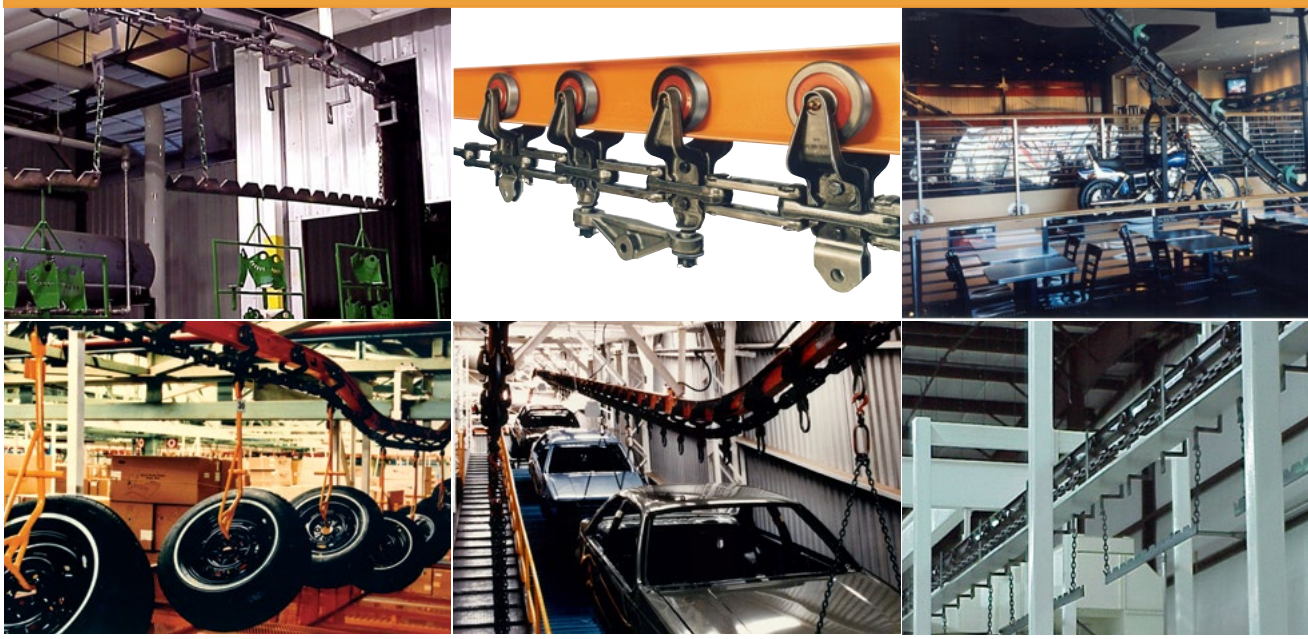
UNIBEAM™

Conveyor Components & Accessories



DAIFUKU

Why Unibeam?

The industry leader for I-beam conveyor systems since 1919

When the job calls for a tough, heavy-duty conveyor system, one name stands the test of time: Unibeam.

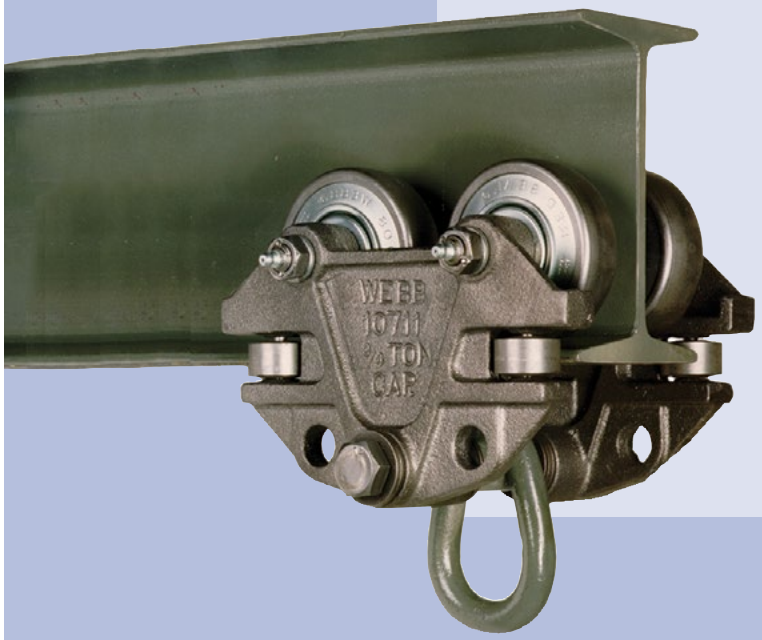
The Daifuku Automotive America, formerly Jervis B. Webb Company, a worldwide leader in material handling solutions and a subsidiary of Daifuku Co.,Ltd., helped revolutionize mass production in 1919 when founder Jervis B. Webb developed the forged rivetless chain conveyor for Ford Motor Company. Today, Unibeam conveyors remain the top choice for companies in all industries seeking a durable conveyor that delivers reliable results.

Daifuku also offers a complete line of quality, cost-effective 3” and 4” I-beam conveyor components and accessories. Whether you need a complete system or replacement parts for an existing conveyor, Daifuku and its wide network of distributors stand behind the Unibeam brand.

Don’t leave quality to chance. Choose Unibeam, the pioneer of heavy-duty conveyor systems and components.

Check out our quality Unibeam conveyor components including:

- **Tracks made from C-1045 steel**
- **Trolleys forged from carbon steel and held together with a rugged two-bolt connection**
- **Traction wheels made with retainer plate to contain wheels**
- **Roller turns made with high carbon I-beam track and sealed-for-life rollers**
- **Drives that utilize rotary design and limit switch cut-off**
- **Take-ups with travel greater than 8”**
- **One piece oven expansion joints**



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Rivetless Chain Features

Quality Forged - Years of service and thousands of installations demonstrate the success of our rivetless chain.

Chain components are drop-forged from high strength carbon steel, precision forged and finished. Our rivetless chain provides the smoothest forged chain pin bearing surface in the industry, minimizing the initial break-in period.

Performance - Quality materials and construction minimize chain stretch and maximize service life.

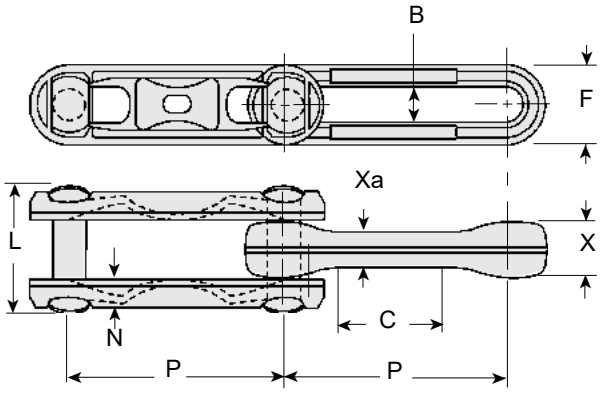
All chain parts are hardened to increase resistance to wear, corrosion, abrasive action and shock loads.

All chain can be magnafluxed upon request.

Rivetless chain is also available in AISI 8642 Alloy steel.

Custom plating can be provided on any size or style chain.

Other chain sizes are available.



Assembled Weight & Ultimate Strength

Chain	Part No.	Part No. Includes:		Assy Wt	Avg. Ult. Str.*
X-348	13612	13607.....Pin 13608.....Side Link 13606.....Center Link	LB	2.25	40,000 lb
			KG	1.02	18,144 kg
X-458	13613	13610.....Pin 13611.....Side Link 13609.....Center Link	LB	3.10	68,000 lb
			KG	1.40	30,845 kg
X-678	13443	13442.....Pin 13440.....Side Link 13441.....Center Link	LB	6.5	125,000 lb
			KG	2.94	56,700 kg

Legend

P.....Nominal pitch
X.....Height of center link
F.....Width of chain
Xa.....Height of chain at center of link
L.....Overall length of pin
D.....Diameter of pin
C.....Length of flat on center link
B.....Inside width of center link
N.....Thickness of side link

Chain Dimensions

Chain	Part No.	P	X	F Max.	Xa	L	D	C	B	N
X-348	13612	3”	3/4”	1-5/64”	1/2”	1-3/4’	1/2”	1-11/16”	17/32”	3/8”
X-458	13613	4”	1”	1-27/64”	5/8”	2-1/4”	5/8”	2”	21/32”	15/32”
X-678	13443	6”	1-9/32”	2”	27/32”	3-1/8”	7/8”	3-1/4”	31/32”	3/4”
METRIC										
X-348	13612	76	19	27	13	44	13	43	13	10
X-458	13613	102	25	36	16	57	16	51	17	12
X-678	13443	152	32	51	21	79	22	83	25	19

* **Average ultimate strength** values are arithmetical averages determined from current tensile test data.

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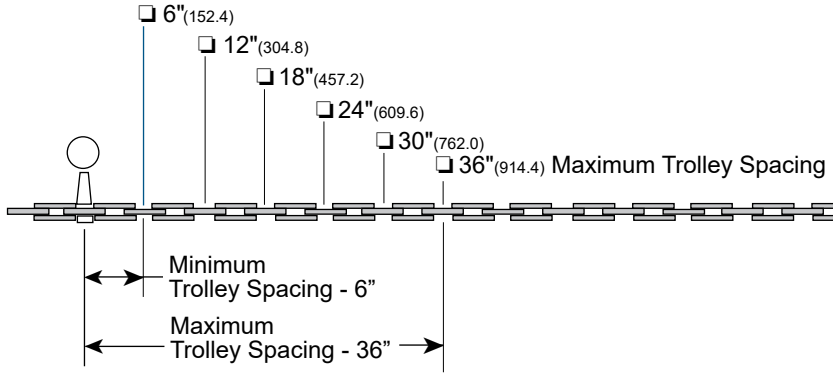
To Order a Chain Assembly:

Complete the information requested below.

Refer to section 1 for chain load ratings and intermediate chain attachments and sections 2 & 3 for trolley specifications and trolley attachments.

X-348 Chain: ❑ Quote ❑ Order

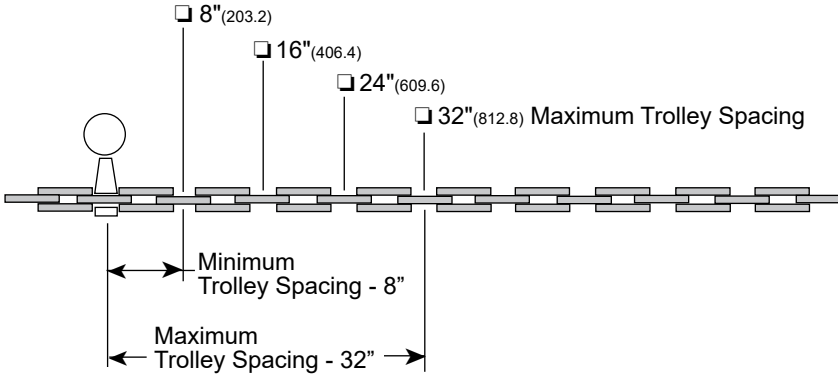
A 10' section has 40 Side Links and 20 Center Links



Trolley Size
Trolley Drop
Trolley Att.Type
Trolley Centers
Inter. Chain Att.Type (If applicable)
Number of 10' Lengths

X-458 Chain: ❑ Quote ❑ Order

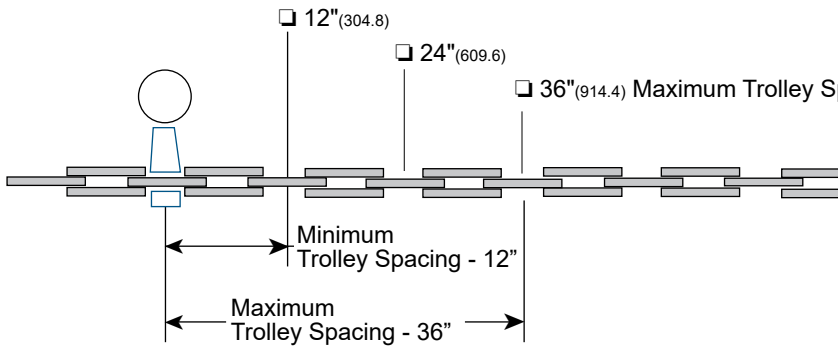
A 10' section has 30 Side Links and 15 Center Links



Trolley Size
Trolley Drop
Trolley Att.Type
Trolley Centers
Inter. Chain Att.Type (If applicable)
Number of 10' Lengths

X-678 Chain: ❑ Quote ❑ Order

A 10' section has 20 Side Links and 10 Center Links



Trolley Size
Trolley Drop
Trolley Att.Type
Trolley Centers
Inter. Chain Att.Type (If applicable)
Number of 10' Lengths

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3" Trolley with 2-1/2" Drop

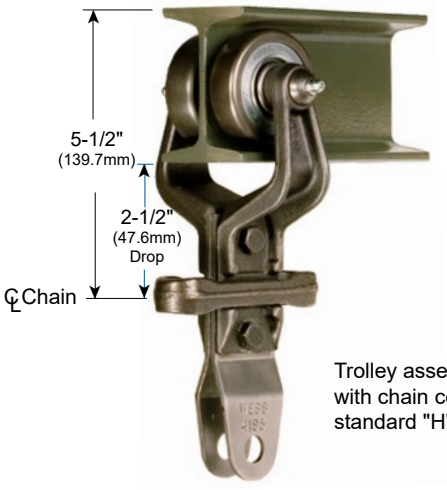
Chain size..... X-348

Trolley Center Spacing..... 6" min. (152mm)
36" max.(914mm)

Single Trolley Load Capacity..... 200lb (91kg)

Load Capacity W/Load Bar..... 400lb 181kg)

- Forged carbon steel brackets
- Standard triple labyrinth seal construction
- Rugged 2 bolt attachment connection
- Pressure type grease fittings
- Trolley wheels are riveted to the trolley bracket



Trolley assembly shown with chain center link and standard "H" attachment

Trolley Assembly Part No.	1/2 Trolley Bracket w/Full Complement Wheel	Bracket Bolts and Nuts	Inner Cap	Triple Labyrinth Seal
252086	14631	Included	Yes	Yes
252087	69600	Included	No	No
252088	75916	Included	Yes	No

4" Trolley with 3-3/16" Drop

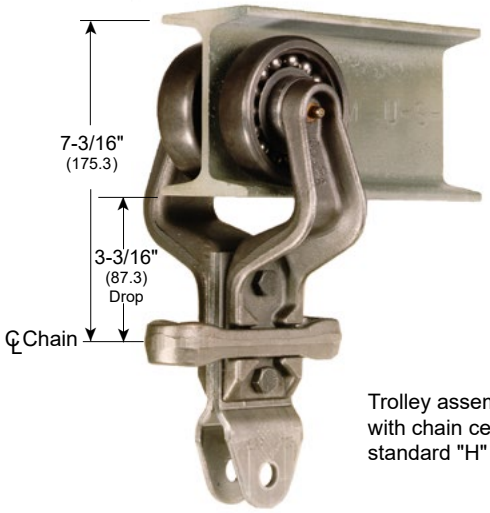
Chain Size..... X-458

Trolley Center Spacing..... 8" min. (202)
32" max. (813)

Single Trolley Load Capacity..... 400lb (181kg)

Load Capacity W/Load Bar..... 800lb (363kg)

- Forged carbon steel brackets
- Standard triple labyrinth seal construction
- Rugged 2 bolt attachment connection
- Pressure type grease fittings
- Trolley wheels are swaged to bracket
- Optional Red Seal Guard full contact high-temp (Viton) grease seal



Trolley assembly shown with chain center link and standard "H" attachment

Trolley Assembly Part No.	1/2 Trolley Bracket w/Full Complement Wheel	Bracket Bolts and Nuts	Inner Cap	Triple Labyrinth Seal
252089	15308M1	Included	Yes	Yes
252090	15309	Included	No	No
252091	15308	Included	Yes	No

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4" Trolley with 4" Drop

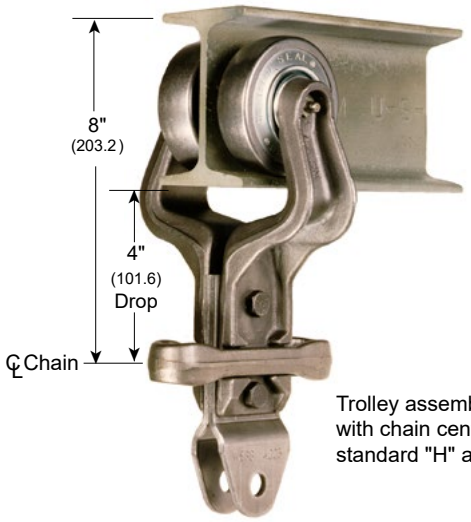
Chain Size X-458

Trolley Center Spacing ..... 8" min. (203.2)
32" max. (812.8)

Load Capacity..... 400lb (181kg)

Load Capacity W/Load Bar..... 800lb (363kg)

- Forged carbon steel brackets
- Standard triple labyrinth seal construction
- Rugged 2 bolt attachment connection
- Pressure type grease fittings
- Trolley wheels are swaged to bracket
- Optional Red Seal Guard full contact high-temp (Viton) grease seal



Trolley assembly shown with chain center link and standard "H" attachment

Trolley Assembly Part No.	1/2 Trolley Bracket w/Full Complement Wheel	Bracket Bolts and Nuts	Inner Cap	Triple Labyrinth Seal
252092	14282	Included	Yes	Yes
252093	86183	Included	No	No
252094	87858	Included	No	Yes

6" Trolley with 4" Drop

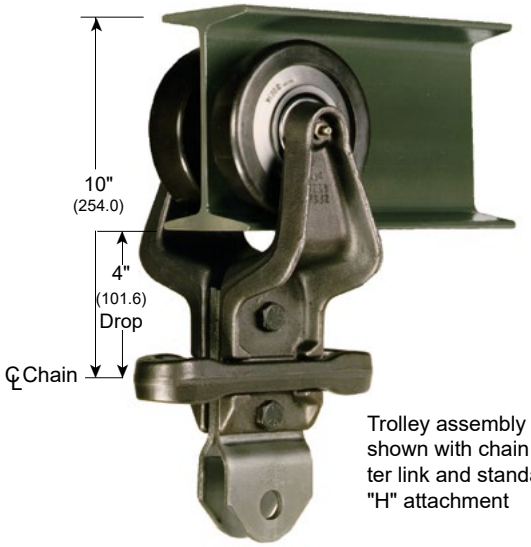
Chain Size X-678

Trolley Center Spacing ..... 12" min. (304.8)
36" max. (914.4)

Load Capacity..... 1,200lb (544kg)

Load Capacity W/Load Bar..... 2,400lb (1088kg)

- Forged carbon steel brackets
- Standard triple labyrinth seal construction
- Rugged 2 bolt attachment connection
- Pressure type grease fittings
- Trolley wheels are swaged to the trolley bracket
- Optional Red Seal Guard full contact high-temp (Viton) grease seal



Trolley assembly shown with chain center link and standard "H" attachment

Trolley Assembly Part No.	1/2 Trolley Bracket w/Full Complement Wheel	Bracket Bolts and Nuts	Inner Cap	Triple Labyrinth Seal
252095	100504	Included	Yes	Yes
252096	100504M2	Included	No	No
252097	100504M1	Included	Yes	No

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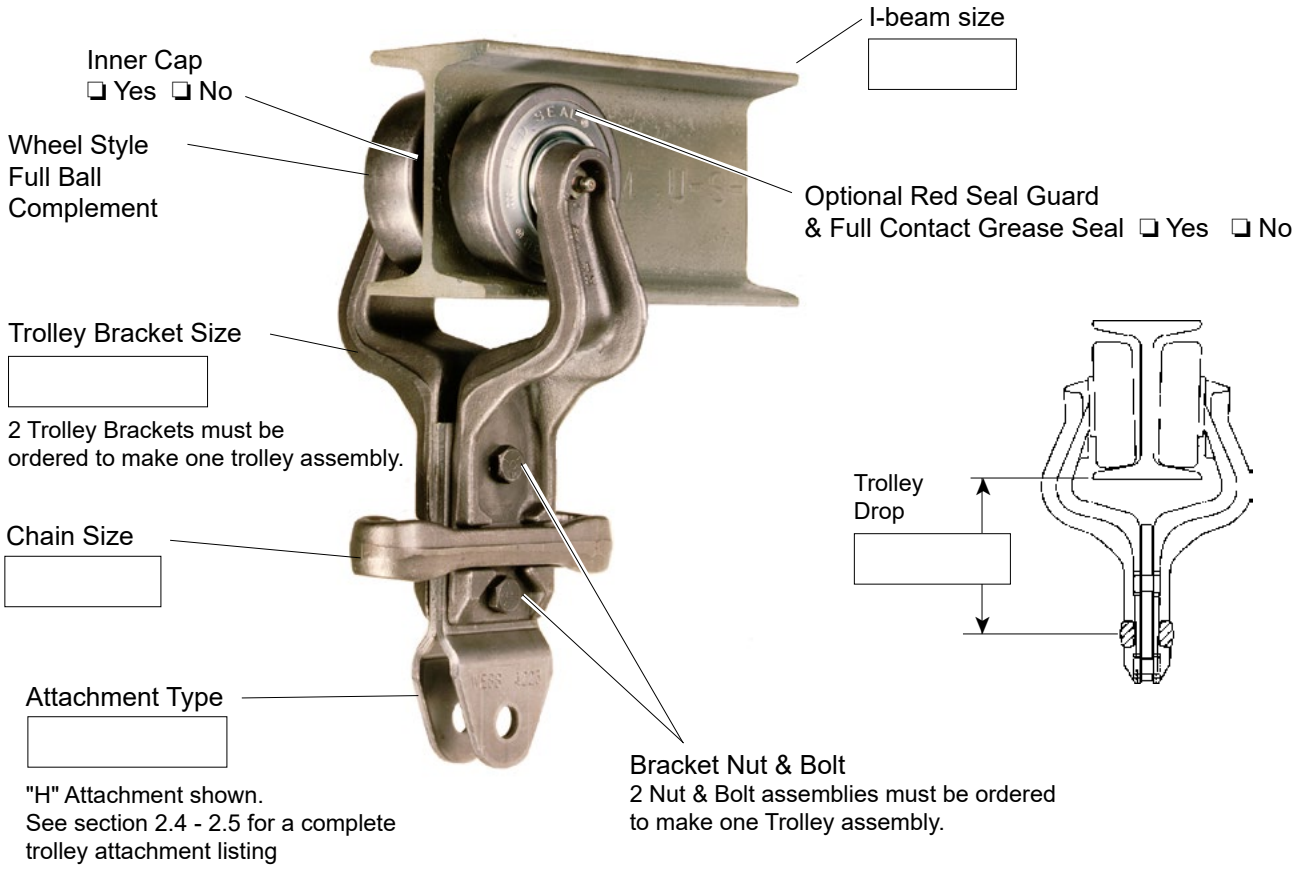
How to Order

Overhead Trolley Assembly



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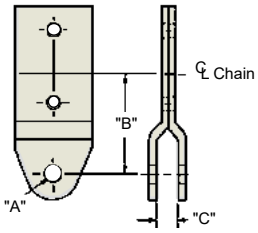
"H" Attachment:

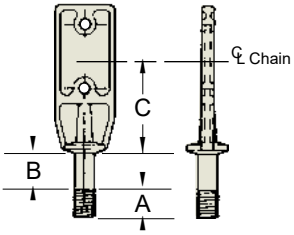
This is the most widely used type of trolley attachment. It consists of two pieces of formed steel and is suitable for suspending almost any type of hook, tray or rack.



Part No.	Chain	"A"	"B"	"C"
4195	3"	17/32"dia.	3 1/8"	9/16"
4223	4"	17/32"dia.	2 7/8"	11/16"
4246	6"	17/32"dia.	3 5/8"	13/16"

"B" Attachment:

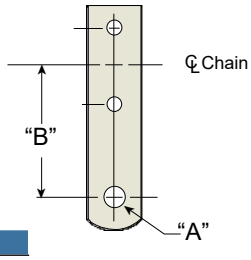
Normally used to support a load bar from a pair of trolleys but may also be used for many other applications. Attachment is steel forged with a threaded stud.



Part No.	Chain	"A"	"B"	"C"
4196	3"	1/2"	15/16"	2-7/16"
4221	4"	5/8"	1 1/4"	2-15/16"
241065	6"	1 3/8"	1 5/8"	3-1/8"

"C" Attachment

Used when a carrier design includes a clevis. It can also be used with a bent rod hook to carry light parts.

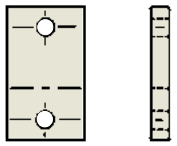


Part No.	Chain	"A"	"B"
4193	3"	17/32"dia	3 1/8"
4222	4"	9/16"dia	2 7/8"
4245	6"	13/16"dia	2 5/8"

"I" Attachment:

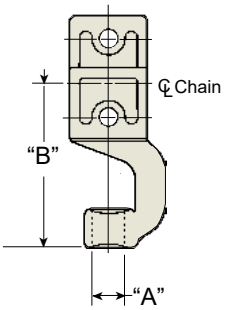
This attachment is used as a filler on intermediate trolleys that do not carry a load.

Part No.	Chain
4194	3"
4224	4"
4247	6"



15579 "J" Attachment

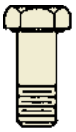
Used for suspending 5/8" diameter rods permitting periodic rotation of rod carriers.



Part No.	Chain	"A"	"B"
15579	4"	41/64"dia	4 5/16"

Bracket Bolt and Nut:

High strength bolts are secured with locknut and fused with high-strength two part epoxy.



Bolt

Part No.	Chain
13434	3"
11979	4"
13464	6"

Nut

Part No.	Chain
57212	3"
56494	4"
56495	6"

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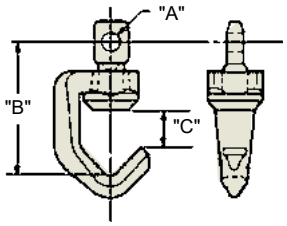
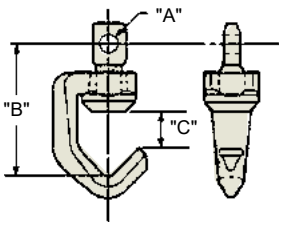
Many applications require a hook that permits rotating the item carried by the conveyor.

Indexing Swivel Hook Assembly



Part No.	Chain	Cap.	"A"	"B"	"C"
252104	3"/4"	125 lb	17/32"dia.	4 1/8"	1 1/4"
252102	4"/6"	200 lb	41/64"dia.	5 1/2"	1 7/8"

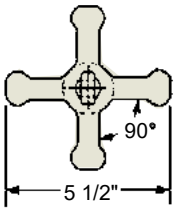
Non-Indexing Swivel Hook Assembly

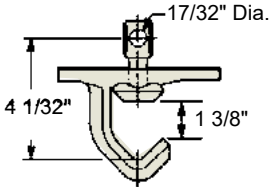


Part No.	Chain	Cap.	"A"	"B"	"C"
252099	3"/4"	125 lb	17/32"dia.	3 15/16"	1 1/4"

Star Wheel Swivel Hook Assembly

125 pound capacity rating and is used with "H" attachments.

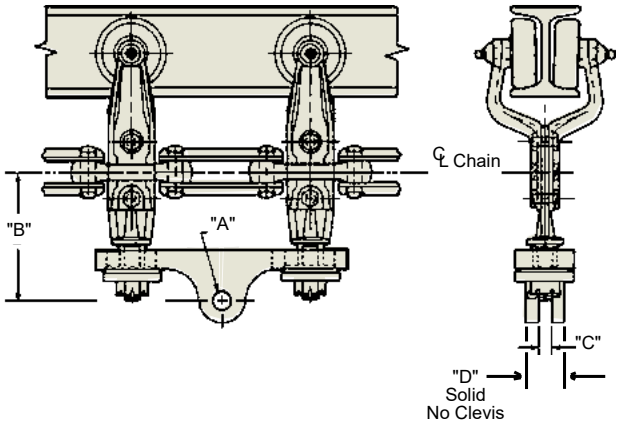




Part No.	Chain
252101	3"
252101	4"

Load Bar Assembly

Use of this load bar permits pairing of trolleys and thereby doubles their weight carrying capacity. "B" attachments are used to suspend the load bar from two trolleys.



Part No.	Chain	Cap.	"A"	"B"	"C"	"D"
252098	3"	400 lb	9/16"dia.	4 1/4"	9/16"	–
252105	4"	800 lb	11/16"dia.	4 7/8"	11/16"	-
252103	6"	2400lb	25/32"	5 5/8"	–	2 3/8"

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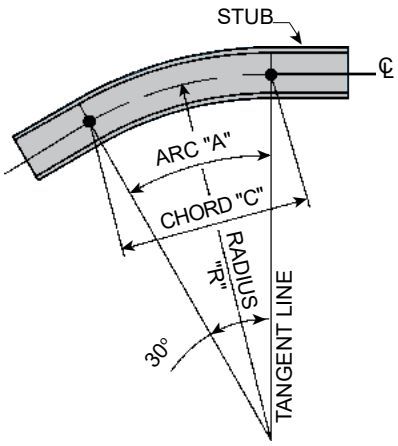
Single Vertical Curves (SVC)

These curves are used to make the upper and lower parts of reverse and compound vertical curves.

Standard Single Vertical Curves

Part No.	I Beam	Angle	Radius	A	C	Stub
17699	3"	30°	96"	49 1/2"	48 15/16"	18 3/8"
17700	3"	45°	96"	74 1/4"	72 5/16"	22 5/16"
102253	4"	30°	96"	49 3/16"	48 11/16"	24"
102254	4"	45°	96"	73 13/16"	71 15/16"	24"
102255	4"	30°	120"	61 13/16"	61 1/16"	24"
102256	4"	45°	120"	92 11/16"	90 5/16"	24"



Single bend, reverse & compound vertical curve assemblies can be custom built to suit customer needs. Contact Daifuku Automotive America Sales for availability and delivery.

Compound Vertical Curves

These curves consist of two single vertical curves and the necessary connecting straight track assembled to accomplish a change in elevation.

D Overall change in elevation of vertical curve assembly.

L Overall length of vertical curve assembly - tangent to tangent.

A True length of any single bend at centerline of track.

C Straight length across any single bend at centerline - workpoint to workpoint.

B Height or vertical change in elevation of any single bend.

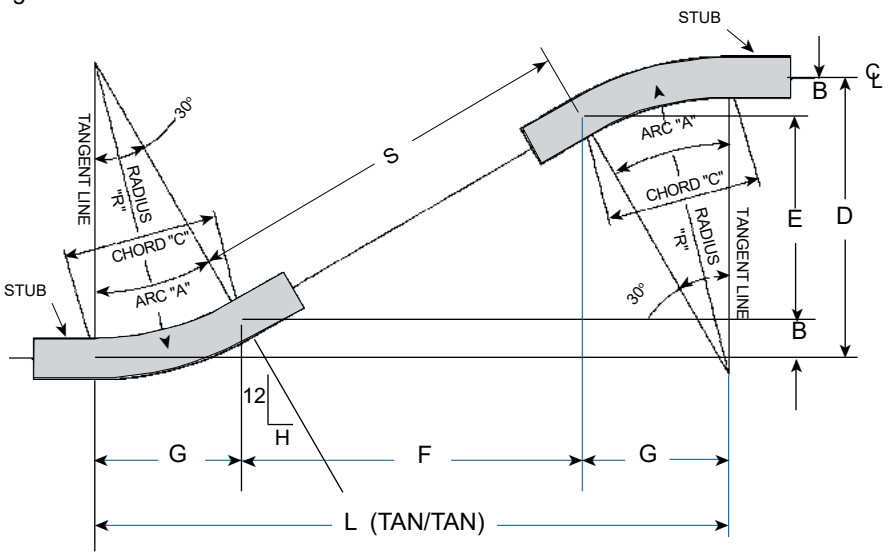
G Horizontal length of any single bend.

H Run length of curve angle.

S Section of track connecting two single bends to create a compound vertical curve.

E Height or vertical change in elevation of straight section.

F Horizontal length of straight section.



Recommended (Rec.) Vertical Curves Based on Trolley Spacing

Trolley Spacing	3" System Min	3" System Rec.	4" System Min	4" System Rec.
8"	-	-	3'-6"	6'-0"
12"	4'-0"	5'-0"	-	-
16"	-	-	5'-6"	8'-0"
18"	5'-0"	6'-6"	-	-
24"	6'-6"	8'-0"	7'-0"	10'-0"
30"	7'-8"	10'-0"	-	-
32"	-	-	9'-0"	12'-0"
36"	9'-0"	12'-0"	-	-

Compound Vertical Curve Chart

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8' Radius (2.34m)

Angle - 30°
Arc - 4' 2-1/4" (1.28m)
Chord - 4' 1-11/16" (1.26m)

When ordering vertical curves you must specify:

- Radius
- Degree of Turn
- Vertical Drop
- I-Beam Size

INCH				METRIC			
Vertical Drop	Straight Track	True Length	Tan/Tan Length	Vertical Drop	Straight Track	True Length	Tan/Tan Length
26.00	0.56	101.06	96.50	660.40	14.29	2566.99	2451.10
27.00	2.56	103.06	98.19	685.80	65.09	2617.79	2493.96
28.00	4.56	105.06	99.94	711.20	115.89	2668.59	2538.41
29.00	6.56	107.06	101.69	736.60	166.69	2719.39	2582.86
30.00	8.56	109.06	103.44	762.00	217.49	2770.19	2627.31
31.00	10.56	111.06	105.13	787.40	268.29	2820.99	2670.18
32.00	12.56	113.06	106.88	812.80	319.09	2871.79	2714.63
33.00	14.56	115.06	108.63	838.20	369.89	2922.59	2759.08
34.00	16.56	117.06	110.31	863.60	420.69	2973.39	2801.94
35.00	18.56	119.06	112.06	889.00	471.49	3024.19	2846.39
36.00	20.56	121.06	113.19	914.40	522.29	3074.99	2874.96
37.00	22.56	123.06	115.56	939.80	573.09	3125.79	2935.29
38.00	24.56	125.06	117.25	965.20	623.89	3176.59	2978.15
39.00	26.56	127.06	119.00	990.60	674.69	3227.39	3022.60
40.00	28.56	129.06	120.75	1016.00	725.49	3278.19	3067.05
41.00	30.56	131.06	122.44	1041.40	776.29	3328.99	3109.91
42.00	32.56	133.06	124.19	1066.80	827.09	3379.79	3154.36
43.00	34.56	135.06	125.94	1092.20	877.89	3430.59	3198.81
44.00	36.56	137.06	127.69	1117.60	928.69	3481.39	3243.26
45.00	38.56	139.06	129.38	1143.00	979.49	3532.19	3286.13
46.00	40.56	141.06	131.13	1168.40	1030.29	3582.99	3330.58
47.00	42.56	143.06	132.88	1193.80	1081.09	3633.79	3375.03
48.00	44.56	145.06	134.56	1219.20	1131.89	3684.59	3417.89
49.00	46.56	147.06	136.31	1244.60	1182.69	3735.39	3462.34
50.00	48.56	149.06	138.06	1270.00	1233.42	3786.12	3506.79
51.00	50.56	151.06	139.75	1295.40	1284.22	3836.92	3549.65
52.00	52.56	153.06	141.50	1320.80	1335.02	3887.72	3594.10
53.00	54.56	155.06	143.25	1346.20	1385.82	3938.52	3638.55
54.00	56.56	157.06	145.00	1371.60	1436.62	3989.32	3683.00
55.00	58.56	159.06	146.69	1397.00	1487.42	4040.12	3725.86
56.00	60.56	161.06	148.44	1422.40	1538.22	4090.92	3770.31
57.00	62.56	163.06	150.19	1447.80	1589.02	4141.72	3814.76
58.00	64.56	165.06	151.88	1473.20	1639.82	4192.52	3857.63
59.00	66.56	167.06	153.63	1498.60	1690.62	4243.32	3902.08
60.00	68.56	169.06	155.38	1524.00	1741.42	4294.12	3946.53
61.00	70.56	171.06	157.13	1549.40	1792.22	4344.92	3990.98
62.00	72.56	173.06	158.81	1574.80	1843.02	4395.72	4033.84
63.00	74.56	175.06	160.56	1600.20	1893.82	4446.52	4078.29
64.00	76.56	177.06	162.31	1625.60	1944.62	4497.32	4122.74
65.00	78.56	179.06	164.00	1651.00	1995.42	4548.12	4165.60
66.00	80.56	181.06	165.75	1676.40	2046.22	4598.92	4210.05
67.00	82.56	183.06	167.50	1701.80	2097.02	4649.72	4254.50
68.00	84.56	185.06	169.25	1727.20	2147.82	4700.52	4298.95
69.00	86.56	187.06	170.94	1752.60	2198.62	4751.32	4341.81
70.00	88.56	189.06	172.69	1778.00	2249.42	4802.12	4386.26
71.00	90.56	191.06	174.44	1803.40	2300.22	4852.92	4430.71
72.00	92.56	193.06	176.13	1828.80	2351.02	4903.72	4473.58
73.00	94.56	195.06	177.88	1854.20	2401.82	4954.52	4518.03

Compound Vertical Curve Chart

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Phone: (248) 553-1232 Fax: (248) 553-1253

8' Radius (2.34m)

Angle - 30°
Arc - 4' 2-1/4" (1.28m)
Chord - 4' 1-11/16" (1.26m)

When ordering vertical curves you must specify:

- Radius
- Degree of Turn
- Vertical Drop
- I-Beam Size

INCH				METRIC			
Vertical Drop	Straight Track	True Length	Tan/Tan Length	Vertical Drop	Straight Track	True Length	Tan/Tan Length
74.00	96.56	197.06	179.63	1879.60	2452.62	5005.32	4562.48
75.00	98.56	199.06	181.38	1905.00	2503.42	5056.12	4606.93
76.00	100.56	201.06	183.06	1930.40	2554.22	5106.92	4649.79
77.00	102.56	203.06	184.81	1955.80	2605.02	5157.72	4694.24
78.00	104.56	205.06	186.56	1981.20	2655.82	5208.52	4738.69
79.00	106.56	207.06	188.25	2006.60	2706.62	5259.32	4781.55
80.00	108.56	209.06	190.00	2032.00	2757.42	5310.12	4826.00
81.00	110.56	211.06	191.75	2057.40	2808.22	5360.92	4870.45
82.00	112.56	213.06	193.50	2082.80	2859.02	5411.72	4914.90
83.00	114.56	215.06	195.19	2108.20	2909.82	5462.52	4957.76
84.00	116.56	217.06	196.94	2133.60	2960.62	5513.32	5002.21
85.00	118.56	219.06	198.69	2159.00	3011.42	5564.12	5046.66
86.00	120.56	221.06	200.38	2184.40	3062.22	5614.92	5089.53
87.00	122.56	223.06	202.13	2209.80	3113.02	5665.72	5133.98
88.00	124.56	225.06	203.88	2235.20	3163.82	5716.52	5178.43
89.00	126.56	227.06	205.63	2260.60	3214.62	5767.32	5222.88
90.00	128.56	229.06	207.31	2286.00	3265.42	5818.12	5265.74
91.00	130.56	231.06	209.06	2311.40	3316.22	5868.92	5310.19
92.00	132.56	233.06	210.81	2336.80	3367.02	5919.72	5354.64
93.00	134.56	235.06	212.50	2362.20	3417.82	5970.52	5397.50
94.00	136.56	237.06	214.25	2387.60	3468.62	6021.32	5441.95
95.00	138.56	239.06	216.00	2413.00	3519.42	6072.12	5486.40
96.00	140.56	241.06	217.75	2438.40	3570.22	6122.92	5530.85
97.00	142.56	243.06	219.44	2463.80	3621.02	6173.72	5573.71
98.00	144.56	245.06	221.19	2489.20	3671.82	6224.52	5618.16
99.00	146.56	247.06	222.94	2514.60	3722.62	6275.32	5662.61
100.00	148.56	249.06	224.63	2540.00	3773.42	6326.12	5705.48
101.00	150.56	251.06	226.38	2565.40	3824.22	6376.92	5749.93
102.00	152.56	253.06	228.13	2590.80	3875.02	6427.72	5794.38
103.00	154.56	255.06	229.88	2616.20	3925.82	6478.52	5838.83
104.00	156.56	257.06	231.56	2641.60	3976.62	6529.32	5881.69
105.00	158.56	259.06	233.31	2667.00	4027.42	6580.12	5926.14
106.00	160.56	261.06	235.06	2692.40	4078.22	6630.92	5970.59
107.00	162.56	263.06	236.75	2717.80	4129.02	6681.72	6013.45
108.00	164.56	265.06	238.50	2743.20	4179.82	6732.52	6057.90
109.00	166.56	267.06	240.25	2768.60	4230.62	6783.32	6102.35
110.00	168.56	269.06	242.00	2794.00	4281.42	6834.12	6146.80
111.00	170.56	271.06	243.69	2819.40	4332.22	6884.92	6189.66
112.00	172.56	273.06	245.44	2844.80	4383.02	6935.72	6234.11
113.00	174.56	275.06	247.19	2870.20	4433.82	6986.52	6278.56
114.00	176.56	277.06	248.88	2895.60	4484.62	7037.32	6321.43
115.00	178.56	279.06	250.63	2921.00	4535.42	7088.12	6366.00
116.00	180.56	281.06	252.38	2946.40	4586.22	7138.92	6410.45
117.00	182.56	283.06	254.13	2971.80	4637.02	7189.72	6454.90
118.00	184.56	285.06	255.81	2997.20	4687.82	7240.52	6497.57
119.00	186.56	287.06	257.56	3022.60	4738.62	7291.32	6542.09
120.00	188.56	289.06	259.31	3048.00	4789.42	7342.12	6586.47

Compound Vertical Curve Chart

UNIBEAM™

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10' Radius (3.05m)

Angle - 30°
Arc - 5' 2-13/16" (1.60m)
Chord - 5' 2-1/8" (1.58m)

When ordering vertical curves you must specify:

- Radius
- Degree of Turn
- Vertical Drop
- I-Beam Size

INCH				METRIC			
Vertical Drop	Straight Track	True Length	Tan/Tan Length	Vertical Drop	Straight Track	True Length	Tan/Tan Length
32.00	0.19	125.88	120.19	812.80	4.76	3197.23	3052.76
33.00	1.69	127.38	121.44	838.20	42.86	3235.33	3084.51
34.00	3.69	129.38	123.19	863.60	93.66	3286.13	3128.96
35.00	5.69	131.38	124.94	889.00	144.46	3336.93	3173.41
36.00	7.69	133.38	126.69	914.40	195.26	3387.73	3217.86
37.00	9.69	135.38	128.38	939.80	246.06	3438.65	3260.73
38.00	11.69	137.38	130.13	965.20	296.93	3489.45	3305.18
39.00	13.69	139.38	131.88	990.60	347.73	3540.25	3349.63
40.00	15.69	141.38	133.56	1016.00	398.53	3591.05	3392.49
41.00	17.69	143.38	135.31	1041.40	449.33	3641.85	3436.94
42.00	19.69	145.38	137.06	1066.80	500.13	3692.65	3481.39
43.00	21.69	147.38	138.81	1092.20	550.93	3743.45	3525.84
44.00	23.69	149.38	140.50	1117.60	601.73	3794.25	3568.70
45.00	25.69	151.38	142.25	1143.00	652.53	3845.05	3613.15
46.00	27.69	153.38	144.00	1168.40	703.33	3895.85	3657.60
47.00	29.69	155.38	145.69	1193.80	754.13	3946.65	3700.46
48.00	31.69	157.38	147.44	1219.20	804.86	3997.45	3744.91
49.00	33.69	159.38	149.19	1244.60	855.73	4048.25	3789.36
50.00	35.69	161.38	150.94	1270.00	906.53	4099.05	3833.81
51.00	37.69	163.38	152.63	1295.40	957.33	4149.85	3876.68
52.00	39.69	165.38	154.38	1320.80	1008.13	4200.65	3921.13
53.00	41.69	167.38	156.13	1346.20	1058.93	4251.45	3965.58
54.00	43.69	169.38	157.81	1371.60	1109.73	4302.25	4008.44
55.00	45.69	171.38	159.56	1397.00	1160.53	4353.05	4052.89
56.00	47.69	173.38	161.31	1422.40	1211.33	4403.85	4097.34
57.00	49.69	175.38	163.06	1447.80	1262.13	4454.65	4141.79
58.00	51.69	177.38	164.75	1473.20	1312.93	4505.45	4184.65
59.00	53.69	179.38	166.50	1498.60	1363.73	4556.25	4229.10
60.00	55.69	181.38	168.25	1524.00	1414.53	4607.05	4273.55
61.00	57.69	183.38	169.94	1549.40	1465.33	4657.85	4316.41
62.00	59.69	185.38	171.69	1574.80	1516.13	4708.65	4360.86
63.00	61.69	187.38	173.44	1600.20	1566.93	4759.45	4405.31
64.00	63.69	189.38	175.19	1625.60	1617.73	4810.25	4449.76
65.00	65.69	191.38	176.88	1651.00	1668.53	4861.05	4492.63
66.00	67.69	193.38	178.63	1676.40	1719.33	4911.85	4537.08
67.00	69.69	195.38	180.38	1701.80	1770.13	4962.65	4581.53
68.00	71.69	197.38	182.06	1727.20	1820.93	5013.45	4624.39
69.00	73.69	199.38	183.81	1752.60	1871.73	5064.25	4668.84
70.00	75.69	201.38	185.56	1778.00	1922.53	5115.05	4713.29
71.00	77.69	203.38	187.31	1803.40	1973.33	5165.85	4757.74
72.00	79.69	205.38	189.00	1828.80	2024.13	5216.65	4800.60
73.00	81.69	207.38	190.75	1854.20	2074.93	5267.45	4845.05
74.00	83.69	209.38	192.50	1879.60	2125.73	5318.25	4889.50
75.00	85.69	211.38	194.19	1905.00	2176.53	5369.05	4932.36
76.00	87.69	213.38	195.94	1930.40	2227.33	5419.85	4976.81

Compound Vertical Curve Chart

UNIBEAM™

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10' Radius (3.05m)

Angle - 30°
Arc - 5' 2-13/16" (1.60m)
Chord - 5' 2-1/8" (1.59m)

When ordering vertical curves you must specify:

- Radius
- Degree of Turn
- Vertical Drop
- I-Beam Size

INCH				METRIC			
Vertical Drop	Straight Track	True Length	Tan/Tan Length	Vertical Drop	Straight Track	True Length	Tan/Tan Length
77.00	89.69	215.38	197.69	1955.80	2278.13	5470.65	5021.26
78.00	91.69	217.38	199.44	1981.20	2328.93	5521.45	5065.71
79.00	93.69	219.38	201.13	2006.60	2379.73	5572.25	5108.58
80.00	95.69	221.38	202.88	2032.00	2430.53	5623.05	5153.03
81.00	97.69	223.38	204.63	2057.40	2481.33	5673.85	5197.48
82.00	99.69	225.38	206.31	2082.80	2532.13	5724.65	5240.34
83.00	101.69	227.38	208.06	2108.20	2582.93	5775.45	5284.79
84.00	103.69	229.38	209.81	2133.60	2633.73	5826.25	5329.24
85.00	105.69	231.38	211.56	2159.00	2684.53	5877.05	5373.69
86.00	107.69	233.38	213.25	2184.40	2735.33	5927.85	5416.55
87.00	109.69	235.38	215.00	2209.80	2786.13	5978.65	5461.00
88.00	111.69	237.38	216.75	2235.20	2836.93	6029.45	5505.45
89.00	113.69	239.38	218.44	2260.60	2887.73	6080.25	5548.31
90.00	115.69	241.38	220.19	2286.00	2938.53	6131.05	5592.76
91.00	117.69	243.38	221.94	2311.40	2989.33	6181.85	5637.21
92.00	119.69	245.38	223.69	2336.80	3040.13	6232.65	5681.66
93.00	121.69	247.38	225.38	2362.20	3090.93	6283.45	5724.53
94.00	123.69	249.38	227.13	2387.60	3141.73	6334.25	5768.98
95.00	125.69	251.38	228.88	2413.00	3192.53	6385.05	5813.43
96.00	127.69	253.38	230.56	2438.40	3243.33	6435.85	5856.29
97.00	129.69	255.38	232.31	2463.80	3294.13	6486.65	5900.74
98.00	131.69	257.38	234.06	2489.20	3344.93	6537.45	5945.19
99.00	133.69	259.38	235.75	2514.60	3395.73	6588.25	5988.05
100.00	135.69	261.38	237.50	2540.00	3446.53	6639.05	6032.50
101.00	137.69	263.38	239.25	2565.40	3497.33	6689.85	6076.95
102.00	139.69	265.38	241.00	2590.80	3548.13	6740.65	6121.40
103.00	141.69	267.38	242.69	2616.20	3598.93	6791.45	6164.26
104.00	143.69	269.38	244.44	2641.60	3649.73	6842.25	6208.71
105.00	145.69	271.38	246.19	2667.00	3700.53	6893.05	6253.16
106.00	147.69	273.38	247.88	2692.40	3751.33	6943.85	6296.03
107.00	149.69	275.38	249.63	2717.80	3802.13	6994.65	6340.48
108.00	151.69	277.38	251.38	2743.20	3852.93	7045.33	6384.93
109.00	153.69	279.38	253.13	2768.60	3903.73	7096.25	6429.38
110.00	155.69	281.38	254.81	2794.00	3954.53	7147.05	6472.24
111.00	157.69	283.38	256.56	2819.40	4005.33	7197.85	6516.69
112.00	159.69	285.38	258.31	2844.80	4056.13	7248.65	6561.14
113.00	161.69	287.38	260.00	2870.20	4106.93	7299.45	6604.00
114.00	163.69	289.38	261.75	2895.60	4157.73	7350.25	6648.45
115.00	165.69	291.38	263.50	2921.00	4208.53	7401.05	6692.90
116.00	167.69	293.38	265.25	2946.40	4259.33	7451.85	6737.35
117.00	169.69	295.38	266.94	2971.80	4310.13	7502.65	6780.21
118.00	171.69	297.38	268.69	2997.20	4360.93	7553.45	6824.66
119.00	173.69	299.38	270.44	3022.60	4411.73	7604.25	6869.11
120.00	175.69	301.38	272.13	3048.00	4462.53	7655.05	

6911.98

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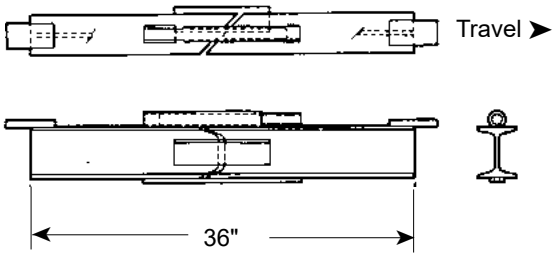
High Carbon Steel Track

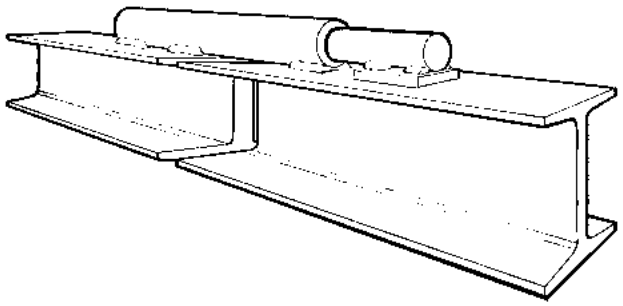
The I-beam track must sustain the entire load carried on an overhead trolley conveyor. To assure longer wear-life and greater strength characteristics, Daifuku supplies I-beams of special high-carbon C-1045 steel in standard structural sections.

	3"	4"
I-beam @ 20 ft. long (unpainted mill ends)	18264	18266

Expansion Joints

	3"	4"
Oven Expansion Joint, (36" lg.)	14174 3/8" Travel	139999 1/2" Travel

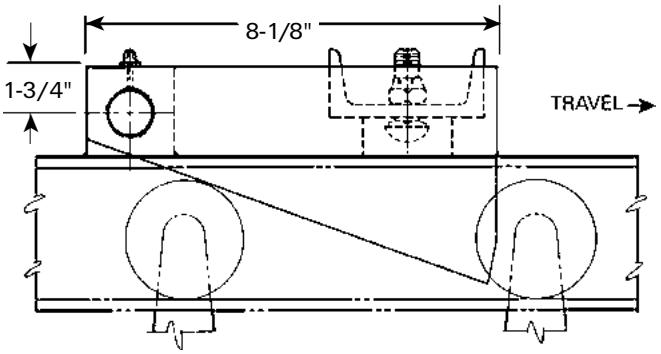




Anti-Backup

	3"	4"
Anti-Backup	8704	8702

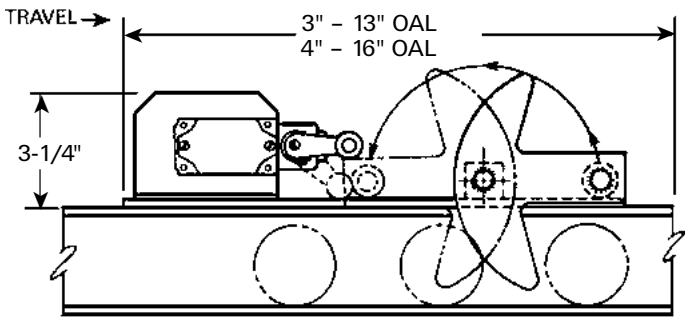
To prevent reverse conveyor travel caused by chain breakage, this anti-backup device is installed on vertical curves.



Anti-Runaway

	3"	4"
Anti-Runaway (less Limit Switch)	10717	101878
Anti-Runaway (with Limit Switch)	16787	101879

If the chain should break and begin to travel faster than normal down vertical curves, this anti-runaway device will be activated which will stop the conveyor chain. The drive motor is stopped when the limit switch is actuated by the safety device.



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Traction Wheel Turn Features

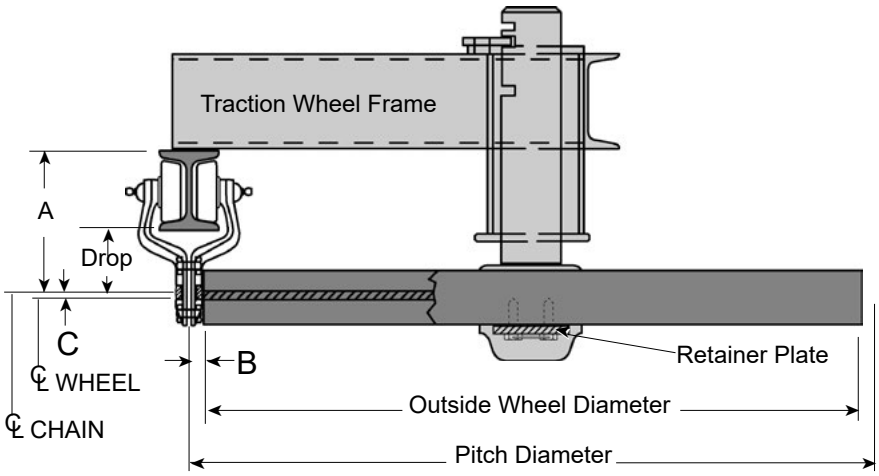
This type of turn is designed to keep the power chain & trolleys in proper alignment when negotiating horizontal turns. They are available in 30°, 45°, 60°, 90° and 180° increments. Custom radii and curve increments can be fabricated upon request.

All traction wheel turns are constructed with a separate mounting frame from which both the conveyor track and the traction wheel shaft mounts are supported. All turns are made of solid plate construction for diameters up to 48" (1219.2). For diameters over 48" (1219.2) a spoke type construction is used.

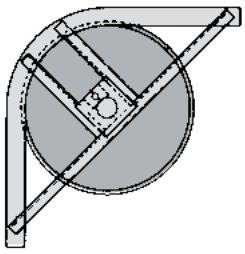
Although more expensive than roller turns, traction wheels require less maintenance, provide smoother operation at higher conveyor speeds, reduce chain pull, and reduce chain wear. Roller bearing traction wheels have a single lubrication point for easy maintenance. Carbon bushed hubs are available for use in environments exceeding 270°F. Traction wheel turns are best suited for dirty, corrosive or high temperature applications.

Minimum Recommended Traction Wheel Diameters

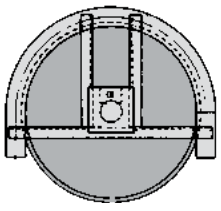
Chain Size	Recommended Trolley Spacing	Traction Wheel Dia.	Roller Turn Radius
X-348	up to 18" 24" 30"	24" 30" 36"	18" 18" 18"
X-458	up to 24" 32"	30" 36"	24" 24"



90° Turn



180° Turn



Traction Wheel Dimensions

Chain & Rail	A	B	C	Chain Drop	Plate Size	Spoke Type
3" I-beam / X348	5-1/2"	1/2"	-	2-1/2"	24" to 48"	Over 48" 1219.2
4" I-beam / X458	7-3/16	11/16"	5/16"	3-3/16"		
4" I-beam / X458	8"	11/16"	5/16"	4"		

Special sizes and types of traction wheel turns can be furnished upon request.

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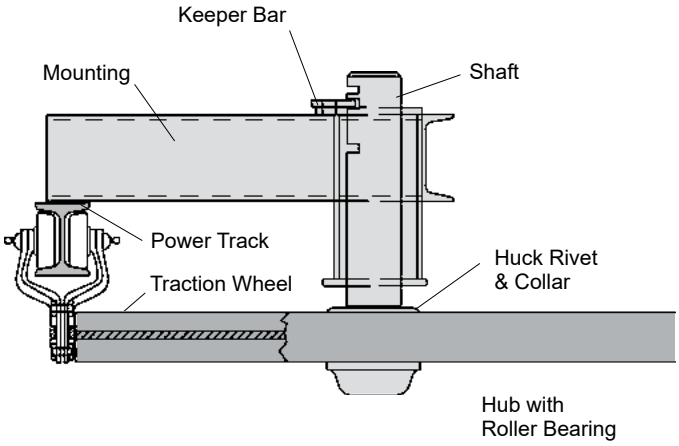
Two Bearing Styles

To cover a wide range of application requirements, traction wheels are available with either anti-friction roller bearings for normal room temperatures or carbon bushed bearings for use in ovens with temperatures up to 450°F (232.2°C).

Two ample size roller bearings are pressed into machined recesses in the traction wheel hub, and are lubricated through the hub cap. These bearings have a large storage space for lubricant that extends the time interval between required maintenance lubrications.

Bearings are protected against entrance of dirt or loss of lubricant by adequate seals. When properly lubricated, tapered roller bearing hubs will operate efficiently in temperatures up to 270°F (132.2°C).

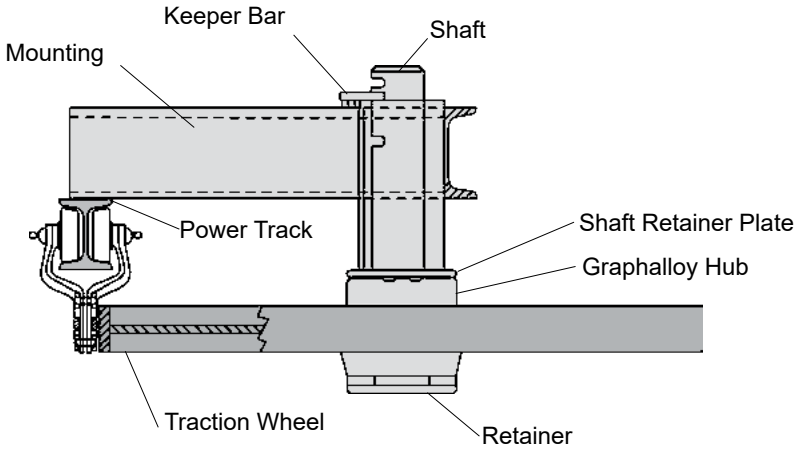
A removable shaft cast block type hub with tapered roller bearings is also available.



Roller Bearing Hub

Carbon Bushed Bearing

The heavy walled, carbon bushings successfully resist temperatures up to 450°F (232.2°C) with no lubrication required, as graphite is a natural lubricant. Carbon bushed bearings are not recommended for applications below 270°F (132.2°C).



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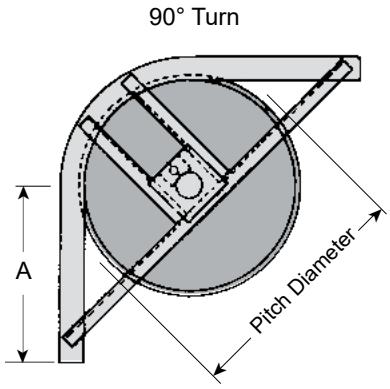
X348 Chain

3" I-beam (76.2mm)
2-1/2" Drop (63.5mm)



Roller Bearing Traction Wheel Assemblies

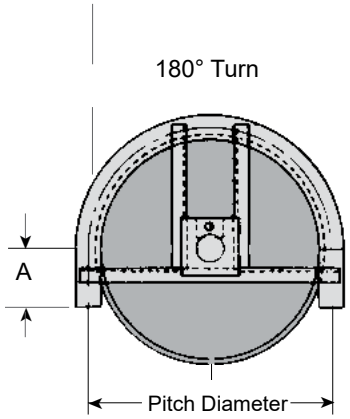
Pitch Diameter		Degree	Part No. Roller	Weight Lb	Kg	* A - Stub Length	
36"	914.4	90	P330-36-090-R-2	315	143	30"	762
		180	P330-36-180-R-2	301	137	12"	304.8
48"	1219.2	90	P330-48-090-R-2	421	191	36"	914.4
		180	P330-48-180-R-2	404	183	12"	304.8

NOTE" Roller bearing traction wheels receive one (1) shop coat of blue paint (RAL 5019)

Carbon Bushed Traction Wheel Assemblies

Pitch Diameter		Degree	Part No. Roller	Weight Lb	Kg	* A - Stub Length	
36”	914.4	90	P330-36-090-C-2	329	149	30"	762
		180	P330-36-180-C-2	316	143	12"	304.8
48”	1219.2	90	P330-48-090-C-2	435	197	36"	914.4
		180	P330-48-180-C-2	418	190	12"	304.8

NOTE” Carbon bushed traction wheels are coated with Rust-Veto



** The stub lengths given are for reference only. They are meant to be used as a design guide.*

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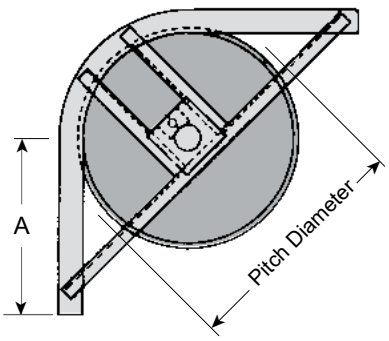
X458 Chain

4" I-beam (101.6mm)

3-3/16" Drop (81.0mm)

90° Turn

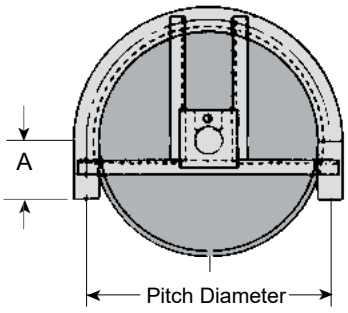


Roller Bearing Traction Wheel Assemblies

Pitch Diameter		Degree	Part No. Roller	Weight Lb	Weight Kg	* A - Stub Length	
36"	914.4	90 180	P440-36-090-R-2 P440-36-180-R-2	344 327	156 148	30" 12"	762 304.8
48"	1219.2	90 180	P440-48-090-R-2 P440-48-180-R-2	457 435	207 197	36" 12"	914.4 260.4
72"	1828.8	90 180	P440-72-090-R-2 P440-72-180-R-2	551 522	250 237	48" 12"	1219.2 304.8

NOTE" Roller bearing traction wheels receive one (1) shop coat of blue paint (RAL 5019)

180° Turn



Carbon Bushed Traction Wheel Assemblies

Pitch Diameter		Degree	Part No. Roller	Weight Lb	Weight Kg	* A - Stub Length	
36”	914.4	90 180	P440-36-090-C-2 P440-36-180-C-2	359 342	163 155	30” 12”	762 304.8
48”	1219.2	90 180	P440-48-090-C-2 P440-48-180-C-2	472 450	214 204	36” 12”	914.4 260.4
72”	1828.8	90 180	P440-72-090-C-2 P440-72-180-C-2	609 580	276 263	48” 12”	1219.2 304.8

NOTE” Carbon bushed traction wheels are coated with Rust-Veto

** The stub lengths given are for reference only. They are meant to be used as a design guide.*

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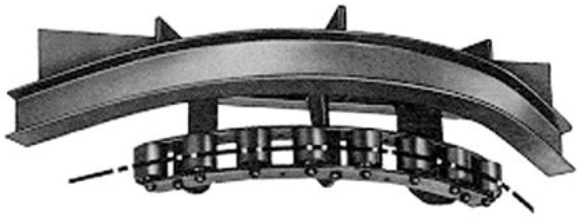
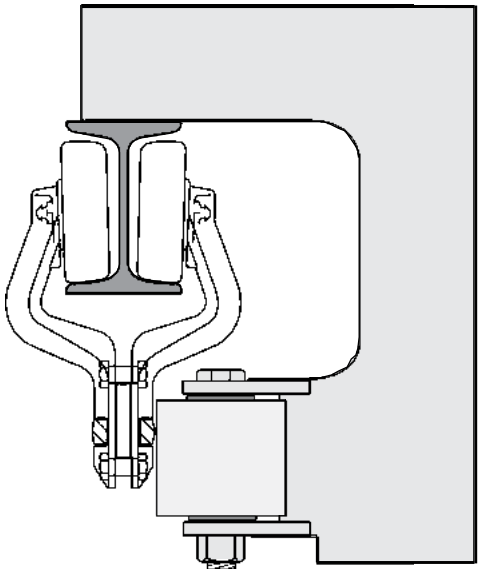
Roller Turn Features

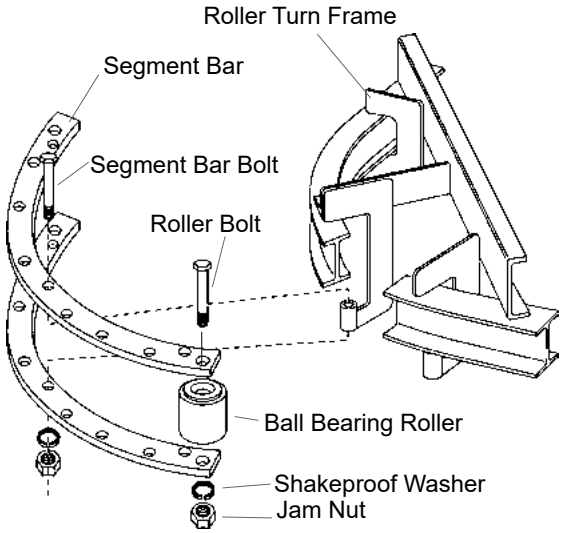
Roller turn rollers are designed to keep the power chain & trolleys in proper alignment when negotiating horizontal turns. They are available in 30°, 45°, 60°, 90° and 180°segments. Custom radii and curve segments can be fabricated upon request.

A roller turn assembly consists of a frame, I-beam rail, segment bar assembly and rollers. The frame is a welded steel construction designed to minimize deflection from chain pull. The roller segment bar assembly is bolted to the frame. This feature allows for easy replacement of either the complete roller assembly or individual rollers.

Roller turns are available with ball bearing rollers. When selecting conveyor system roller turns, be aware of load to load clearances on turns. Also, larger radii roller turns reduce friction and wear. They are recommended for systems where heavy chain pull is encountered.







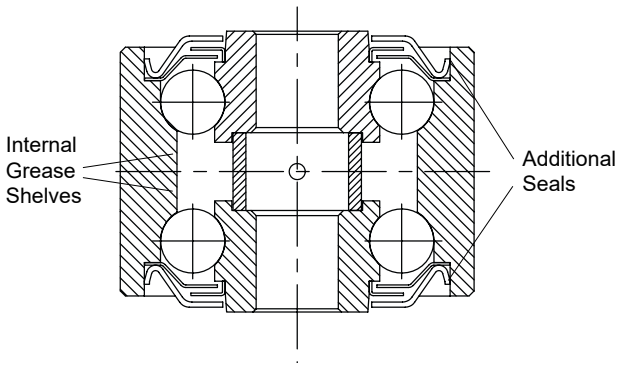
Minimum Recommended Roller Turn Radii

Chain Size	Recommended Trolley Spacing	Traction Wheel Dia.	Roller Turn Radius
X-348	up to 18" 24" 30"	24" 30" 36"	18" 18" 18"
X-458	up to 24" 32"	30" 36"	24" 24"

Ball Bearing Roller and Hardware

Unibeam roller turn rollers are specially constructed ball bearing rollers incorporating labyrinth seals. The units are factory lubricated and considered sealed-for-life.

Labyrinth seals protect bearings from contamination.



I-beam Size	Roller Turn Roller	Roller Bolt	Nut	Washer
3” Roller Turn	16493	9624	56567	57015
4” Roller Turn	16472	9577	56567	57015

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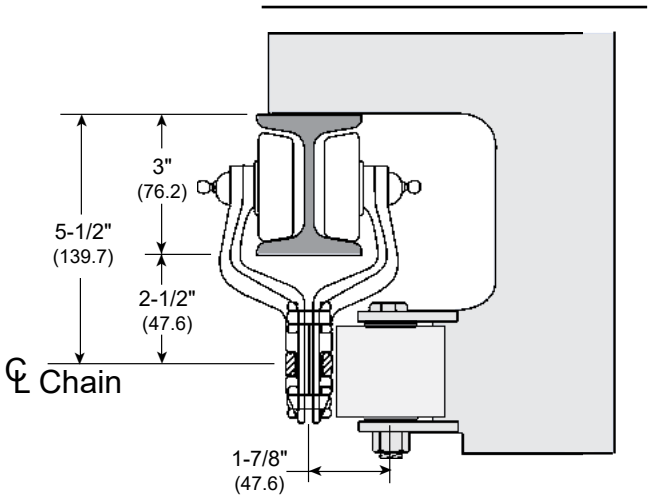
X-348 Roller Turn

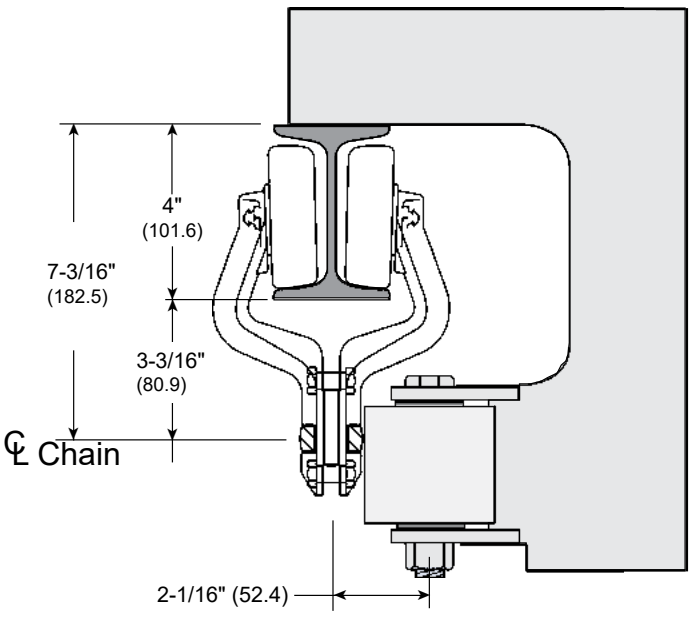
Roller Bearing Type..... Standard
Roller Bolt Dia..... 5/8" (15.7mm)
Chain Drop..... 2-1/2" (63.5)



Turn Radius	Part No.	Degree of turn	# of Rollers	Weight lb	Weight kg	Stub Length	
18"	9658	30°	2	64	29	12"	304.8
	9656	45°	3	71	32	12"	304.8
	9654	60°	4	72	33	12"	304.8
	9652	90°	6	84	38	12"	304.8
	9650	180°	12	151	68	12"	304.8
24"	9668	30°	3	76	34	12"	304.8
	9666	45°	4	83	38	12"	304.8
	9664	60°	6	96	44	12"	304.8
	9662	90°	8	110	50	12"	304.8
	9660	180°	16	198	90	12"	304.8
36"	9688	30°	4	80	36	12"	304.8
	9686	45°	6	98	44	12"	304.8
	9684	60°	8	119	54	12"	304.8
	9682	90°	12	149	67	12"	304.8
	9680	180°	24	278	126	12"	304.8
48"	212380	30°	6	107	48	12"	304.8
	212374	45°	8	131	59	12"	304.8
	212379	60°	12	163	74	12"	304.8
	212373	90°	16	185	84	12"	304.8
	9690	180°	32	408	185	12"	304.8

X-458 Roller Turn

Roller Bearing Type..... Standard
Roller Bolt Dia..... 5/8" (15.7mm)
A - Chain Drop..... 3-3/16" (80.9mm)



Turn Radius	Part No.	Degree of turn	# of Rollers	Weight lb	Weight kg	Stub Length	
24"	9718	30°	3	92	42	12"	304.8
	9716	45°	4	101	46	12"	304.8
	9714	60°	6	116	53	12"	304.8
	9712	90°	8	148	67	12"	304.8
	9710	180°	16	258	117	12"	304.8
36"	9738	30°	4	99	45	12"	304.8
	9736	45°	6	107	48	12"	304.8
	9734	60°	8	152	69	12"	304.8
	9732	90°	12	196	89	12"	304.8
	9730	180°	24	356	161	12"	304.8
48"	9758	30°	6	127	58	12"	304.8
	9756	45°	8	149	67	12"	304.8
	9754	60°	12	190	86	12"	304.8
	9752	90°	16	244	111	12"	304.8
	9750	180°	32	493	223	12"	304.8
60"	9762	90°	20	327	148	12"	304.8
72"	9772	90°	22	360	166	12"	304.8

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Daifuku has developed a UniFrame rotary caterpillar drive assembly to satisfy the reliable performance needs of today's modern manufacturing facilities. The following are the principal features of the UniFrame Drive:

The UniFrame Drive is a rotary type unit with limit switch overload protection. The rotary design can sense jam conditions within the drive and activate the overload limit switch. Linear drives cannot sense a jam within the unit.

Time-tested subcomponents such as the our caterpillar chain, backup bar, and drive sprocket have been incorporated into the new design.

SEW Eurodrive gearmotors are used, eliminating the need for belts, sheaves or additional guards. The helical-gear arrangement operates with higher efficiencies and at lower temperatures than worm gear reducers.

The reducer is a hollow shaft style unit that allows simplification of the drive/reducer connection. The entire reducer can be removed by removing a few bolts without disassembling the sprocket and caterpillar chain arrangement.

The reducers/gear motor arrangement simplifies preventive maintenance by eliminating belts and sheaves, which require periodic adjustment/replacement.

Brake motors are standard on the UniFrame Drive. (Note: Brakes must be wired separately when used with VFDs).

Frames are stocked for chain pull capacities of 2000 lb and 3000 lb.

4000 lb capacity units are available by special order.

Standard units are designed for use with VFD controllers. Daifuku offers three speeds of 15, 45 and 60 feet per minute. Inverter duty motors can operate within 3:1 turn down ratios allowing speed ranges of 5-15, 15-45 and 20-60 feet per minute based on constant torque. Higher turn down ratios are achievable with slight variances in torque.

X-348 Systems

Conveyor Speed	5 10 15 20 25 30 35 40 45 50 55 60		
Horsepower	1.5 Horsepower	3 Horsepower	5 Horsepower
Chain Pull Capacity	2000 lb		
947159	UniFrame X-348 rotary constant speed caterpillar drive assembly 2000 lb. Chain pull capacity c/w 1.5 HP, 230/460 Volt AC, TEFC inverter duty gear motor, 3:1 turn-down ratio, 460 Volt AC brake and limit switch overload protection. Nominal speed 15 FPM.		
947158	UniFrame X-348 rotary constant speed caterpillar Drive assembly 2000 lb. Chain pull capacity c/w 3 HP, 230/460 Volt AC, TEFC inverter duty gear motor, 3:1 turn-down ratio, 460 Volt AC brake and limit switch overload protection. Nominal speed 45 FPM.		
947157	UniFrame X-348 rotary constant speed caterpillar Drive assembly 2000 lb. Chain pull capacity c/w 5 HP, 230/460 Volt AC, TEFC inverter duty gear motor, 3:1 turn-down ratio, 460 Volt AC brake and limit switch overload protection. Nominal speed 60 FPM.		

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X-458 Systems

Conveyor Speed	5	10	15	20	25	30	35	40	45	50	55	60
Horsepower	1.5 Horsepower			3 Horsepower					5 Horsepower			
Chain Pull Capacity	2000 lb											
947166	UniFrame X-458 rotary constant speed caterpillar Drive assembly 2000 lb Chain pull capacity c/w 1.5 HP, 230/460 Volt AC, TEFC inverter duty gear motor, 3:1 turn-down ratio, 460 Volt AC brake and limit switch overload protection. Nominal speed 15 FPM.											
947165	UniFrame X-458 rotary constant speed caterpillar Drive assembly 2000 lb Chain pull capacity c/w 3 HP, 230/460 Volt AC, TEFC inverter duty gear motor, 3:1 turn-down ratio, 460 Volt AC brake and limit switch overload protection. Nominal speed 45 FPM.											
947164	UniFrame X-458 rotary constant speed caterpillar Drive assembly 2000 lb Chain pull capacity c/w 5 HP, 230/460 Volt AC, TEFC inverter duty gear motor, 3:1 turn-down ratio, 460 Volt AC brake and limit switch overload protection. Nominal speed 60 FPM.											

X-458 Systems

Conveyor Speed	5	10	15	20	25	30	35	40	45	50	55	60
Horsepower	1.5 Horsepower			5 Horsepower					7.5 Horsepower			
Chain Pull Capacity	3000 lb											
947163	UniFrame X-458 rotary constant speed caterpillar Drive assembly 3000 lb Chain pull capacity c/w 1.5 hp, 230/460 Volt AC, TEFC inverter duty gear motor, 3:1 turn-down ratio, 460 Volt AC brake and limit switch overload protection. Nominal speed 15 FPM.											
947162	UniFrame X-458 rotary constant speed caterpillar Drive assembly 3000 lb Chain pull capacity c/w 5 hp, 230/460 Volt AC, TEFC inverter duty gear motor, 3:1 turn-down ratio, 460 Volt AC brake and limit switch overload protection. Nominal speed 45 FPM.											
947133	UniFrame X-458 rotary constant speed caterpillar Drive assembly 3000 lb Chain pull capacity c/w 7.5 hp, 230/460 Volt AC, TEFC inverter duty gear motor, 3:1 turn-down ratio, 460 Volt AC brake and limit switch overload protection. Nominal speed 60 FPM.											

Caterpillar Drive Components

Standard Caterpillar Drive Chain

Special straight sidebar link keeps chain from bending backwards and keeps pressure off of the trailing dog roller. This evens the load out to the lead dog roller and helps prevent premature wear of the trailing dog roller.

Dog rollers are through hardened to a minimum Rockwell C47 hardness, increasing wearability of the rollers.

Dog faces are induction hardened to a Rockwell C55 hardness along the entire face of the dog ensuring accurate hardness levels.

4140 steel chain sidebars increase chain tensile strength.

Caterpillar Drive Chain Specifications

System	Chain Size	Dog Centers	Standard Caterpillar Chain
X-348	10'	12"	8388
X-458	10'	8"	8389

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Take-up Features

These devices are used to provide a means of compensating for chain wear resulting in chain stretch.

Take-ups for overhead conveyors consist of a fixed outer frame and a moveable inner frame. The inner frame is mounted on rollers and incorporates two expansion sections in the conveyor track. The inner frame rolls within the stationary frame and is designed to take up slack in the conveyor chain due to wear or stretch.

Take-ups can be furnished with either roller turns or traction wheels. Roller turns are normally furnished with a continuous 180° arc, but are available at an optional cost as a spread take-up where two 90° arcs are employed with a section of straight track between them.

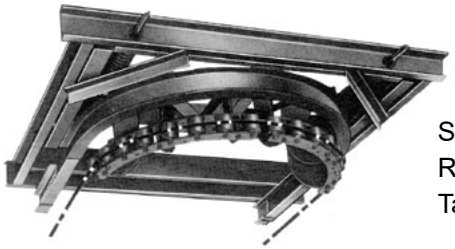
Daifuku take-ups are made in several styles. The most common styles are spring and air types. However, counterweight types are available upon request.

Spring Take-ups

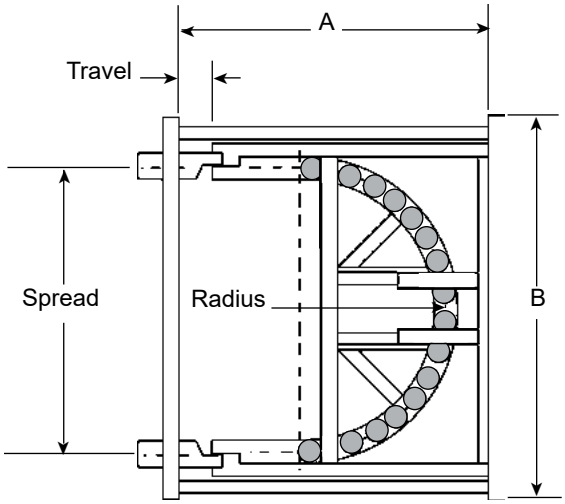
Because the spring take-up is automatic and requires very little maintenance, it is the most popular. The spring type take-up is generally satisfactory for non-reversing systems where it can be located immediately beyond the drive or where a relatively small amount of tension is required.

Air Take-ups

Air cylinder operated take-ups are recommended for conveyors that require a constant take-up tension. The tension in an air operated take-up can be readily adjusted at any time by regulating the air pressure through the use of suitable air control valves. The air operated take-up is particularly advantageous where it must be located at some distance from the unit.



Standard
Roller Turn
Take-up



Optional
Traction Wheel
Take-up
(Upon Request)

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Roller Turn Takeup
Spring Operated, 8" Travel (203.2mm)

Turn Specs	Radius		Part #	A - Length		B - Width	
I-beam ..... 3" Chain ..... 3" Drop..... 2-1/2"	24" 36"	609.6 914.4	9641 9643	59-3/4" 71-3/4"	1517.6 1822.4	66-3/4" 90-3/4"	1695.4 2305.0
I-beam ..... 4" Chain ..... 4" Drop..... 3-3/16"	24" 36"	609.6 914.4	16507 16541	59-3/4" 71-3/4"	1517.6 1822.4	66-3/4" 90-3/4"	1695.4 2305.0

Roller Turn Takeup
Air Operated, 8" Travel

Turn Specs.	Radius		Part #	A - Length		B - Width	
I-beam ..... 3" Chain ..... 3" Drop..... 2-1/2"	24" 36"	609.6 914.4	100871 100873	59-3/4" 71-3/4"	1517.6 1822.4	66-3/4" 90-3/4"	1695.4 2305.0
I-beam ..... 4" Chain ..... 4" Drop..... 3-3/16"	24" 36"	609.6 914.4	100874 100876	59-3/4" 71-3/4"	1517.6 1822.4	66-3/4" 90-3/4"	1695.4 2305.0

Roller Turn Takeup
Air Operated, 30" Travel

Turn Specs.	Radius		Part #	A - Length		B - Width	
I-beam ..... 3" Chain ..... 3" Drop..... 2-1/2"	24" 36"	609.6 914.4	100839 100841	81-3/4" 93-3/4"	2076.4 2381.2	66-3/4" 90-3/4"	1695.4 2305.0
I-beam ..... 4" Chain ..... 4" Drop..... 3-3/16"	24" 36"	609.6 914.4	100842 100844	81-3/4" 93-3/4"	2076.4 2381.2	66-3/4" 90-3/4"	1695.4 2305.0

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1/4 Ton Capacity Trolley

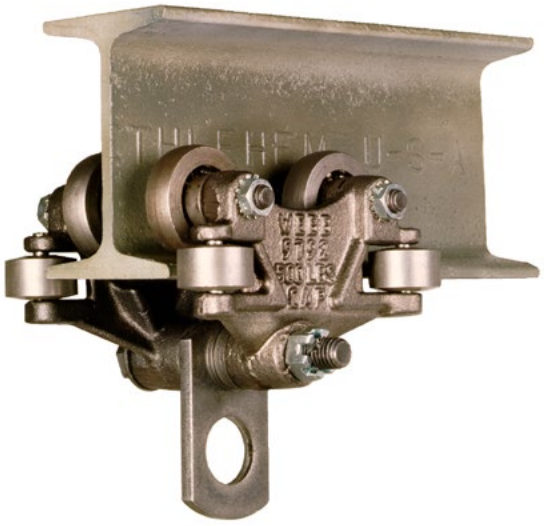
Part No. 9792

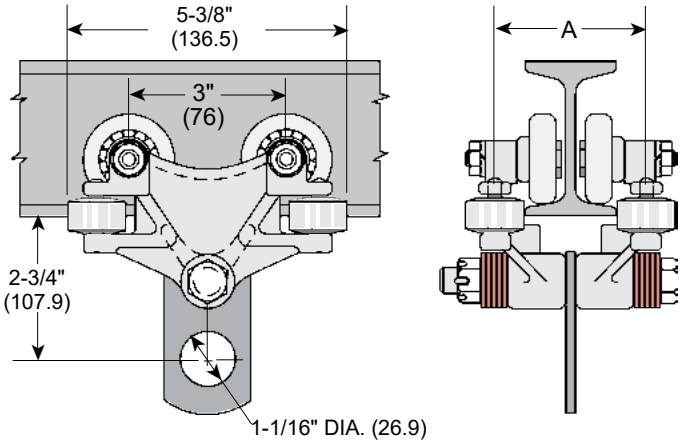
Adapts to: 2-5/8", 3" & 4" I-beams

Standard Features:

Side guide rollers prevent unnecessary wear on track and trolley.

Rugged cast iron body construction.





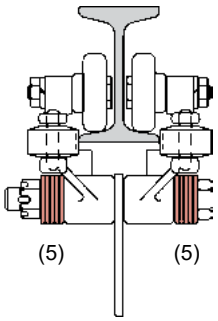
Min. horizontal radius ..... 12" (304.8)
Dia. of load link bolt ..... 1/2" (12.7)
Weight ..... 8.63 pounds (3.9 kg)

I-beam Size	A	
	inch	mm
2-5/8"	3	76.2
3"	3-9/16	90.5
4"	3-7/8	98.4

Washer Placement Guide

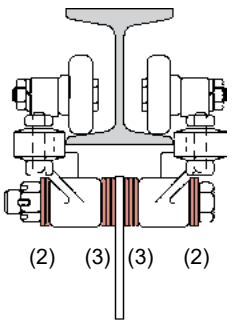
Caution: Maximum washer thickness for a 1/2" dia. (13.0) load bolt is 0.095" (2.4).

2-5/8" (67) I-beam



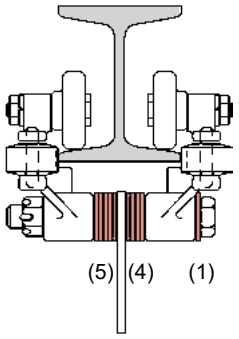
0 washers inside bolt
10 washers outside bolt

3" (76) I-beam



6 washers inside bolt
4 washers outside bolt

4" (102) I-beam



9 washers inside bolt
1 washer outside bolt

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3/4 Ton Capacity Trolley

Part No. 10711

Adapts to: 4", 5" & 6" I-beams

For I-beams over 6", contact Daifuku Product Sales for special assembly instructions.

Standard Features:

Side guide rollers prevent unnecessary wear on track and trolley.

Extended end flanges for added safety.

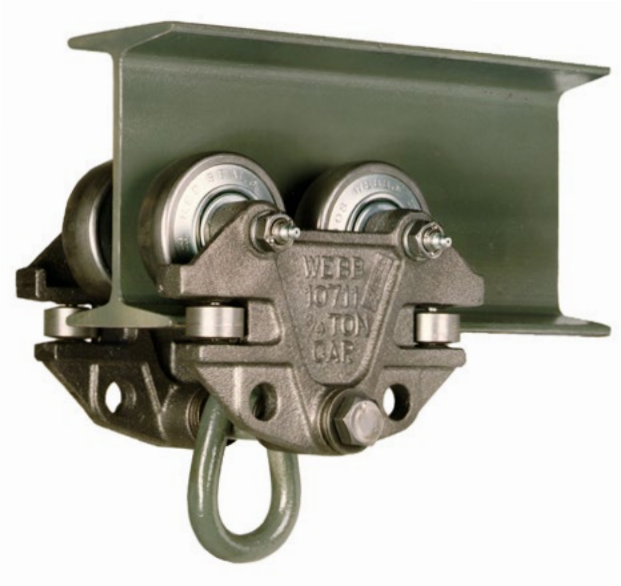
Rugged cast iron body construction.

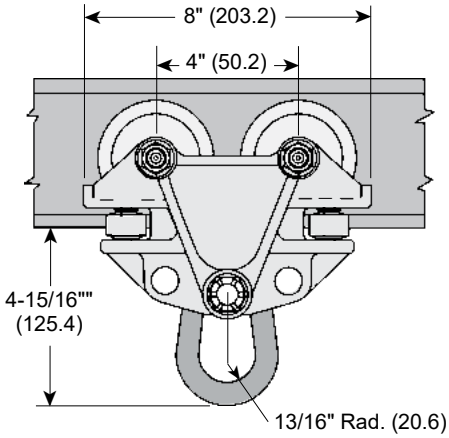
Trolley wheels are equipped with standard triple labrynth seals.

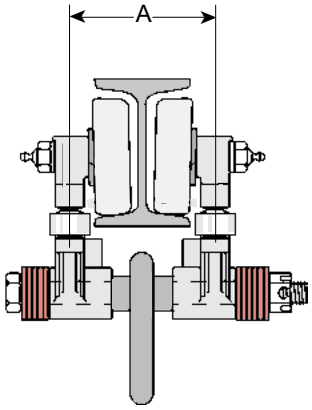
Wheels are bolted for easy replacement.

Available options:

Red Seal Guard with full contact grease seals.







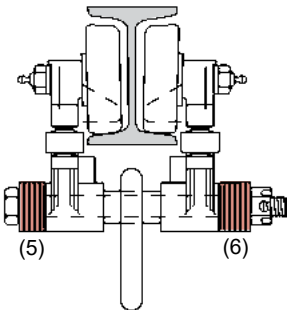
Min. horizontal radius ..... 12" (304.8)
Dia. of load link bolt ..... 5/8" (15.9)
Weight ..... 17 pounds (7.71 kg)

I-beam Size	A	
	inch	mm
4"	4	101.6
5"	4-3/8	111.7
6"	4-3/4	120.6

Washer Placement Guide

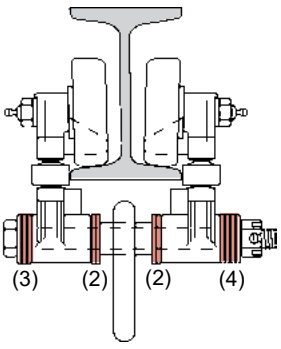
Caution: Maximum washer thickness for a 5/8" dia. (16.0) load bolt is 0.134" (2.4)

4" (102) I-beam



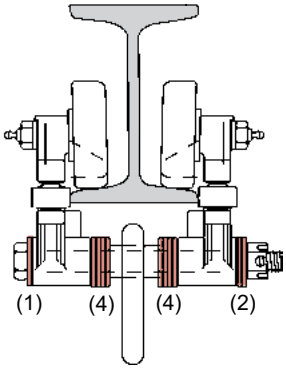
0 washers inside bolt
11 washers outside bolt

5" (127) I-beam



4 washers inside bolt
7 washers outside bolt

6" (203) I-beam



8 washers inside bolt
3 washers outside bolt

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1 Ton Capacity Trolley

Part No. 8360

Adapts to: 5", 6", 7" & 8" I-beams

For use on 10" & 12" I-beams, contact Daifuku Product Sales for special instructions.

Standard Features:

Side guide rollers prevent unnecessary wear on track and trolley.

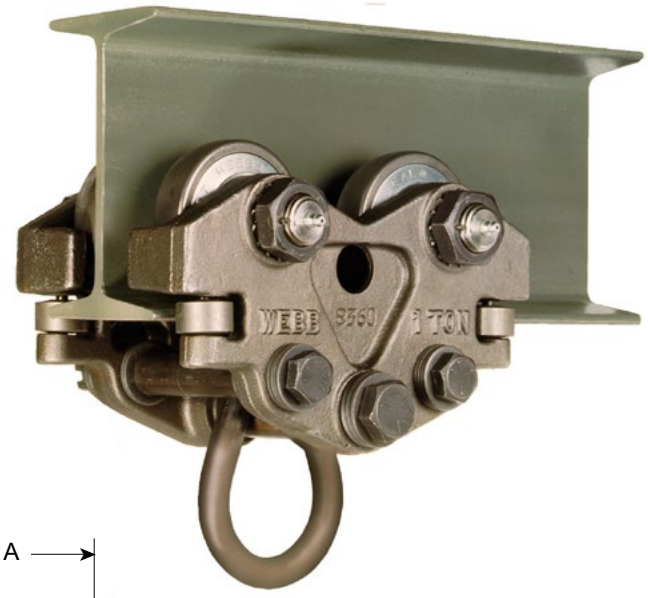
Extended end flanges for added safety.

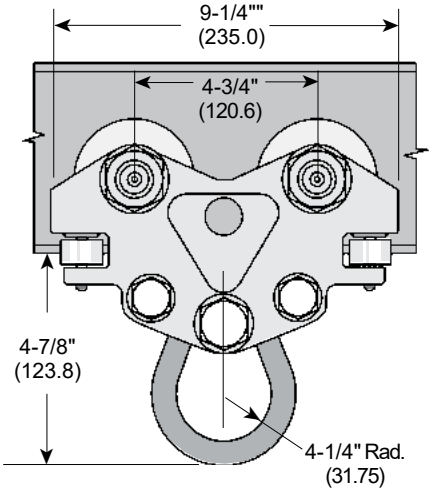
Rugged cast iron body construction.

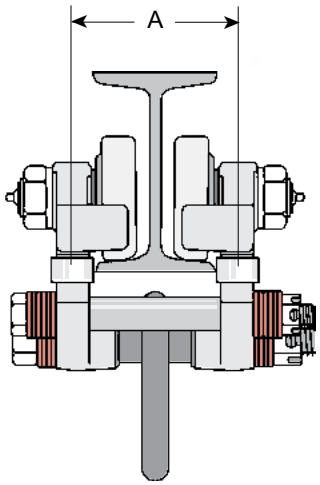
Trolley wheels are equipped with standard triple labyrinth seals. Wheels are bolted for easy replacement.

Available options:

Red Seal Guard with full contact grease seals.







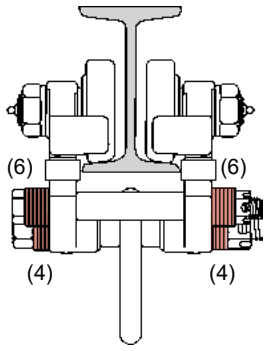
Min. horizontal radius ..... 12" (304.8)
Dia. of load link bolt ..... 3/4" (19.1)
Weight ..... 27.75 pounds (12.58 kg)

I-beam Size	A	
	inch	mm
5"	4-5/16	109.5
6"	4-11/16	119.1
7"	4-15/16	125.4
8"	5-5/16	135.0

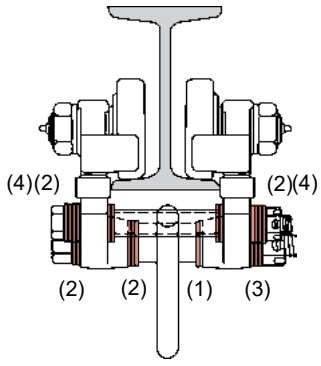
Washer Placement Guide

Caution: Maximum washer thickness for a 5/8" dia.(16.0) safety bolt is 0.095" (2.4)
Maximum washer thickness for a 3/4" dia. (19.0) load bolt is 0.134" (3.4)

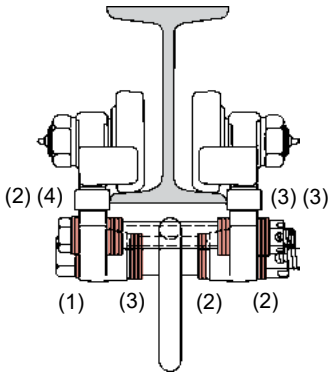
5" (127) I-beam



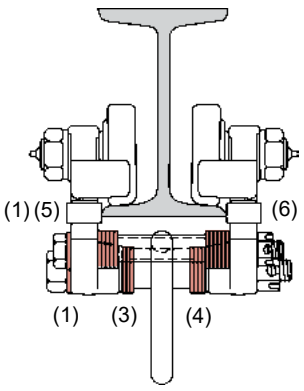
6" (152) I-beam



7" (178) I-beam



8" (203) I-beam



Load Bolts	0 washers per bolt inside 8 washers per bolt outside	3 washers per bolt inside 5 washers per bolt outside	5 washers per bolt inside 3 washers per bolt outside	7 washers per bolt inside 1 washers per bolt outside
Safety Bolts	0 washers per bolt inside 12 washers per bolt outside	4 washers per bolt inside 8 washers per bolt outside	7 washers per bolt inside 5 washers per bolt outside	11 washers per bolt inside 1 washer per bolt outside

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2 Ton Capacity Trolley

Part No. 8363

Adapts to: 6", 8", 10" & 12" I-beams

Standard Features:

Side guide rollers prevent unnecessary wear on track and trolley.

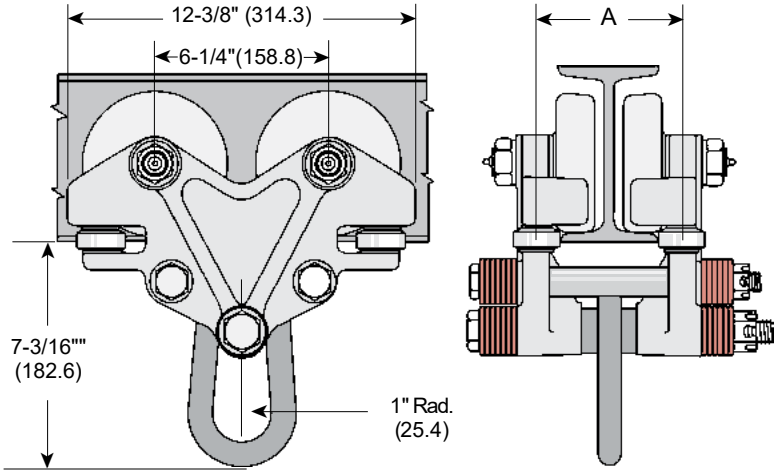
Extended end flanges for added safety.

Rugged cast iron body construction.

Trolley wheels are equipped with standard triple labyrinth seals. Wheels are bolted for easy replacement.

Available options:

Red Seal Guard with full contact grease seals.



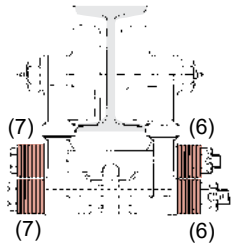
Min. horizontal radius ..... 36" (304.8)
Dia. of load link bolt ..... 7/8" (22.2)
Weight ..... 66.5 pounds (30.16 kg)

I-beam Size	A	
	inch	mm
6"	5-5/16	135.0
8"	5-15/16	150.8
10"	6-9/16	166.6
12"	6-15/16	176.2

Washer Placement Guide

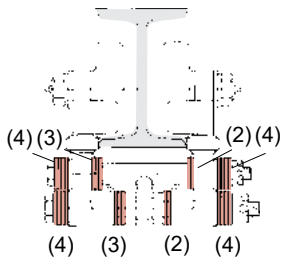
Caution: Maximum washer thickness for a 3/4" dia.(19.0) safety bolt is 0.134" (3.4)
Maximum washer thickness for a 7/8" dia. (22.0) load bolt is 0.134" (3.4)

6" (152mm) I-beam



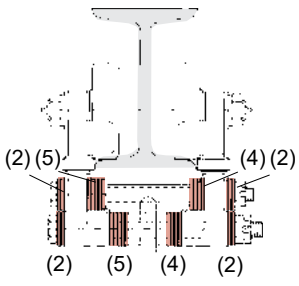
0 washers per bolt inside
13 washers per bolt outside

8" (203mm) I-beam



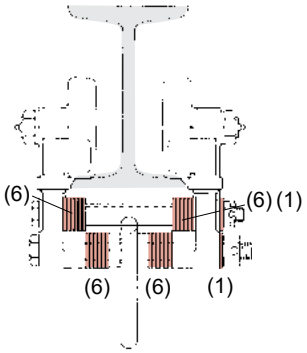
5 washers per bolt inside
8 washers per bolt outside

10" (254mm) I-beam



9 washers per bolt inside
4 washers per bolt outside

12" (304.8mm) I-beam



12 washers per bolt inside
1 washer per bolt outside

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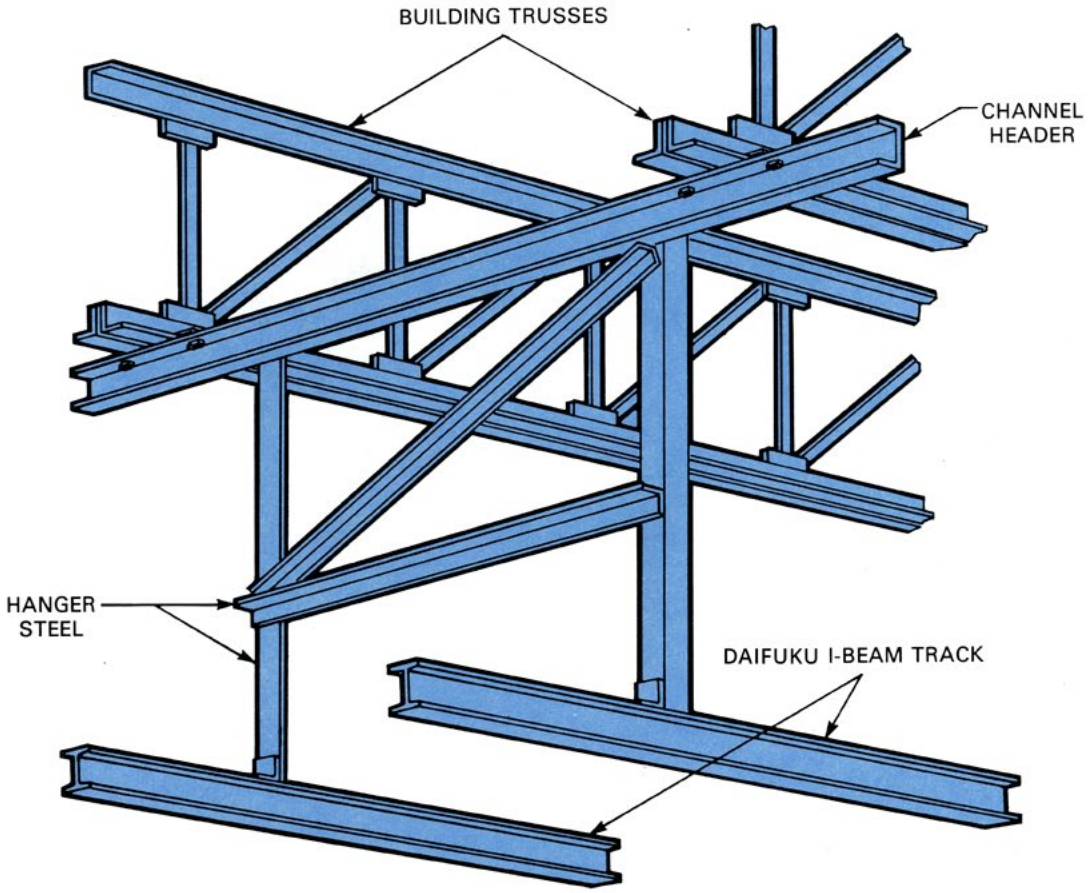
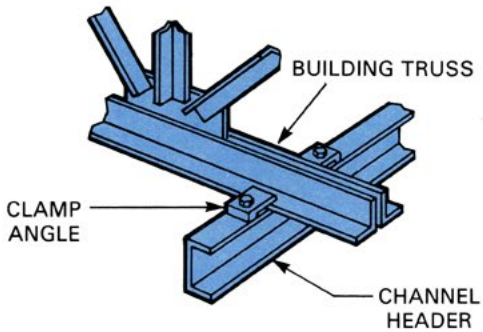
FITTINGS AND METHODS OF SUPPORTING I-BEAM TRACK



Wherever possible, avoid welding superstructure and hanger steel to the building steel…use bolted type connections. On hangers and header steel, welded connections are considered to be more economical than bolted connections…either type can be used.

Trolley loads and spacings govern the selection of hanger and sway brace angle sizes. The following angle sizes will provide sufficient conveyor support under average loading conditions:



TYPICAL BOLTED CONNECTION

Note:

1. When supporting the drive, the above angle sizes must be increased.
2. Use welded construction except to building steel carrying stresses where clamps should be used.
3. Horizontal and vertical curves should be erected first.

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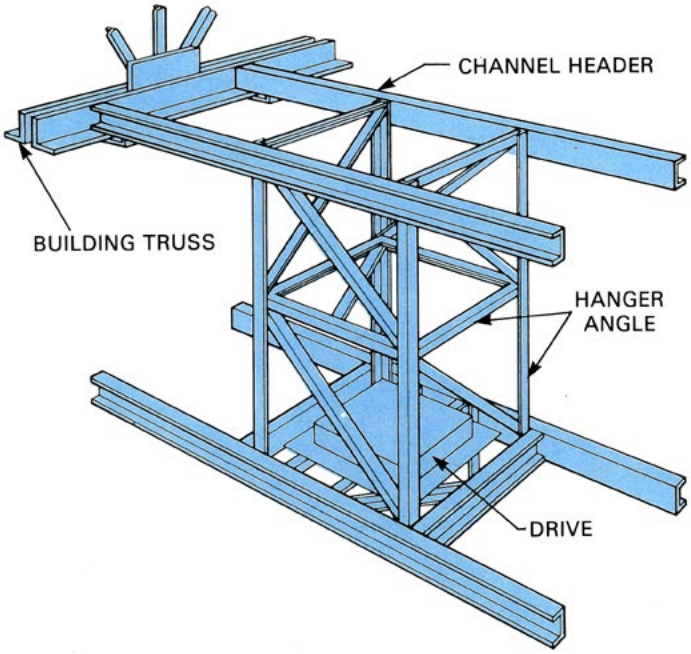
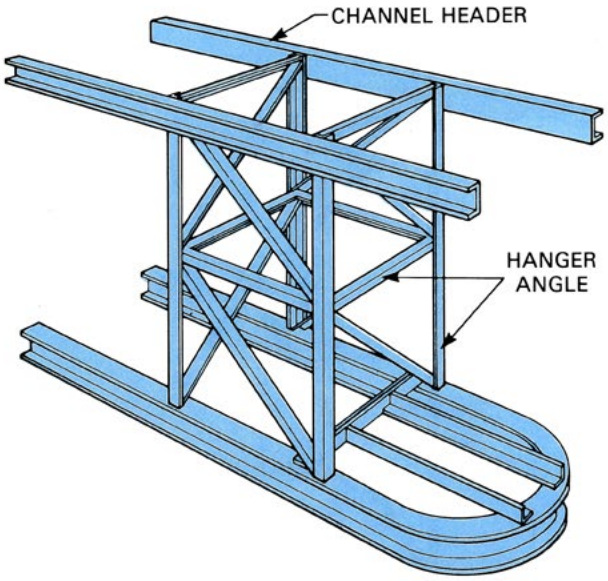
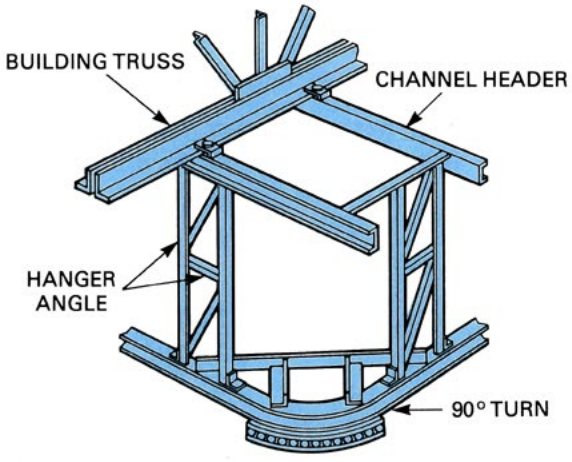
TYPICAL COMPONENT SUPPORT METHODS



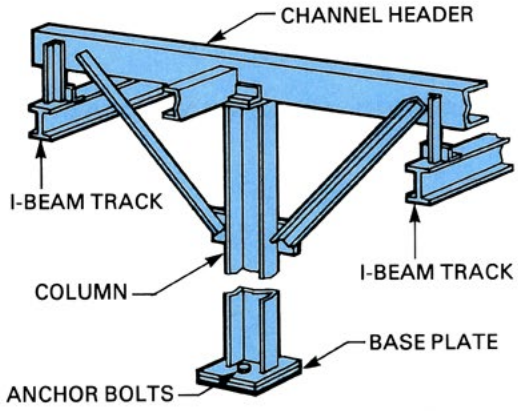
TYPICAL DRIVE SUPPORT



TYPICAL SUPPORTS FOR ALL 180° TURNS



TYPICAL SUPPORTS FOR 90° TURNS



TYPICAL FLOOR SUPPORT

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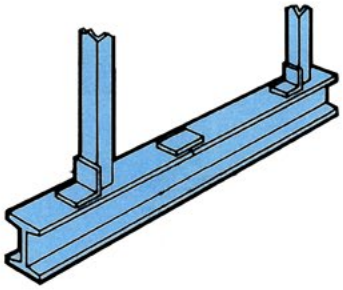
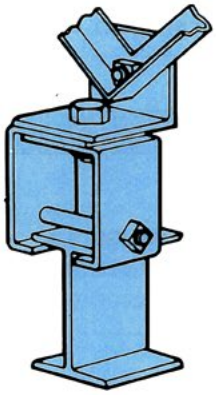
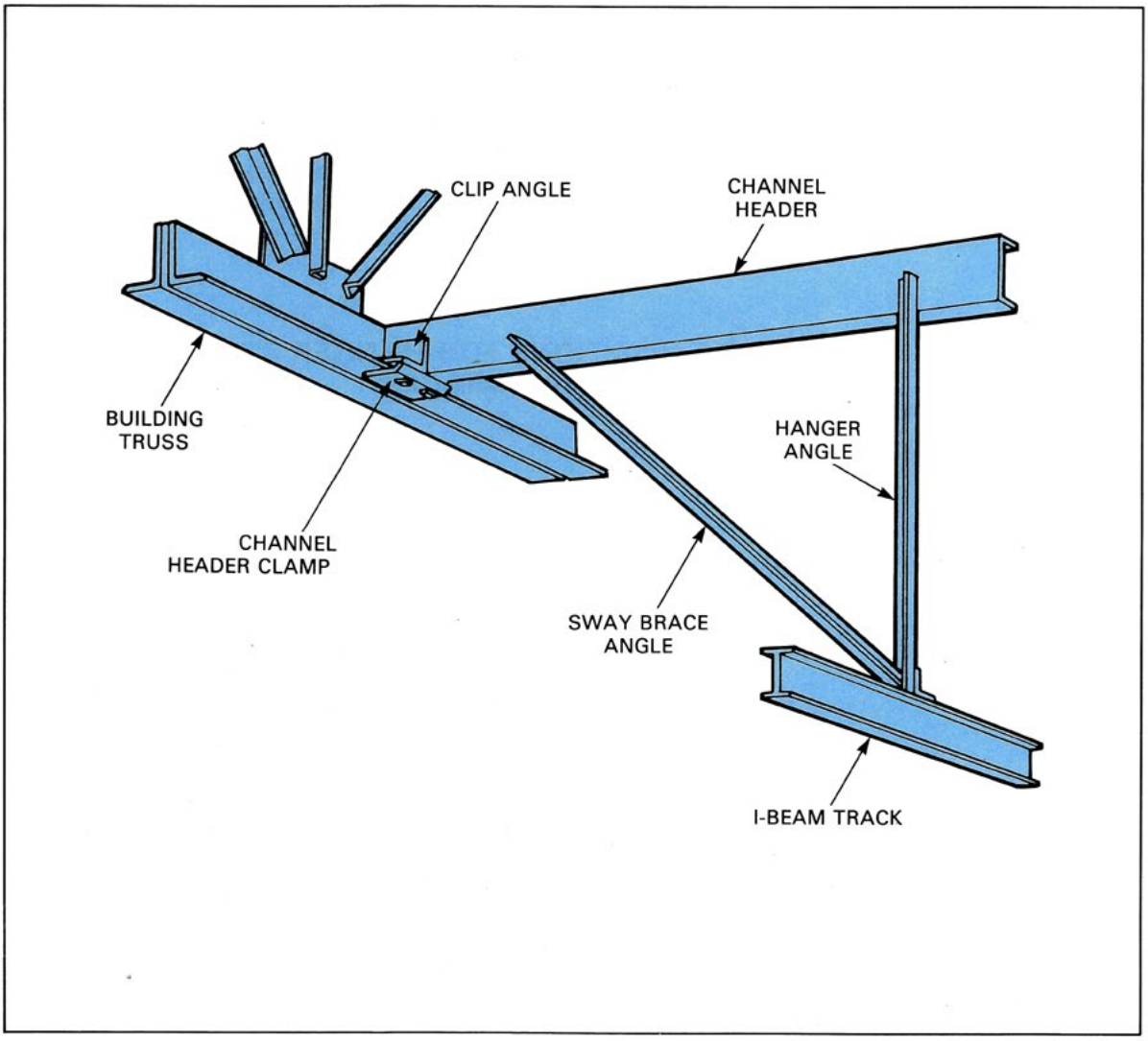


WELDED CONSTRUCTION



BOLTED CONSTRUCTION



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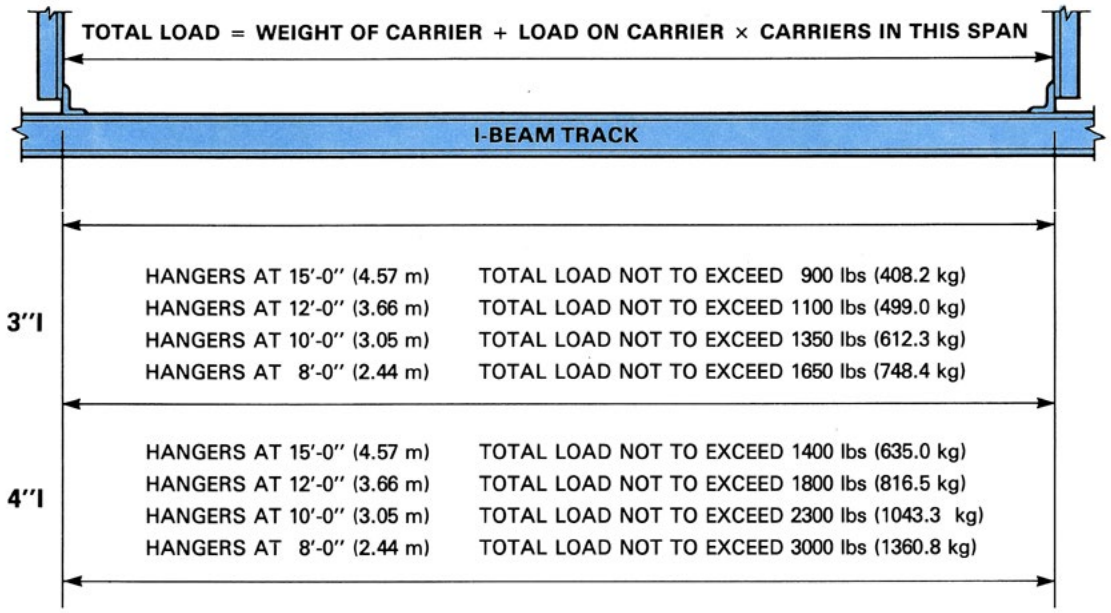
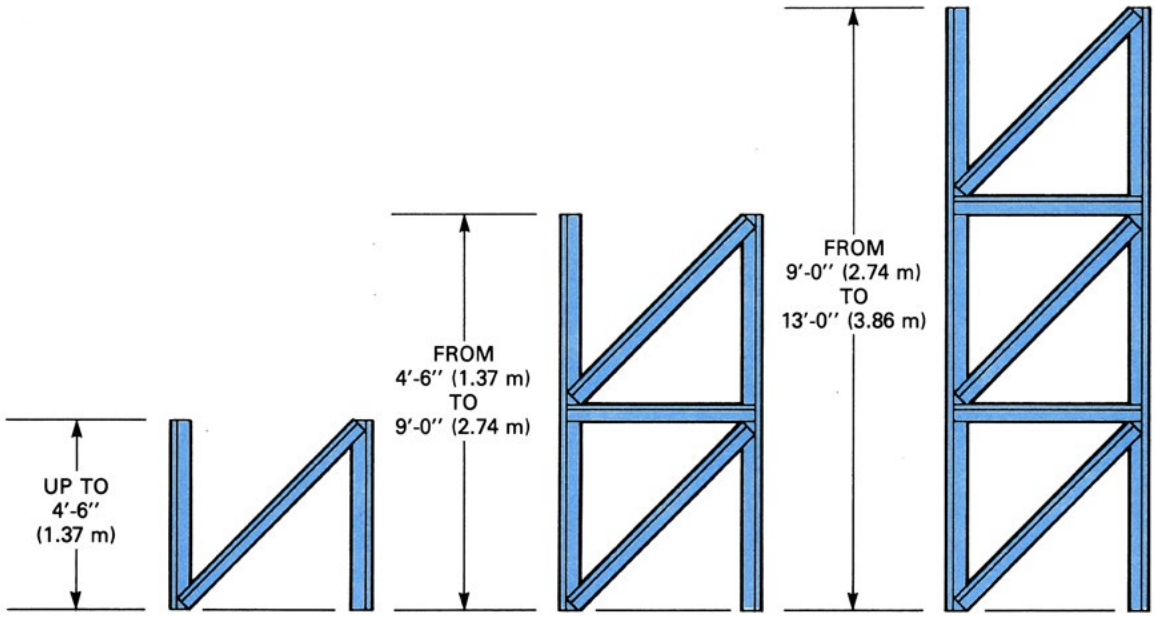
LOAD LIMITS ON I-BEAM TRACK



TYPICAL SUPPORT ELEVATIONS FOR HANGER STEEL CROSS AND SWAY BRACES



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Systematic care, inspection, and service of equipment performed on a regular basis will lead to early detection of minor problems.

- **Upon completion** of erection of an Overhead Trolley Conveyor and before operation of the conveyor, the customer's Maintenance Department shall properly lubricate all moving parts. Many customers prefer to use their own choice of lubricants and lubricating intervals. The following charts and suggestions are therefore offered as a guide.
- **Trolley wheel bearings** receive a minimum application of rust-proof spindle oil at the factory for protection during shipment only.
- **Trolley wheels** operating through part washers, steam, elevated temperatures, caustic and abnormal conditions should be baffled for protection and require special consideration. Refer to chart or your local lubricant specialist for recommendations.
- **Trolley wheels operating in elevated temperatures** (above 250°F, 121°C) should have an automatic lubricator of positive connection type located a reasonable distance from oven exit to allow parts to cool down to approximately 200°F (93°C). Lubricators should apply a minimum of mist or fog of light penetrating oil that will leave a minimum of residue.
- **Inspect** as recommended for sluggish wheels, dry chain, etc.
- **Sluggish or frozen wheels** must be removed from conveyor and throughly cleaned and inspected for later replacement use. The cost of a new trolley is sometimes less than the cost of cleaning the components.
- **A quantity of spare parts** should be on hand for replacement, especially half trolley assemblies, attachments, and inner caps.
- **To remove wheel inner cap**, pierce with a sharp tool and pry loose. Replace with new wheel inner cap, which must be pressed in place carefully with a blunt tool.
- **Do not over lubricate.** Wheels running smoothly require no additional lubricant.
- **Trolley brackets** that may become bent in service should be replaced. Do not attempt to straighten.
- **Chain should be lubricated at drive** on slack chain side to ensure lubricant reaches bearing point of pin and link.
- **Traction wheels with carbon bushing must never be lubricated.**
- **I-beam track should be inspected** at regular intervals for wear and peening of flanges at vertical curves and wear on I-beam webs.
- **Conveyors operating in extremely low temperatures** should be allowed to run at reduced speed continuously overnight to prevent freezing of lubricants.
- **Lubricants shown** in chart on page 8.5, or equal, are suggested.
  DO NOT OVER LUBRICATE.

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Reliability of conveyors depends largely on sound maintenance procedures. Each conveyor should be thoroughly inspected at regular intervals and corrective measures should be taken to prevent major breakdowns and loss of valuable production time.

If the log is maintained with sufficient information, a dual purpose will be accomplished. First, a record of trouble and responsibility is available. Second, the log can be reviewed periodically; and changes to frequency of inspection and/or maintenance methods could be made. This would then, over a period of time, make the maintenance program more effective.

A suggested log sheet form is shown below. If the same or similar troubles recur frequently, it is only logical to (1) make more frequent inspections for the particular trouble, or (2) investigate changes which will prevent such trouble. A written record of the log form type will assist in evaluation much more than “word of mouth”.

IMPORTANT: Do not attempt to perform maintenance or make adjustments on any equipment without first consulting the service manual. Be sure the conveyor is always disconnected from the power source before starting maintenance.

Maintenance Log Sheet

Conveyor No.	Date of Inspection	Result of Inspection	Parts Replaced or Repaired	Cause of Trouble	Mechanics' Initials

Trouble-Probable Cause-Remedy Chart

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Trouble	*Probable Causes*	*Remedy*
CHAIN		
Excessive chain wear. *(Note: The chain will elongate due to wear; this is normal wear and is no fault of the system.)*	Lack of lubrication. Sluggish or frozen trolley wheels. Roller turn roller frozen. Obstruction in chain path. Conveyor overloaded.	Lubricate chain. Lubricate or replace trolleys. Replace roller turn rollers. Remove obstruction and remove and replace chain if damaged. Conveyor should not be loaded beyond its designed capacities.
Excessive slack chain.	Chain growth through normal wear.	Adjust take-up and if necessary remove links of chain.
TROLLEYS		
Sluggish or frozen trolley wheels.	Residue accumulated from over lubrication. Bearings corroded or worn out.	Remove from conveyor and clean. Remove welsh plug to clean and press on new plug with blunt tool. Replace trolley.
Bent trolley brackets	Damaged in jam or by obstruction.	Remove obstruction and replace damaged trolley bracket with new bracket. Do not attempt to straighten bent brackets.)
ROLLER TURNS		
Sluggish or frozen roller turn rollers	Dirt or grease residue.	Clean thoroughly or replace if bearings are damaged. See lubrication chart.
I-BEAM TURNS		
Excessive wear or peening of flanges at vertical curves.	Excessive chain tension.	Adjust chain tension.
Excessive wear on I-beam web.	Bent trolley brackets. Eccentric Loading.	Replace trolleys. Load carriers symmetrically.

Trouble-Probable Cause-Remedy Chart

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Trouble	*Probable Causes*	*Remedy*
TAKE-UP		
Floating frame movement sluggish or frozen	Spring compression, air pressure or counterweight load too great.	Reduce the spring, air or counterweight loading.
	Dry or damaged expansion joints.	Lubricate if dry and replace with new expansion joints if damaged.
	Guide wheels worn or frozen with dirt and grease residue.	Clean thoroughly or replace if worn.
DRIVE		
Decrease in conveyor speed	Belt slippage	Adjust belt until snug.
	Set screws on pulley are loose and causing pulley to rotate on shaft.	Align pulley and tighten set screws.
Drive stops	Overload limit switch	Locate and eliminate cause of conveyor jam and restart conveyor.
	Power failure	Check power supply
Excessive noise in reducer	Lack of lubrication	Fill reducer with oil to oil level plate; or, if needed, change oil. Grease all fittings.
	Oil leak	Tighten all grease fittings and pipe plugs, clear breather tube opening and add lubricant.
	Worn or broken gear or bearing	Disassemble reducer and replace damaged part.
Motor running above normal temperature	Conveyor chain pull excessive	Inspect chain & trolley lubrication
	Electrical	Inspect electrical wiring and controls.
	Bearing failure	Inspect and replace motor.
	Motor ventilation obstructed	Clean motor of dust and dirt.
Slapping or pulsating caterpillar chain	Chain too loose	Adjust drive take-up unit until chain is snug. (Do not remove any links of caterpillar chain or dogs.)
	Conveyor chain or caterpillar chain worn beyond use	Replace
Floating frames sluggish or frozen	Obstruction	Remove obstruction and repair or replace any damaged equipment.
	Guide wheels worn or frozen with dirt or grease residue	Clean thoroughly or replace if worn too badly.

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Lubricant Guide for Operating Temperatures up to 250°F (121°C)

See local lubrication specialist for temperatures above 250°

	Inspect	Lubricant	Remarks
Chain	60 Days or as required	AGMA #3	
Trolley Wheels	30 Days	NLGI #2 Gr.*	
Roller Turn Rollers Zerk Fittings No Fittings		NLGI #2 Gr. SAE #30 Oil	Generally not used above 250°F
Traction Wheels Anti-Friction Carbon Bush		NLGI #2 Gr. None	Never lubricate carbon bushed traction wheels
Motor			See Instructions on motor
Countershaft Bearings		NLGI #2 Gr.	
Caterpillar Chain		SAE #90 Oil	
Caterpillar Chain Dogs		NLGI #2 Gr.	Apply to face of Dog
Takeup Bearings		NLGI #2 Gr.	
Idler Sprocket		NLGI #2 Gr.	
Back-up Rollers		SAE #30 Oil or Nlgl #2 Gr.	
Back-up Bar		NLGI #2 Gr.	
Track		None	Inspect wear
Floating Frame Wheels		None	Prepacked
Reducers & Fittings		50° to 125°F (10° to 52°C) NLGI #2 Gr.	
Gear Case		AGMA #8 Comp. Oil** For use with bronze worm gear reducer	See instructions on unit

*Lithium Complex Base Recommended

**Temperature 15° to 60° (-9° to 16°C). Use AGMA #7 Comp. oil for use with Bronze Worm Gear Reducer.

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Suggested Inspection Checklist for Daifuku Overhead Trolley Conveyors

Chain

- ☐ Lubrication
- ☐ Excessive wear
- ☐ Slack Chain

Trolleys

- ☐ Lubrication
- ☐ Sluggish or frozen wheels
- ☐ Bent bracket
- ☐ Loose bracket bolts

I-Beam

- ☐ Wear and peening on flanges at vertical curves
- ☐ Wear on web at load or unload points, horizontal and vertical curves
- ☐ Obstacles on track interfering with trolley path

Roller Turns

- ☐ Lubrication
- ☐ Roller bearing wear
- ☐ Roller face wear
- ☐ Loose roller bolts
- ☐ Loose bracket bolts

Takeup

- ☐ Lubrication
- ☐ Limit switches
- ☐ Roller bearing wear
- ☐ Roller face wear
- ☐ Loose roller bolts
- ☐ Loose bracket bolts
- ☐ Travel remaining
- ☐ Spring (screw) adjustment
- ☐ Expansion joint conditions
  - • Lubrication
  - • Wear
  - • Free movement
- ☐ Ease of floating frame travel

Traction Wheels

- ☐ Lubrication
- ☐ Bearings
- ☐ Rim wear
- ☐ Check bolts
- ☐ Alignment

Drive

- ☐ Lubrication
  - • Cat chain
  - • Machinery components
  - • Bearings
  - • Oil level in reducer

- ☐ Wear
  - • Cat chain
  - • Back-up bar
  - • Back-up rollers
  - • Cat unit sprockets

- ☐ Adjustments
  - • Cat unit take-up (Cat chain should be tight)
  - • Back-up bar
  - • Limit switch cut-off tripper bar

- ☐ Overload condition
  - • Chain pull indicator reading in overload zone
  - • Motor or reducer running at excessive temperature

- ☐ Belt drive condition
  - • Pulleys are aligned and set screws are tight
  - • Belts are in good condition and are not slipping

- ☐ Excessive oil leakage from reducer
- ☐ Loose mounting bolts
- ☐ Ease of floating frame travel

Safety

- ☐ All applicable safety procedures followed during inspection
- ☐ Proper installation of all safety devices

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NOTICE:

This catalog is intended to illustrate the various Daifuku overhead conveyor components and their application into a conveyor system. Environmental as well as many other conditions will vary with each installation. Daifuku does not represent or warrant that adherence to any guidelines or suggestions set forth in this catalog will necessarily result in proper selection, manufacture, installation and/or maintenance of conveyor equipment and/or a conveyor system. Daifuku disclaims responsibility for any equipment and/or system malfunction, property damage, personal injury or any other damages of any kind or nature, or violations of law resulting from component, equipment and/or system selection, design, installation, maintenance or operation performed by a contractor, user or any other person.

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In accordance with our established policy to constantly improve our products, the specifications in this manual are subject to change without notice.

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