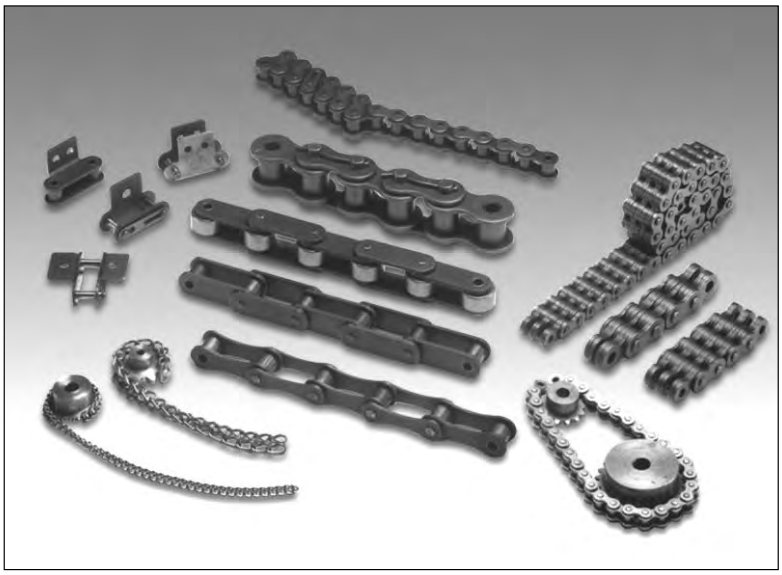
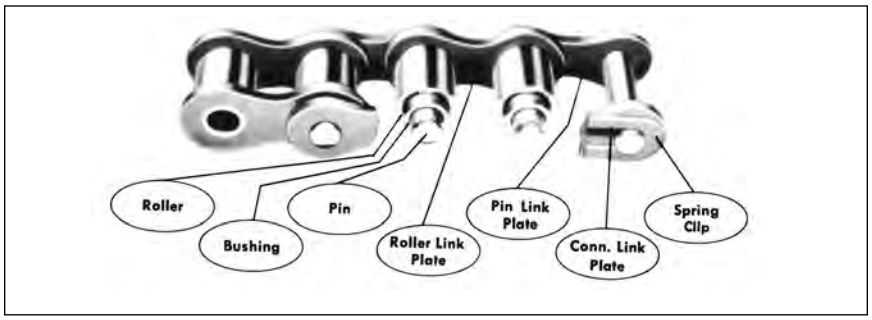


G

Section Contents

Roller Chains

Description of Roller Chain Parts



G

Chain Dimensions

Principal dimensions of roller chain which identify the chain definitely are pitch, roller width, roller diameter and pin diameter.

PITCH is the linear distance from center to center of adjacent pins or rivets.

WIDTH is the distance between inside plates or length of roller.

DIAMETER is the actual outside diameter of roller (or pin).

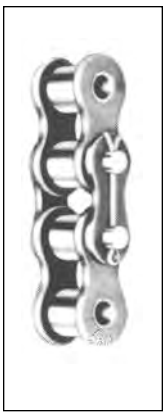
Chain Types

Boston Roller chains can be furnished in two types — RIVETED and DETACHABLE.

RIVETED TYPE

Riveted type chains are recommended for high speed drives, as a greater rigidity of the pins and side plates is secured from this construction.

Rivited type is considered standard on the smaller sizes up to and including 3/4 " pitch and will be supplied unless Detachable type is specified. Detachable type chain is not recommended up to and including 5/8" pitch, but is available in cotter pin construction in 3/4" pitch.



DETACHABLE (Cottered) TYPE

Detachable type chains are recommended for slower speed drives, especially in the larger pitches where ease of assembly and disassembly becomes an important factor.

Detachable type with cotter pins is considered standard on all sizes 1" pitch and above and will be supplied unless riveted type is specified. Both types are available.

Chain Links

CONNECTING LINK
(Spring Clip)

Standard for Nos. 25, 35, 40, 41, 50 and 60 single and multiple-width chains.

CONNECTING LINK
(Cotter Pin)

Standard for Nos. 80, 100, 120, 140, and 160, 200 and 240 single and multiple-width chains.

ROLLER LINK

Furnished as complete assemblies, roller links are standard for all chain sizes. The same roller links are used for single and multiple-width chains.

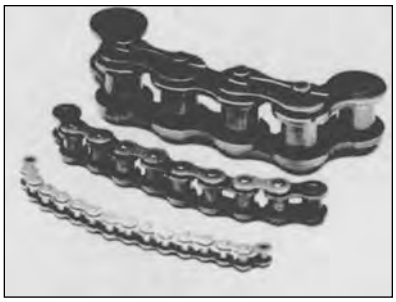
ONE PITCH OFFSET LINK
(For standard service)

For use whenever chain length contains an odd number of pitches. These links are standard for all chain sizes in single or multiple-widths. (Not available for 25 pitch.)

TWO PITCH OFFSET LINK
(For severe service)

Consists of a roller link and an offset link riveted together. Two pitch offset assemblies should be specified for severe service.

Ordering Information



STEEL – SINGLE STRAND

Chain Pitch & Number	Standard Package Quantities	Catalog Number	Item Code
1/4"-25*	10' PKG. 100' REEL 250' REEL 500' REEL	25 - 10' 25 100' 25 - 250' 25 - 500'	68948 69010 68950 68951
3/8" - 35*	10' PKG. 100' REEL 250' REEL 500' REEL	35 - 10' 35 - 100' 35 - 250' 35 - 500'	68953 68954 68955 68956
1/2" - 40	10' PKG 100' REEL 250' REEL	40 - 10' 40 - 100' 40 - 250'	68959 68960 68961
1/2" - 41	10' PKG 100' REEL 250' REEL 500' REEL	41 - 10' 41 - 100' 41 - 250' 41 - 500'	68964 68965 68966 68967
1/2" - 43	10' PKG	43 - 10'	68947
5/8" - 50	10' PKG 100' REEL 250' REEL	50 - 10' 50 - 100' 50 - 250'	68984 68985 68986
3/4" - 60	10' PKG 100' REEL	60 RIV - 10' 60 RIV - 100'	68989 68990
	10' PKG	60 DET -10'	68991
1" - 80	10' PKG 50' REEL	80 RIV - 10' 80 RIV - 50'	68808 29948
	10 PKG	80 DET - 10'	68812
1-1/4" - 100	10' PKG	100 RIV - 10' 100 DET - 10'	68936 68937
1-1/2" - 120	10' PKG	120 RIV - 10' 120 DET - 10'	68940 68941
1-3/4" - 140	10'2-1/2" PKG	140 RIV - 10'2-1/2" 140 DET - 10'2-1/2"	30440 30438
2" - 160	10' PKG	160 RIV - 10' 160 DET - 10'	30462 30460
2-1/4" - 180	10' PKG	180 RIV - 10' 180 DET - 10'	50219 30478
2-1/2" - 200	10' PKG	200 RIV - 10' 200 DET - 10'	31066 30488
3" - 240	5' PKG	240 RIV - 5'	50210
STEEL - DOUBLE STRAND			
1/4" - 25-2* 3/8" - 35-2"	10' PKG 10' PKG	25-2-10' 35-2-10'	45886 69011
1/2" - 40-2	10' PKG	40-2-10'	69014
5/8" - 50-2	10' PKG	50-2-10'	69017
3/4" - 60-2	10' PKG	60-2 RIV - 10' 60-2- DET - 10'	69020 68935
1" - 80-2	10' PKG	80-2 RIV - 10' 80-2 DET - 10'	68813 68816
1-1/4" - 100-2	10' PKG	100-2 RIV - 10' 100-2 DET - 10'	68938 68939
1-1/2" - 120-2	10' PKG	120-2 RIV - 10' 120-2 DET - 10'	68942 68943
1-3/4" - 140-2	10'2-1/2" PKG	140-2RIV-10'2-1/2" 140-2DET-10'2-1/2"	06085 30448
2" - 160-2	10' PKG	160-2 RIV - 10' 160-2 DET - 10'	50209 30470
2-1/4" - 180-2	10' PKG	180-2 DET-10'	31014
2-1/2" - 200-2	5' PKG	200-2 RIV-5' 200-2 DET-5'	50220 30496
3" - 240-2	5' PKG	240-2 DET-5'	58301

STEEL – TRIPLE STRAND

Chain Pitch & Number	Standard Package Quantities	Catalog Number	Item Code
1/4" - 25-3*	10' PKG	25-3-10'	45890
3/8" - 35-3*	10' PKG	35-3-10'	69057
1/2" - 40-3	10' PKG	40-3-10'	69060
5/8" - 50-3	10' PKG	50-3-10'	69063
3/4" - 60-3	10' PKG	60-3- RIV - 10' 60-3 DET - 10'	69066 68934
1" - 80-3	10' PKG	80-3 RIV - 10' 80-3 DET - 10'	68818 68822
1-1/4" - 100-3	10' PKG	100-3 RIV - 10' 100-3 DET - 10'	69081 69082
1-1/2" - 120-3	10' PKG	120-3 RIV - 10' 120-3 DET - 10'	69083 69087
1-3/4" - 140-3	10'2-1/2" PKG	140-3DET-10'2-1/2"	31142
2" - 160-3	5' PKG	160-3 DET-5'	31148
2-1/4" - 180-3	5' PKG	180-3 DET-5'	31160
2-1/2" - 200-3	5' PKG	200-3 DET-5'	30966
3" - 240-3	5' PKG	240-3 DET-5'	58304
STEEL - QUAD STRAND			
3/8" - 35-4*	10' PKG	35-4-10'	68839
1/2" - 40-4	10' PKG	40-4-10'	68842
5/8" - 50-4	10' PKG	50-4-10'	68843
3/4" - 60-4	10' PKG	60-4 RIV - 10' 60-4 DET - 10'	68932 68933
1" - 80-4	10' PKG	100-4 RIV - 10'	50216
1-1/2" - 120-4	10' PKG	120-4 DET - 10'	31184
1-3/4" 140-4	5' PKG	140-4 DET - 5'	31190
2" - 160-4	5' PKG	160-4 DET - 5'	31154
2-1/2" - 200-4	5' PKG	200-4 DET - 5'	31172
STAINLESS STEEL			
1/4" - 25*	10' PKG 100' REEL	25SS - 10' 25SS - 100'	58285 69056
3/8" - 35*	10' PKG	35SS - 10'	30078
1/2" - 40	10' PKG	40SS - 10'	30134
5/8" - 50	10' PKG	50SS - 10'	30272
3/4" - 60	10' PKG	60SS - 10'	30328
1" - 80	10' PKG	80SS RIV - 10'	13493
NICKEL PLATED			
1/4" - 25*	10' PKG 100' REEL	25NP - 10' 25NP - 100'	68709 68710
3/8" - 35*	10' PKG	35NP - 10'	68713
	100' PKG	35NP - 100'	68714
1/2" - 40	10' PKG	40NP - 10'	68718
	100' REEL	40NP - 100'	68719
5/8" - 50	10' PKG	50NP - 10'	68723
	100' REEL 250' REEL	50NP - 100' 50NP - 250'	68724 68725
3/4" - 60	10' PKG 100' REEL	60NP - 10' 60NP - 100'	68728 68729
1" - 80	10' PKG	80NP - 10'	68732

HEAVY SERIES‡

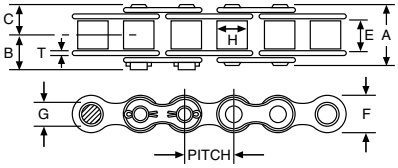
Chain Pitch & Number	Standard Package Quantities	Catalog Number	Item Code
3/4" - 60H	10' PKG	60H RIV - 10' 60H DET - 10'	68994 68981
1" - 80H	10' PKG	80H RIV - 10' 80H DET - 10'	69077 69079
1-1/4" - 100H	10' PKG	100H RIV - 10' 100H DET - 10'	30958 30956
1-1/2" - 120H	10' PKG	120H RIV - 10' 120H DET - 10'	06401 30960
1-3/4" - 140H	10'2-1/2" PKG	140HRIV-10'2-1/2" 140HDET-10'2-1/2"	50218 30962
2" - 160H	10' PKG	160H RIV - 10' 160H DET - 10'	30234 30964
2-1/2" - 200H	10' PKG	200H DET - 10'	58293

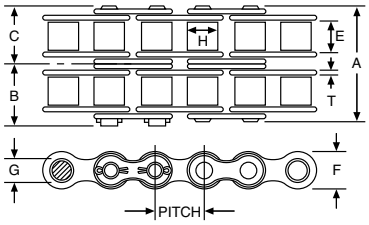
* Non Roller
‡ Heavy Series chain has thicker link plates to resist shock from pulsating loads.
DET → Cottered

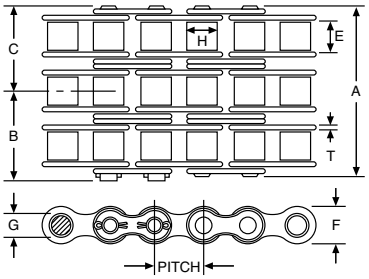
Roller Chains

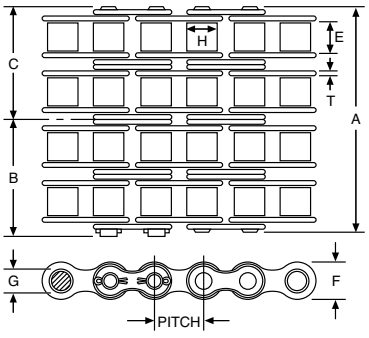
ANSI Standard

Double, Triple and Quadruple Widths Dimensions









ALL DIMENSIONS IN INCHES

Chain Number	Pitch	E	H Roller Diam.	A	B	C	T	F	Pin Diam. G	Average Ultimate Strength Lbs.	Avg. Weight Per Ft. Lbs.
SINGLE WIDTH											
25*	1/4	.125	.130	.31	.19	.15	.030	.23	.0905	930	.104
35*	3/8	.187	.200	.47	.34	.23	.050	.36	.141	2,300	.21
40	1/2	.312	.312	.65	.42	.32	.060	.46	.156	3,700	.41
S41	1/2	.250	.306	.51	.37	.26	.050	.39	.141	2,580	.28
50	5/8	.375	.400	.79	.56	.40	.080	.59	.200	6,400	.69
60	3/4	.500	.468	.98	.64	.49	.094	.70	.234	8,700	.96
80	1	.625	.625	1.28	.74	.64	.125	.93	.312	15,500	1.60
100	101/4	.750	.750	1.54	.91	.77	.156	1.16	.375	24,000	2.56
120	1-1/2	1.000	.875	1.94	1.14	.97	.187	1.38	.437	34,000	3.60
140	1-3/4	1.000	1.000	2.08	1.22	1.04	.218	1.63	.500	46,000	4.90
160	2	1.250	1.125	2.48	1.46	1.24	.250	1.88	.562	58,000	6.40
180	2-1/4	1.406	1.406	2.81	1.74	1.40	.281	2.13	.687	80,000	8.70
200	2-1/2	1.500	1.562	3.02	1.86	1.51	.312	2.32	.781	95,000	10.30
240	3	1.875	1.875	3.76	2.27	1.88	.375	2.80	.937	130,000	16.90
DOUBLE WIDTH											
25-2*	1/4	.125	.130	.56	.31	.28	.030	.23	.0905	1,860	.20
35-2*	3/8	.187	.200	.86	.50	.43	.050	.36	.141	4,600	.41
40-2	1/2	.312	.312	1.20	.67	.60	.060	.46	.156	7,400	.81
50-2	5/8	.375	.400	1.49	.82	.75	.080	.59	.200	12,800	1.35
60-2	3/4	.500	.468	1.87	1..02	.93	.094	.70	.234	17,400	1.90
80-2	1	.625	.625	2.42	1.32	1.21	.125	.93	.312	31,000	3.15
100-2	1-1/4	.750	.750	2.94	1.62	1.47	.156	1.16	.375	48,000	5.00
120-2	1-1/2	1.000	.875	3.72	2.04	1.86	.187	1.38	.437	68,000	7.10
140-2	1-3/4	1.000	1.000	4.00	2.19	2.00	.218	1.63	.500	92,000	9.50
160-2	2	1.250	1.125	4.80	2.63	2.40	.250	1.88	.562	116,000	17.60
180-2	2-1/4	1.406	1.406	5.40	2.94	2.70	.281	2.13	.687	160,000	17.60
200-2	2-1/2	1.500	1.562	5.86	3.28	2.93	.312	2.32	.781	190,000	21.00
240-2	3	1.875	1.875	7.22	4.00	3.61	.375	2.80	.937	260,000	33.10
TRIPLE WIDTH											
25-3*	1/4	.125	.130	.81	.44	.41	.030	.23	.0905	2,790	.30
35-3*	3/8	.187	.200	1.26	.70	.63	.050	.36	.141	6,900	.60
40-3	1/2	.312	.312	1.78	.96	.89	.060	.46	.156	11,100	1.20
50-3	5/8	.375	.400	2.20	1.17	1.10	.080	.59	.200	19,200	2.05
60-3	3/4	.500	.468	2.75	1.46	1.37	.094	.70	.234	26,100	2.75
80-3	1	.625	.625	3.58	1.90	1.79	.125	.93	.312	46,500	4.80
100-3	1-1/4	.750	.750	4.35	2.33	2.18	.156	1.16	.375	72,000	7.30
120-3	1-1/2	1.000	.875	5.52	2.94	2.76	.187	1.38	.437	102,000	10.70
140-3	1-3/4	1.000	1.000	5.94	3.16	2.97	.218	1.63	.500	138,000	15.00
160-3	2	1.250	1.125	7.10	3.78	3.55	.250	1.88	.562	174,000	19.40
180-3	2-1/4	1.406	1.406	8.00	4.22	4.00	.281	2.13	.687	240,000	26.50
200-3	2-1/2	1.500	1.562	8.68	4.70	4.34	.312	2.32	.781	285,000	31.00
240-3	3	1.875	1.875	10.70	5.74	5.35	.375	2.80	.937	390,000	49.20
QUADRUPLE WIDTH											
25-4*	1/4	.125	.130	1.06	.56	.53	.030	.23	.0905	3,720	.45
35-4*	3/8	.187	.200	1.65	.90	.83	.050	.36	.141	9,200	.82
40-4	1/2	.312	.312	2.33	1.24	1.17	.060	.46	.156	14,800	1.60
50-4	5/8	.375	.400	2.91	1.53	1.45	.080	.59	.200	25,600	2.75
60-4	3/4	.500	.468	3.64	1.90	1.82	.094	.70	.234	34,800	3.70
80-4	1	.625	.625	4.73	2.47	2.37	.125	.93	.312	62,000	6.40
100-4	1-1/4	.750	.750	5.76	3.03	2.88	.156	1.16	.375	96,000	9.80
120-4	1-1/2	1.000	.875	7.30	3.83	3.65	.187	1.38	.437	136,000	14.20
140-4	1-4/4	1.000	1.000	7.86	4.12	3.93	.218	1.63	.500	184,000	20.00
160-4	2	1.250	1.125	9.40	4.93	4.70	.250	1.88	.562	232,000	25.00
180-4	2-1/4	1.406	1.406	10.58	5.52	5.29	.281	2.13	.687	320,000	35.00
200-4	2-1/2	1.500	1.562	11.50	6.10	5.75	.312	2.32	.781	380,000	41.50
240-4	3	1.875	1.875	14.14	7.47	7.07	.375	2.80	.937	520,000	65.00

*Non-Roller

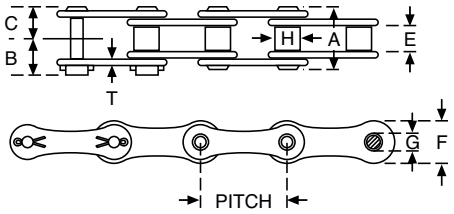
Transmission/Conveyor/Heavy Series

Double Pitch Dimensions

Transmission Series

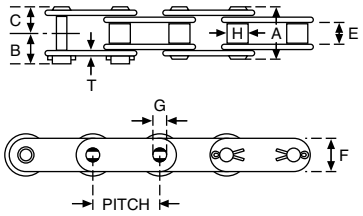
ALL DIMENSIONS IN INCHES

Chain Number	Pitch	E Width	H Dia.	A	B	C	T Thick-ness	F	G Pin Dia.	Avg. Ultimate Strgth. (Lbs.)	Avg. Wgt. Per Foot Lbs.
2040	1	.312	.312	.65	.42	.32	.060	.46	.156	3,700	.30
2050	1-1/4	.375	.400	.79	.56	.40	.080	.59	.200	6,100	.45
2060	1-1/2	.500	.468	.98	.64	.49	.094	.69	.234	8,500	.68
2080	2	.625	.625	1.28	.74	.64	.125	.88	.312	14,500	1.11
2100	2-1/2	.750	.750	1.54	.91	.77	.156	1.16	.375	24,000	1.94

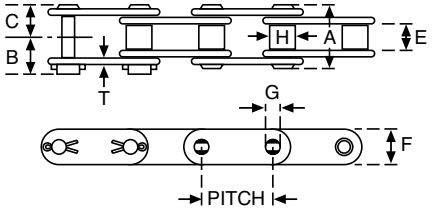


Conveyor Series

OVERSIZE ROLLERS



STANDARD ROLLERS



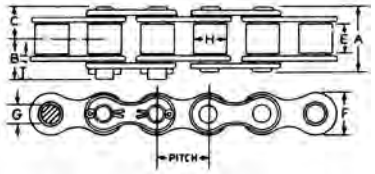
ALL DIMENSIONS IN INCHES

Chain Number	Pitch	E	H		A	B	C	T	F	G	Avg. Ultimate Strgth. (Lbs.)	Avg. weight per foot (Lbs.)		
			Std. Roller	Over-Size Roller								Std. Roller	Over-size Roller	Thermo-plastic Roller
C2040	1	.312	.312	.625	.65	.42	.32	.060	.46	.156	3,700	.32	.55	.33
C2050	1-1/4	.375	.400	.750	.79	.56	.40	.080	.59	.200	6,100	.53	.84	.54
C2060H	1-1/2	.500	.468	.875	1.11	.65	.55	.125	.69	.234	8,500	.92	1.40	.94
C2080H	2	.625	.625	1.125	1.41	.80	.70	.156	.88	.312	14,500	1.52	2.21	1.52
C2100H	2-1/2	.750	.750	1.562	1.67	.98	.83	.187	1.15	.375	24,000	2.30	3.75	—
C2120H	3	1.000	.875	1.750	2.07	1.21	1.03	.218	1.37	.437	34,000	3.70	5.71	—
C2160H	4	1.250	1.125	2.250	2.60	1.52	1.30	.281	1.87	.562	58,000	5.85	8.93	—

Heavy Series

ALL DIMENSIONS IN INCHES

Chain Number	Pitch	E	H	A	B	C	T	F	G	Avg. Ultimate Strgth. (Lbs.)	Avg. Wgt. Per Foot Lbs.
60H	3/4	.500	.468	1.11	.65	.55	.125	.680	.234	8,500	1.14
80H	1	.625	.625	1.41	.80	.70	.156	.930	.312	14,500	1.93
100H	1-1/4	.750	.750	1.67	.98	.83	.187	1.156	.375	24,000	3.06
120H	1-1/2	1.000	.875	2.07	1.21	1.03	.218	1.375	.437	34,000	4.45
140H	1-3/4	1.000	1.000	2.20	1.28	1.10	.250	1.625	.500	46,000	5.68
160H	2	1.250	1.125	2.60	1.52	1.30	.281	1.875	.562	58,000	7.33
180H	2-1/4	1.406	1.406	2.95	1.75	1.48	.312	2.130	.687	80,000	9.10
200H	2-1/2	1.500	1.562	3.63	2.02	1.66	.375	2.312	.781	95,000	13.50



Conveyor Chain Selection

Single or Double Pitch, Flat-Top and Hollow Pin Chain

In order to select a chain for a conveyor application, the Velocity and maximum Chain Pull must be established.
The total pull may be obtained if the Torque and Sprocket PD are known, or if the Horsepower and Velocity can be determined.

$$\text{Chain Pull, } W = \frac{2T}{D}$$

$$W = \frac{33000\ P}{V}$$

$$W = \frac{126050\ P}{nD}$$

W = Chain Pull, Lbs.
T = Torque, In. Lbs.
D = Sprocket PD, Inches
P = Horsepower
V = Chain Velocity, FPM
n = Sprocket Speed, RPM

If a pair of chains are used, the pull on each chain will be half of the total chain pull.
Having determine the Chain Pull, refer to Chain Load Rating Charts on Page 247 and select a chain with a capacity equal to or greater than the Chain Pull Required.
To Calculate Chain Length (L):

For Single Pitch Chain

$$L = 2C + N$$

For Double Pitch & Flat-Top Chain

$$L = 2C + \frac{N}{2}$$

where:

L = Chain Length, Pitches
C = Center Distance, Pitches
N = Number of Teeth in One Sprocket*

The computed value of L must be rounded out to a larger whole number of pitches (links) for each complete chain. Any whole number of links is satisfactory for Hinge-Top Chain but an even number should be selected for Single or Double Pitch or Flat-Top Chains.
To obtain the center distance or chain length in inches, the value in pitches should be multiplied by the chain pitch.
Example 1. Selecting a Double Pitch Conveying Chain.
The power required to move material at 50 FPM is 1 Horsepower on a Conveyor with a Center Distance of 10 ft.

Step I: Determine Chain Pull:

$$W = \frac{33{,}000\ P}{V} = \frac{33000 \times 1}{50} = 660 \text{ Lbs.}$$

Step II: Refer to Conveyor Chain Load Rating Chart, page 165. Select a double pitch chain with a Working Load equal to or greater than 660 lbs. at 50 FPM. Selection — C2050 (1.25" Pitch) with 5/8 pitch sprockets 50B25 (or larger).

Step III: Determine Chain Length in Pitches. Convert Center Distance (10 feet) to pitches.

$$C = \frac{10 \times 12}{1.25} = 96 \text{ Pitches}$$

$$\text{Chain Length (L)} = 2C + \frac{N}{2}$$

$$\text{Chain Length (L)} = 2 \times 96 + \frac{25}{2} = 204.5$$

Adjust to next larger even whole number.
Chain Length (L) = 206 Pitches

*Assuming same size Driver and Driven Sprockets.

Single Pitch & Double Pitch Chain

For horizontal conveyor applications where the HP or Torque data is not available, the approximate Chain Pull can be calculated from the Weight to be moved (product and cha in) and the Coefficient of Friction (between sliding surfaces of chain and supporting ways).

For Normal operation:

Chain Pull

$W = (M = 2m)\ Cf$
W = Chain Pull Lbs.
M = Product Weight, Lbs. per Ft.
m = Chain Weight, Lbs. per Ft.
C = Conveyor Length (between Centers), Ft.
f = Coefficient of Friction (see Table).

For trial purposes,
let m = 1.0 for other conveyor chains.

Note: The estimated weight of pins and/or attachments (per foot of chain) should be included in chain weight.

Whenever the product becomes stalled on a moving conveyor, the chain pull is increased. The Added Pull depends on the Stalled Weight (of product) and the Coefficient of Friction (between surfaces of product and chain).

For stalled product:

Added Chain Pull,

$w = MIf$
w = Added Chain Pull, Lbs.
M = Product Weight, Lbs. per Ft.
l = Length of Stalled Product, Ft.
f = Coefficient of Friction (see Table).

For Stalled condition:

Total Chain Pull = W = w, Lbs.

If a pair is used, the pull on each chain will be half of the total chain pull.

Conveyor Chain Selection (Continued)

Example 2. A horizontal conveyor 25 Ft. long is to move a product weighing 200 Lbs. per Ft. at 20 FPM. Two FT2060 Flat-Top chains will be used, if possible, with the thermoplastic plates supported on metal ways without lubrication.

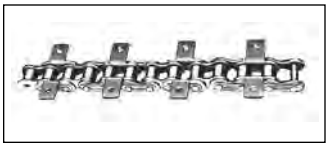
Chain Pull,
W = (M + 2m) Cf
M = 200 Lbs. per Ft.
m = 1.41 x 2 = 2.82 (two chains)
C = 25 Ft.
f = .25 + .15 = .40 (for starting with load)
W = (200 + 5.64) 25 x .40 = 2056 Lbs.

The maximum working load of FT2060 chain at 20 FPM is 1170 Lbs. (see table) and this will be adequate if the product cannot become stalled.

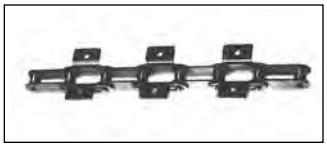
Note: Whenever two strands of chain are used, the total chain weight will be double the single strand weight, (per foot).

COEFFICIENT OF FRICTION FOR CONVEYOR CHAIN

Plate Material Stainless Steel	Stainless Steel	Carbon Steel	Delrin	Nylon	High Density Poly-ethylene	Impreg-nated Wood
Dry	.41	.41	.30	.35	.15	.11
Water	.35	.35	.25	.30	.12	.11
Soap & Water	.20	.20	.25	.20	.08	.11
Carbon Steel						
Dry	.41	.39	.30	.35	.15	.11
Water	.35	.35	.25	30	.12	.11
Soap	.20	.20	.15	.20	.08	.11
Acetal Plastic						
Dry	.30	.30				.20
Water	.25	.25				.20
Soap & Water	.15	.15				.10
Nylon						
Dry	.35	.35				.25
Water	.30	.30				.25
Soap & Water	.20	.20				.12



SINGLE PITCH ROLLER CHAIN WITH ATTACHMENTS



DOUBLE PITCH ROLLER CHAIN WITH ATTACHMENTS

To select the proper chain, the working load or chain pull and the chain speed in feet per minute must be known. Using this information find the proper chain in the chart.† These load ratings are based on proper installation, lubrication and steady load conditions.
The minimum permissible number of sprocket teeth is 15 for single pitch, and 24 for double pitch chain. For smoother operation, sprockets with greater numbers of teeth than the minimum are recommended.

CHAIN LOAD RATING CHART

	Chain Numbers							
Single Pitch	35*	40	50	60	80	100	120	160
Double Pitch		C2040	C2050	C2060	C2080	C2100	C2120	C2160
Velocity of Chain (FPM)	Maximum Working Load or Chain Pull (Lbs.)							
25	250	443	690	995	1770	2760	3990	7100
50	243	432	675	970	1730	2690	3880	6900
75	233	414	645	930	1660	2580	3720	6630
100	220	391	610	880	1570	2440	3520	6250
125	206	366	570	820	1460	2280	3290	5850
150	190	338	528	760	1350	2110	3040	5400
175	175	311	485	700	1240	1940	2800	4970
200	160	284	444	640	1140	1770	2560	4550
225	146	259	405	584	1040	1620	2340	4150
250	133	236	368	530	940	1470	2120	3770
275	120	214	333	480	855	1330	1920	3310
300	110	195	305	440	780	1220	1760	3120
	Standard Pitch Boston Sprockets To Operate With Above Chain							
Pitch	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"	1-1/2"	2"

*No. 35 Chain is a Rollerless Chain.

†For Hollow Pin chains, the working load (chain pull) should be multiplied by 1.3 to obtain the proper value for use in selecting the chain pitch required.

Flat Top Conveyor Chain

MAXIMUM WORKING LOAD OR CHAIN PULL (LBS.)

Chain Type	Chain Velocity — Feet Per Minute					
	0-10	20	30	40	50	70
FT2060	1070	1045	1035	1030	1025	1015

MAXIMUM WORKING LOAD OR CHAIN PULL (LBS.)

Chain Type	Chain Velocity — Feet Per Minute					
	100	150	200	250	300	400
FT2060	1005	960	915	855	670	435

LUBRICATION - To assure maximum chain life, carbon and stainless steel chains should be lubricated wherever possible. Soap lubrication is recommended. Several detergent and nonalkali fluid types are on the market. Water lubrication should be used when no other lubricant can be tolerated. Drip-type systems and wheel-type and sponge-type applicators are on the market.
Delrin chain tends to be self-lubricating, although wear life can be extended with the use of a lubricant, such as soap and water.

Conveyor Chain Working Load

At speeds of normal conveyor operation (less than 500 feet per minute), chains are selected on the basis of safe working load, rather than horsepower capacity. Working load or chain pull of conveyor series chains is calculated by multiplying the total combined weight of the chain, plus the conveyed material in any run, by the appropriate coefficient of friction. In general, the maximum working load for a conveyor chain will be higher than that determined for similar chains from a horsepower rating table. The higher load is permitted because there are usually fewer load cycles on a conveyor chain, compared to a power transmission drive. In order to minimize wear, permissible working loads of conveyor chains are reduced as speeds increase. See the working load table below.

COEFFICIENT OF FRICTION—DOUBLE PITCH ROLLER CHAINS

Chain Number	Chain with Large Size Rollers and Rolling Friction				Chain with Standard Size Rollers and Sliding Friction			
	*Static		Rolling		*Static		Sliding	
	Dry	Lubricated	Dry	Lubricated	Dry	Lubricated	Dry	Lubricated
C-2040, C-2042	0.17	0.12	0.14	0.10	.33	.24	.27	.21
C-2050, C-2052	0.16	0.11	0.13	0.09				
C-2060H, C-2062H	0.16	0.11	0.13	0.09				
C-2080H, C-2082H	0.15	0.10	0.12	0.08				
C-2100H, C-2102H	0.14	0.09	0.11	0.07				
C-2120H, C-2122H	0.14	0.09	0.11	0.07				
C-2160H, C-2162H	0.13	0.08	0.10	0.07				

*For chain speed of 3 feet per minute or less

RECOMMENDED MAXIMUM WORKING LOADS

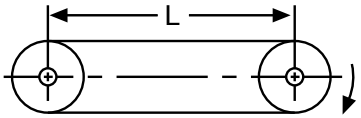
Chain Number	Pitch in Inches	Chain Speed, feet per minute								
		5	25	50	75	100	200	300	400	500
		Maximum Working Load, Lbs.								
C-2040, C-2042	1	530	525	510	490	465	335	230	160	115
C-2050, C-2052	1 1/4	870	865	840	805	765	555	380	265	190
C-2060H,C-2062H	1 1/2	1215	1205	1170	1125	1065	775	530	370	265
C-2080H,C-2082H	2	2070	2055	2000	1915	1815	1320	905	630	455
C-2100H,C-2102H	2 1/2	3425	3400	3310	3175	3000	2180	1500	1040	750
C-2120H,C-2122H	3	4855	4815	4690	4495	4250	3090	2125	1480	1065
C-2160H,C-2162H	4	8585	8210	8000	7670	7250	5275	3625	2520	1815

Calculate the working load for horizontal, inclined, vertical and carousel conveyors, substituting the following values in the appropriate formulas:

- P = Chain pull or working load
- S = Speed in feet per minute
- L = Length of conveyor in feet between sprocket centers
- T = Total chain length in feet
- V = Vertical rise in feet
- F_1 = Coefficient of friction, sliding
- F_2 = Coefficient of friction, rolling
- W = Weight of chain and attachments per foot in pounds
- M = Weight of conveyed product per foot in pounds
- N = Number of chain strands

Horizontal Conveyor

$$P = \frac{LF\,(2W + M)}{N}$$

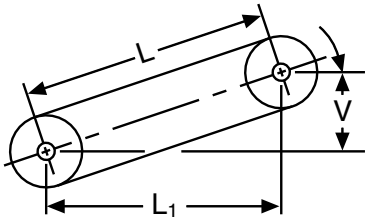


Inclined Conveyor

A factor must be added to or subtracted from the chain load to compensate for raising or lowering the conveyed load on an inclined installation. This factor may be calculated by multiplying the weight of conveyed load by the vertical change in feet, and dividing y the horizontal run of the conveyor in feet.

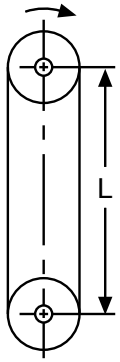
$$P = \frac{LF\,(2W + M)\cos\phi \div LM \sin\phi}{N}$$

$$\phi = \text{ARC tan } \frac{V}{L_1}$$

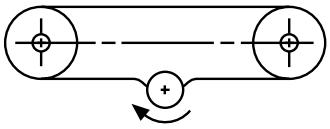


Vertical Conveyor

$$P = \frac{L\,(M + W)}{N}$$



Carousel Conveyor (Plan View) for Crescent Top Chains



$$P = \frac{TF\,(W + M) + (TMF)}{N}$$

Note: (TMF) is the length of stalled product.

Roller Chain Formulas

Horsepower

Horsepower equals 33,000 foot-pounds per minute, or 550 foot-pounds per second. In terms of chain working load or pull (P) and speed:

$$HP = \frac{P \times S}{33{,}000}$$

$$HP = \frac{P \times \text{Number of Teeth} \times \text{Pitch} \times RPM}{396{,}000}$$

$$HP = \frac{\text{Torque (lb.-in.)} \times RPM}{63{,}025}$$

$$HP = \frac{\text{Torque (lb.-in.)} \times RPM}{5{,}252}$$

Ratio

$$\text{Ratio} = \frac{\text{Teeth in Large Sprocket}}{\text{Teeth in Small Sprocket}} \quad \text{or} \quad \frac{\text{Fast RPM}}{\text{Slow RPM}}$$

Chain Working Load

When horsepower input is known, calculate for chain working load or pull (P):

$$P = \frac{HP \times 33{,}000}{FPM}$$

$$P = \frac{HP \times 396{,}000}{\text{Number of Teeth} \times \text{Pitch} \times RPM}$$

$$P = \frac{\text{Torque}}{\text{Sprocket Pitch Radius}}$$

Chain Speed

$$\text{Speed (FPM)} = \frac{\text{Pitch} \times \text{Number of Teeth} \times RPM}{12}$$

Sprocket Speed

$$RPM = \frac{12 \times RPM}{\text{Number of Teeth} \times \text{Pitch}}$$

$$\text{RPM of Driven Sprocket} = \frac{\text{Driver Teeth} \times \text{Driver RPM}}{\text{Driven Teeth}}$$

$$\text{RPM of Driver Sprocket} = \frac{\text{Driven Teeth} \times \text{Driven RPM}}{\text{Driver Teeth}}$$

Centrifugal Pull or Tension

Pull or tension caused by chain weight and velocity:

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

Total Chain Tension

Total Chain Tension = Working Load + Centrifugal Pull

Chain Bearing Pressure

$$\text{Bearing Pressure (pounds per square inch)} = \frac{\text{Working Load}}{\text{Bushing Length} \times \text{Pin Dia.}}$$

Torque

Torque =Sprocket Pitch Radius x Working Load

$$\text{Torque (lb.-in.)} = \frac{HP \times 63{,}025}{RPM}$$

$$\text{Torque (lb.-ft.)} = \frac{HP \times 5{,}252}{RPM}$$

Factory of Safety

$$FS = \frac{\text{Chain Ultimate Strength}}{\text{Chain Working Load}}$$

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Notes

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Ordering Procedure

Attachments may be ordered as separate links or assembled in chains.

WHEN ORDERING SEPARATE ATTACHMENT LINKS, THE FOLLOWING DATA MUST BE GIVEN:

1. Chain Number and Attachment Number.
2. Connecting Link or Roller Link.

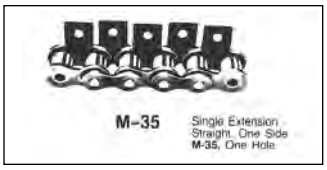
WHEN ORDER ATTACHMENTS ASSEMBLED* IN CHAIN, THE FOLLOWING INFORMATION MUST BE SUPPLIED:

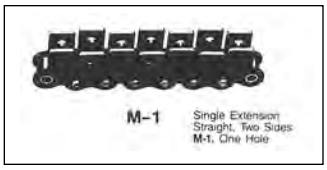
1. Chain Number and Attachment Number.
2. Spacing between Attachment Centers (Pitches or Inches). This must be a multiple of the chain pitch.
3. If spacing is an even number of pitches, attachments will be assembled as pin links unless roller link style is specified.
4. If spacing is an odd number of pitches, assembly will normally be supplied with alternate pin and roller link attachments. For attachments to be on pin (or roller) links only, an offset link must be assembled in each interval.

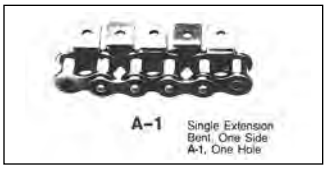
*Riveted assembly will be supplied unless detachable links are specified.

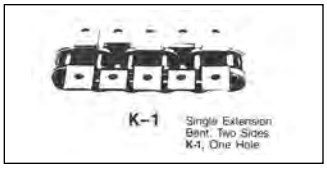
ANSI Standard Roller Chains

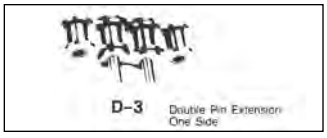
Standard Roller Chain Attachments

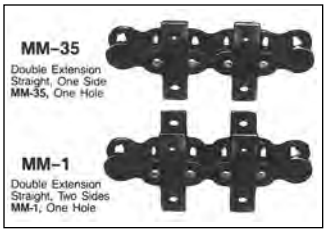


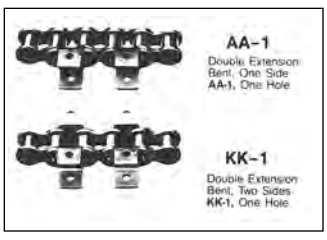


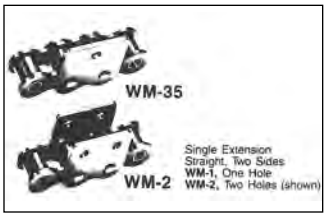


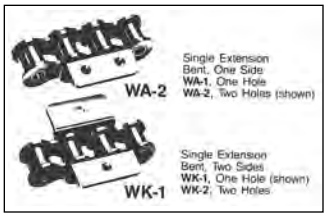




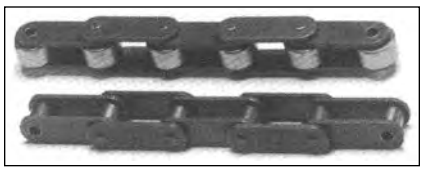




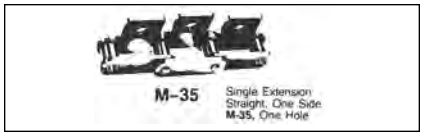


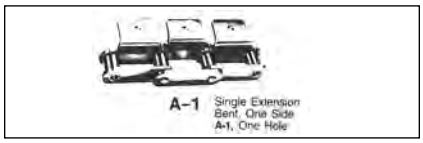


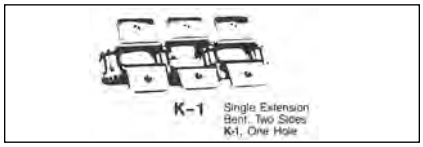
Double Pitch Roller Chains

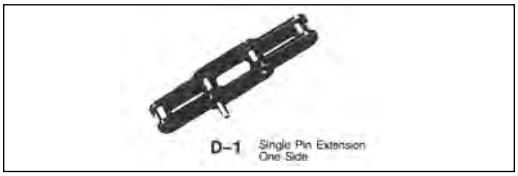


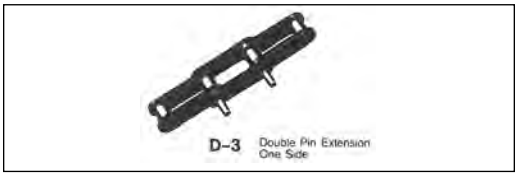
Double Pitch Chain Attachments

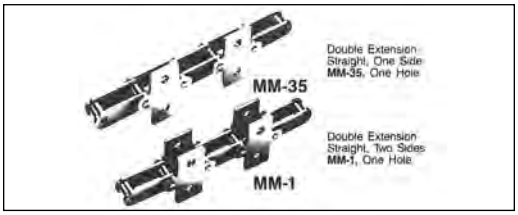


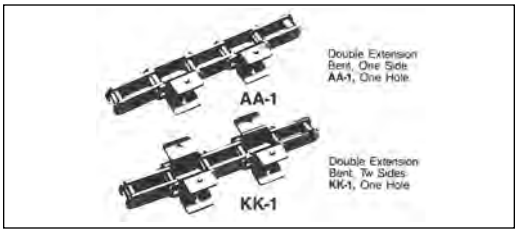












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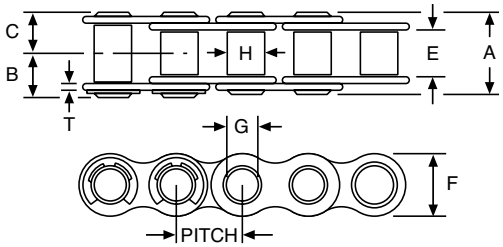
Hollow Pin

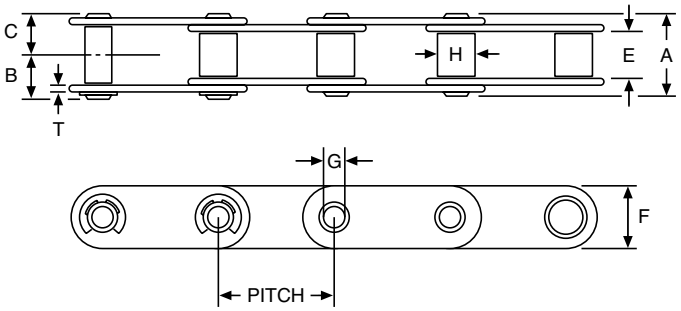
Single and Double Pitch

Boston Gear Hollow Pin Chain is identical to ANSI Roller Chain in pitch, roller width and roller diameter. It is quality designed for long wear life in conveyor applications. The "hollow pin" feature provides unlimited conveyor design versatility. Stud, bushed design. Bushing diameter is same as comparable roller chain.

ORDER BY CATALOG NUMBER OR ITEM CODE

Chain Pitch and Number	Standard Package Quantities	Catalog Number	Item Code
SINGLE PITCH			
1/2" – 40HP 5/8" – 50HP 3/4" – 60 HP 1" – 80 HP	20' Pkg.	40HP – 20' 50 HP – 20' 60 HP – 20" 80 HP – 20'	31088 31092 31096 31100
DOUBLE PITCH — STANDARD ROLLERS			
1" – C2040HP 1-1/4" – C2050HP 1-1/2" – C2060 HP 2" – C2080 HP	20' Pkg.	C2040HP – 20' C2050 HP – 20' C2060 HP – 20" C2080 HP – 20'	31104 31108 31112 31116
DOUBLE PITCH — OVERSIZE ROLLERS			
1" – C2042HP 1-1/4" – C2052HP 1-1/2" – C2062 HP 2" – C2082 HP	20' Pkg.	C2042HP – 20' C2052 HP – 20' C2062 HP – 20" C2082 HP – 20'	50223 50224 50225 50226





DIMENSIONS IN INCHES

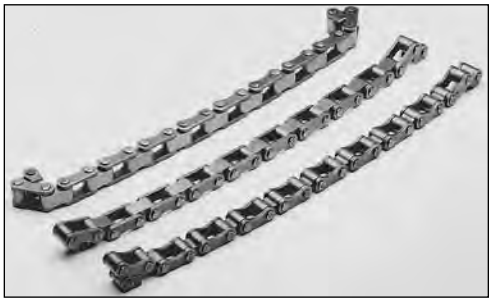
Chain Pitch		E	H	A	B	C	T	F	G	Average Ultimate Strength (Lbs.)	Average Weight Per Foot (Lbs.)	
Single	Double										Single	Double
1/2	1	.312	.312	.65	.37	.32	.060	.46	.158	2500	.38	.31
5/8	1-1/4	.375	.400	.79	.46	.40	.080	.59	.203	3700	.63	.51
3/4	1-1/2	.500	.469	.97	.57	.49	.094	.69	.237	6100	.88	.75
1	2	.625	.625	1.22	.70	.61	.125	.88	.318	8500	1.56	1.33

Block Chain*

ORDER BY CATALOG NUMBER OR ITEM CODE

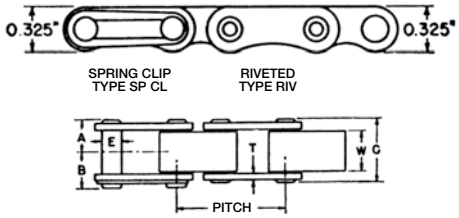
Chain Number	Standard Package Quantities	Catalog Number	Item Code
B503	25' Pkg.	B503-25'	30602
B504		B504-25'	30608
B505		B505-25'	30614
B506		B506-25'	30620

STAINLESS STEEL Block Chain available on Special Order. Contact Factory.



ALL DIMENSIONS IN INCHES

Chain No.	Pitch	W	From Pin Head to C/L	From Pin Head to C/L	Over-All Width		Link Plate Thickness	Pin Dia. E	Average Weight Per Foot, (Lbs.)
					C				
			A	B	Riv.	Sp Cl	T		
B503	1	1/4	7/32	17/64	7/16	31/64	0.060	0.170	0.3
B504	1	5/16	9/32	5/16	9/16	19/32	0.080	0.187	0.4
B505	1	3/8	5/16	11/32	5/8	21/32	0.080	0.187	0.4
B506	1	1/2	3/8	13/32	3/4	25/32	0.080	0.187	0.5



*Refer to Page 298 for Block Chain Sprockets

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Leaf (Cable) Chain

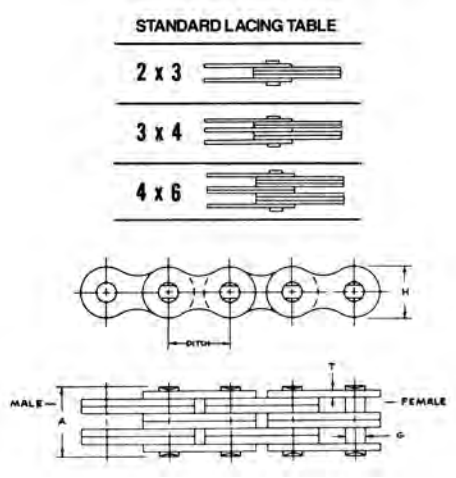
Boston Leaf Chains are designed for tension linkage applications such as counterweight chains for machine tools, elevator and oven doors, fork lift truck masts, spinning frames, i.e. applications to lift or pull where it is not necessary to engage a sprocket.

Leaf chains normally run over sheaves and are attached to clevises at each end. Because of the wide variation in clevis designs, leaf chains are furnished less the end pins.

Not recommended for new applications.

ORDER BY CHAIN NUMBER AND LENGTH IN FEET

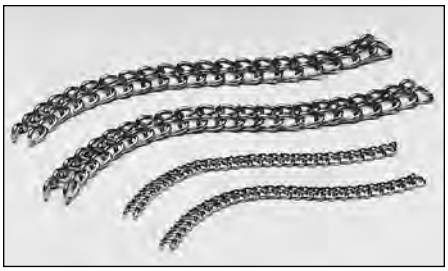
Chain Pitch	Lacing	A	G	H	T	Average Ultimate Strength (Lbs.)	Weight Per Foot (Lbs.)	Chain Number
1/2	2 x 3	.50	.200	.455	.080	6,000	.48	BL-423
1/2	3 x 4	.67	.200	.455	.080	9,000	.64	BL-434
1/2	4 x 6	.92	.200	.455	.080	12,000	.93	BL-446
5/8	2 x 3	.58	.234	.585	.094	9,000	.74	BL-523
5/8	3 x 4	.78	.234	.585	.094	13,200	1.03	BL-534
5/8	3 x 4	1.07	.234	.585	.094	18,000	1.46	BL-546
3/4	2 x 3	.76	.312	.708	.125	13,200	1.15	BL-623
3/4	3 x 4	1.02	.312	.708	.125	20,400	1.60	BL-634
3/4	4 x 6	1.41	.312	.708	.125	26,400	2.30	BL-646
1	2 x 3	.94	.375	.950	.156	22,800	1.91	BL-823
1	3 x 4	1.26	.375	.950	.156	34,800	2.66	BL-834
1	4 x 6	1.41	.375	.950	.156	45,600	3.78	BL-846



When ordering chain with odd number of pitches specify whether male or female end link required.

Ladder Chain

Steel–Stainless Steel–Brass



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An effective, low-cost means of transmitting motion where load (torque) is not a critical factor.

In addition to stock-listed sizes and materials, ladder chain can be furnished pre-assembled into endless lengths to customer specifications or pre-cut to desired lengths.

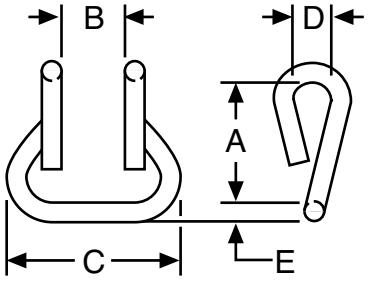
Ladder chain may be made into endless loops by opening the two eyes of one end link with needle-nosed pliers to permit entry of the other end link and then closing the open eyes.

Ladder chain can be furnished on a made-to-order basis made endless, with special plating. Consult the factory for prices.

ORDER BY CATALOG NUMBER OR ITEM CODE*

Chain Number	Standard package Quantities	Catalog Number	Item Code
1AA Miniature	*	1AA Stainless Steel	54941
1	50’ Pkg.	1 BRASS—50’ 1 HITEN—50’ 1 STEEL—50’ 1 SS—50’	31200 31208 31216 46847
1A	50’ Pkg.	1A BRASS—50’ 1A HITEN—50’ 1A STEEL—50’ 1A SS—50’	31202 31210 31218 46848
2	50’ Pkg.	2 BRASS—50’ 2 HITEN—50’ 2 STEEL—50’ 2 SS—50’	31204 31212 31220 46849
2-1/2	50’ Pkg.	2A BRASS—50’ 2A HITEN—50’ 2A STEEL—50’ 2A SS—50’	31206 31214 31222 46850

*To order Miniature Ladder Chain, specify Item Code and Number of Feet required. For Sprockets to run with this Chain, see Miniature Roller Chain Sprockets, Page 274.



ALL DIMENSIONS IN INCHES

Chain Number	Links per Foot (Approx.)	A		B Min.	C Max.	D Max.	E ±.0005	Weight Per 100 Ft. (Lbs.)	
		Min.	Max.					Steel	Brass
1AA	82	.1465	.1485	.079	.229	—	.031	—	—
1A	65	.1840	.1852	.115	.315	.072	.041	2.85	3.06
1	42	.2846	.2869	.125	.350	.091	.047	3.38	3.04
2	34	.3514	.3546	.180	.480	.115	.054	4.20	4.50
2-1/2	34	.3507	.3553	.195	.565	.155	.080	10.30	11.10

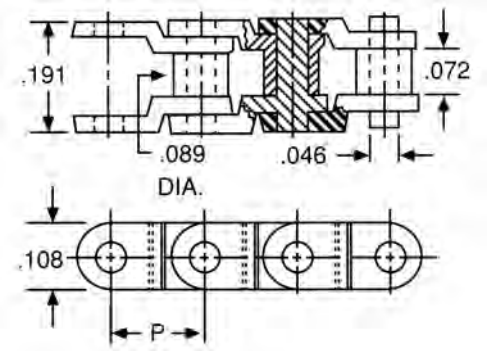
Load Data

Chain Number	Approx. Yield Point (In Pounds)				Approx. HP at 500 RPM			
	Steel			Brass	Steel			Brass
	Untreated	High Tensile	Stain-less		Untreated	High Tensile	Stain-less	
1A	20	40	20	15	1/6	1/3	1/6	1/8
1	40	70	25	25	1/4	1/2	3/16	1/6
2	50	90	35	30	1/3	3/4	1/4	1/4
2-1/2	75	140	65	45	1/2	1	7/16	1/3

Ratings for 1AA Chain will be furnished on request.

Stainless Steel – Single Strand Riveted

MATERIAL: Stainless Steel Type 18-8
FINISH: Clear Passivated
AVERAGE TENSILE LOAD: 180 lbs.
WEIGHT: .035 lbs. per foot



ORDER BY CATALOG NUMBER OR ITEM CODE

Item Number	Catalog Number	No. of Links	Length
54919	15SS50	50	7.375
54920	15SS60	60	8.850
54921	15SS70	70	10.325
54922	15SS80	80	11.800
54923	15SS90	90	13.275
54924	15SS100	100	14.750
54925	15SS110	110	16.225
54926	15SS120	120	17.700
54927	15SS130	130	19.175
54928	15SS140	140	20.650
54929	15SS150	150	22.125
54930	15SS160	160	23.600
54931	15SS170	170	25.075
54932	15SS180	180	26.550
54933	15SS190	190	28.035
54934	15SS200	200	29.500
54935	15SS210	210	30.975
54936	15SS220	220	32.450
54937	15SS230	230	33.925
54938	15SS240	240	35.400

NOTE: Sizes not listed are available on request.
All lengths include and are supplied with connecting link 15SS C/L

PRICED PER FOOT

Item Number	Catalog Number	Material	P Pitch	Links per Foot	Weight per Foot
54939	6M-7-MS	Nylatron GS	.1475	81.3	.093 oz.

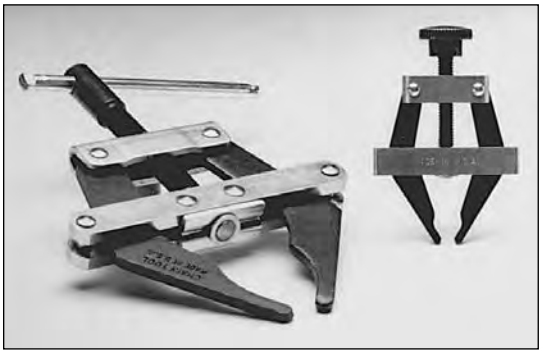
CONNECTING LINK

Catalog Number	Item Code
54942	15SS C/L

BUSHING LINK

Catalog Number	Item Code
54943	15SS B/L

Chain Pullers



The Boston Chain Puller was designed to make roller chain installation quick and easy.

To use: (1) hook the two jaws into each end of the chain; (2) turn the screw until the two ends almost meet; (3) insert the connecting link and fasten.

ORDER BY CATALOG NUMBER OR ITEM CODE

Chain Sizes	Jaw Spread	Catalog Number	Item Code
Nos. 35-60 80-240	2” 5”	TH35-60 TH80-240	10784 10788

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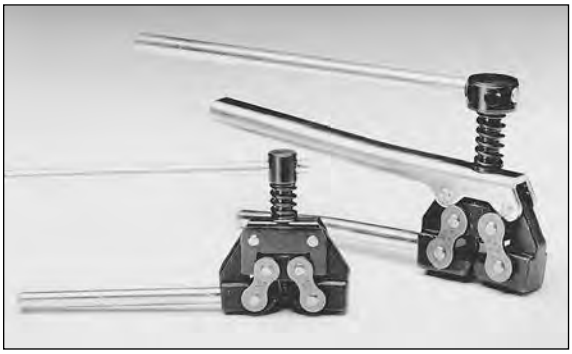
Chain Breaking Tools



These Boston Chain Breaking Tools will disconnect any riveted roller chain manufactured to ANSI specifications, up to and including No. 100 (1-1/4” pitch).

Tool steel replaceable punch point, tempered for long life.

ORDER BY CATALOG NUMBER OR ITEM CODE

Chain Sizes	Catalog Number	Item Code	Replaceable Points	
			Catalog Number	Item Code
Nos. 25-60 60-100	CBT-60 CBT-100	06800 63526	XCBT 60-5 XCBT 100-5	06808 63587