468	.234	5/8	13/64	15/32	1-1/2	2-5/32	.094	2-13/32	13/16	3-1/16	1.00	1.99	.026
80 & 80-2	1	5/8	.625	.312	3/4	17/64	5/8	2	2-25/32	.125	3-5/32	1-3/32	3-15/16	1.71	3.40	.054
100 & 100-2	1-1/4	3/4	.750	.375	1	21/64	25/32	2-1/2	3-3/8	.156	3-29/32	1-23/64	4-25/32	2.58	5.10	.110
120 & 120-2	1-1/2	1	.875	.437	1-1/8	25/64	29/32	3	4-1/8	.187	4-25/32	1-39/64	5-29/32	3.87	7.65	.164
140 & 140-2	1-3/4	1	1.000	.500	1-3/8	29/64	1-1/8	3-1/2	4-17/32	.219	5-7/16	1-15/16	6-15/32	4.95	9.80	.282
160 & 160-2	2	1-1/4	1.125	.562	1-1/2	33/64	1-1/4	4	5-3/8	.250	6-5/16	2-3/16	7-11/16	6.61	13.10	.396

† Rollerless
All sizes available in riveted construction. Sizes 60 and above available in cottered construction. Please specify desired construction when ordering.

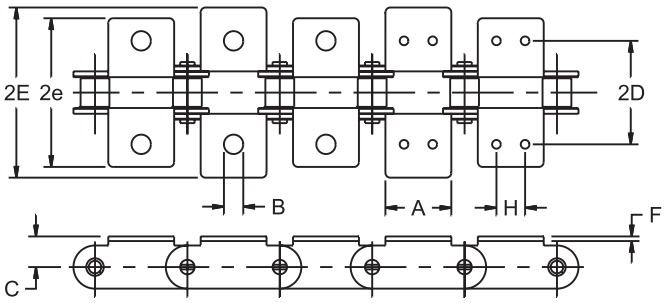
Call us direct at 1-888-EPT-SCC3

B-1 & B-2 BENT ATTACHMENTS

Double Pitch Roller Chain, Standard Series



B-1

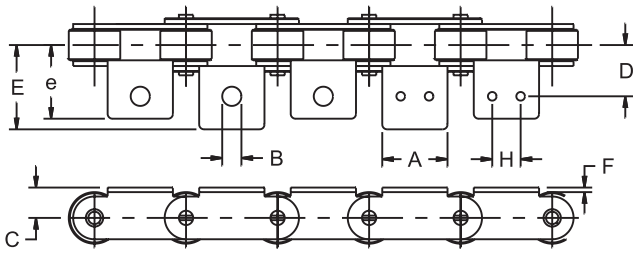


B-2

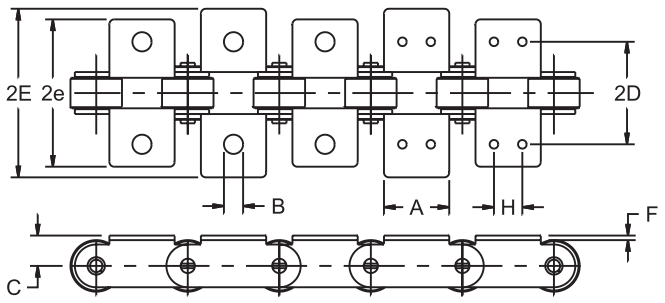
conveyor series – standard rollers bent attachments

Chain No.	Pitch	Dimensions (Inches)														Weight in Lbs.		
		Roller		Pin Diam.	A	B †	C	D	2D	Over Roller Link		Over Pin Link		F	H	Chain Per Ft.	Each Attach.	
		Width	Diam.							e	2e	E	2E				B-1	B-2
C-2040	1	5/16	.312	.156	3/4	9/64	23/64	1/2	1	11/16	1-3/8	49/64	1-17/32	.060	3/8	.34	.004	.008
C-2050	1-1/4	3/8	.400	.200	1	13/64	7/16	5/8	1-1/4	29/32	1-13/16	63/64	1-31/32	.080	15/32	.56	.014	.028
C-2060H	1-1/2	1/2	.468	.234	1-1/8	13/64	37/64	27/32	1-11/16	1-5/64	2-5/32	1-13/64	2-13/32	.125	9/16	1.01	.035	.070
C-2080H	2	5/8	.625	.312	1-1/2	17/64	3/4	1-3/32	2-3/16	1-13/32	2-13/16	1-9/16	3-1/8	.156	3/4	1.67	.074	.148
C-2100H	2-1/2	3/4	.750	.375	1-7/8	21/64	59/64	1-5/16	2-5/8	1-25/32	3-9/16	1-31/32	3-15/16	.187	15/16	2.47	.132	.264
C-2120H	3	1	.875	.437	2-1/4	25/64	1-3/32	1-9/16	3-1/8	2-9/64	4-9/32	2-3/8	4-3/4	.219	1-1/8	3.56	.216	.432

† When ordering double pitch attachment chain, specify either one hole or two holes in the attachment tab.
All sizes available in riveted construction. Size C2062 and above available in cottered construction. Please specify desired construction when ordering.



B-1



B-2

conveyor series – large rollers bent attachments

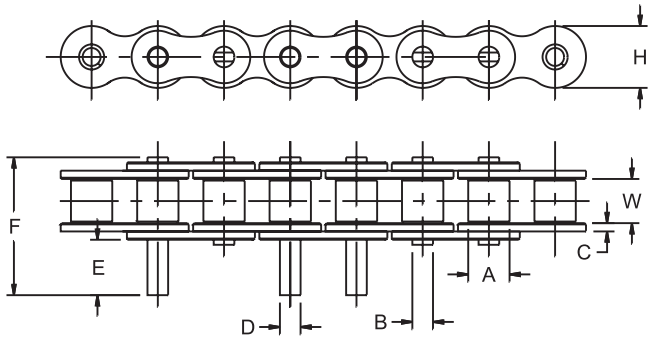
Chain No.	Pitch	Dimensions (Inches)														Weight in Lbs.		
		Roller		Pin Diam.	A	B †	C	D	2D	Over Roller Link		Over Pin Link		F	H	Chain Per Ft.	Each Attach.	
		Width	Diam.							e	2e	E	2E				B-1	B-2
C-2042	1	5/16	.625	.156	3/4	9/64	23/64	1/2	1	11/16	1-3/8	49/64	1-17/32	.060	3/8	.58	.004	.008
C-2052	1-1/4	3/8	.750	.200	1	13/64	7/16	5/8	1-1/4	29/32	1-13/16	63/64	1-31/32	.080	15/32	.88	.014	.028
C-2062H	1-1/2	1/2	.875	.234	1-1/8	13/64	37/64	27/32	1-11/16	1-5/64	2-5/32	1-13/64	2-13/32	.125	9/16	1.48	.035	.070
C-2062H-T*	1-1/2	1/2	.875	.234	1-1/8	13/64	37/64	27/32	1-11/16	1-5/64	2-5/32	1-13/64	2-13/32	.125	9/16	1.00	.035	.070
C-2082H	2	5/8	1.125	.312	1-1/2	17/64	3/4	1-3/32	2-3/16	1-13/32	2-13/16	1-9/16	3-1/8	.156	3/4	2.40	.074	.148
C-2102H	2-1/2	3/4	1.562	.375	1-7/8	21/64	59/64	1-5/16	2-5/8	1-25/32	3-9/16	1-31/32	3-15/16	.187	15/16	4.56	.132	.264
C-2122H	3	1	1.750	.437	2-1/4	25/64	1-3/32	1-9/16	3-1/8	2-9/64	4-9/32	2-3/8	4-3/4	.219	1-1/8	5.56	.216	.432

* Morse Thermoplastic Roller Chain offers a smooth, quiet chain with reduced weight.
† When ordering double pitch attachment chain, specify either one hole or two holes in the attachment tab.
All sizes available in riveted construction. Size C2062, and above available in cottered construction. Please specify desired construction when ordering.

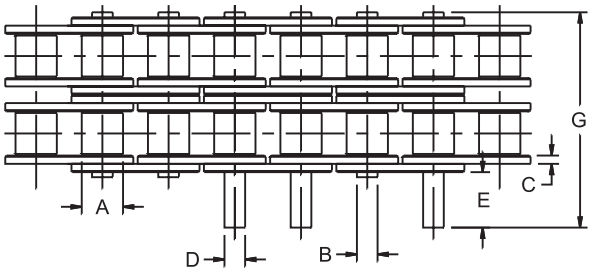
Call us direct at 1-888-EPT-SCC3

D-1 & D-3 EXTENDED PIN ATTACHMENTS

Standard Series



D-1 D-3



D-3 D-1

extended pins – ANSI roller chain

Chain No.	Pitch	Roller Width W	Dimensions (Inches)							
			Roller Diam. A	Chain Pin Diam. B	Side Plate Thickness C	Diameter of Extended Pins D	Standard Length of Extended Pins E	F	G	H
†35 & 35-2	3/8	3/16	.200	.141	.050	.141	3/8	13/16	1-7/32	.350
41	1/2	1/4	.306	.141	.050	.141	3/8	55/64	-	.383
40 & 40-2	1/2	5/16	.312	.156	.060	.156	3/8	31/32	1-17/32	.466
50 & 50-2	5/8	3/8	.400	.200	.080	.200	15/32	1-7/32	1-15/16	.584
60 & 60-2	3/4	1/2	.468	.234	.094	.234	9/16	1-1/2	2-13/32	.700
80 & 80-2	1	5/8	.625	.312	.125	.312	3/4	1-31/32	3-1/8	.934
100 & 100-2	1-1/4	3/4	.750	.375	.156	.375	15/16	2-27/64	3-53/64	1.166
120 & 120-2	1-1/2	1	.875	.437	.187	.437	1-1/8	3	4-25/32	1.400
140 & 140-2	1-3/4	1	1.000	.500	.219	.500	1-5/16	3-21/64	5-1/4	1.634
160 & 160-2	2	1-1/4	1.125	.562	.250	.562	1-1/2	3-29/32	6-7/32	1.866

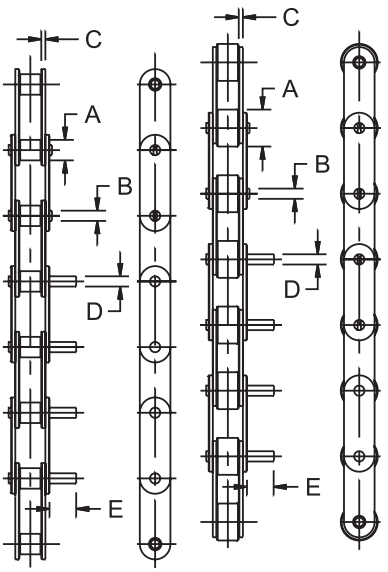
† Rollerless

All sizes available in riveted construction. Sizes 60 and above available in cottered construction. Please specify desired construction when ordering.

conveyor series – extended pins

Chain No.	Dimensions (Inches)						
	Pitch	Roller Width	Roller Diam. A	Chain Pin Diam. B	Side Plate Thickness C	Diam. of Extended Pin D	Length of Extended Pin E
Standard Roller							
C-2040	1	5/16	.312	.156	.060	.156	3/8
C-2050	1-1/4	3/8	.400	.200	.080	.200	15/32
C-2060H	1-1/2	1/2	.468	.234	.125	.234	9/16
C-2080H	2	5/8	.625	.312	.156	.312	3/4
C-2100H	2-1/2	3/4	.750	.375	.187	.375	15/16
C-2120H	3	1	.875	.437	.219	.437	1-1/8
Large Rollers							
C-2042	1	5/16	.625	.156	.060	.156	3/8
C-2052	1-1/4	3/8	.750	.200	.080	.200	15/32
C-2062H	1-1/2	1/2	.875	.234	.125	.234	9/16
C-2062H-T*	1-1/2	1/2	.875	.234	.125	.234	9/16
C-2082H	2	5/8	1.125	.312	.156	.312	3/4
C-2102H	2-1/2	3/4	1.562	.375	.187	.375	15/16
C-2122H	3	1	1.750	.437	.219	.437	1-1/8

* Morse Thermoplastic Roller Chain offers a smooth, quiet chain with reduced weight.



STANDARD ROLLERS LARGE ROLLERS

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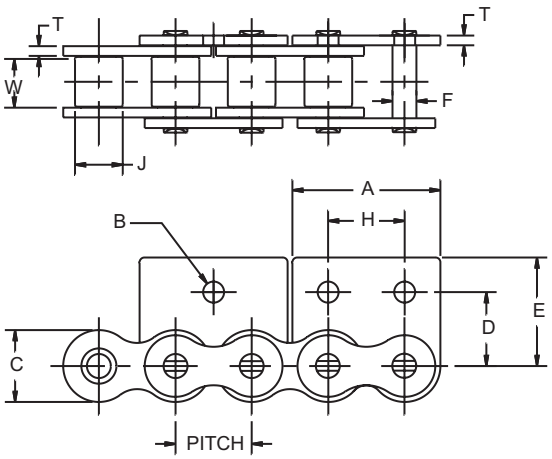
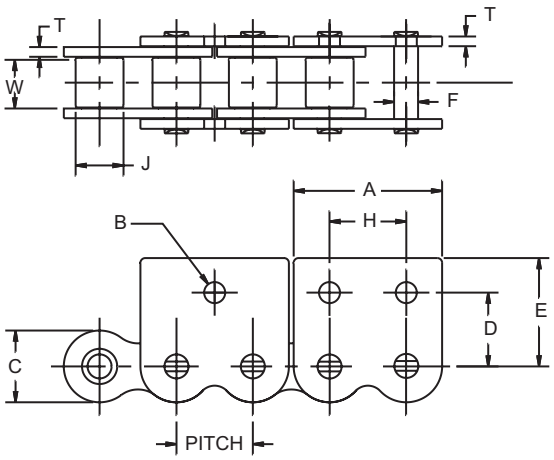
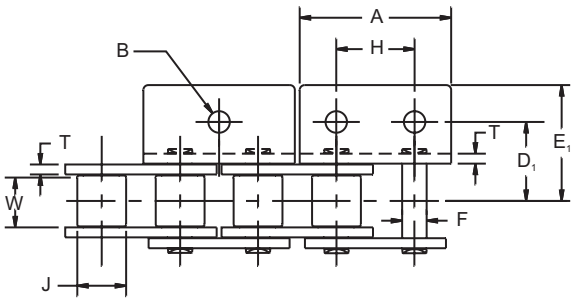
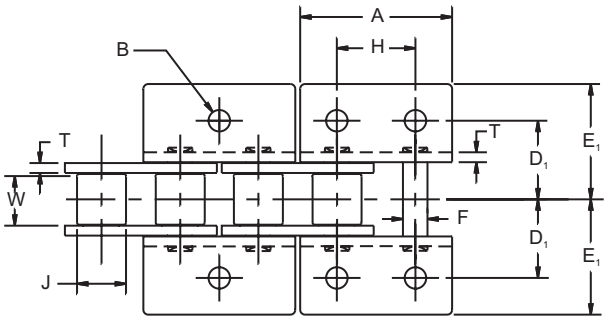


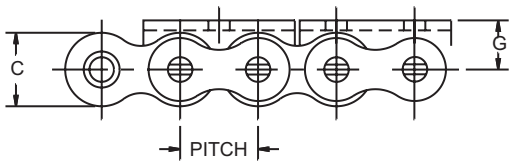
WS-1



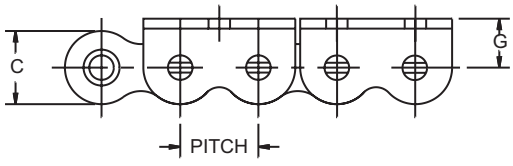
WS-2







WB-1



WB-2

wide tab attachments – ANSI roller chain

Chain No.	Pitch	Dimensions (Inches)													
		Roller		Pin Diam. F	A	B	Inside Plate Height C	D	E	G	H	Bent Pin Attachments		Bent Roller Attachments	
		Width W	Diam. J									D_1	E_1	D_2	E_2
40	1/2	5/16	0.312	0.156	0.966	0.140	0.466	0.500	0.686	0.312	0.500	0.500	45/64"	0.500	21/32
50	5/8	3/8	0.400	0.200	1.209	0.205	0.584	0.625	0.907	0.406	0.625	0.625	59/64	0.625	27/32
60	3/4	1/2	0.468	0.234	1.450	0.205	0.700	0.720	1.057	0.468	0.750	0.750	1 3/32	0.750	1
80	1	5/8	0.625	0.312	1.934	0.265	0.934	0.969	1.396	0.625	1.000	1.000	1 7/16	1.000	1 19/64

When ordering wide tab attachment chain, specify one hole or two holes in the attachment tab.

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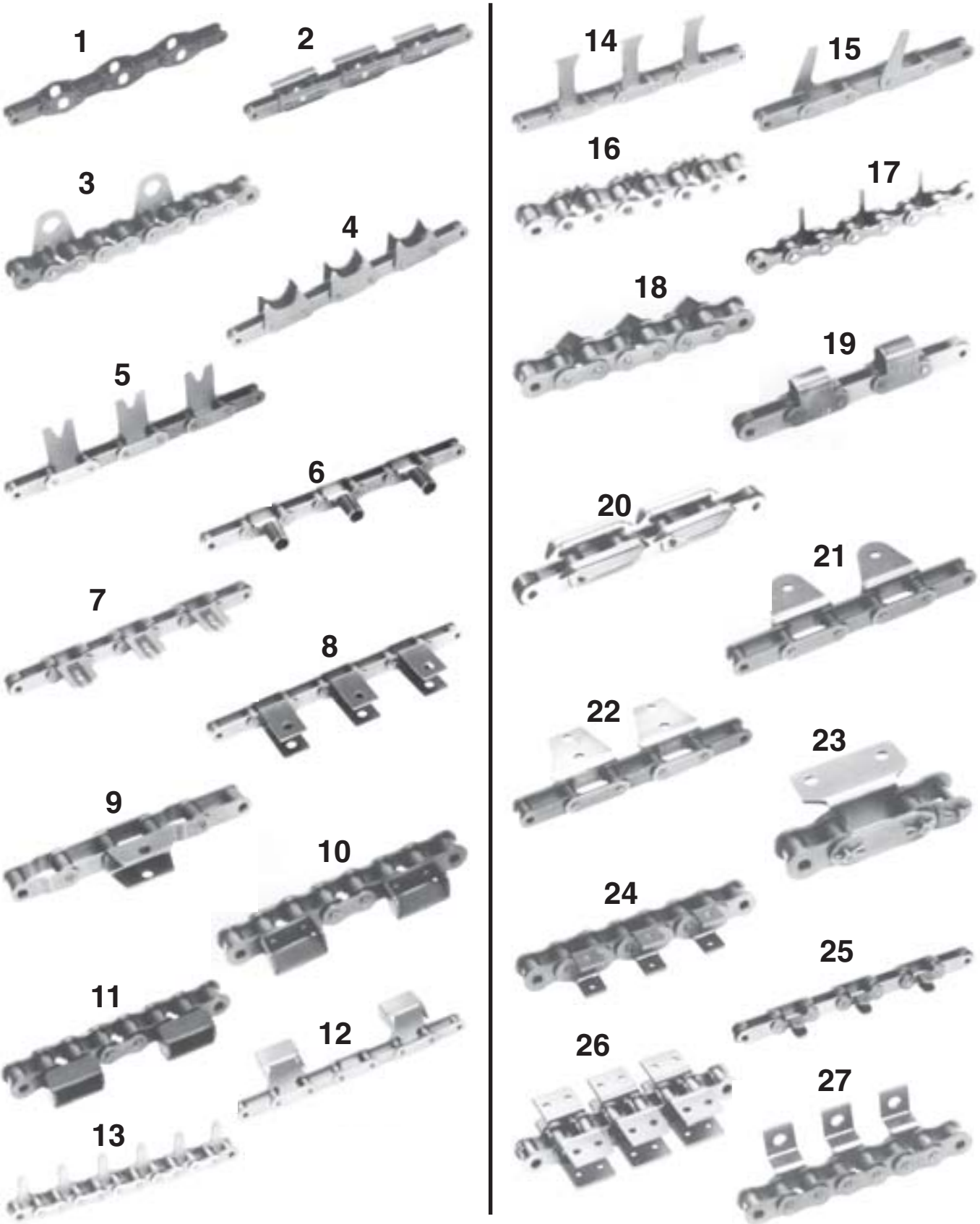
These are a few examples
For additional attachments, call us



# of our attachments.
direct at 1-888-EPT-SCC3.

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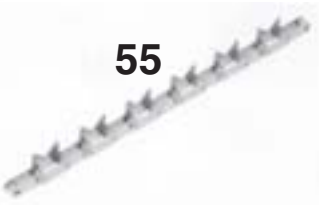


connecting and offset links

Pitch	Power Trans. Series (1)	Conveyor Series		Connecting Link Types			Connecting Links Furnished With Stock Lgth Chain	Offset Link
				"SF" Link (Slip Fit)		"PF" Link (Light Press Fit)		
		Standard	Large Rollers	Spring Clip	Cotter	Cotter		Standard
1/4,3/8,1/2 & 5/8"	25,35,40,41,50	-	-	Standard	None	None	1 each 10'	
3/4"	60	-	-	Optional	Standard	Optional	1 each 10'	
1"	80	-	-	Optional	Standard	Optional	1 each 10'	
1-1/4,1-1/2,1-3/4"	100,120,140	-	-	None	Standard	Optional	1 each 10'	
2,2-1/2"	160,200	-	-	None	Standard	Optional	1 each 10'	Cotter
1 & 1-1/4"	2040,2050	C-2040, C-2050	C-2042, C-2052	Standard	None	None	1 each 10'	
1-1/2"	2060	C-2060H	C-2062, C-2062HT	Optional	Standard	Optional	1 each 10'	
2"	2080	C-2080H	C-2082H	None	Standard	Optional	1 each 10'	
2-1/2" & 3"	None	C-2100H, C-2120H	C-2102H, C-2122H	None	Standard	Optional	1 each 10'	

(1) Includes Standard, Sintered Bush, and Double Pitch
Note: Use of slip fit and offset connecting links should be avoided in highly loaded drives.
Heavy, "8" heavy, 60 and above are light press fit connectors.

Connecting Link ("C" or "SF")

Connecting Link ("Con" or "PF")

Used to create chain with an even number of pitches.

Single Pitch Offset Cotter Type

Two Pitch Offset Rivet Type

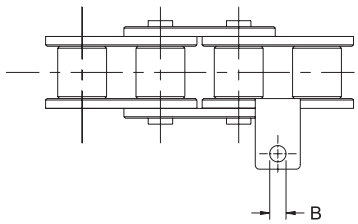
Used to create chain with an odd number of pitches.

attachment hole dimensions

Morse attachment hole sizes are designed for the following screw sizes:

Attachment Hole Dimensions			
Chain Size	Hole "B"	Screw SIze	Screw Diameter
35	.109	#2	.086
41	.125	#5	.125
40	.141	#5	.125
50	.203	#10	.190
60	.203	#10	.190
80	.266	1/4"	.250
100	.328	5/16	.312
120	.391	3/8	.375
140	.453	7/16	.438
C2040	.141	#5	.125
C2050	.203	#10	.190
C2060H	.203	#10	.190
C2080H	.266	1/4	1/4
C2100H	.328	5/16	5/16
C2120H	.391	3/8	3/8

Oversized and undersized holes also available.



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DESIGN RECOMMENDATIONS

Interchange

For selecting/sizing single pitch attachment chains, consult the roller chain horsepower tables in DC-98 catalog (pg. G-19), or contact Technical Service at 1-800-626-2093. For double pitch chains see pages 16-18 in this catalog.

General Design Recommendations

When designing new chains, the following points should be considered:

❶ Attachments are best located on pin links to add versatility and flexibility to an application.

❷ Variations of height and shape in attachment design can be derived from standard linkplates or from made-to-order designs. Many chain parts can be manufactured in non-standard material thicknesses to increase strength or improve durability for specific applications.

❸ Many different hole sizes and locations can be supplied using basic linkplate configurations.

❹ Morse attachment links are soft enough to permit such further operations as reaming, drilling and tapping.

❺ Note that when standard bent attachments are turned inward over the chain, the holes do not fall on the center line of the chain.

❻ Standard extended pins are carburized and hardened for maximum wear life. For additional shock resistance, consider through-hardened pins.

❼ To ensure proper sprocket engagement, standard length tolerance for chains without attachments is -0.000 to + 0.016 inches/foot; tolerance for chains with attachments is -.000 to + 0.031 inches/foot.

❽ To prevent unequal chain loading on parallel multiple strand conveyors, the teeth on each drive sprocket must be accurately aligned with the teeth on each of the other drive sprockets.

❾ Conveyor chains that support a load should have large rollers to minimize horsepower requirements.

Chains in this catalog should not be used for hoisting applications. Consult Technical Services for hoist application recommendations.

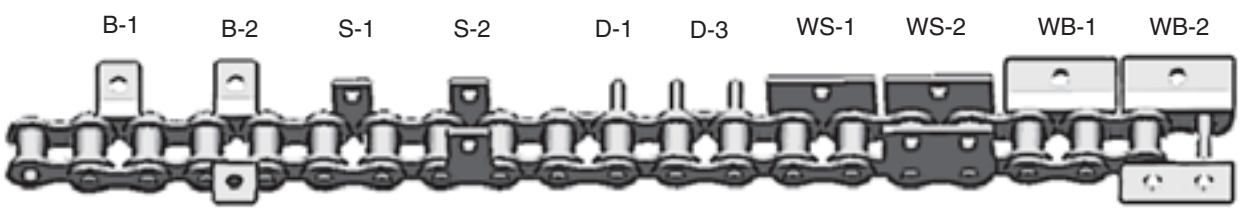
Competitive Comparison				
Description	**Morse**	**Diamond***	**Rexnord***	**U.S Tsubaki**
Bent Attachment One Side	B-1 ●	B-1	A-1	A-1 A-2 ●●●
Bent Attachment Both Sides	B-2 ●	B-2	K-1 K-2 ●●●	K-1
Straight Attachment One Side	S-1 ●	S-1	M-35 M-0 ●●●● M-35-2 ●●●	SA-1
Straight Attachment Both Sides	S-2 ●	S-2	M-1 M-2 MM-0 ●●●●	SK-1
Extended Pin One Pin per Pin Link	D-1	E-1	D-1	D-1
Extended Pin Two Pins per Pin Link	D-3	E-2	D-3	D-3
Wide Tab Bent Attachment One Side	WB-1 ●●	WCB1	-	WA-1 WA-2
Wide Tab Bent Attachment Both Sides	WB-2 ●●	WCB2	-	WK-1 WK-2
Wide Tab Straight Attachment One Side	WS-1 ●●	WCS1	-	WSA-1 WSA-2
Wide Tab Straight Attachment Both Sides	WS-2 ●●	WCS2	-	WSK-1 WSK-2

● Standard pitch lugs have one hole
Double pitch lugs have two holes

●● Available with either one or two holes in lug

●●● Supplied with two holes in lug

●●●● Supplied with no holes in lug



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conveyor series selection

Conveyor chain selection is usually based on the working load capacity of the chain rather than horsepower capacity. The allowable working loads are presented in the table below.

The following information provides the necessary formulas and factors needed to select the proper chain for a conveying application. The basic procedure is to determine the chain pull or working load, choose an appropriate chain size, and calculate the power required to operate the conveyor.

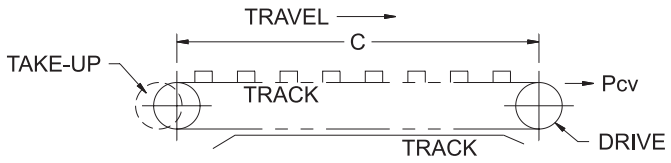
The working load or chain pull is calculated by using one of the following three formulas in conjunction with the coefficient of friction factors found in the tables.

For each of the following conveyor arrangements, there are formulas for the two most common conditions: the load supported by the chain and the load moved but not supported by the chain. The coefficients of friction for sliding material are listed in the table on the following page.

working loads for conveyor series chains

Chain No.	Pitch (in.)	Chain speed (ft/min)								
		5	25	50	75	100	200	300	400	500
C2040	1.00	530	525	510	490	465	335	230	160	115
C2050	1.25	870	865	840	805	765	555	380	265	190
C2060H	1.50	1215	1205	1170	1125	1065	775	530	370	265
C2080H	2.00	2070	2055	2000	1915	1815	1320	905	630	455
C2100H	2.50	3425	3400	3310	3175	3000	2180	1500	1040	750
C2120H	3.00	4855	4815	4690	4495	4250	3090	2125	1480	1065

horizontal arrangement



a. Conveyed material moved but not supported by the chain:

$$P_a = C\,(2.1Mf + Wf_w) + J$$

b. Conveyed material supported by chain. In this case, $f_w = f$ (of the chain–that is, f_s or f_r) and the formula becomes

$$P_b = Cf\,(2.1M + W) + J$$

(J applies only when sidewalls are stationary).

The total conveyor pull is the sum of the following:

Pull on loaded run	$P = P_a$ or P_b
Pull on return run	$P_R = MCf'$
Take-up pull*	P_{TU} or P_c
Pull to operate tail sprocket	$P_R \times .1$
Pull from other factors	P_o
Total conveyor pull	P_{cv}

Calculate the total chain pull per strand (P_T) by dividing P_{cv} by the number of strands taking the load.

Horsepower required to operate the conveyor

$$HP = \frac{(P_{cv} - P_{TU} \text{ or } P_C) \times 1.2 \times S}{33{,}000}$$

* Usually the takeup pull is known. If not, use 0.3% of the chain's ultimate strength as a reasonable estimate.

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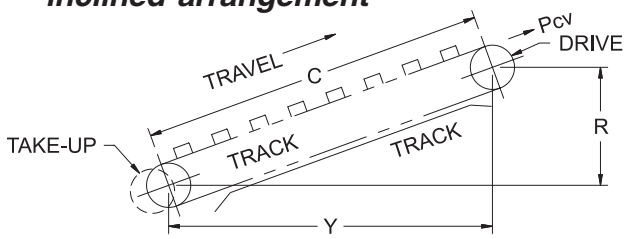
inclined arrangement



a. Conveyed material moved but not supported by the chain conveyor:

$$P_a = C\,(2Mf \cos \alpha + Wf_w \cos \alpha + W \sin \alpha) + J$$

b. Conveyed material fully supported by the conveyor. In this case, $f_w = f$ and the formula becomes

$$P_b = Cf \cos \alpha\,(2M + W) = (CW \sin \alpha) + J$$

1. When Y and R are known:

$$\cos \alpha = \frac{Y}{C} \text{ and } \sin \alpha = \frac{R}{C}$$

2. When ($Mf \cos \alpha - MF \sin \alpha$) is a positive quantity, multiply the difference by 1.1 for tail shaft friction.

The total conveyor pull is the sum of the following:

Pull on loaded run	$P = P_a$ or P_b
Pull on return run**	$P_R = MCf'$
Take-up pull*	P_{TU} or P_c
Pull to operate tail sprocket	$P_R \times .1$
Pull from other factors	P_o
Total conveyor pull	P_{cv}

Calculate the total chain pull per strand (P_T) by dividing P_{cv} by the number of strands taking the load.

Horsepower required to operate the conveyor

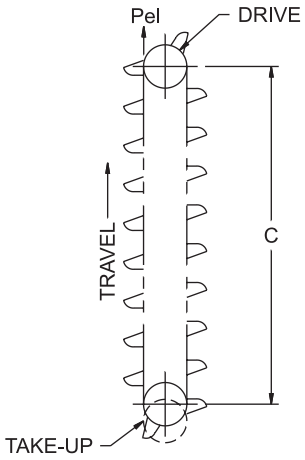
$$HP = \frac{(P_{cv} - P_{TU} \text{ or } P_C) \times 1.2 \times S}{33{,}000}$$

* Usually the takeup pull is known. If not, use 0.3% of the chain's ultimate strength as a reasonable estimate.

** Disregard when $\frac{R}{Y}$ is greater than factor f.

DOUBLE PITCH
Conveyor Chain Selection

vertical arrangement



P = C(M + W)

The total conveyor pull is the sum of the following:

Pull on loaded run	P = (M+W)C
Take-up pull*	P_{TU}
Digging pull	P_B = x d
Pull to operate tail sprocket	P_{TU} x .1
Total elevator pull	P_{EL}

Calculate the total chain pull per strand (P_T) by dividing P_{EL} by the number of chain strands used in the elevator.

Horsepower required to operate the conveyor

$$HP = \frac{(P_{EL} - (P_{TU} + MC) \times 1.2 \times S}{33{,}000}$$

* Usually, the takeup pull is known. If not, use 0.3% of the chain's ultimate strength as a reasonable estimate.

For material with small lumps, multiply M by the sprocket diameter. For fine or fluffy materials, multiply M by the sprocket radius.

definitions

M, weight, in pounds per foot, of the moving elements of the conveyor as carried by the chains.

W, weight of material carried in pounds per foot of conveyor. (for unit materials, sum up the average weight of units expected to be on the conveyor at maximum capacity, and divide by the conveyor length in feet.)

f, coefficient of friction of chain, sliding or rolling (f_s or f_r), as given in the tables.

f_w, coefficient of friction of material sliding in trough, as given in the table or from other references. (Note: When material is entirely carried by conveyor, f_w = f.)

J, additional pull from drag of material on stationary sides of trough, given in the tables.

S, conveyor speed, in feet per minute.

P, conveyor pull, in pounds. (P_a or P_b).

P_a = Pull due to digging material from elevator boot, pounds

P_C = Centrifugal Pull = $\frac{\text{Chain Weight per Foot} \times (\text{FPM})^2}{115{,}900}$

P_L = Conveyor or elevator pull on loaded run, pounds

P_O = Conveyor pull from other sources, pounds

P_R = Conveyor pull on return run, pounds

P_{CV} = Total calculated conveyor pull, pounds

P_{EL} = Total calculated elevator pull, pounds

P_{TU} = Conveyor take-up pull, pounds

HP = Horsepower at head shaft

C = Length of conveyor in feet

α = Angle of conveyor incline (from horizontal)

friction factors f_r for double-pitch roller chains equipped with large rollers

Chain Number	Static†		Rolling	
	Dry	Lubricated	Dry	Lubricated
C-2042	0.17	0.12	0.14	0.10
C-2052	0.16	0.11	0.13	0.09
C-2062H	0.16	0.11	0.13	0.09
C-2082H	0.15	0.10	0.12	0.08
C-2102H	0.14	0.09	0.11	0.07
C-2122H	0.14	0.09	0.11	0.07

† Use static coefficient of friction for speeds of 3 ft/min or less.

friction factors f_s for sliding roller conveyor chains

Condition	Dry	Lubricated
Static*	0.33	0.24
Sliding	0.27	0.21

* Use static coefficient of friction for speeds of 3 ft/min or less.

friction factors f_w for sliding of materials

Material	Coefficient
Coal on steel	0.33
Crushed stone or sand on steel	0.33
Cement on steel	0.80
Wood on wood	0.55

trough drag friction factor J for materials

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

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

h = height of material in inches

R = variable factor for different materials

C = length of conveyor in feet

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The following information should be used in conjunction with the conveyor chain selection. Formulas are listed on the previous pages.

Table 1A gives friction factor FRS for chains with standard small rollers supporting the weight of the chain and conveyed products. Supporting heavy conveyed loads with standard small rollers is not normally recommended, as the rollers may not turn and develop flat spots.

Table 1A - Friction Factors for Small Rollers - FRS

Condition	Dry	Lubricated
Static Rolling	0.33 0.20	.24 .14

Maximum speed should be limited to 70 FPM.

Table 2A gives allowable load supported by the rollers. Permissible load includes the weight of the chain, as well as conveyed products. The table includes limits for both large and standard small rollers along with plastic large rollers.

Table 2A - Roller Load Rating

Chain Size	Allowable Pounds Per Roller		
	Hardened Steel		Plastic (Large **)
	(Large *)	(Std. Small)	
40-2040 C2040/2	- 145	30 30	- 40
50-2050 C2050/2	- 210	45 45	- 60
60/2060 C2060H/2	- 340	65 65	- 100
80-2080 C2080H/2	- 570	120 120	- 165
100-2100 C2100H/2	- 825	175 175	- -
120-2120 C2120H/2	- 1285	250 250	- -

* Based on 2000 PSI Bearing Load.
** Based on 575 PSI Bearing Load.
Load or Force in Pounds.

CAUTION
WHEN CONNECTING/DISCONNECTING CHAIN:

1. **Always lock out equipment power switch before removing or installing chains.**
2. **Always USE SAFETY GLASSES to protect your eyes.**
3. **Wear protective clothing, gloves and safety shoes as appropriate.**
4. **REMOVE COTTER KEYS OR GRIND OFF RIVETED PIN END. SUPPORT THE CHAIN TO PREVENT UNCONTROLLED MOVEMENT OF CHAIN AND PARTS.**
5. **USE OF PRESSING EQUIPMENT IS RECOMMENDED. TOOLS MUST BE IN GOOD CONDITION AND PROPERLY USED.**
6. **DO NOT ATTEMPT TO CONNECT OR DISCONNECT CHAIN UNLESS YOU KNOW THE CHAIN CONSTRUCTION.**
7. **Damaged chain may be weakened and therefore should not be used.**
8. **Discard removed components. Components should not be reused.**
9. **Use NEW sub-assemblies for rework and not individual components.**

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Name _____ Company _____ Acct. No. _____

Disbributor _____ City, State, Zip Code _____

Phone _____ Fax _____

Base Chain Size _____ ❒ single ❒ double ❒ triple ❒ riveted ❒ cottered

Length _____ ❒ pitches ❒ inches

If odd no. pitches, I'd like ❒ roller links at both ends ❒ pin links at both ends ❒ riveted offset link ❒ cottered offset link

Attachment (or extended pin) Spacing: every _____ ❒ pitches ❒ inches on the ❒ pin link ❒ roller link ❒ both

No. of Strands _____ ❒ one-time order ❒ annual qty (for qty discounts) _____

Material/Plating ❒ carbon steel ❒ stainless steel ❒ nickel plated ❒ Moisture Guard ❒ other _____

Standard Attachments:

(see catalog for dimensions on standard attachments and extended pin offering)

B ❒ Bent
S ❒ Straight — 1 ❒ One Side — 1 ❒ One Hole
WB ❒ Wide Tab Bent — 2 ❒ Both Sides — 2 ❒ Two Holes
WS ❒ Wide Tab Straight

D ❒ Extended Pin — 1 ❒ One Pin per Link; 3 ❒ Both Pins in Link

Other Instructions/Requirements

_____

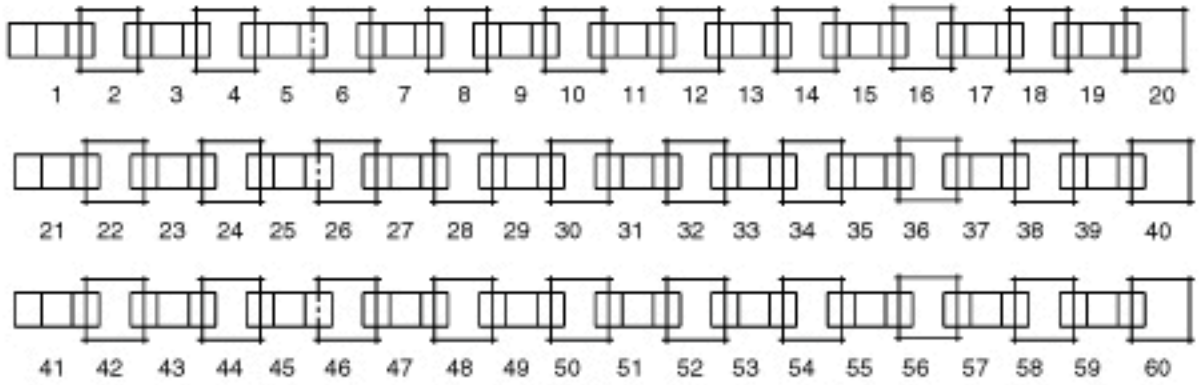
_____

_____

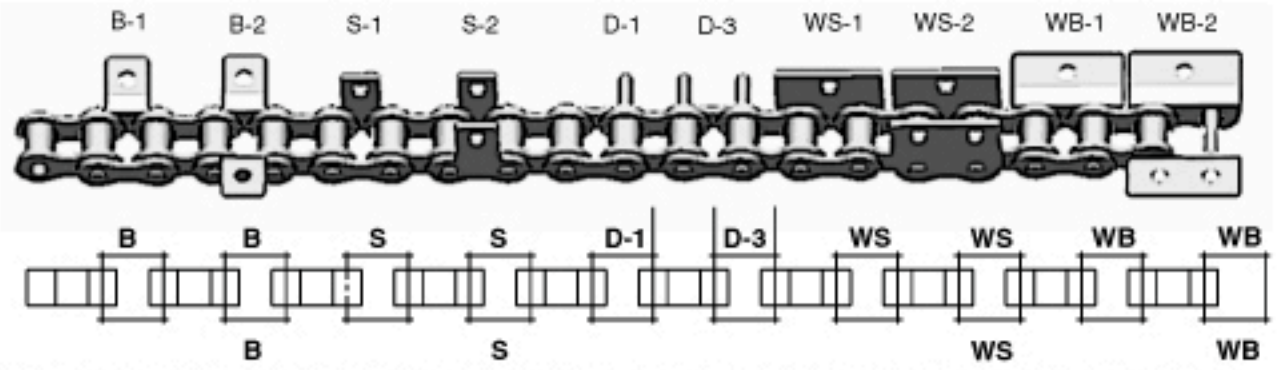
Special Attachments:

❒ drawing attached
❒ here's my sketch, please confirm with me:

ATTACHMENT SPACING



EXAMPLE



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