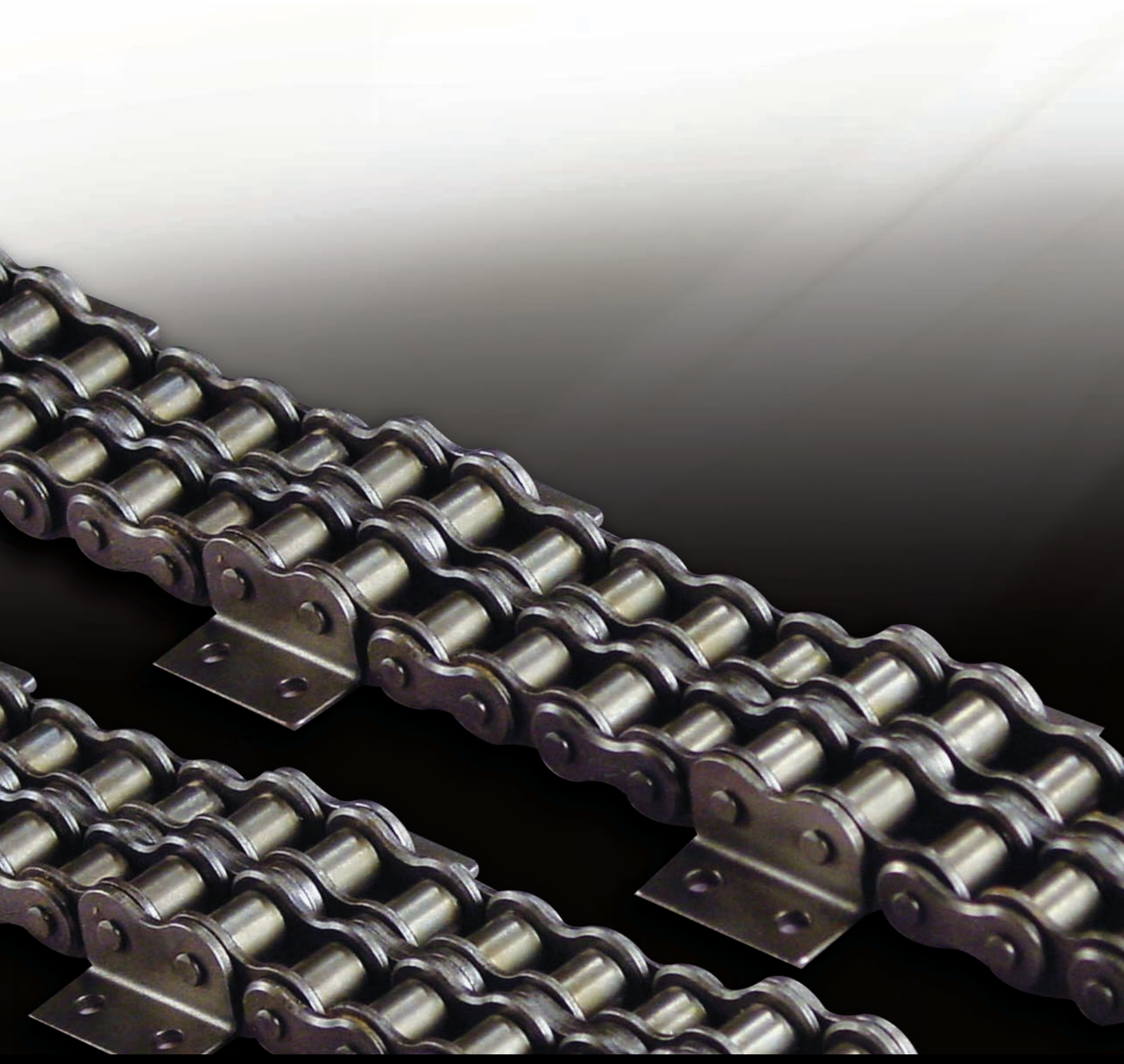
DIAMOND®

DIAMOND CHAIN COMPANY

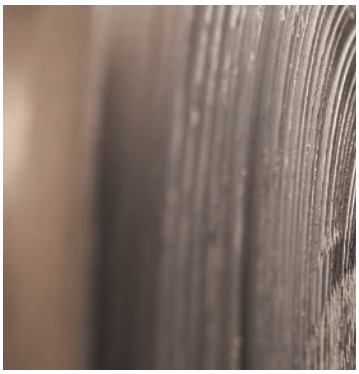


Attachment Chain

Every Calling is Great, When Greatly Pursued.

OLIVER WENDELL HOLMES

At the Diamond Chain Company, the calling to design and manufacture the world's highest-performing roller chain is greatly pursued every day by teams of passionate technical experts who have made your success their life's work. It's that intensity of focus that some of the world's greatest inventors trusted to provide the drive chains they needed to transform the world. From the Wright Brothers, to Henry Ford, to the global leaders of our time, Diamond® chain is the roller chain most trusted to perform, when performance matters most.



CHAIN DESCRIPTIONS AND DIMENSIONS

Standard Attachment Roller Chain

Single-pitch and double-pitch chains are available assembled with either attachment link plates or extended pins. Diamond's standard attachment hole sizes are designed to accommodate most common screw sizes. If your application requires a different attachment hole size, than shown in this brochure, please contact Diamond as many alternate lug holes are available and may be available from stock. Contact Diamond application engineers if you have any questions when designing or specifying attachment chains.

Specialty / Made-To-Order Attachment Roller Chain

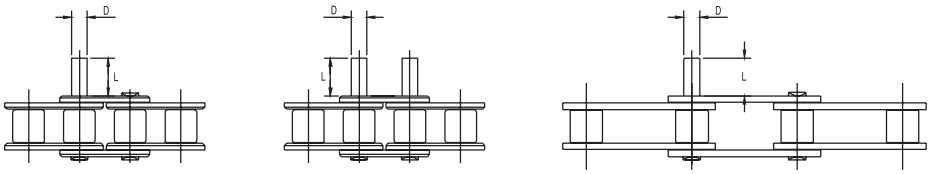
For every custom order, our application and design engineers are involved from the very beginning. These engineers review the application, propose solutions, and then monitor the chain through its design and production. They'll even advise you of any special considerations and maintenance procedures to make sure your custom chain is one of the longest lasting chains you own.

	Diamond Terminology	Other Terminology	Description
Single-Pitch and Double-Pitch Lugs 	B1 one hole	A1	Bent attachment on 1 side, 1 hole
	B1 two holes	A2	Bent attachment on 1 side, 2 holes
	B2 one hole	K1	Bent attachment on 2 sides, 1 hole
	B2 two holes	K2	Bent attachment on 2 sides, 2 holes
	S 1 one hole	S A1, M-35	Straight attachment on 1 side, 1 hole
	S 1 two holes	S A2, M-35-2	Straight attachment on 1 side, 2 holes
	S 2 one hole	S K1, M-1	Straight attachment on 2 sides, 1 hole
	S 2 two holes	S K2, M-2	Straight attachment on 2 sides, 2 holes
Wide Contour Lugs 	WC S 1 one hole	WM-35	Wide contour, straight attachment on 1 side, 1 hole
	WC S 1 two holes	WM-35-2	Wide contour, straight attachment on 1 side, 2 holes
	WC S 2 one hole	WM-1	Wide contour, straight attachment on 2 sides, 1 hole
	WC S 2 two holes	WM-2	Wide contour, straight attachment on 2 sides, 2 holes
	WCB1 one hole	WA-1	Wide contour, bent attachment on 1 side, 1 hole
	WCB1 two holes	WA-2, A2	Wide contour, bent attachment on 1 side, 2 holes
	WCB2 one hole	WK-1	Wide contour, bent attachment on 2 sides, 1 hole
	WCB2 two holes	WK-2, K2	Wide contour, bent attachment on 2 sides, 2 holes
Extended Pins 	E1	D1	One pin in link extended
	E2	D3	Both pins in link extended

Standard Extended Pins For ASME/ANSI Standard Series Chains Double-Pitch Conveyor Chains

Extended Pin Dimensions

Others	Diamond
D1	E1 (one extended pin)
D3	E2 (two extended pins)



Dimensions in Inches

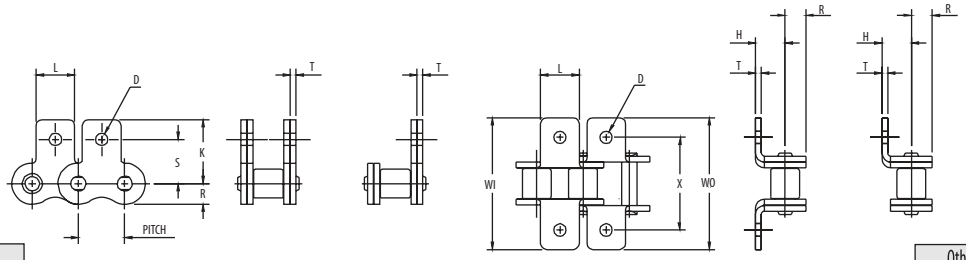
ASME/ ANSI #	Pitch Inches	D ±.0005"	L ±.010"
35	.375	.141	.375
40	.500	.156	.383
41	.500	.141	.375
50	.625	.200	.468
60	.750	.234	.562

ASME ANSI #	Pitch Inches	D ±.0005"	L ±.010"
80	1.00	.312	.750
100	1.25	.375	.937
120	1.50	.437	1.125
140	1.75	.500	1.312
160	2.00	.562	1.500

ASME/ANSI #	Pitch Inches	D ±.0005"	L ±.010"
C-2040, C-2042	1.00	.156	.375
C-2050, C-2052	1.25	.200	.468
C-2060H, C-2062H	1.50	.234	.562
C-2080H, C-2082H	2.00	.312	.750
C-2100H, C-2102H	2.50	.375	.937
C-2120H, C-2122H	3.00	.437	1.125
C-2160H, C-2162H	4.00	.562	1.500

CHAIN DESCRIPTIONS AND DIMENSIONS

Standard Straight & Bent Attachment Chain



Others	Diamond
M-35, SA1	S1 (one hole)
M-1, SK1	S2 (one hole)

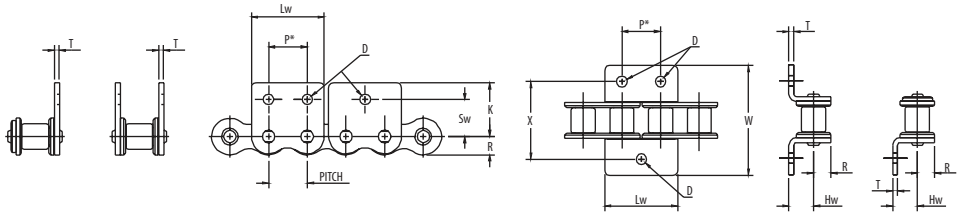
Others	Diamond
A1	B1 (one hole)
K1	B2 (one hole)

Dimensions in Inches

ASME/ANSI Number	Pitch Inches	D	H	K	L	R Max.	S	T	WI	WO	X
25	.250	.125	.180	.451	.218	.119	.308	.030	.781	.843	.562
35	.375	.102	.250	.577	.312	.178	.387	.050	1.125	1.125	.750
40	.500	.141	.312	.684	.375	.238	.489	.060	1.390	1.390	1.000
41	.500	.141	.282	.698	.375	.192	.482	.050	1.375	1.375	.937
50	.625	.203	.406	.895	.500	.297	.618	.080	1.812	1.812	1.250
60	.750	.203	.478	1.038	.625	.356	.716	.094	2.135	2.135	1.500
80	1.000	.266	.625	1.339	.750	.475	.968	.125	2.750	2.750	2.000
100	1.250	.343	.784	1.696	1.000	.594	1.233	.156	3.077	3.406	2.500
120	1.500	.386	.917	2.024	1.125	.713	1.424	.187	3.841	4.239	2.995
140	1.750	.448	1.127	2.445	1.375	.831	1.750	.220	4.361	4.826	3.500
160	2.000	.516	1.250	2.756	1.500	.950	2.007	.250	5.078	5.609	4.000

NOTE: Above attachments available for multiple strand chain.

Wide Contour Straight & Bent Attachment Chain



Others	Diamond
WM-35	WCS1 (one hole)
WM-35-2	WCS1 (two holes)

Others	Diamond
WM-1	WCS2 (one hole)
WM-2	WCS2 (two holes)

Others	Diamond
W A-1	WCB1 (one hole)
W A-2, A2	WCB1 (two holes)

Others	Diamond
WK-1	WCB2 (one hole)
WK-2, K2	WCB2 (two holes)

Dimensions in Inches

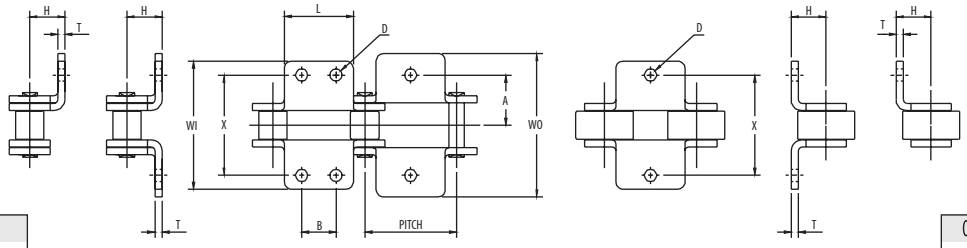
ASME/ANSI Number	Pitch Inches	D	Hw	K	Lw	P	R Max.	Sw	T	W	X
35	.375	.125	.262	.577	.727	.375	.178	.399	.050	1.105	.750
40	.500	.141	.326	.684	.946	.500	.238	.503	.060	1.366	1.000
41	.500	.141	.282	.698	.878	.500	.192	.482	.050	1.372	.937
50	.625	.203	.406	.895	1.211	.625	.297	.618	.080	1.807	1.250
60	.750	.203	.478	1.038	1.420	.750	.356	.716	.094	2.135	1.500
80	1.000	.266	.625	1.339	1.885	1.000	.475	.967	.125	2.750	2.000
100	1.250	.343	.784	1.696	2.362	1.250	.594	1.233	.156	3.408	2.500
120	1.500	.386	.917	2.023	2.836	1.500	.713	1.424	.187	4.239	2.995

NOTE: Attachments available on pin link plate only.

Contact Diamond Chain for available attachments on roller links (wide contour).
Above attachments available for mutiple strand chain.

CHAIN DESCRIPTIONS AND DIMENSIONS

DOUBLE-PITCH BENT ATTACHMENTS
OVAL CONTOUR LINK PLATES
STANDARD AND OVERSIZED ROLLER



Others	Diamond
A1	B1 (one hole)
A2	B1 (two holes)

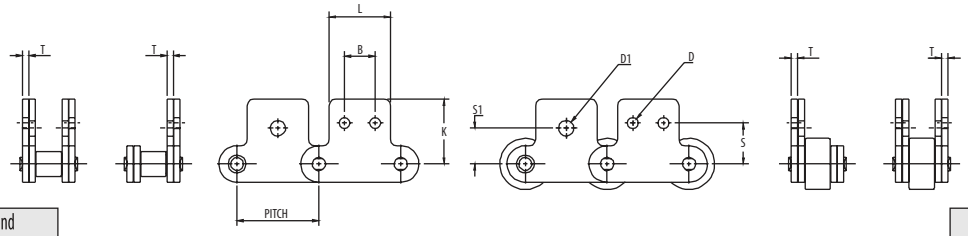
Others	Diamond
K1	B2 (one hole)
K2	B2 (two holes)

Dimensions in Inches

Standard Roller ASME/ANSI #	Standard Roller Roller Diam.	Pitch Inches	A	B	D	H	L	T	WI	WO	X	Large Roller ASME/ANSI #	Large Roller Roller Diam.
C2040	.312	1.00	.500	.375	.141	.359	.750	.060	1.350	1.483	1.000	C-2042	.625
C2050	.400	1.25	.625	.469	.203	.453	.937	.080	1.692	1.863	1.250	C-2052	.750
C2060H	.469	1.50	.844	.562	.203	.578	1.125	.125	2.171	2.446	1.688	C-2062H	.875
C2080H	.625	2.00	1.094	.750	.266	.766	1.500	.156	2.792	3.125	2.188	C-2082H	1.125
C2100H	.750	2.50	1.312	.937	.328	.922	1.875	.187	3.554	3.951	2.625	C-2102H	1.562
C2120H	.875	3.00	1.562	1.125	.391	1.095	2.250	.219	4.318	4.782	3.125	C-2122H	1.750
C2160H	1.125	4.00	2.063	1.500	.516	1.438	3.000	.281	5.520	6.116	4.125	C-2162H	2.250

NOTE: Two attachment holes stock. One attachment hole Made-To-Order.

DOUBLE-PITCH STRAIGHT ATTACHMENTS
OVAL CONTOUR LINK PLATES
STANDARD AND OVERSIZED ROLLER



Others	Diamond
M-35, SA1	S1 (one hole)
M-35-2, SA2	S1 (two holes)

Others	Diamond
M-1, SK1	S2 (one hole)
M-2, SK2	S2 (two holes)

Dimensions in Inches

Standard Roller ASME/ ANSI #	Standard Roller Roller Diam.	Pitch Inches	With Two Attachment Holes B	With Two Attachment Holes D	With Two Attachment Holes S	K	L	T	With One Attachment Hole D1	With One Attachment Hole S1	Large Roller ASME/ ANSI #	Large Roller Roller Diam.
C2040	.312	1.00	.375	.141	.531	.773	.750	.060	.188	.438	C-2042	.625
C2050	.400	1.25	.469	.203	.625	.971	.937	.080	.250	.563	C-2052	.750
C2060H	.469	1.50	.562	.203	.750	1.203	1.125	.125	.329	.688	C-2062H	.875
C2080H	.625	2.00	.750	.266	1.000	1.590	1.500	.156	.375	.875	C-2082H	1.125
C2100H	.750	2.50	.937	.328	1.250	1.982	1.875	.187	.516	1.125	C-2102H	1.562
C2120H	.875	3.00	1.125	.391	1.469	2.367	2.250	.219	.563	1.312	C-2122H	1.750
C2160H	1.125	4.00	1.500	.516	2.000	3.090	3.000	.281	.750	1.750	C-2162H	2.250

NOTE: Two attachment holes stock. One attachment hole Made-To-Order.

STANDARD ATTACHMENT ROLLER CHAIN

Standard Attachments:

Standard attachments are normally much less expensive than special designs. However, if a specialty attachment is necessary, please refer to the Made-To-Order section of our product guide or contact Diamond's application engineers for possible design options.

Link Plate Location & Modifications:

Attachments assembled on pin links, whether they are standard or special design, are less expensive than those assembled on roller links. Diamond's attachment link plates are specifically designed and heat treated to permit further operations by the user such as drilling, reaming, and tapping if desired.

At no time should attachment links be modified by welding because the heat applied can adversely affect the heat treatment of the steel, resulting in either reduced performance or failure.

Extended Pins:

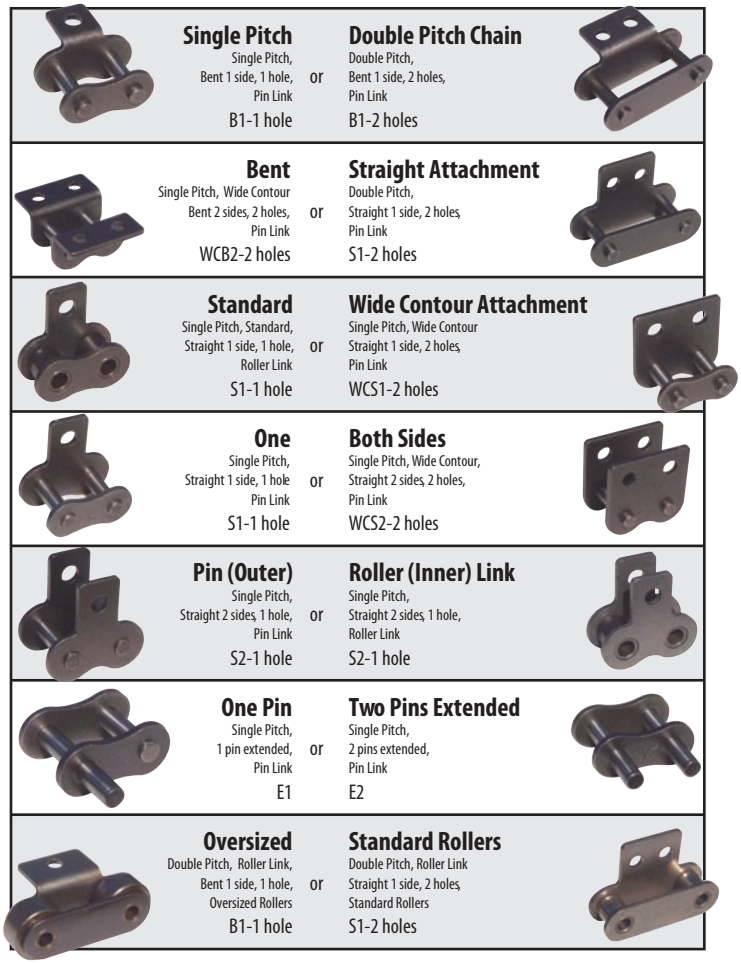
Extended pins, made from medium carbon steel, are specially heat treated for ductility and toughness and can be easily assembled at virtually any spacing. It is important to note that if pairs of extended pins are specified, they must be located in a common pin link. In some applications, this may require the use of an offset in the cycle.

Diamond does not recommend using "shouldered pins." They can compromise quality due to high stress concentrations at the point where diameters change. Additions of sleeves or bearings on the extended pins will often yield a more dependable design.

Attachment Hole Sizes:

Diamond's attachment hole sizes are designed to accommodate most common screw sizes. If your application requires a different attachment hole size than shown here, please contact Diamond as many alternate lug holes are available.

OPTIONS



Dimensions in Inches

Chain Size	Hole Diameter	Screw Size	Screw Diameter
25	0.125	#3	0.099
35	0.102	#2	0.086
40	0.141	#5	0.125
41	0.141	#5	0.125
50	0.203	#10	0.190
60	0.203	#10	0.190
80	0.266	1/4	0.250
100	0.343	5/16	0.312
120	0.386	3/8	0.375
140	0.448	7/16	0.438
160	0.516	1/2	0.500
C2040	0.141	#5	0.125
C2050	0.203	#10	0.190
C2060H	0.203	#10	0.190
C2080H	0.266	1/4	0.250
C2100H	0.328	5/16	0.312
C2120H	0.391	3/8	0.375
C2160H	0.516	1/2	0.500

IMPORTANT FEATURES FOR PARALLEL OPERATIONS

Manufacturing Length Tolerance

ASME/ANSI defines the permissible length of an assembled section of roller chain. The allowable length tolerances vary from model to model and are also affected by the chain's construction, i.e. with or without attachments.

EXAMPLE—

The assembled length tolerance for an ASME/ANSI 1 inch pitch chain (#80)

- Without attachments, tolerance is
  +.016″/-.000″ per foot
- With attachments, tolerance expands to
  +.032″/-.000″ per foot

This means that a section of #80 chain 12 pitches long (12″ nominal) can measure as long as 12.016″ but *no less than* 12.000″. The same section of chain assembled with bent, straight, or extended pin attachments could measure as long as 12.032″ but again, *no less than* 12.000″.

Commonly, manufacturers strive to produce chain nearer to the nominal figure but the maximum allowable over length tolerance should always be considered when designing for take-ups and catenary chain sag. If the application requires, some design/assembly steps can be taken to direct the length of the chain toward the nominal. However, on a routine basis, machine designs based on a nominal or specified chain length should be avoided.

Length Matching of Roller Chains

Many applications require two or more chains, normally with attachments, to run in parallel "flights" joining the chains together forming a conveyor or transfer type system. In these cases it is critical to have the chains ordered as a set, matched for length and installed on the machinery with the same relationship to one another as when they were manufactured. Diamond offers two degrees of matching for parallel operation: Class I and Class II.

Class I—A Class I match assures that the longest and the shortest chain in a given set will not vary in overall length by more than .006″/ft. Using #80 chain as an example, the length of two 120 pitch long chains will not vary by more than .060″ in overall length (10ft. x .006″/ft. = .060″). Therefore, the shortest could measure 120″ + .000″ (remember no negative tolerance) and, the longest could measure up to 120″ + .060″ and satisfy the Class I requirement. Class I matching is most often accomplished by assembling the chains from selected lots of component parts.

Class II—A Class II match is much more stringent and assures that the longest and the shortest chain in a given set will not vary in overall length by more than .002″/ft. Applying this new tolerance to the above example, the length of two #80 chains 120 pitches long will not vary by more than .020″ in overall length (10ft. x .002″/ft. = .020″). Therefore, the shortest could measure 120″ + .000″ and the longest could measure 120″ + .020″ and satisfy the requirement. Class II matching is quite difficult and requires some very unique procedures.

Differences— it is important to remember that matched chains still fall under the overall length limitations imposed by either ASME/ANSI or the manufacturer. Matching ***does not*** assure the user of chains with a finite overall length, only that the chains in the set have a controlled relationship to one another.

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