Fermilab

Particle Physics Division

Mechanical Department Engineering Note

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Project: MicroBooNE

Project Internal Reference:

Title: Small LArTF work platform

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Reviewer(s): [signature] 10/16/2013

Key Words:

Abstract/Summary:

This note documents calculations for the structure of a small work platform that is installed over the Liquid Argon pumps. The platform is a temporary surface to access some piping and valves that are too high to reach from the floor and there is no room in the area for a ladder or a lift.

Applicable Codes:
AISC Manual of Steel Construction, ninth edition.
APA- Engineered Wood Association, Load –Span Tables for PS-1 Plywood

Small Platform over LAr pumps at LArTF
Jim Kilmer
9/26/2013

This note documents the mechanical structure for a small service platform over the two LAr pumps at LArTF. It is needed because areas above the pump need minor access from time to time and ladders won't allow a technician to reach all of the areas needed. The frame uses the original support frame holding up the pumps, which is made out of 3" by 3" by 1/4" square structural tubing. The remainder of the support is pieces of double unistrut. Rate the enntire platform area at only 500 pounds of weight. This allows for a tech and a heavy tool or two techs.

PUMP FRAME

As noted the pump frame is made from 3" by 3" by 1/4" wall tubing. The six vertical pieces are all 57 inches long. Used as columns in the AISC manual each of those six columns is good for 53,000 pounds of load, well beyond that required for holding up the pumps estimated at 600 pounds each and also an extra 500 pounds of platform load. The horizontal members that support the platform are made from 3" by 3" tubing and are approximately 36 inches long. To calculate the bending in these assume that the entire 500 pound platform load is carried on one unistrut colum that bears in the center of the 3" by 3" memberas a worst case calculation.

$I := 3.16 \cdot in^4$ Moment of Inertia of 3" by 3" tubing

$c := 1.5 \cdot in$ Distance from central axis to the extreme fibers

$P := 500 \cdot lb + 600 \cdot lb$ Add the platform and pump load

$L := 36 \cdot in$

$$Mmax := \frac{P \cdot L}{4}$$

$$Mmax = 9.9 \times 10^3 \cdot in \cdot lb$$

$$\sigma bend := Mmax \cdot \frac{c}{I}$$

$$\sigma bend = 4.699 \times 10^3 \cdot \frac{lb}{in^2}$$

The bending stress on these tubes is well below standard allowable stress for structual materials. Normal structual tubing is rated at 50 KSI X .66 = 33 KSI allowable bending stress.

UNISTRUT SUPPORTS

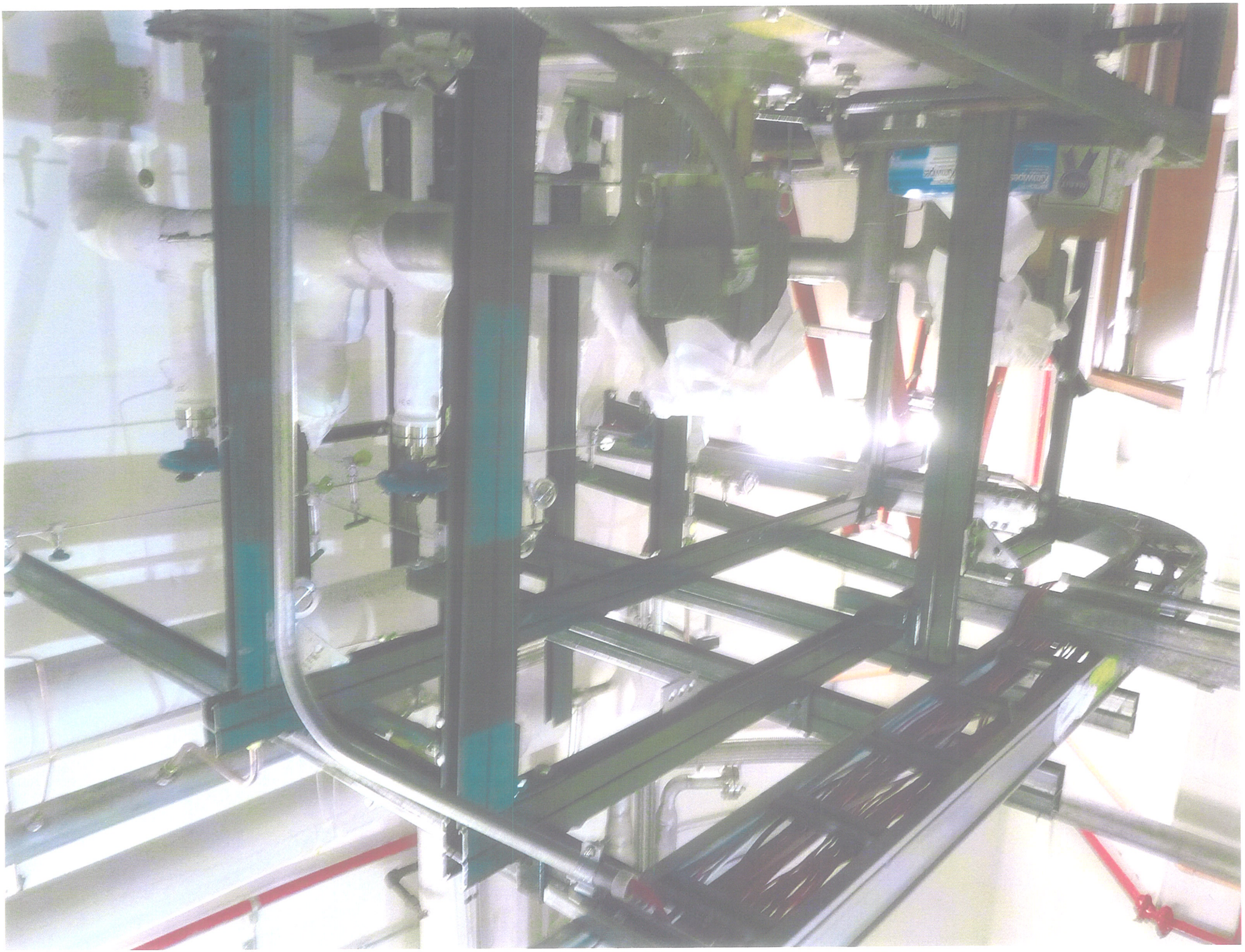
The unistrut portion of the deck support is all P1001 double unistrut except for one piece of P1000 single unistrut. In the section of the deck built on the pump frame the unistrut columns are all 36" tall. From the Unistrut catalog, P1001 has a column maximum loading at 36 inches of 6290

pounds. The one P1000 column is rate for a maximum allowable load at 36 inches of 3,190 pounds. These are all capable of carrying the 500 pound platform load.

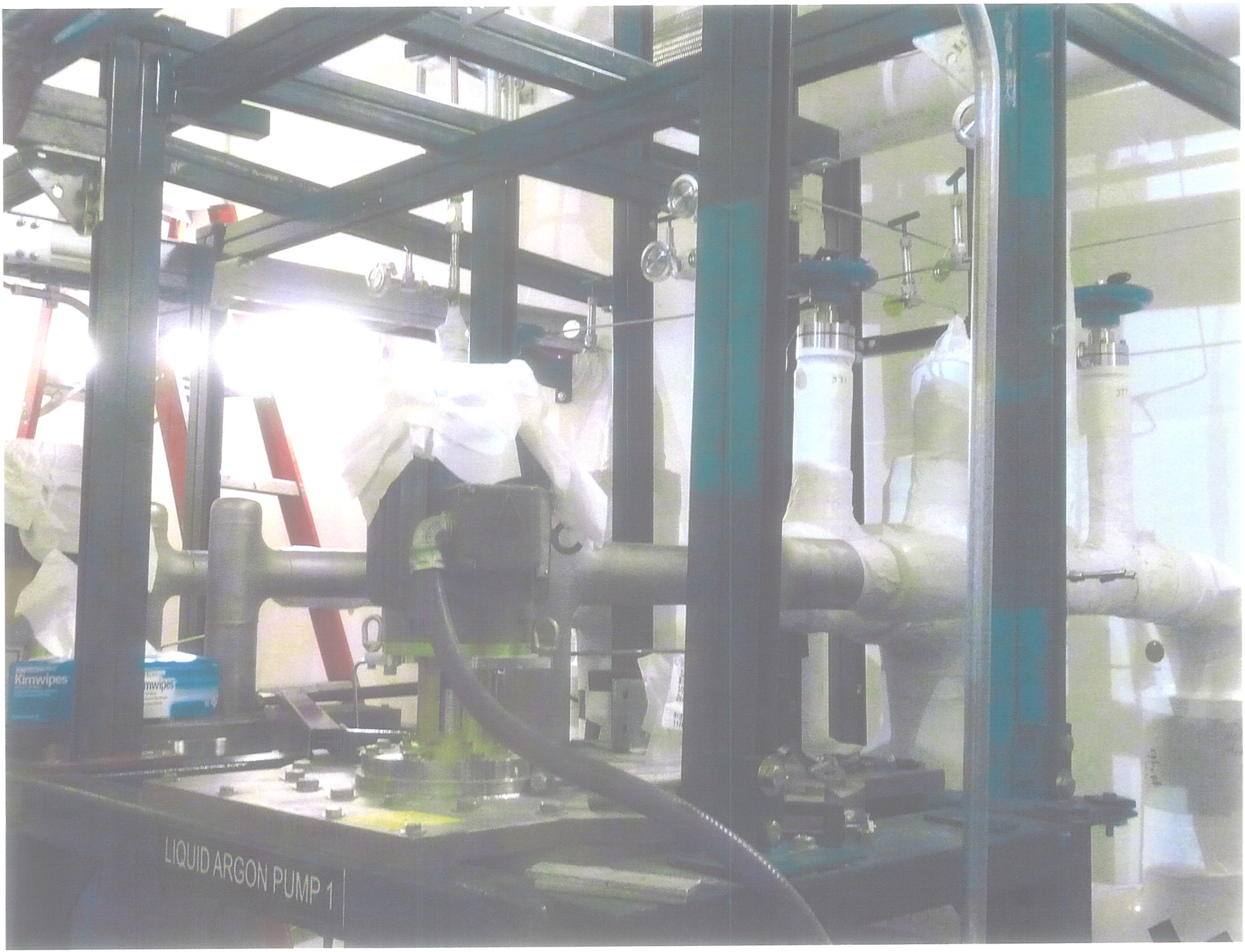
There are two Unistrut pieces anchored to the wall to hold one end of the support beams for the platform. Each of the pieces has three 1/2" drop in anchors. From the Hilti ancors catalogue a 1/2" drop in anchor in shear in 2000 psi concrete has a 1470 pound allowable load. Three anchors has a large safety factor of 8.8 over the maximum platform load of 500 pounds.

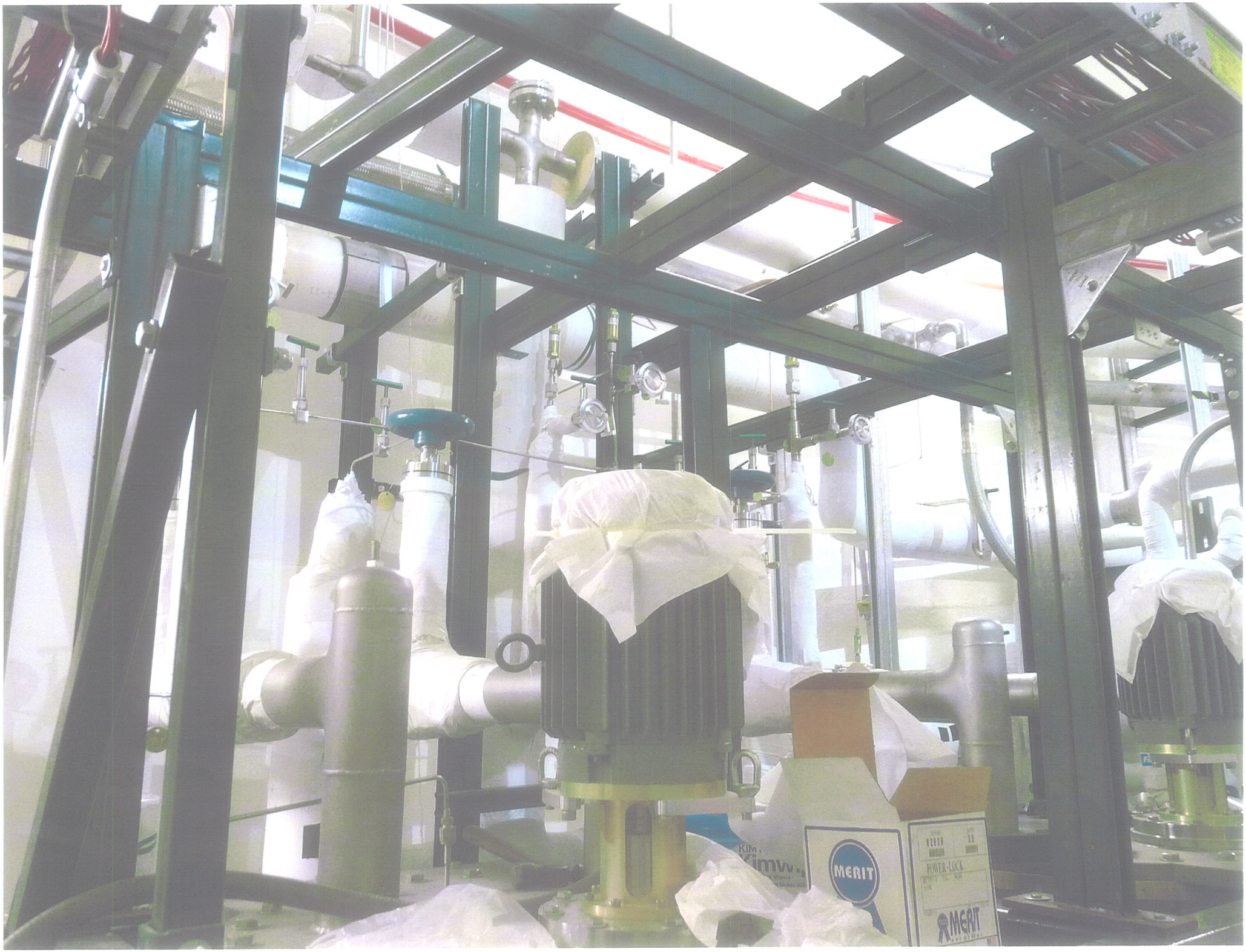
All of the horizontal beams are attached to the columns by P2484 ninety degree angle brackets. From the catalogue (page 74) the P2484 bracket can support 3000 pounds when properly installed. This is a safety factor of six over the required load.

The plywood on the platform is issued from the stockroom, and is listed as Plum Creek, 7 ply, 3/4 inch , Grade3 A-C Fir, Sanded on one side. From the APA- The Engineered Wood Association paper Load-Span Tables for PS-1 Plywood a load rating is given in table 3 on page 4. The plywood is used with Face Grain across the supports and at 24 inches on center. Finding the minimum of the listed load ratings as the bending load given as 142 pounds/square foot (psf). The platform limit is 500 pounds totalwhich is over about 20 square feet or about 25 psf which is much less. Therefore the plywood floor is OK.



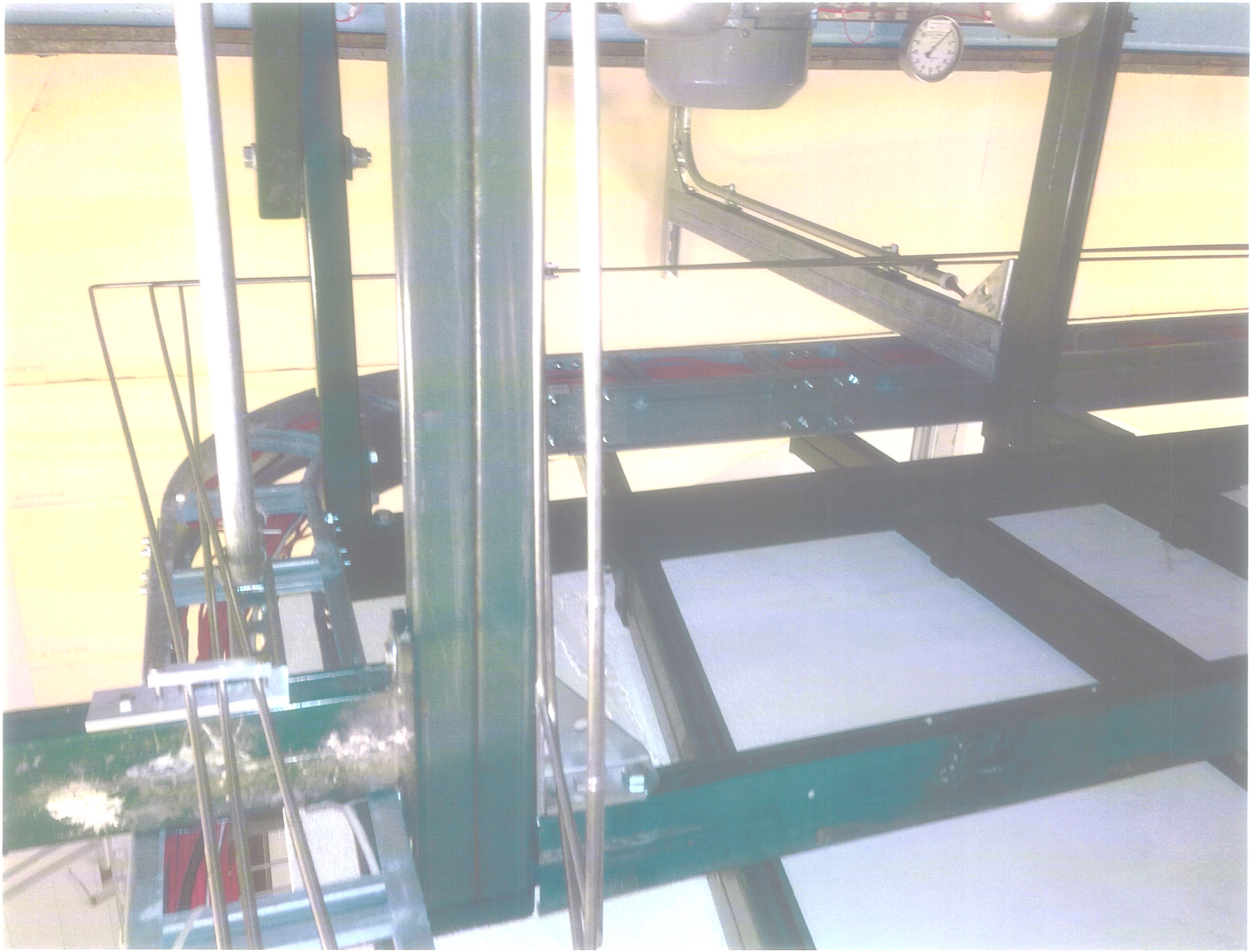

WARNING!
Do Not Bend


Kimwipes
LIQUID ARGON PUMP 1


MERIT
POWER-LOCK
MERIT


LIQUID ARGON PUMP 1
Kimwipes


SIN 2
REULAND



P1000 - Beam Loading

Span In	Max. Allowable Uniform Load Lbs	Defl. at Uniform Load In	Uniform Loading at Deflection Span/180 Lbs	Span/240 Lbs	Span/360 Lbs
24	1,690	0.06	1,690	1,690	1,690
36	1,130	0.13	1,130	1,130	900
48	850	0.22	850	760	500
60	680	0.35	650	480	320
72	560	0.50	450	340	220
84	480	0.68	330	250	160
96	420	0.89	250	190	130
108	380	1.14	200	150	100
120	340	1.40	160	120	80
144	280	2.00	110	80	60
168	240	2.72	80	60	40
192	210	3.55	60	50	NR
216	190	4.58	50	40	NR
240	170	5.62	40	NR	NR

P1001 - Beam Loading

Span In	Max. Allowable Uniform Load Lbs	Defl. at Uniform Load In	Uniform Loading at Deflection Span/180 Lbs	Span/240 Lbs	Span/360 Lbs
24	3,500*	0.02	3,500*	3,500*	3,500*
36	3,190	0.07	3,190	3,190	3,190
48	2,390	0.13	2,390	2,390	2,390
60	1,910	0.20	1,910	1,910	1,620
72	1,600	0.28	1,600	1,600	1,130
84	1,370	0.39	1,370	1,240	830
96	1,200	0.51	1,200	950	630
108	1,060	0.64	1,000	750	500
120	960	0.79	810	610	410
144	800	1.14	560	420	280
168	680	1.53	410	310	210
192	600	2.02	320	240	160
216	530	2.54	250	190	130
240	480	3.16	200	150	100

P1000 - Column Loading

Unbraced Height In	Max. Allowable Load at Slot Face Lbs	Maximum Column Load Applied at C.G. K = 0.65 Lbs	K = 0.80 Lbs	K =1.0 Lbs	K = 1.2 Lbs
24	3,550	10,740	9,890	8,770	7,740
36	3,190	8,910	7,740	6,390	5,310
48	2,770	7,260	6,010	4,690	3,800
60	2,380	5,910	4,690	3,630	2,960
72	2,080	4,840	3,800	2,960	2,400
84	1,860	4,040	3,200	2,480	1,980
96	1,670	3,480	2,750	2,110	1,660
108	1,510	3,050	2,400	1,810	**
120	1,380	2,700	2,110	**	**
144	1,150	2,180	1,660	**	**

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24	6,430	24,280	23,610	22,700	21,820
36	6,290	22,810	21,820	20,650	19,670
48	6,160	21,410	20,300	18,670	16,160
60	6,000	20,210	18,670	15,520	12,390
72	5,620	18,970	16,160	12,390	8,950
84	5,170	16,950	13,630	9,470	6,580
96	4,690	14,890	11,190	7,250	5,040
108	4,170	12,850	8,950	5,730	3,980
120	3,690	10,900	7,250	4,640	**
144	2,930	7,630	5,040	**	**

P1000/P1001 - Elements of Section

Parameter	P1000		P1001	
Area of Section	0.555	In^2	1.111	In^2
Axis 1-1				
Moment of Inertia (I)	0.185	In^4	0.928	In^4
Section Modulus (S)	0.202	In^3	0.571	In^3
Radius of Gyration (r)	0.577	In	0.914	In
Axis 2-2				
Moment of Inertia (I)	0.236	In^4	0.471	In^4
Section Modulus (S)	0.290	In^3	0.580	In^3
Radius of Gyration (r)	0.651	In	0.651	In

Notes:

* Load limited by spot weld shear.

** KL/r > 200

NR = Not Recommended.

1. Beam loads are given in *total* uniform load (W Lbs) not uniform load (w lbs/ft or w lbs/in).
2. Beam loads are based on a simple span and assumed to be adequately laterally braced. Unbraced spans can reduce beam load carrying capacity. Refer to Page 56 for reduction factors for unbraced lengths.
3. For pierced channel, multiply beam loads by the following factor:

"KO" Series.....95% **"T" Series 85%**
"HS" Series .....90% **"SL" Series.....85%**
"H3" Series.....90% **"DS" Series.....70%**

4. Deduct channel weight from the beam loads.
5. For concentrated midspan point loads, multiply beam loads by 50% and the corresponding deflection by 80%. For other load conditions refer to page 18.
6. All beam loads are for bending about Axis 1-1.

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72	5,620	18,970	16,160	12,390	8,950
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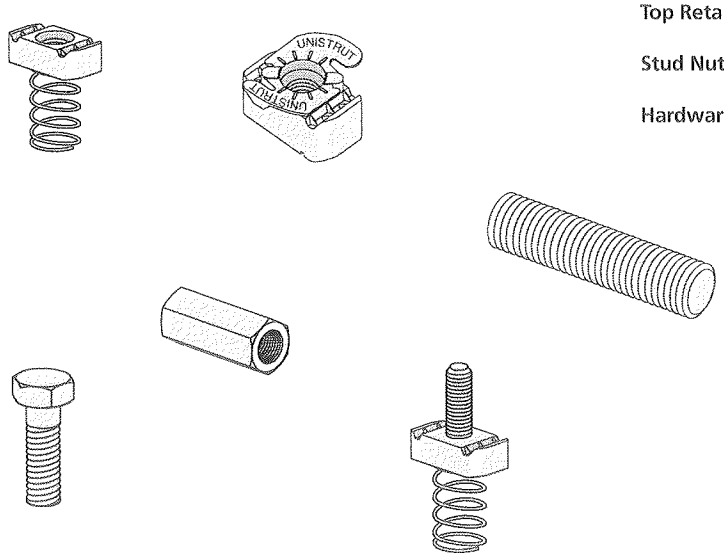


MATERIAL

Unistrut channel nuts are manufactured from mild steel bars, and after machining operations are completed, they are case hardened, assuring positive biting action into the inturned edge of the Unistrut channel.

Screws conform to SAE J429 GR 2 (exceeds ASTM A307). Proof Load 55KSI, Tensile Load 74 KSI

Bolt Size	Channel Nut ASTM
¼" & 5/16"	A1011 SS GR45
3/8", 7/16" & ½"	A576 GR1015 Modified
5/8" & ¾"	A36 or A675 GR60
7/8"	A36

FINISHES

Nuts, bolts and washers are electro-galvanized (EG), ASTM B633 Type III SC1 finish, unless otherwise noted.

Many hardware items are also available in stainless steel. Consult factory for ordering information.

THREADS

All threads on the nuts and bolts are Unified and American coarse screw threads.

DESIGN BOLT TORQUE

BOLT SIZE	¼"-20	5/16"-18	3/8"-16	½"-13	5/8"-11	¾"-10
Rec.Torque Ft/Lbs *(N•m)*	6 *(8)*	11 *(15)*	19 *(26)*	50 *(68)*	100 *(136)*	125 *(170)*
Max Torque Ft/Lbs *(N•m)*	7 *(9)*	15 *(20)*	25 *(34)*	70 *(95)*	125 *(170)*	135 *(183)*

DIMENSIONS

Imperial dimensions are illustrated in inches. Metric dimensions are shown in parenthesis or as noted.
Unless noted, all metric dimensions are in millimeters and rounded to one decimal place.

Many Unistrut nuts, bolts and hardware items are also available in standard metric dimensions. Consult factory for ordering information.

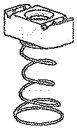
Channel Nuts With Spring

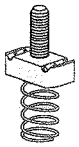

P1006 - P1010
Pg 67


P1012S - P1024S
Pg 67


P4006 - P4010
Pg 67


P4012S - P4023S
Pg 67


P5506 - P5510
Pg 67


P2378 - P2382
Pg 68

Channel Nuts Without Spring

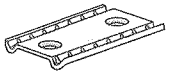

P3016
Pg 67


P3006 - P3013
Pg 67


P1012 - P1024
Pg 67


P4012 - P4023
Pg 67


P1006T - P1010T, P4010T
Pg 67


P4908
Pg 67


P1016
Pg 67

Hardware


HHCS
Pg 68


HFMS
Pg 68


HRMS
Pg 68


HSHS
Pg 68


HCSS
Pg 68

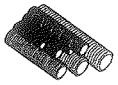

HSQN
Pg 69


HHXN
Pg 69


HFLW
Pg 69


HLKW
Pg 69

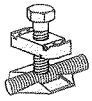

HOCW
Pg 70

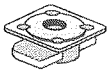

HTHR
Pg 69


HRCN
Pg 69


P2486
Pg 70


P2485
Pg 70


P2485K
Pg 70


K1062 - K1064
Pg 70

Maximum Allowable Pull-out And Slip Loads

Channel	Channel Nut Size-Thread	Gauge	Allowable Pull-Out Strength Lbs *(kN)*	Resistance to Slip Lbs *(kN)*	Torque Ft-Lbs *(N•m)*
P1000 P3000 P5000 P5500	⅞" - 9	12	2,500 *11.12*	1,700 *7.56*	*125 *170*
	¾" - 10	12	2,500 *11.12*	1,700 *7.56*	*125 *170*
	⅝" - 11	12	2,500 *11.12*	1,500 *6.67*	*100 *135*
	½" - 13	12	2,000 *8.90*	1,500 *6.67*	50 *70*
	7/16" - 14	12	1,400 *6.23*	1,000 *4.45*	35 *50*
	⅜" - 16	12	1,000 *4.45*	800 *3.56*	19 *25*
	5/16" - 18	12	800 *3.56*	500 *2.22*	11 *15*
	¼" - 20	12	600 *2.67*	300 *1.33*	6 *8*
P3300	½" - 13	12	1,500 *6.67*	1,500 *6.67*	50 *70*
	⅜" - 16	12	1,000 *4.45*	800 *3.56*	19 *25*
	5/16" - 18	12	800 *3.56*	500 *2.22*	11 *15*
	¼" - 20	12	600 *2.67*	300 *1.33*	6 *8*

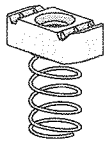
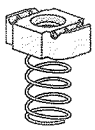
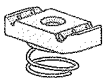
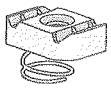
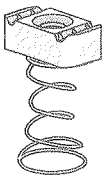
Channel	Channel Nut Size-Thread	Gauge	Allowable Pull-Out Strength Lbs *(kN)*	Resistance to Slip Lbs *(kN)*	Torque Ft-Lbs *(N•m)*
P1100 & P4100	½" - 13	14	1,400 *6.23*	1,000 *4.45*	50 *70*
	⅜" - 16	14	1,000 *4.45*	750 *3.34*	19 *25*
	5/16" - 18	14	800 *3.56*	400 *1.78*	11 *15*
	¼" - 20	14	600 *2.67*	300 *1.33*	6 *8*
P2000 & P4000	½" - 13	16	1,000 *4.45*	1,000 *4.54*	50 *70*
	⅜" - 16	16	1,000 *4.45*	750 *3.34*	19 *25*
	5/16" - 18	16	800 *3.56*	400 *1.78*	11 *15*
	¼" - 20	16	600 *2.67*	300 *1.33*	6 *8*

* May require ⅜" or ½" thick fitting.

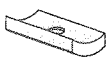
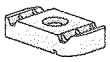
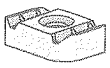
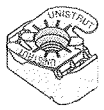
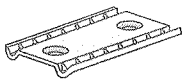
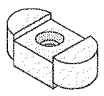
Nut design loads include a minimum safety factor of 3.

Note: Refer to the Channel Nut Selection Chart on the following two pages for the part number.

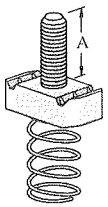
Channel Nut With Spring

Part Number	Nut Size Thread	Wt/100 pcs Lbs *(kg)*	Use With
			
P1006-0832	#8 -32	7 *(3.2)*	P1000, P1100, P2000, P3000
P1006-1024	#10 -24	7 *(3.2)*	
P1006-1420	¼" -20	7 *(3.2)*	
P1007	5/16" -18	6 *(2.7)*	
P1008	⅜" -16	10 *(4.5)*	
P1009	7/16" -14	9 *(4.1)*	
P1010	½" -13	12 *(5.4)*	
			
P1012S	⅝" -11	21 *(9.5)*	P1000, P1100, P2000, P3000
P1023S	¾" -10	21 *(9.5)*	
P1024S	⅞" -9	21 *(9.5)*	
			
P4006-0832	# 8 -32	7 *(3.2)*	P3300, P4000, P4100
P4006-1024	#10 -24	7 *(3.2)*	
P4006-1420	¼" -20	7 *(3.2)*	
P4007	5/16" -18	6 *(2.7)*	
P4008	⅜" -16	9 *(4.1)*	
P4009	7/16" -14	9 *(4.1)*	
P4010	½" -13	8 *(3.6)*	
			
P4012S	⅝" -11	10 *(4.5)*	P3300, P4000, P4100
P4023S	¾" -10	10 *(4.5)*	
			
P5506-0832	#8 -32	7 *(3.2)*	P5500
P5506-1024	#10 -24	7 *(3.2)*	
P5506-1420	¼" -20	7 *(3.2)*	
P5507	5/16" -18	6 *(2.7)*	
P5508	⅜" -16	10 *(4.5)*	
P5509	7/16" -14	10 *(4.5)*	
P5510	½" -13	12 *(5.4)*	

Channel Nut Without Spring

Part Number	Nut Size Thread	Wt/100 pcs Lbs *(kg)*	Use With
			
P3016-0632	#6 -32	2 *(0.9)*	Any Channel
P3016-0832	#8 -32	2 *(0.9)*	
P3016-1024	#10 -24	4 *(1.8)*	
P3016-1420	¼" -20	4 *(1.8)*	
			
P3006-0832	#8 -32	6 *(2.7)*	Any Channel
P3006-1024	#10 -24	6 *(2.7)*	
P3006-1420	¼" -20	6 *(2.7)*	
P3007	5/16" -18	6 *(2.7)*	
P3008	⅜" -16	9 *(4.1)*	
P3009	7/16" -14	9 *(4.1)*	
P3010	½" -13	11 *(5.0)*	Any Channel Except P3300, P4000, P4100
P3013	½" -13	8 *(3.6)*	P3300, P4000 P4100
			
P1012	⅝" -11	20 *(9.1)*	Any Channel Except P3300, P4000, P4100
P1023	¾" -10	20 *(9.1)*	
P1024	⅞" -9	20 *(9.1)*	
			
P4012	⅝" -11	11 *(5.0)*	P3300, P4000 P4100
P4023	¾" -10	11 *(5.0)*	
			
P1006T1420	¼" -20	7 *(3.2)*	Any Channel
P1008T	⅜" -16	10 *(4.5)*	
P1010T	½" -13	12 *(5.4)*	Any Channel Except P3300, P4000, P4100
P4010T	½" -13	8 *(3.6)*	P3300, P4000 P4100
			
P4908	⅜" -16	17.5 *(7.9)*	Any Channel
Double Conveyor Adjusting Nut			
			
P1016	⅜" -16	17.5 *(7.9)*	Any Slotted Channel
Missing Link Multi-Purpose Strut Fastener			

Channel Stud Nut With Spring

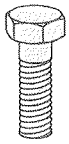


All Stud Nut grooves are serrated.

Part No.	Thread	"A" Stud In *(mm)*	Wt/100 pcs Lbs *(kg)*	
P2378-1	¼" - 20	1 *(25.4)*	8 *(3.6)*	Use With P1000, P1100, P2000, P3000
P2378-2		1¼ *(31.8)*	9 *(4.1)*	
P2378-3		1½ *(38.1)*	9 *(4.1)*	
P2379-1	5/16" - 18	1 *(25.4)*	12 *(5.4)*	
P2379-2		1¼ *(31.8)*	12 *(5.4)*	
P2379-3		1½ *(38.1)*	13 *(5.9)*	
P2380-1	⅜" - 16	1 *(25.4)*	13 *(5.9)*	
P2380-2		1¼ *(31.8)*	13 *(5.9)*	
P2380-3		1½ *(38.1)*	13 *(5.9)*	
P2380-4		1¾ *(44.5)*	15 *(6.8)*	

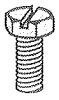
Part No.	Thread	"A" Stud In *(mm)*	Wt/100 pcs Lbs *(kg)*	
P2380-5	⅜" - 16	2 *(50.8)*	16 *(7.3)*	Use With P1000, P1100, P2000, P3000
P2380-6		2¼ *(57.2)*	16 *(7.3)*	
P2381-2	½" - 13	1 *(25.4)*	14 *(6.4)*	
P2381-3		1¼ *(31.8)*	15 *(6.8)*	
P2381-4		1½ *(38.1)*	17 *(7.7)*	
P2381-5		1¾ *(44.5)*	18 *(8.2)*	
P2381-6		2 *(50.8)*	19 *(8.6)*	
P2381-7		2¼ *(57.2)*	20 *(9.1)*	
P2382-2	⅝" - 11	1¼ *(31.8)*	18 *(8.2)*	
P2382-3		1½ *(38.1)*	20 *(9.1)*	

Hex Head Cap Screws



Part No.	Size	Wt/ 100 pcs Lbs *(kg)*
HHCS025044EG	¼" x 7/16"	1.0 *(0.5)*
HHCS025075EG	¼" x ¾"	1.3 *(0.6)*
HHCS025150EG	¼" x 1½"	2.6 *(1.2)*
HHCS031125EG	5/16" x 1¼"	3.6 *(1.6)*
HHCS037075EG	⅜" x ¾"	4.0 *(1.8)*
HHCS037087EG	⅜" x ⅞"	4.4 *(2.0)*
HHCS037100EG	⅜" x 1"	4.5 *(2.0)*
HHCS037125EG	⅜" x 1¼"	5.3 *(2.4)*
HHCS037150EG	⅜" x 1½"	6.0 *(2.7)*
HHCS037200EG	⅜" x 2"	7.6 *(3.4)*
HHCS037225EG	⅜" x 2¼"	8.4 *(3.8)*
HHCS037250EG	⅜" x 2½"	9.2 *(4.2)*
HHCS050094EG	½" x 15/16"	9.1 *(4.1)*
HHCS050119EG	½" x 1 3/16"	10.2 *(4.6)*
HHCS050150EG	½" x 1½"	11.6 *(5.3)*
HHCS050175EG	½" x 1¾"	13.1 *(5.9)*
HHCS050200EG	½" x 2"	14.6 *(6.6)*
HHCS050225EG	½" x 2¼"	16 *(7.3)*
HHCS050250EG	½" x 2½"	17.5 *(7.9)*

Hex Slotted Machine Screws



Part No.	Size	Wt/ 100 pcs Lbs *(kg)*
HSHS025050EG	¼" x ½"	1.4 *(0.6)*
HSHS025062EG	¼" x 5/8"	1.5 *(0.7)*
HSHS025075EG	¼" x ¾"	1.7 *(0.8)*
HSHS031100EG	5/16" x 1"	2.6 *(1.2)*
HSHS031125EG	5/16" x 1¼"	3.0 *(1.4)*
HSHS031150EG	5/16" x 1½"	3.4 *(1.5)*
HSHS037125EG	⅜" x 1¼"	5.3 *(2.4)*

Cone Point Set Screws

Part No.	Size	Wt/ 100 pcs Lbs *(kg)*
HCSS025100EG	¼" x 1"	2.8 *(1.3)*
HCSS031150EG	5/16" x 1½"	3.9 *(1.8)*
HCSS037150EG	⅜" x 1½"	4.5 *(2.0)*
HCSS037200EG	⅜" x 2"	6.1 *(2.8)*
HCSS050150EG	½" x 1½"	8.5 *(3.9)*
HCSS050200EG	½" x 2"	11.4 *(5.2)*
HCSS062150EG	⅝" x 1½"	14.5 *(6.6)*
HCSS062200EG	⅝" x 2"	23.0 *(10.4)*

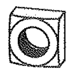
Flat Head Machine Screws

Part No.	Size	Wt/ 100 pcs Lbs *(kg)*
HFMS025062EG	¼" x 5/8"	1.2 *(0.5)*
HFMS031100EG	5/16" x 1"	2.6 *(1.2)*
HFMS050100EG	½" x 1"	9.3 *(4.2)*

Round Head Machine Screws

Part No.	Size	Wt/ 100 pcs Lbs *(kg)*
HRMS025050EG	¼" x ½"	1 *(0.5)*
HRMS025075EG	¼" x ¾"	1.2 *(0.5)*
HRMS025100EG	¼" x 1"	1.5 *(0.7)*
HRMS031100EG	5/16" x 1"	2.6 *(1.2)*
HRMS031125EG	5/16" x 1¼"	3.0 *(1.4)*
HRMS037100EG	⅜" x 1"	4.1 *(1.9)*
HRMS037125EG	⅜" x 1¼"	4.7 *(2.1)*
HRMS037150EG	⅜" x 1½"	5.3 *(2.4)*

Square Nuts

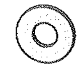


Part No.	Size	Wt/100 pcs Lbs *(kg)*
HSQN025EG	¼"	0.9 *(0.4)*
HSQN031EG	5⁄16"	1.6 *(0.7)*
HSQN037EG	⅜"	2.7 *(1.2)*
HSQN050EG	½"	5.8 *(2.6)*
HSQN062EG	⅝"	10.7 *(4.9)*
HSQN075EG	¾"	15.4 *(6.9)*
HSQN087EG	⅞"	24.9 *(11.3)*
HSQN100EG	1"	36.3 *(16.5)*

Hexagon Nuts

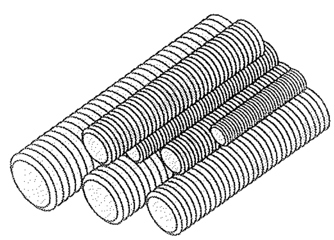
Part No.	Size	Wt/100 pcs Lbs*(kg)*
HHXN025EG	¼"	0.6 *(0.3)*
HHXN031EG	5⁄16"	1.2 *(0.5)*
HHXN037EG	⅜"	1.6 *(0.7)*
HHXN050EG	½"	4.8 *(2.2)*
HHXN062EG	⅝"	7.3 *(3.3)*
HHXN075EG	¾"	11.9 *(5.4)*
HHXN087EG	⅞"	19.0 *(8.6)*
HHXN100EG	1"	28.3 *(12.8)*

Flat Washers



Part No.	Size	Wt/100 pcs Lbs*(kg)*
HFLW025EG	¼"	0.8 *(0.4)*
HFLW031EG	5⁄16"	1.0 *(0.5)*
HFLW037EG	⅜"	1.5 *(0.7)*
HFLW050EG	½"	3.5 *(1.6)*
HFLW062EG	⅝"	7.7 *(3.5)*
HFLW075EG	¾"	11.0 *(5.0)*
HFLW087EG	⅞"	15.3 *(6.9)*
HFLW100EG	1"	18.8 *(8.5)*

Steel Threaded Rod

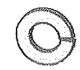


Standard Length 12' (3.7m)

Low Carbon Steel Grade 1006 - 1010
F_y = 36,000 psi minimum
F_t = 58,000 psi minimum

Part No.	Size	Wt/100 Ft. Lbs *(kg)*
HTHR025	¼" x 20	13 *(5.9)*
HTHR031	5⁄16" x 18	20 *(9.1)*
HTHR037	⅜" x 16	30 *(13.6)*
HTHR044	7⁄16" x 14	30 *(13.6)*
HTHR050	½" x 13	53 *(24.0)*
HTHR062	⅝" x 11	84 *(38.1)*
HTHR075	¾" x 10	124 *(56.2)*
HTHR087	⅞" x 9	170 *(77.1)*
HTHR100	1" x 8	223 *(101.2)*

Lock Washers



Part No.	Size	Wt/100 pcs Lbs *(kg)*
HLKW025EG	¼"	0.25 *(0.1)*
HLKW031EG	5⁄16"	0.41 *(0.2)*
HLKW037EG	⅜"	0.63 *(0.3)*
HLKW050EG	½"	1.32 *(0.60)*
HLKW062EG	⅝"	2.20 *(1.0)*
HLKW075EG	¾"	3.80 *(1.7)*
HLKW087EG	⅞"	6.00 *(2.7)*
HLKW100EG	1"	8.80 *(4.0)*

Load Carrying Capacity Of Threaded Hot Rolled Steel Conforming To ASTM A575 And A576

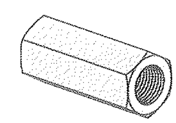
Threaded Rod Loads for Piping Applications (based on MSS SP-58)

Nominal Dia.	Root Area In² *(mm²)*	Max. Safe Load at 650°F (343°C) Lbs *(kN)*
⅜	0.068 *(43.9)*	730 *(3.25)*
½	0.126 *(81.3)*	1,350 *(6.01)*
⅝	0.202 *(130.3)*	2,160 *(9.61)*
¾	0.302 *(194.8)*	3,230 *(14.37)*
⅞	0.419 *(270.3)*	4,480 *(19.93)*
1	0.552 *(356.1)*	5,900 *(26.24)*

Threaded Rod Loads for Structural Applications
(Based on AISC, Steel Construction Manual, ASD, 9th Edition. Per AISC, Allowed Tensile Stress = 0.33 * Fu)

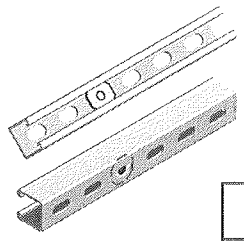
Nominal Dia.	Nominal Area In² *(mm²)*	Allowed Tension Load Lbs *(kN)*
¼	0.049 *(31.6)*	930 *(4.14)*
⅜	0.110 *(71.0)*	2,110 *(9.39)*
7⁄16	0.150 *(96.8)*	2,870 *(12.77)*
½	0.196 *(126.5)*	3,750 *(16.68)*
⅝	0.307 *(198.2)*	5,870 *(26.11)*
¾	0.442 *(285.4)*	8,450 *(37.59)*
⅞	0.601 *(388.0)*	11,500 *(51.15)*
1	0.785 *(506.8)*	15,030 *(66.86)*

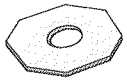
Steel Coupler Nuts



Part Number	Size	Length In (mm)	Wt/100 pcs Lbs (kg)
HRCN025	¼" - 20	⅞" *(22.2)*	1.9 *(0.9)*
HRCN031	5⁄16" - 18	1¾" *(44.5)*	7.5 *(3.4)*
HRCN037	⅜" - 16	1¾" *(44.5)*	9.0 *(4.1)*
HRCN044	7⁄16" - 14	1¾" *(44.5)*	10.4 *(4.7)*
HRCN050	½" - 13	1¾" *(44.5)*	10.0 *(4.5)*
HRCN062	⅝" - 11	2⅛" *(54.0)*	18.0 *(8.2)*
HRCN075	¾" - 10	2¼" *(57.2)*	28.0 *(12.7)*
HRCN087	⅞" - 9	2½" *(63.5)*	55.0 *(24.9)*
HRCN100	1" - 8	2¾" *(69.9)*	73.0 *(33.1)*

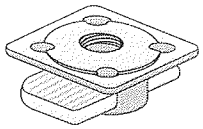
Slot Adapter™



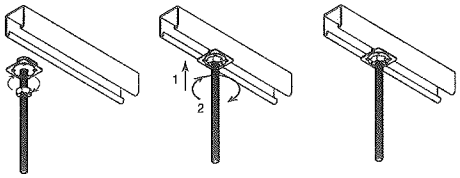


Part No.	Bolt Size	Wt/100 pcs Lbs (kg)
HOCW025	¼" (6.4)	1 (0.5)
HOCW037	⅜" (9.5)	1.5 (0.7)

Kwik Washer™

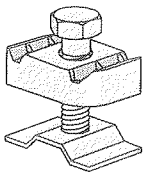


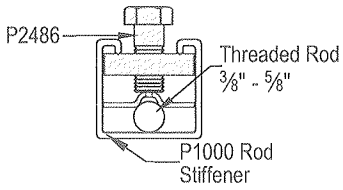
Overhead installation with one hand.
Available in zinc plated and hot dip galvanized



Part No.	Size In (mm)	Load Lbs (kN)	Wt/100 pcs Lbs (kg)
K1062	¼" (6.4)	250 (1.11)	1.2 (0.5)
K1063	⅜" (9.5)	610 (2.71)	2.6 (1.2)
K1064	½" (12.7)	1,130 (5.03)	9.3 (4.2)

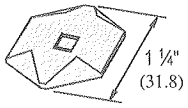
P2486 Seismic Rod Stiffener

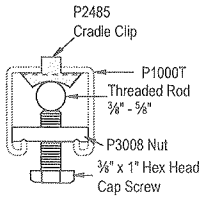




Wt/100 pcs: 16 Lbs (7.3 kg)

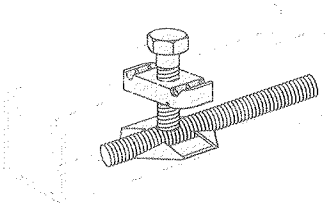
P2485 Cradle Clip

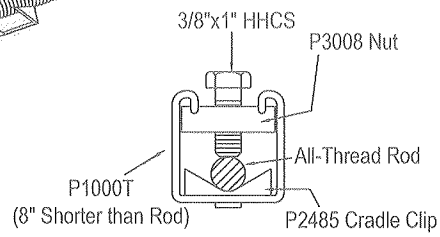


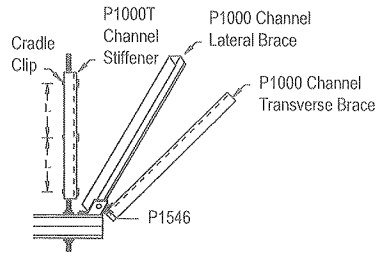


Cradle clip only, order other items seperately.

P2485K Seismic Cradle Clip Assembly







Wt/100 pcs: 3.0 Lbs (1.4 kg)

P2485 & P2486 – Spacing Chart

Rod Size In (mm)	Root Area In2 (mm2)	Radius of Gyration In (mm)	Design Load Lbs (kN)	.....Rod Stiffener Clip Spacing (L)..... Rod Stress @100% 10,700 PSI In (mm)	Rod Stress @75% 8,025 PSI In (mm)	Rod Stress @50% 5,350 PSI In (mm)	Rod Stress @35% 3,745 PSI In (mm)
⅜	0.068	0.074	730	9	11	13	15
9.5	*49.5*	*1.99*	*3.25*	*228.6*	*279.4*	*330.2*	*381.0*
½	0.126	0.100	1,350	12	14	17	21
12.7	*72.4*	*2.40*	*6.01*	*304.8*	*355.6*	*431.8*	*533.4*
⅝	0.202	0.127	2,160	15	18	22	26
15.9	*138.3*	*3.32*	*9.61*	*381.0*	*457.2*	*558.8*	*660.4*

Notes:
1. Minimum Tensile Stress is 50,000 psi (345MPa)
2. Working Stress is 10,700 psi (73.9 MPa) – Same as for Tension
3. Compression Will Only Occur During a Seismic Event
4. Compression Requires the Use of Rod Stiffeners
5. KL/r = 200 When Rod Stress is at 35%

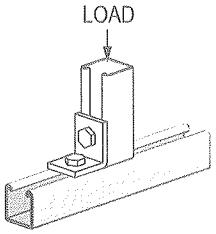
Refer to seismic bracing systems catalog for more detailed information.

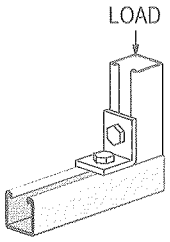
Lateral Bracing Load Reduction Charts

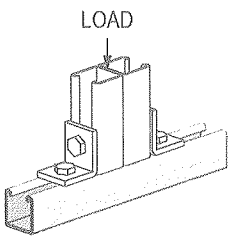
Span		Single Channel									Double Channel								
Ft. *(m)*	In. *(cm)*	P1000	P1100	P2000	P3000	P3300	P4000	P4100	P5000	P5500	P1001	P1101	P2001	P3001	P3301	P4001	P4101	P5001	P5501
2 *(0.61)*	24 *(61)*	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3 *(0.91)*	36 *(91)*	0.94	0.89	0.88	0.96	1.00	0.94	0.98	0.85	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4 *(1.22)*	48 *(122)*	0.88	0.78	0.75	0.91	1.00	0.88	0.94	0.70	0.77	1.00	0.98	0.98	1.00	1.00	0.98	1.00	0.97	0.98
5 *(1.52)*	60 *(152)*	0.82	0.68	0.61	0.88	0.98	0.83	0.91	0.55	0.67	0.97	0.93	0.92	0.98	1.00	0.93	0.96	0.90	0.93
6 *(1.83)*	72 *(183)*	0.78	0.59	0.48	0.84	0.97	0.79	0.89	0.44	0.58	0.93	0.87	0.85	0.95	0.97	0.88	0.92	0.83	0.87
7 *(2.13)*	84 *(213)*	0.75	0.52	0.41	0.82	0.96	0.75	0.86	0.38	0.51	0.89	0.82	0.78	0.92	0.95	0.83	0.89	0.76	0.81
8 *(2.44)*	96 *(244)*	0.71	0.47	0.35	0.79	0.94	0.72	0.84	0.33	0.46	0.85	0.76	0.71	0.88	0.92	0.79	0.85	0.68	0.76
9 *(2.74)*	108 *(274)*	0.69	0.43	0.32	0.77	0.93	0.69	0.82	0.30	0.42	0.81	0.70	0.64	0.85	0.90	0.74	0.81	0.61	0.70
10 *(3.05)*	120 *(305)*	0.66	0.40	0.29	0.75	0.92	0.66	0.80	0.28	0.40	0.78	0.65	0.57	0.82	0.87	0.69	0.78	0.54	0.64
12 *(3.66)*	144 *(366)*	0.61	0.36	0.25	0.70	0.89	0.60	0.76	0.24	0.36	0.70	0.54	0.45	0.76	0.82	0.60	0.71	0.43	0.53
14 *(4.27)*	168 *(427)*	0.55	0.32	0.23	0.66	0.86	0.55	0.73	0.22	0.32	0.63	0.45	0.38	0.70	0.78	0.51	0.64	0.35	0.45
16 *(4.88)*	192 *(488)*	0.51	0.30	0.21	0.62	0.84	0.50	0.69	0.21	0.30	0.56	0.39	0.32	0.64	0.73	0.44	0.57	0.30	0.39
18 *(5.49)*	216 *(549)*	0.47	0.28	0.19	0.58	0.81	0.47	0.65	0.19	0.28	0.49	0.34	0.28	0.58	0.68	0.39	0.50	0.27	0.34
20 *(6.10)*	240 *(610)*	0.44	0.26	0.18	0.54	0.78	0.43	0.61	0.18	0.26	0.44	0.31	0.25	0.52	0.63	0.35	0.45	0.24	0.30

Bearing Loads on Unistrut Channel

Loads are calculated based on 2007 Specification For The Design Of Cold Formed Steel Structural Members published by AISI

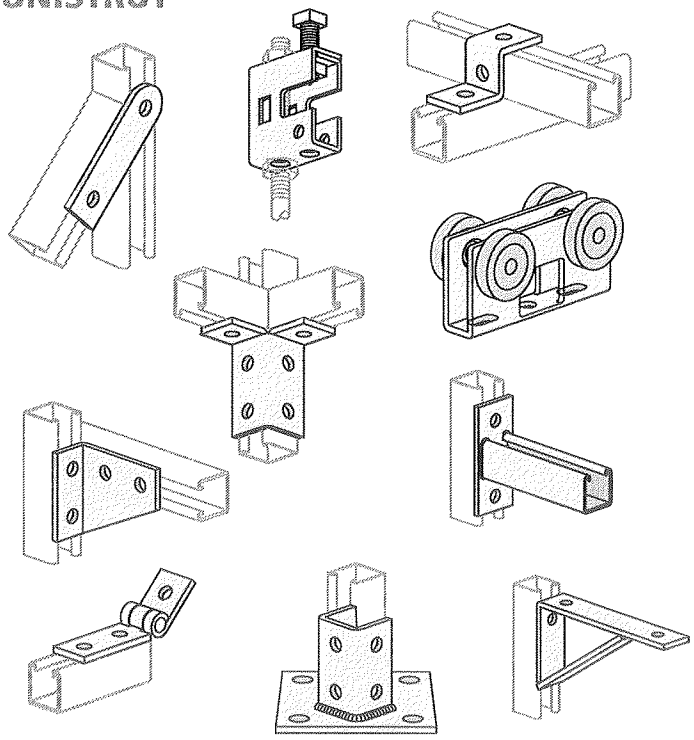






Channel	Bearing Length 1⅝" (41 mm) Maximum Allowable Loads Lbs *(kN)*	Bearing Length 1⅝" (41 mm) Maximum Allowable Loads Lbs *(kN)*	Bearing Length 3¼" (82 mm) Maximum Allowable Loads Lbs *(kN)*
P1000	6,700 *29.80*	3,100 *13.79*	7,700 *34.25*
P1100	3,500 *15.57*	1,700 *7.56*	4,000 *17.79*
P2000	2,500 *11.12*	1,200 *5.34*	3,000 *13.34*
P3000	6,700 *29.80*	3,200 *14.23*	7,700 *34.25*
P3300	6,800 *30.25*	3,200 *14.23*	7,800 *34.70*
P4000	2,600 *11.57*	1,200 *5.34*	3,000 *13.34*
P4100	3,500 *15.57*	1,800 *8.01*	4,100 *18.24*
P5000	6,500 *28.91*	3,000 *13.34*	7,500 *33.36*
P5500	6,600 *29.36*	3,100 *13.79*	7,600 *33.81*

GENERAL FITTINGS



MATERIAL

Fittings, unless noted, are made from hot-rolled, pickled and oiled steel plates, strip or coil, and conform to ASTM specifications A575, A576, A635, or A36. The fitting steel also meets the physical requirements of ASTM A1011 SS GR 33. The pickling of the steel produces a smooth surface free from scale.

Many fittings are also available in stainless steel, aluminum and fiberglass. Consult factory for ordering information.

FINISHES

Fittings are available in:

Perma-Green III (GR),

Electro-galvanized (EG), conforming to ASTM B633 Type III SC1;

Hot-dipped galvanized (HG), conforming to ASTM A123 or A153 and

Plain (PL).

APPLICATION

All parts drawings illustrate only one application of each fitting. In most cases many other applications are possible. The channels shown in the illustrations are P1000, 1⅝" square, except where noted otherwise.

All 9/16" diameter holes use ½" x 15/16" hex head cap screws and ½" nuts – P1010, P4010 or P5510 – depending on the channel used. Nuts and bolts are not included with the fitting and must be ordered separately.

DESIGN BOLT TORQUE

BOLT SIZE	¼"-20	5/16"-18	⅜"-16	½"-13	⅝"-11	¾"-10
Rec. Torque Ft/Lbs (N•m)	6 (8)	11 (15)	19 (26)	50 (68)	100 (136)	125 (170)
Max Torque Ft/Lbs (N•m)	7 (9)	15 (20)	25 (34)	70 (95)	125 (170)	135 (183)

SET SCREW TORQUE

BOLT SIZE	¼"-20	⅜"-16	½"-13	⅝"-11	¾"-10	⅞"-9
Set Screw Torque In/Lbs (N•m)	40 (4)	60 (7)	125 (14)	250 (28)	400 (44.5)	665 (75)

Note: Caution should be taken not to overtighten the set screw

DIMENSIONS

Imperial dimensions are illustrated in inches. Metric dimensions are shown in parenthesis or as noted. Unless noted, all metric dimensions are in millimeters and rounded to one decimal place.

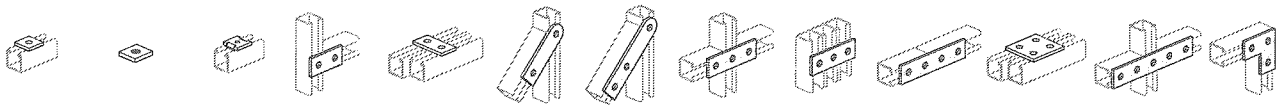
DESIGN LOAD

Design load data, where shown, is based on the ultimate strength of the connection with a safety factor of 2.5, unless otherwise noted.

BEAM CLAMPS

Clamps are designed to be used with W, M, S and HP Shape beams, Standard C and Miscellaneous MC Channels, Angles and Structural Tees. Clamps must be used in pairs where indicated. For beam clamps with HG finish, standard hardware is EG finish. For optional stainless steel hardware, please contact the factory for availability.

Flat Plate Fittings



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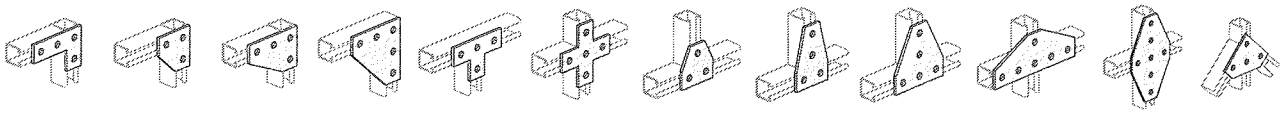

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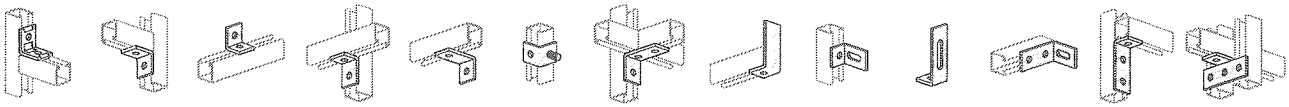
Angle Fittings



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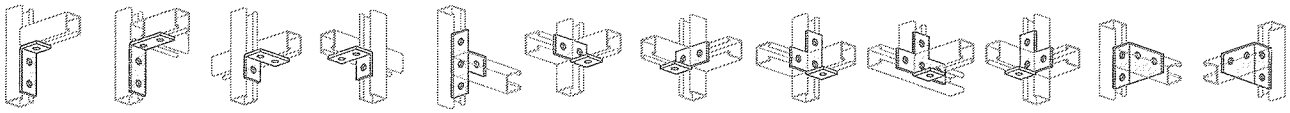

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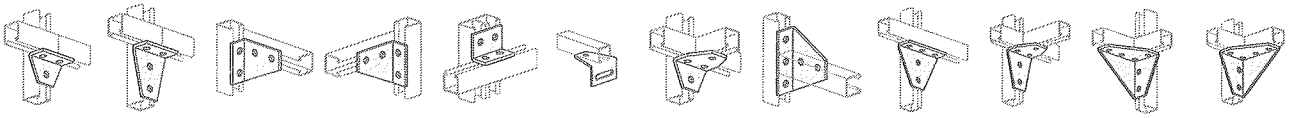

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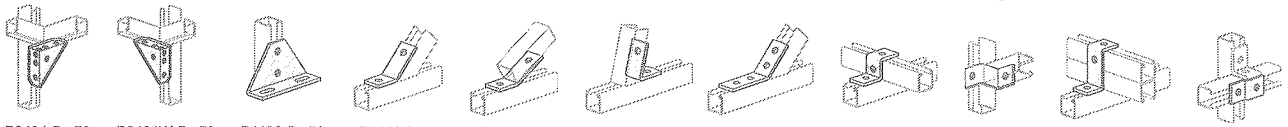
"Z" Shape Fittings



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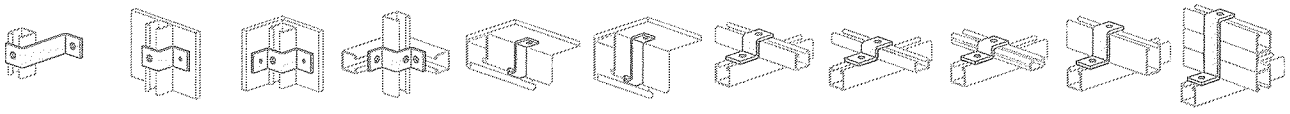

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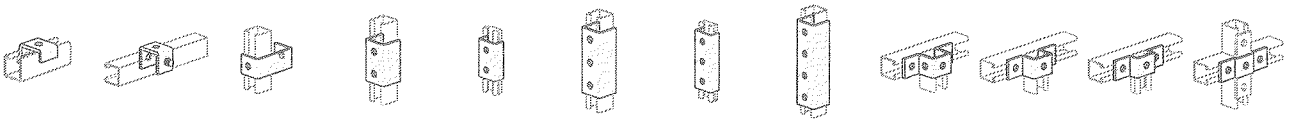
"U" Shape Fittings



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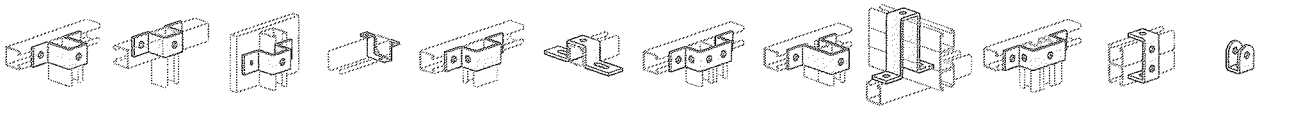

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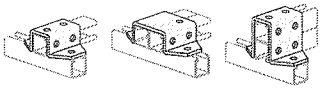

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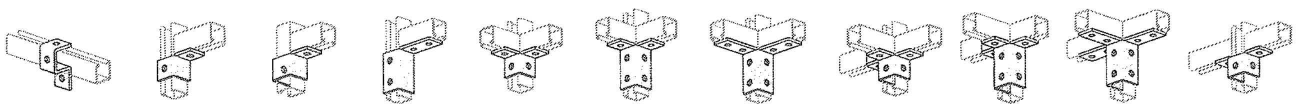
Wing Shape Fittings



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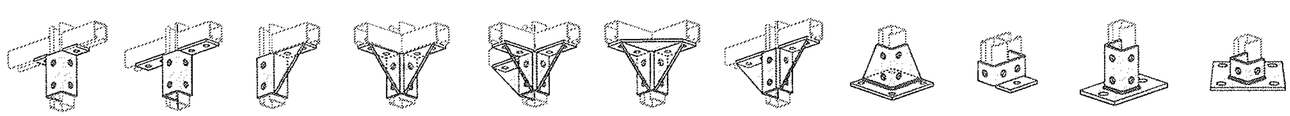
Post Bases



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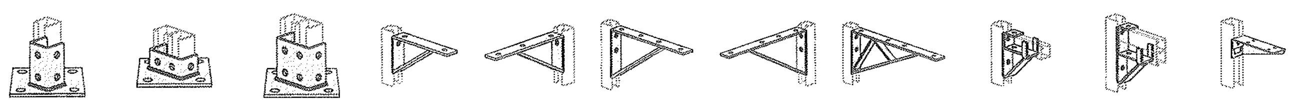
Brackets and Brace Fittings



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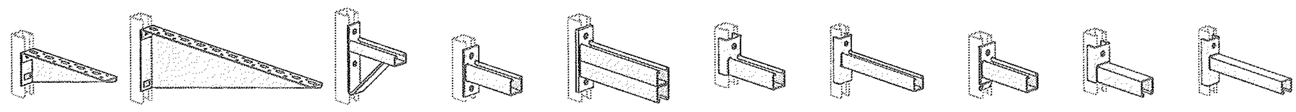

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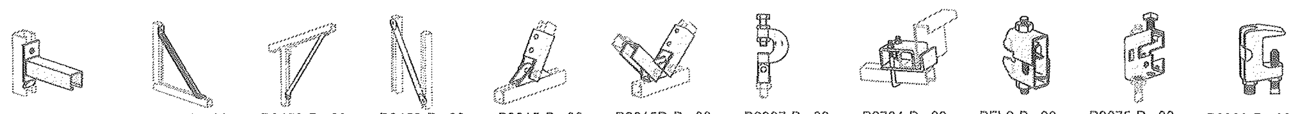
Beam Clamps



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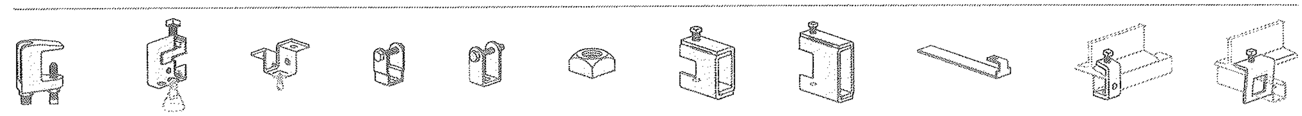

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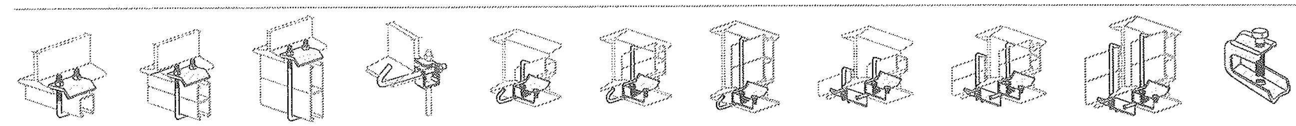

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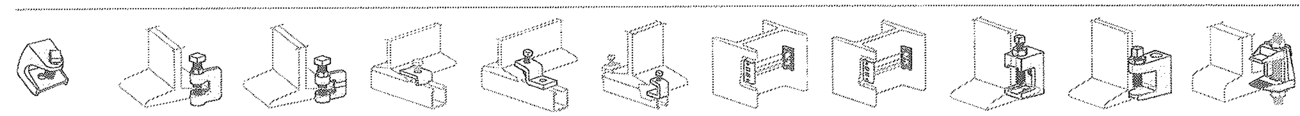

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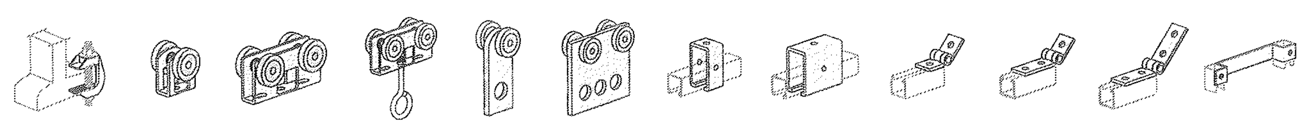
Trolley Assemblies

Special Applications Fittings



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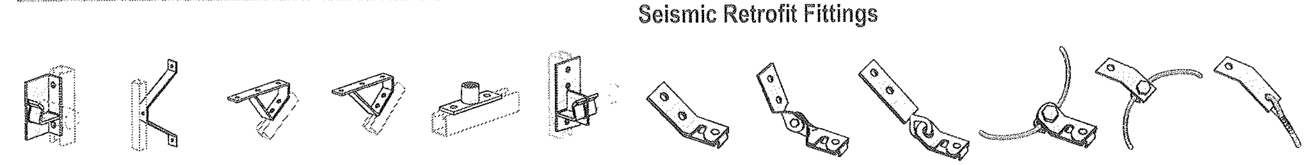
Seismic Retrofit Fittings



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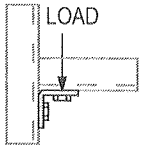
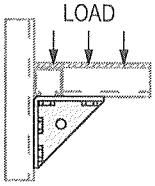
DESIGN LOAD DATA FOR TYPICAL UNISTRUT CHANNEL CONNECTIONS

90° Fittings (When used in position shown)

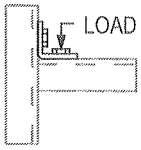
Load – P1026		Channel Thickness 12 ga.	14 ga.	16 ga.
	Lbs	1,500	1,000	750
	kN	*6.67*	*4.45*	*3.34*



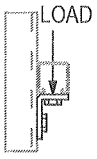
Load – P2484		Channel Thickness 12 ga.	14 ga.	16 ga.
	Lbs	3,000	2,000	1,500
	kN	*13.34*	*8.90*	*6.67*



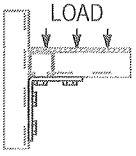
Load – P1026		Channel Thickness 12 ga.	14 ga.	16 ga.
	Lbs	1,000	650	500
	kN	*4.45*	*2.89*	*2.22*



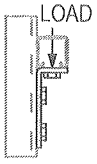
Load – P1068		Channel Thickness 12 ga.	14 ga.	16 ga.
	Lbs	500	500	500
	kN	*2.22*	*2.22*	*2.22*



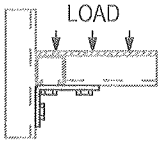
Load – P1325, P2235		Channel Thickness 12 ga.	14 ga.	16 ga.
	Lbs	2,000	2,000	1,500
	kN	*8.90*	*8.90*	*6.67*



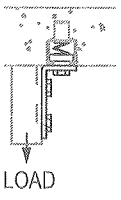
Load – P1326		Channel Thickness 12 ga.	14 ga.	16 ga.
	Lbs	500	500	500
	kN	*2.22*	*2.22*	*2.22*



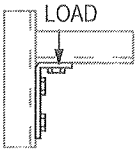
Load – P1458, P1579		Channel Thickness 12 ga.	14 ga.	16 ga.
	Lbs	1,500	1,000	1,000
	kN	*6.67*	*4.45*	*4.45*



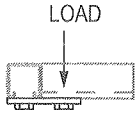
Load – P1346		Channel Thickness 12 ga.	14 ga.	16 ga.
	Lbs	1,200	1,200	1,000
	kN	*5.34*	*5.34*	*4.45*



Load – P1346		Channel Thickness 12 ga.	14 ga.	16 ga.
	Lbs	2,000	1,500	900
	kN	*8.90*	*6.67*	*4.00*

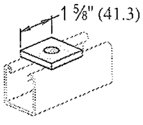


Load – P1065		Channel Thickness 12 ga.	14 ga.	16 ga.
	Lbs	1,000	800	600
	kN	*4.45*	*3.56*	*2.67*



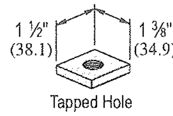
Note:
(1) Both ends of beams supported.
(2) Load data is based on P1010 nut and ½" bolt.
(3) Safety factor = 2½ based on ultimate strength of connection.

P1062, P1063, P1064, P1964, P2471, P2490



Part No.	Bolt Size	Hole Size	Wt/100 pcs Lbs (kg)
P1062	5⁄16"	11⁄32"	18 *(8.2)*
P1063	⅜"	7⁄16"	18 *(8.2)*
P1064	½"	9⁄16"	17 *(7.7)*
P1964	⅝"	11⁄16"	16 *(7.3)*
P2471	¾"	13⁄16"	15 *(6.8)*
P2490	⅞"	15⁄16"	14 *(6.4)*

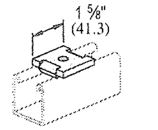
P1959, P1960, P1961



Part Number	U.S. Std. Thd Size	Wt/100 pcs Lbs *(kg)*
P1959	⅜" - 16	21 *(9.5)*
P1960	½" - 13	20 *(9.1)*
P1961	⅝" - 11	19 *(8.6)*

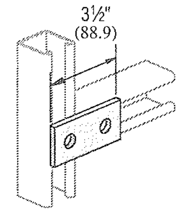
Material: ⅜" (9.5 mm) thick

P2862, 2863, 2864



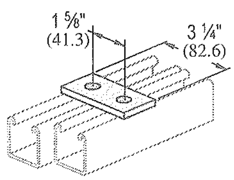
Part Number	Bolt Size	Hole Size	Wt/100 pcs Lbs *(kg)*
P2862	5⁄16"	11⁄32"	18 *(8.2)*
P2863	⅜"	7⁄16"	18 *(8.2)*
P2864	½"	9⁄16"	17 *(7.7)*

P1065



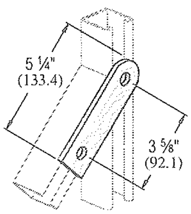
Wt/100 pcs: 38 Lbs (17.2 kg)

P1924



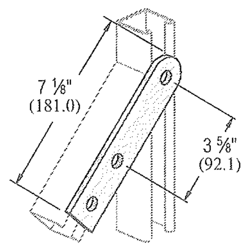
Wt/100 pcs: 35 Lbs (15.9 kg)

P2325



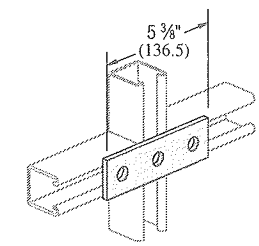
Wt/100 pcs: 55 Lbs (24.9 kg)

P2324



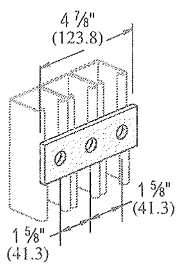
Wt/100 pcs: 75 Lbs (34.0 kg)

P1066



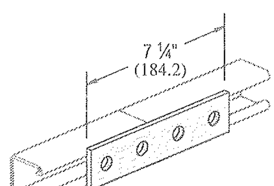
Wt/100 pcs: 56 Lbs (25.4 kg)

P1925



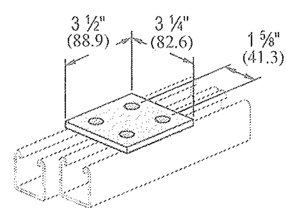
Wt/100 pcs: 50 Lbs (22.7 kg)

P1067



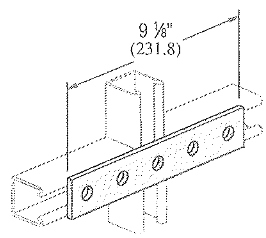
Wt/100 pcs: 78 Lbs (35.4 kg)

P2079



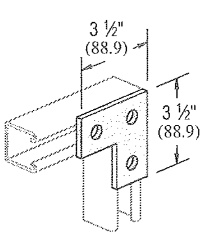
Wt/100 pcs: 73 Lbs (33.1 kg)

P1941



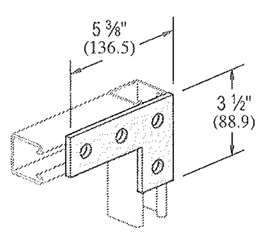
Wt/100 pcs: 94 Lbs (42.6 kg)

P1036



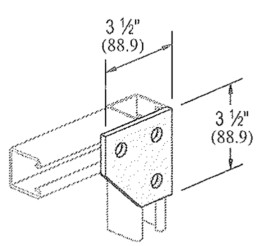
Wt/100 pcs: 58 Lbs (26.3 kg)

P1380 A



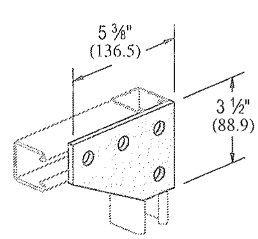
Wt/100 pcs: 80 Lbs (36.3 kg)

P1334



Wt/100 pcs: 70 Lbs (31.8 kg)

P1380



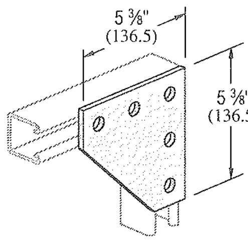
Wt/100 pcs: 105 Lbs (47.6 kg)

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*

Hole Diameter: 9⁄16" (14mm); Hole Spacing - From End: 13⁄16" (21mm); Hole Spacing - On Center: 1⅞" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)

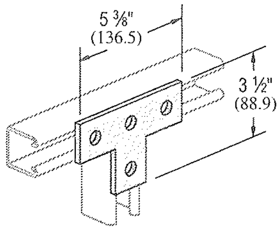
General Fittings

P1873



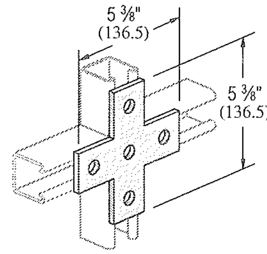
Wt/100 pcs: 150 Lbs (68.0 kg)

P1031



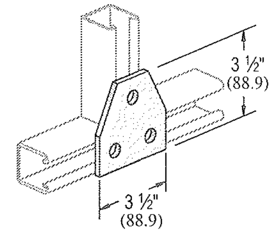
Wt/100 pcs: 80 Lbs (36.3 kg)

P1028



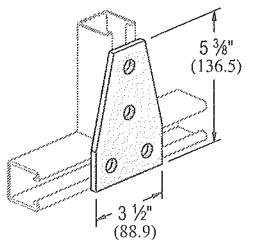
Wt/100 pcs: 105 Lbs (47.6 kg)

P1356



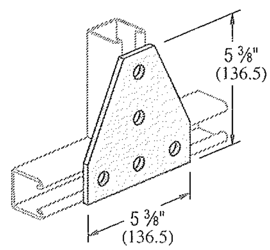
Wt/100 pcs: 70 Lbs (31.8 kg)

P1358



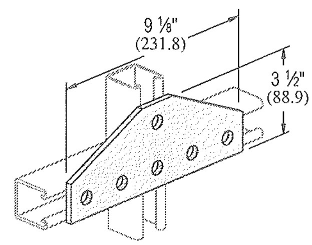
Wt/100 pcs: 105 Lbs (47.6 kg)

P1726



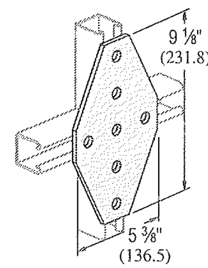
Wt/100 pcs: 148 Lbs (67.1 kg)

P1953



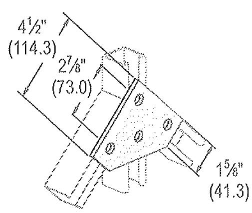
Wt/100 pcs: 176 Lbs (79.8 kg)

P1950



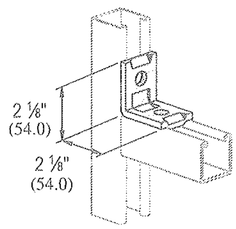
Wt/100 pcs: 240 Lbs (108.9 kg)

P1962



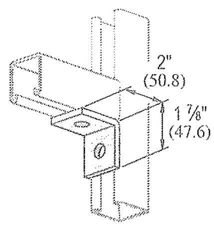
Wt/100 pcs: 112 Lbs (50.8 kg)

P2626



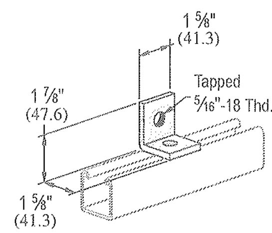
Wt/100 pcs: 40 Lbs (18.1 kg)

P1026



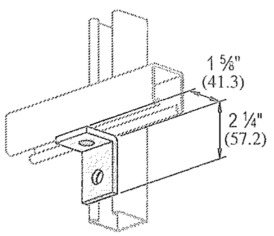
Wt/100 pcs: 38 Lbs (17.2 kg)

P1723



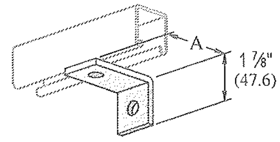
Wt/100 pcs: 34 Lbs (15.4 kg)

P1068



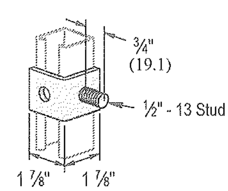
Wt/100 pcs: 38 Lbs (17.2 kg)

P1281, P1282, P1283



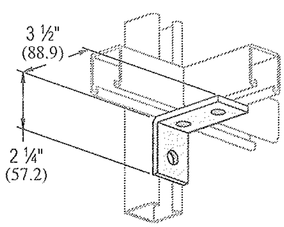
Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*
P1281	3 *76.2*	49 *22.2*
P1282	3½ *88.9*	54 *24.5*
P1283	4 *101.6*	61 *27.7*

P1315



Wt/100 pcs: 45 Lbs (20.4 kg)

P1458

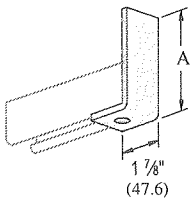


Wt/100 pcs: 58 Lbs (26.3 kg)

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*

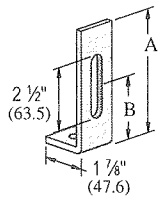
Hole Diameter: 9⁄16" (14mm); Hole Spacing - From End: 13⁄16" (21mm); Hole Spacing - On Center: 1⅞" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)

P1538A THRU P1538D



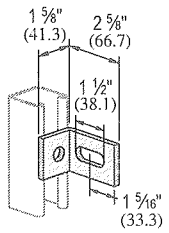
Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*
P1538A	3⅞ *98.4*	61 *27.7*
P1538B	5⅞ *149.2*	84 *38.1*
P1538C	7⅞ *200.0*	107 *48.5*
P1538D	9⅞ *250.8*	130 *59.0*

P1498, P1499



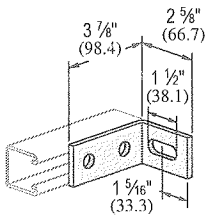
Part Number	"A" In *(mm)*	"B" In *(mm)*	Wt/100 pcs Lbs *(kg)*
P1498	4⅞ *123.8*	2½ *63.5*	65 *29.5*
P1499	6⅞ *174.6*	4½ *114.3*	85 *38.6*

P1750



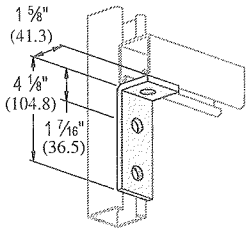
Wt/100 pcs: 38 Lbs (17.2 kg)

P1747



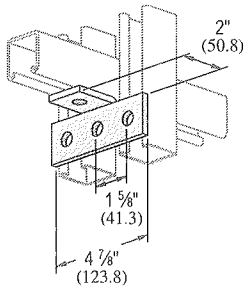
Wt/100 pcs: 66 Lbs (29.9 kg)

P1326



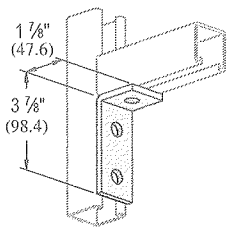
Wt/100 pcs: 58 Lbs (26.3 kg)

P1821



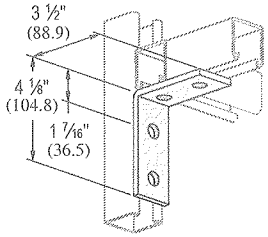
Wt/100 pcs: 71 Lbs (32.2 kg)

P1346



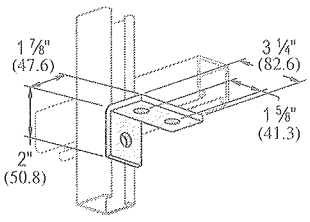
Wt/100 pcs: 58 Lbs (26.3 kg)

P1325



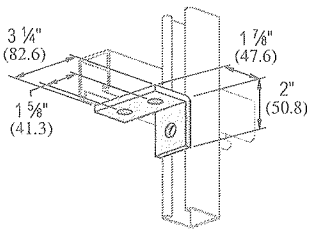
Wt/100 pcs: 78 Lbs (35.4 kg)

P1822



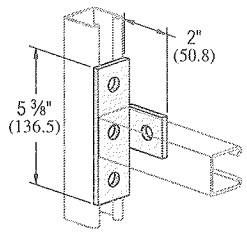
Wt/100 pcs: 55 Lbs (24.9 kg)

P1823



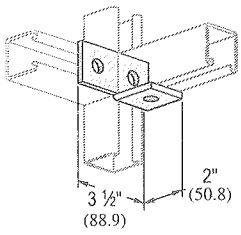
Wt/100 pcs: 55 Lbs (24.9 kg)

P1033



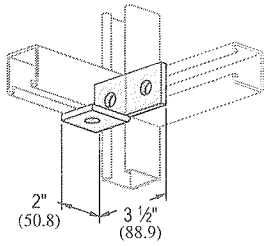
Wt/100 pcs: 80 Lbs (36.3 kg)

P1037



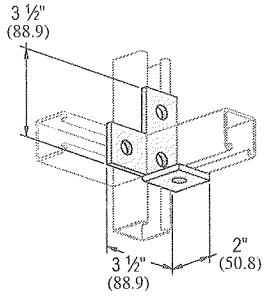
Wt/100 pcs: 58 Lbs (26.3 kg)

P1038



Wt/100 pcs: 58 Lbs (26.3 kg)

P1034

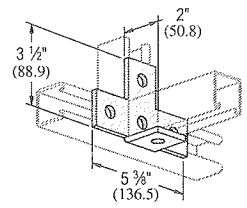


Wt/100 pcs: 80 Lbs (36.3 kg)

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*

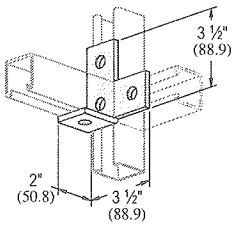
Hole Diameter: ⅝" (14mm); Hole Spacing - From End: ⅜" (21mm); Hole Spacing - On Center: 1⅞" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)

P1029



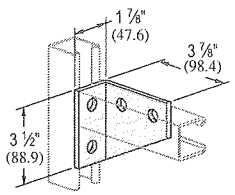
Wt/100 pcs: 105 Lbs (47.6 kg)

P1035



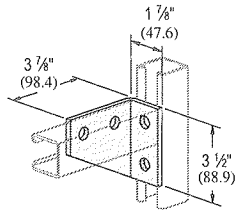
Wt/100 pcs: 80 Lbs (36.3 kg)

P1290



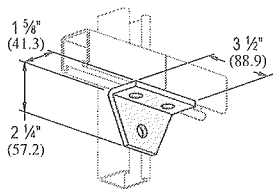
Wt/100 pcs: 101 Lbs (45.8 kg)

P1291



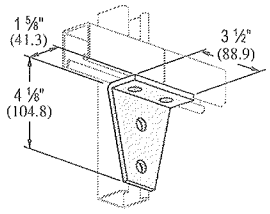
Wt/100 pcs: 101 Lbs (45.8 kg)

P1357



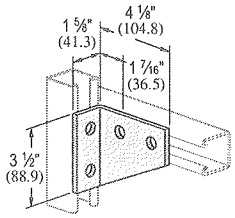
Wt/100 pcs: 70 Lbs (31.8 kg)

P1359



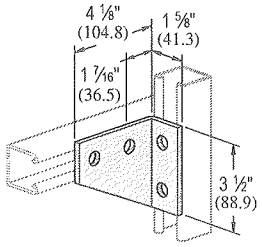
Wt/100 pcs: 105 Lbs (47.6 kg)

P1381



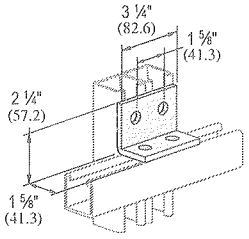
Wt/100 pcs: 105 Lbs (47.6 kg)

P1382



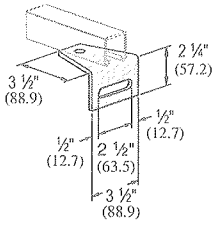
Wt/100 pcs: 105 Lbs (47.6 kg)

P1934



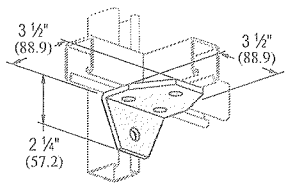
Wt/100 pcs: 75 Lbs (34.0 kg)

P1713



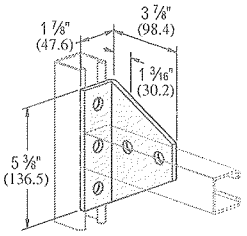
Wt/100 pcs: 97 Lbs (44.0 kg)

P1579



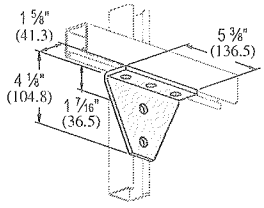
Wt/100 pcs: 103 Lbs (46.7 kg)

P1727



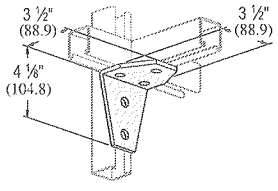
Wt/100 pcs: 154 Lbs (69.9 kg)

P1728



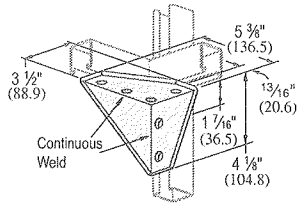
Wt/100 pcs: 154 Lbs (69.9 kg)

P2235



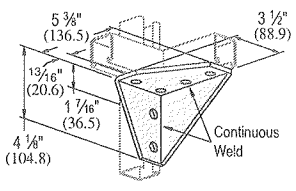
Wt/100 pcs: 135 Lbs (61.2 kg)

P1956



Wt/100 pcs: 230 Lbs (104.3 kg)

P1957

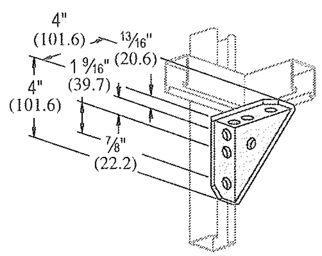


Wt/100 pcs: 230 Lbs (104.3 kg)

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*

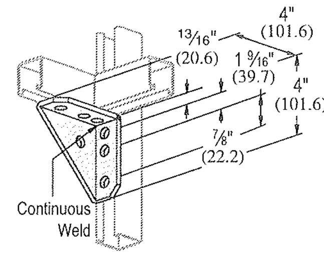
Hole Diameter: 9⁄16" (14mm); Hole Spacing - From End: 13⁄16" (21mm); Hole Spacing - On Center: 1⅞" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)

P2484



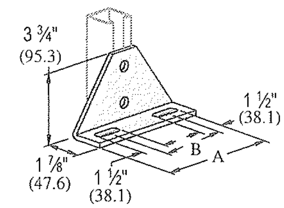
Wt/100 pcs: 134 Lbs (60.8 kg)

P2484W



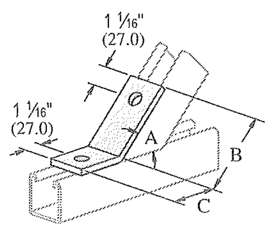
Wt/100 pcs: 134 Lbs (60.8 kg)

P1130, P1131



Part Number	"A" In *(mm)*	"B" In *(mm)*	Wt/100 pcs Lbs *(kg)*
P1130	6⅝ *168.3*	4 *101.6*	190 *86.2*
P1131	8⅝ *219.1*	6 *152.4*	242 *109.8*

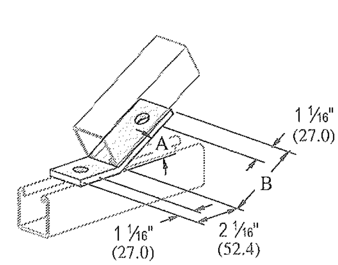
P1546, P2094 THRU P2100



Part No.	"A" Degree *(rad)*	"B" In *(mm)*	"C" In *(mm)*
P2094	82½° *1.44*	3 9/16 *90.5*	1 11/16 *42.9*
P2095	75° *1.31*	3 9/16 *90.5*	1 11/16 *42.9*
P2096	67½° *1.18*	3½ *88.9*	1¾ *44.5*
P2097	60° *1.05*	3⅜ *85.7*	1⅞ *47.6*
P2098	52½° *0.92*	3¼ *82.6*	2 1/16 *52.4*
P1546	45° *0.79*	3 *76.2*	2 5/16 *58.7*
P2099	37½° *0.65*	3½ *88.9*	1 13/16 *46.0*
P2100	37½° *0.65*	2 11/16 *68.3*	2⅝ *66.7*

Wt/100 pcs: 58 Lbs (26.3 kg)

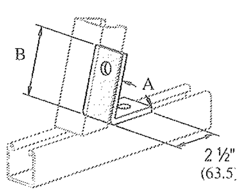
P2101 THRU P2104



Part No.	"A" Degree *(rad)*	"B" In *(mm)*
P2101	30° *0.52*	3¼ *82.6*
P2102	22½° *0.39*	3 5/16 *84.1*
P2103	15° *0.26*	3 5/16 *84.1*
P2104	7½° *0.13*	3 5/16 *84.1*

Wt/100 pcs: 58 Lbs (26.3 kg)

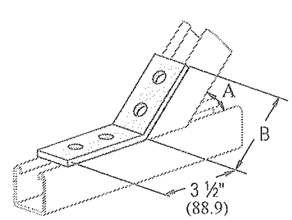
P1186, P2105 THRU P2110



Part Number	"A" Degree *(rad)*	"B" In *(mm)*
P2105	82½° *1.44*	3 3/16 *81.0*
P2106	75° *1.31*	3 3/16 *81.0*
P2107	67½° *1.18*	3⅛ *79.4*
P2108	60° *1.05*	3⅛ *79.4*
P2109	52½° *0.92*	3 1/16 *77.8*
P1186	45° *0.79*	3⅛ *79.4*
P2110	37½° *0.65*	3 *76.2*

Wt/100 pcs: 58 Lbs (26.3 kg)

P2260 THRU P2270



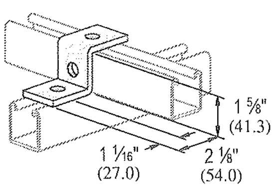
Part Number	"A" Degree *(rad)*	"B" In *(mm)*
P2270	82½° *1.44*	3⅝ *92.1*
P2269	75° *1.31*	3⅝ *92.1*
P2268	67½° *1.18*	3⅝ *92.1*
P2267	60° *1.05*	3 11/16 *93.7*
P2266	52½° *0.92*	3 11/16 *93.7*
P2265	45° *0.79*	3 11/16 *93.7*
P2264	37½° *0.65*	3 11/16 *93.7*
P2263	30° *0.52*	3 11/16 *93.7*
P2262	22½° *0.39*	3¾ *95.3*
P2261	15° *0.26*	3¾ *95.3*
P2260	7½° *0.13*	3¾ *95.3*

Wt/100 pcs: 78 Lbs (35.4 kg)

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*

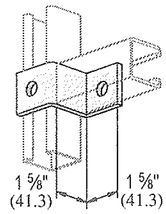
Hole Diameter: 9/16" (14mm); Hole Spacing - From End: 13/16" (21mm); Hole Spacing - On Center: 1⅞" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)

P1045



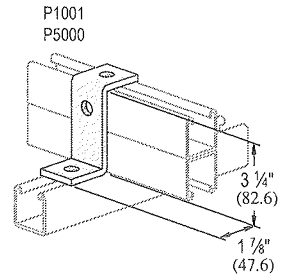
Wt/100 pcs: 55 Lbs (24.9 kg)

P1347



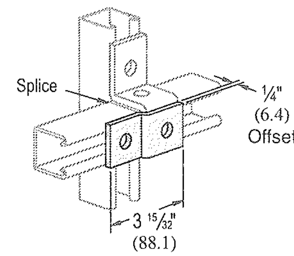
Wt/100 pcs: 55 Lbs (24.9 kg)

P1453



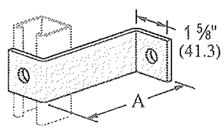
Wt/100 pcs: 70 Lbs (31.8 kg)

P1454



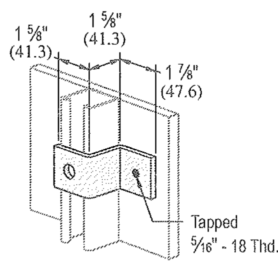
Wt/100 pcs: 38 Lbs (17.2 kg)

P1479A THRU P1479E



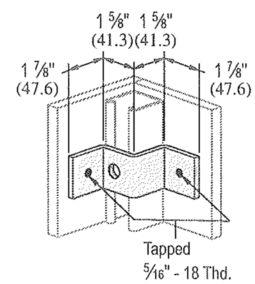
Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*
P1479A	4 *101.6*	81 *36.7*
P1479B	5 *127.0*	92 *41.7*
P1479C	6 *152.4*	104 *47.2*
P1479D	7 *177.8*	115 *52.2*
P1479E	8 *203.2*	127 *57.6*

P1730



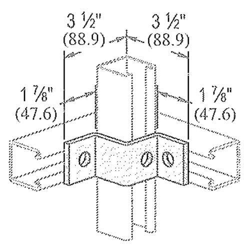
Wt/100 pcs: 54 Lbs (24.5 kg)

P1734



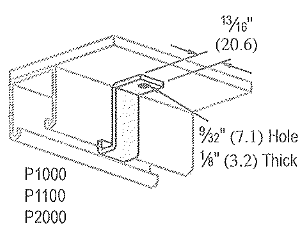
Wt/100 pcs: 70 Lbs (31.8 kg)

P1736



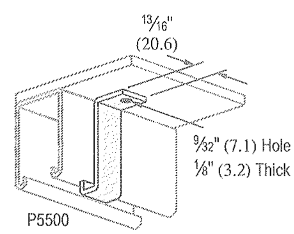
Wt/100 pcs: 70 Lbs (31.8 Kg)

P2360



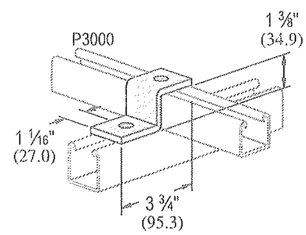
Wt/100 pcs: 9 Lbs (4.1 kg)

P5560



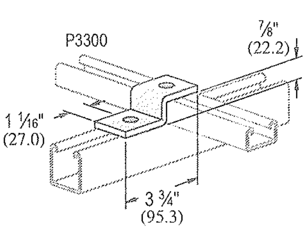
Wt/100 pcs: 11 Lbs (5.0 kg)

P3045



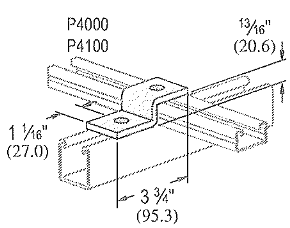
Wt/100 pcs: 53 Lbs (24.0 kg)

P3345



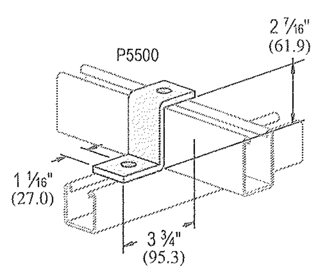
Wt/100 pcs: 47 Lbs (21.3 kg)

P4045



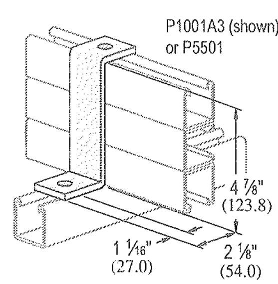
Wt/100 pcs: 47 Lbs (21.3 kg)

P5545



Wt/100 pcs: 67 Lbs (30.4 kg)

P2469

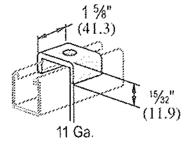


Wt/100 pcs: 93 Lbs (42.2 kg)

Standard Dimensions for 1 5/8" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*

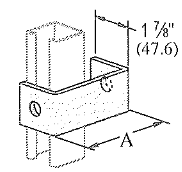
Hole Diameter: 9/16" (14mm); Hole Spacing - From End: 13/16" (21mm); Hole Spacing - On Center: 1 7/8" (48mm); Width: 1 5/8"(41mm); Thickness: 1/4" (6mm)

P2800



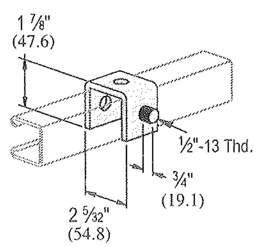
Part Number	Bolt Size In	Wt/100 pcs Lbs *(kg)*
P2800-25	¼"	14 *6.4*
P2800-37	⅜"	14 *6.4*
P2800-50	½"	13 *5.9*
P2800-62	⅝"	13 *5.9*
P2800-75	¾"	13 *5.9*

P1363A THRU P1363E



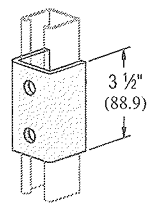
Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*
P1363A	4 *101.6*	78 *35.4*
P1363B	5 *127.0*	89 *40.4*
P1363C	6 *152.4*	101 *45.8*
P1363D	7 *177.8*	112 *50.8*
P1363E	8 *203.2*	124 *56.2*

P1320



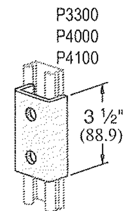
Wt/100 pcs: 63 Lbs (28.6 kg)

P1376



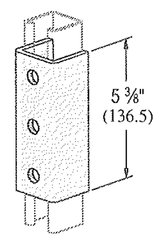
Wt/100 pcs: 128 Lbs (58.1 kg)

P4376



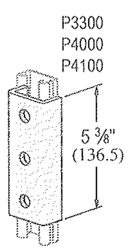
Wt/100 pcs: 85 Lbs (38.6 kg)

P1376A



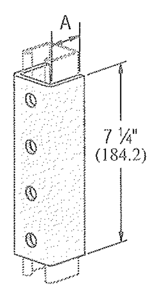
Wt/100 pcs: 197 Lbs (89.4 kg)

P4376A



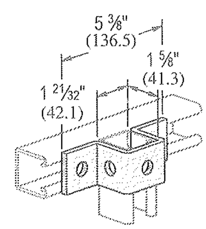
Wt/100 pcs: 130 Lbs (59.0 kg)

P1377, P4377, P5077, P5577



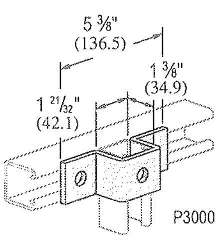
Part Number	For Use With	Wt/100 pcs Lbs (kg)
P1377	P1000, P1100, P2000	265 *120*
P4377	P3300, P4000, P4100	176 *80*
P5077	P5000	390 *177*
P5577	P5500	310 *141*

P1047



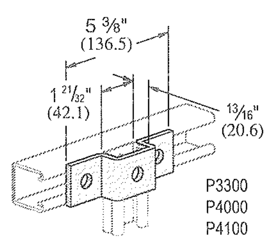
Wt/100 pcs: 88 Lbs (39.9 kg)

P3047



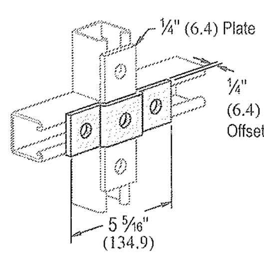
Wt/100 pcs: 84 Lbs (38.1 kg)

P4047



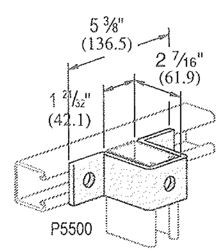
Wt/100 pcs: 71 Lbs (32.2 kg)

P1455



Wt/100 pcs: 58 Lbs (26.3 kg)

P5547

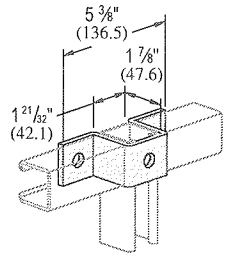


Wt/100 pcs: 108 Lbs (49.0 kg)

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*

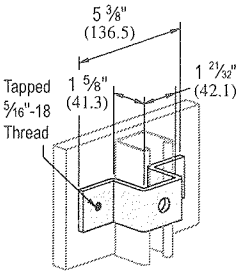
Hole Diameter: 9/16" (14mm); Hole Spacing - From End: 13/16" (21mm); Hole Spacing - On Center: 1⅞" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)

P1383



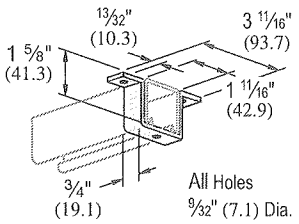
Wt/100 pcs: 95 Lbs (43.1 kg)

P1732



Wt/100 pcs: 88 Lbs (39.9 kg)

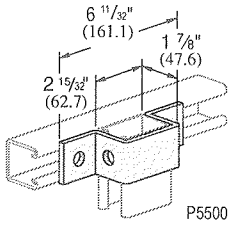
P2237



Material: 1/8" (3.2) thick.

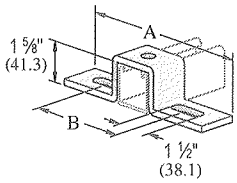
Wt/100 pcs: 18 Lbs (8.2 kg)

P5543



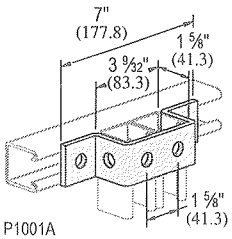
Wt/100 pcs: 97 Lbs (44.0 kg)

P1048, P1049, P1050



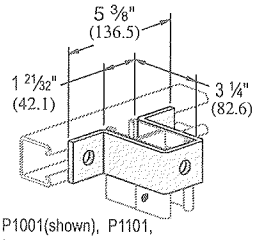
Part Number	"A" In (mm)	"B" In (mm)	Wt/100 pcs Lbs (kg)
P1048	7¼	4⅛	105
	184.2	*104.8*	*47.6*
P1049	8½	5⅜	120
	215.9	*136.5*	*54.4*
P1050	10⅜	7¼	130
	263.5	*184.2*	*59.0*

P1043A



Wt/100 pcs: 105 Lbs (47.6 kg)

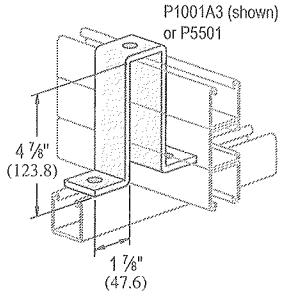
P1737



P1001(shown), P1101, P2001, P4004 or P5000

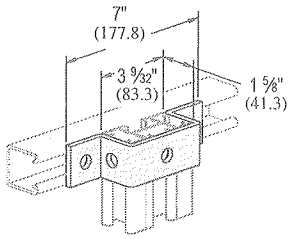
Wt/100 pcs: 128 Lbs (58.1 kg)

P2473



Wt/100 pcs: 197 Lbs (89.4 kg)

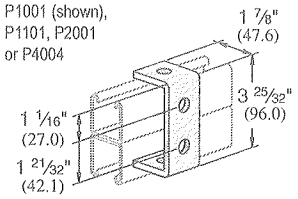
P4043



P4004 (shown), P1001, P1101, P2001, or P5000

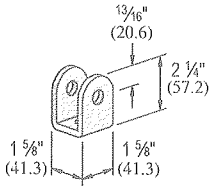
Wt/100 pcs: 106 Lbs (48.1 kg)

P1044



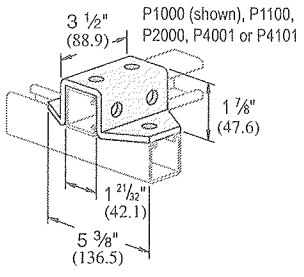
Wt/100 pcs: 70 Lbs (31.8 kg)

P1973



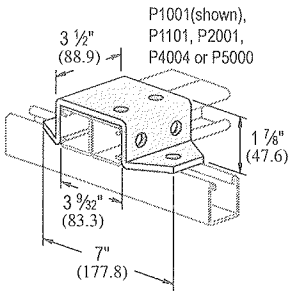
Wt/100 pcs: 53 Lbs (24.0 kg)

P2326



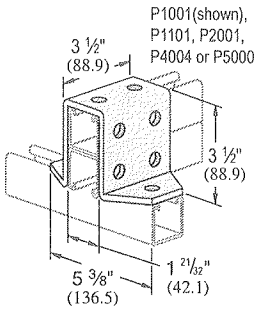
Wt/100 pcs: 171 Lbs (77.6 kg)

P2328



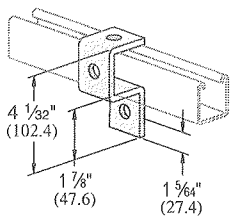
Wt/100 pcs: 209 Lbs (94.8 kg)

P2329



Wt/100 pcs: 257 Lbs (116.6 kg)

P1046A

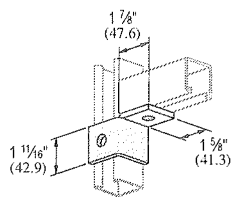


Wt/100 pcs: 76 Lbs (34.5 kg)

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*

Hole Diameter: 9/16" (14mm); Hole Spacing - From End: 13/16" (21mm); Hole Spacing - On Center: 1⅞" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)

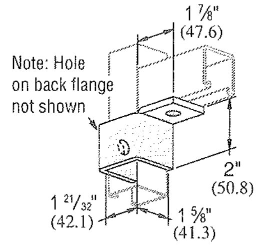
P2341 R-L



R - As shown
L - Opposite hand

Wt/100 pcs: 60 Lbs (27.2 kg)

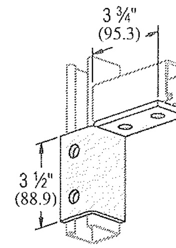
P2472 R-L



R - As shown
L - Opposite hand

Wt/100 pcs: 75 Lbs (34.0 kg)

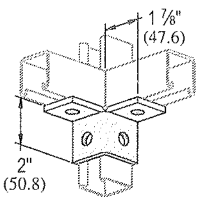
P2343 R-L



R - As shown
L - Opposite hand

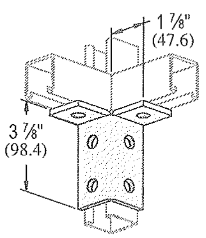
Wt/100 pcs: 119 Lbs (54.0 kg)

P2223



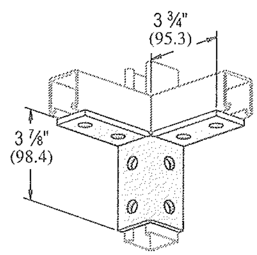
Wt/100 pcs: 76 Lbs (34.5 kg)

P2224



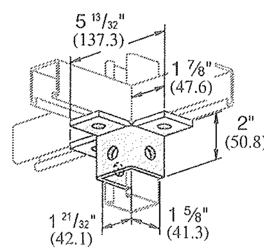
Wt/100 pcs: 115 Lbs (52.2 kg)

P2225



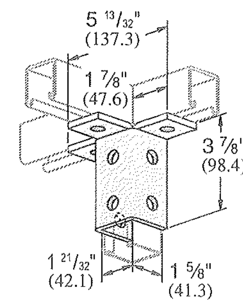
Wt/100 pcs: 155 Lbs (70.3 kg)

P2227



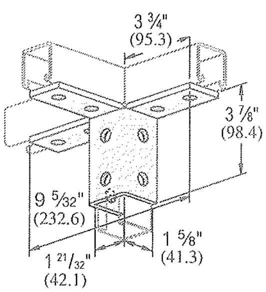
Wt/100 pcs: 113 Lbs (51.3 kg)

P2228



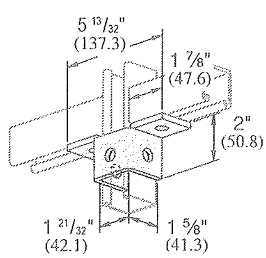
Wt/100 pcs: 177 Lbs (80.3 kg)

P2229



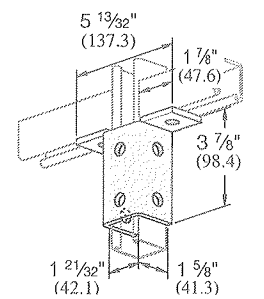
Wt/100 pcs: 230 Lbs (104.3 kg)

P2345



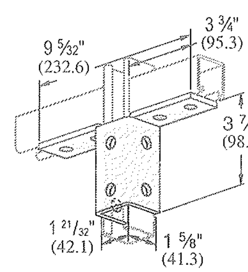
Wt/100 pcs: 93 Lbs (42.2 kg)

P2346



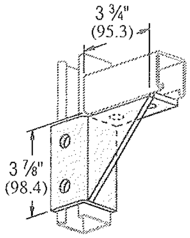
Wt/100 pcs: 150 Lbs (68.0 kg)

P2347



Wt/100 pcs: 193 Lbs (87.5 kg)

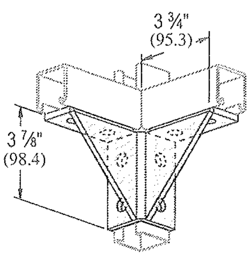
P2344 R-L



R - As shown
L - Opposite hand

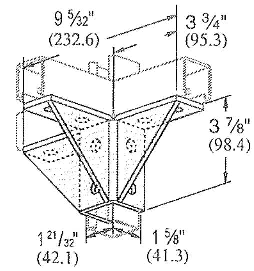
Wt/100 pcs: 176 Lbs (79.8 kg)

P2226



Wt/100 pcs: 217 Lbs (98.4 kg)

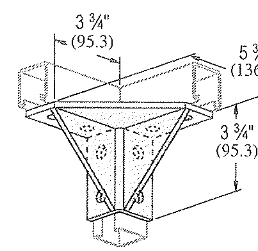
P2230



Wt/100 pcs: 310 Lbs (140.6 kg)

P2245

Fitting notched for continuous vertical.

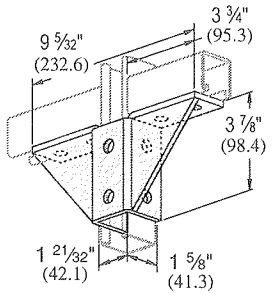


Wt/100 pcs: 315 Lbs (142.9 kg)

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*

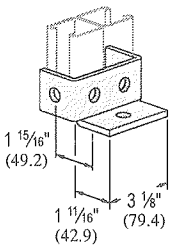
Hole Diameter: 9/16" (14mm); Hole Spacing - From End: 13/16" (21mm); Hole Spacing - On Center: 1⅞" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)

P2348



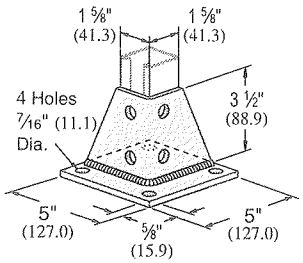
Wt/100 pcs: 274 Lbs (124.3 kg)

P2453



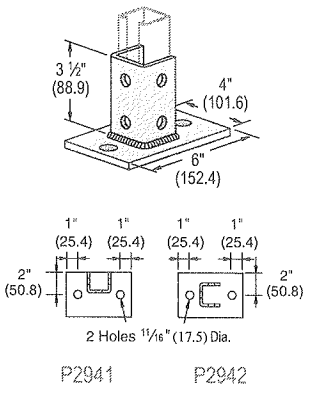
Wt/100 pcs: 116 Lbs (52.6 kg)

P1887



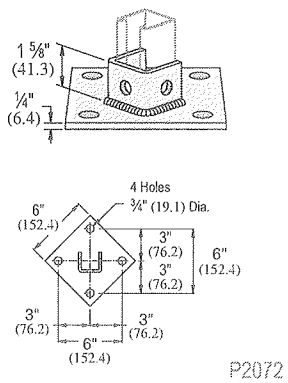
Wt/100 pcs: 297 Lbs (134.8 kg)

P2941, P2942



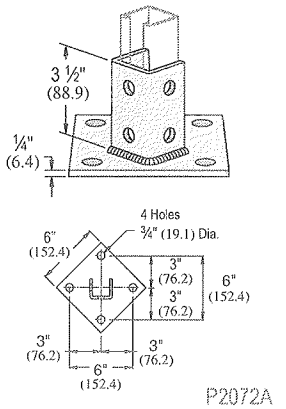
Wt/100 pcs: 358 Lbs (162.4 kg)

P2072, P2072 SQ



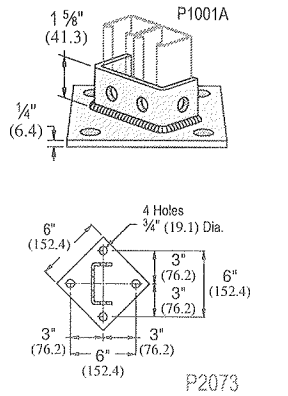
Wt/100 pcs: 307 Lbs (139.3 kg)

P2072A, P2072A SQ



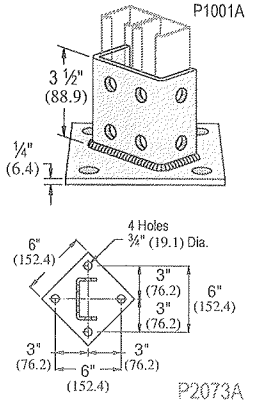
Wt/100 pcs: 373 Lbs (169.2 kg)

P2073, P2073 SQ



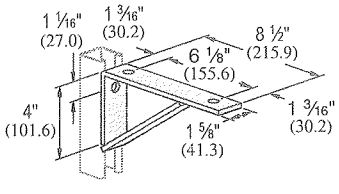
Wt/100 pcs: 325 Lbs (147.4 kg)

P2073A, P2073A SQ



Wt/100 pcs: 408 Lbs (185.1 kg)

P1769



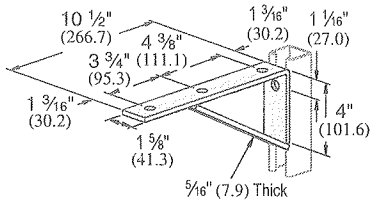
Material: 1/4" (6.4) thick steel.

Vertical Channel Part No.	Gauge	Uniform Design Load Lbs (kN)
P1000	12	800 / 3.56
P1100	14	600 / 2.67
P2000	16	400 / 1.81

Safety Factor 2½

Wt/100 pcs: 174 Lbs (78.9 kg)

P1771



Material: 1/4" (6.4) thick steel.

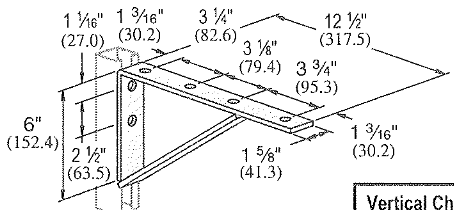
Vertical Channel Part No.	Gauge	Uniform Design Load Lbs (kN)
P1000	12	800 / 3.56
P1100	14	600 / 2.67
P2000	16	400 / 1.81

Safety Factor 2½

Wt/100 pcs: 206 Lbs (93.4 kg)

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*
Hole Diameter: 9/16" (14mm); Hole Spacing - From End: 13/16" (21mm); Hole Spacing - On Center: 1⅞" (48mm); Width: 1⅝"(41mm); Thickness: 1/4" (6mm)
Note : When used for mechanical supports, load capacities of brackets and fittings should be in compliance with the American Standard Code for Pressure Piping.

P1773



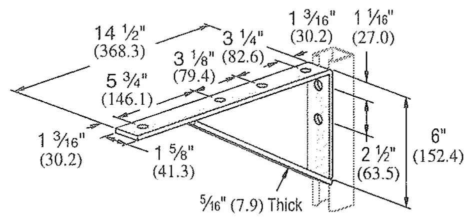
Material: ¼" (6.4) thick steel.

Vertical Channel Part No.	Gauge	Uniform Design Load Lbs *(kN)*
P1000	12	900 *(4.00)*
P1100	14	800 *(3.56)*
P2000	16	450 *(2.04)*

Safety Factor 2½

Wt/100 pcs: 264 Lbs (119.7 kg)

P1775



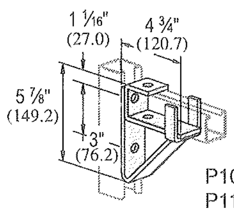
Material: ¼" (6.4) thick steel.

Vertical Channel Part No.	Gauge	Uniform Design Load Lbs *(kN)*
P1000	12	900 *(4.00)*
P1100	14	800 *(3.56)*
P2000	16	450 *(2.04)*

Safety Factor 2½

Wt/100 pcs: 295 Lbs (133.8 kg)

P1075



P1000
P1100
P2000
P4001

Material: ¼" (6.4) thick steel.

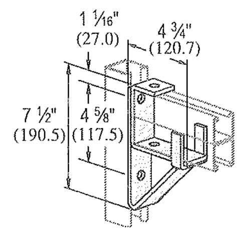
Wt/100 pcs: 229 Lbs (103.9 kg)

Vertical Channel Part No.	Gauge	Allowable Moment* In-Lbs *(N•M)*
P1000	12	5,100 *(576)*
P1100	14	4,400 *(497)*
P2000	16	3,200 *(362)*

Safety Factor 2½

* Allowable moment for fitting only. Channel may determine overall capacity.

P1593



P1001
P1101
P5000
P2001

Material: ¼" (6.4) thick steel.

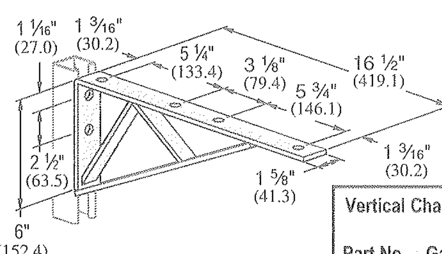
Wt/100 pcs: 272 Lbs (123.4 kg)

Vertical Channel Part No.	Gauge	Allowable Moment* In-Lbs *(N•M)*
P1000	12	13,000 *1,469*
P1100	14	9,100 *1,028*
P2000	16	6,500 *734*

Safety Factor 2½

* Allowable moment for fitting only. Channel may determine overall capacity.

P1777



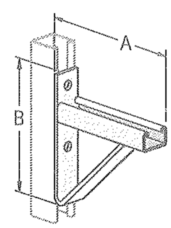
Material: ¼" (6.4) thick steel.

Vertical Channel Part No.	Gauge	Uniform Design Load Lbs *(kN)*
P1000	12	1,200 *(5.44)*
P1100	14	900 *(4.00)*
P2000	16	600 *(2.67)*

Safety Factor 2½

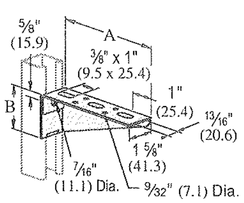
Wt/100 pcs: 385 Lbs (174.6 kg)

P2547 THRU P2551 — CABLE TRAY BRACKET



Part Number	"A" In *(mm)*	"B" In *(mm)*	Wt/100 pcs Lbs *(kg)*	Uniform Load* Lbs *(kN)*
P2547	15 *381.0*	8¾ *222*	420 *190.5*	1,000 *4.45*
P2548	21 *533.4*	8¾ *222*	628 *284.9*	1,000 *4.45*
P2549	27 *685.8*	11¼ *286*	860 *390.1*	900 *4.00*
P2550	33 *838.2*	11¼ *286*	1010 *458.1*	900 *4.00*
P2551	39 *990.6*	16 *406.4*	1257 *683.3*	800 *3.56*

P2491 R-L THRU P2493 R-L



R - As shown; L - Opposite hand
Material : 12 Gauge Steel.

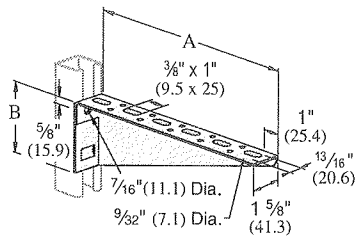
Vertical Channel Part No.	Gauge	Uniform Design Load Lbs *(kN)*
P1000	12	300 *(1.33)*
P1100	14	250 *(1.11)*
P2000	16	200 *(.89)*

Safety Factor - 2½

Part Number	Stamped Ident. No.	"A" In *(mm)*	"B" In *(mm)*	Wt/100 pcs Lbs *(kg)*
P2491 R-L	121892 R-L	6 *152.4*	1^15^⁄16 *49.2*	67 *30.4*
P2492 R-L	121893 R-L	8 *203.2*	2⁷⁄16 *61.9*	92 *41.7*
P2493 R-L	121894 R-L	10 *254.0*	2^15^⁄16 *74.6*	120 *54.4*

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*
Hole Diameter: 9⁄16" (14mm); Hole Spacing - From End: 13⁄16" (21mm); Hole Spacing - On Center: 1⅞" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)
Note : When used for mechanical supports, load capacities of brackets and fittings should be in compliance with the American Standard Code for Pressure Piping.

P2494 R-L THRU P2499 R-L



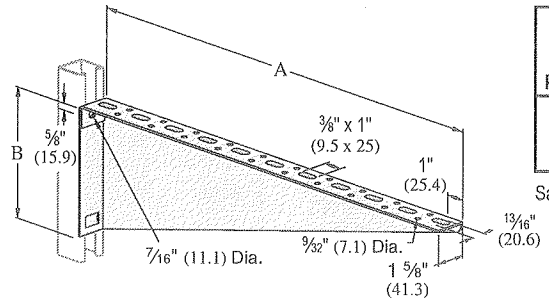
Material : 12 Gauge Steel.
R - As shown; L - Opposite hand

Vertical Channel		Uniform Design Load
Part No.	Gauge	Lbs *(kN)*
P1000	12	300 *(1.33)*
P1100	14	250 *(1.11)*
P2000	16	200 *(.89)*

Safety Factor - 2½

Part Number	Stamped Ident. No.	"A" In *(mm)*	"B" In *(mm)*	Wt/100 pcs Lbs *(kg)*
P2494 R-L	121895 R-L	12 *304.8*	3 7/16 *87.3*	152 *68.9*
P2495 R-L	121896 R-L	14 *355.6*	3 15/16 *100.0*	173 *78.5*
P2496 R-L	121897 R-L	16 *406.4*	4 7/16 *112.7*	223 *101.2*
P2497 R-L	121898 R-L	18 *457.2*	4 15/16 *125.4*	266 *120.7*
P2498 R-L	121899 R-L	20 *508.0*	5 7/16 *138.1*	308 *139.7*
P2499 R-L	121900 R-L	22 *558.8*	5 15/16 *150.8*	355 *161.0*

P2500 R-L THRU P2503 R-L



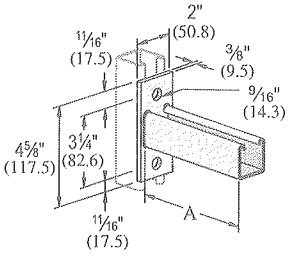
Material : 12 Gauge Steel.
R - As shown; L - Opposite hand

Vertical Channel		Uniform Design Load
Part No.	Gauge	Lbs *(kN)*
P1000	12	300 *(1.33)*
P1100	14	250 *(1.11)*
P2000	16	200 *(.89)*

Safety Factor - 2½

Part Number	Stamped Ident. No.	"A" In *(mm)*	"B" In *(mm)*	Wt/100 pcs Lbs *(kg)*
P2500 R-L	121901 R-L	24 *609.6*	6 7/16 *164*	400 *181.4*
P2501 R-L	121902 R-L	26 *660*	6 15/16 *176*	445 *201.8*
P2502 R-L	121903 R-L	28 *711*	7 7/16 *189*	493 *223.6*
P2503 R-L	121904 R-L	30 *762.0*	7 15/16 *202*	545 *247.2*

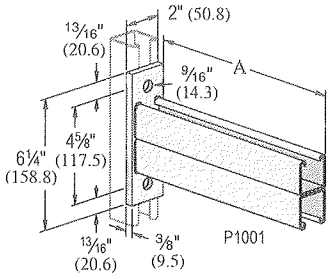
P2944, P2945, P2946, P2947



Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*	Uniform Load* Lbs *(kN)*
P2944	6 *152.4*	185 *84*	1200 *5.34*
P2945	12 *304.8*	293 *133*	600 *2.67*
P2946	18 *457.2*	401 *182*	400 *1.78*
P2947	24 *609.6*	509 *231*	300 *1.33*

Safety Factor 2½
* Mounted on 12 Ga. Channel

P2542 THRU P2546

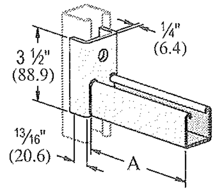


Safety Factor - 2½

Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*	Vertical Channel Part No.	Gauge	Uniform Design Load Lbs *(kN)*
P2542	12 *304.8*	502 *228*	P1000	12	2,000 *(8.90)*
			P1100	14	1,400 *(6.23)*
			P2000	16	1,000 *(4.45)*
P2543	18 *457.2*	692 *314*	P1000	12	1,300 *(5.78)*
			P1100	14	900 *(4.00)*
			P2000	16	650 *(2.89)*
P2544	24 *609.6*	882 *400*	P1000	12	1,000 *(4.45)*
			P1100	14	700 *(3.11)*
			P2000	16	500 *(2.22)*
P2545	30 *762.0*	1,072 *486*	P1000	12	800 *(3.56)*
			P1100	14	560 *(2.49)*
			P2000	16	400 *(1.78)*
P2546	36 *914.4*	1,262 *572*	P1000	12	650 *(2.89)*
			P1100	14	450 *(2.00)*
			P2000	16	320 *(1.42)*

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*
Hole Diameter: 9/16" (14mm); Hole Spacing - From End: 13/16" (21mm); Hole Spacing - On Center: 1⅛" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)
Note : When used for mechanical supports, load capacities of brackets and fittings should be in compliance with the American Standard Code for Pressure Piping.

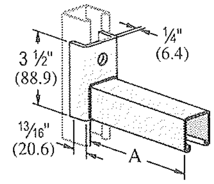
P2231, P2232



Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*	Vertical Channel Part No.	Gauge	Uniform Design Load Lbs *(kN)*
P2231	6 *152.4*	191 *86.6*	P1000	12	1,600 *(7.12)*
			P1100	14	1,200 *(5.34)*
			P2000	16	800 *(3.56)*
P2232	12 *304.8*	292 *132.4*	P1000	12	800 *(3.56)*
			P1100	14	600 *(2.67)*
			P2000	16	400 *(1.78)*

Safety Factor - 2½

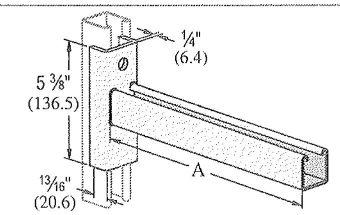
P2231A, P2232A



Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*	Vertical Channel Part No.	Gauge	Uniform Design Load Lbs *(kN)*
P2231A	6 *152.4*	191 *86.6*	P1000	12	1,600 *(7.12)*
			P1100	14	1,200 *(5.34)*
			P2000	16	800 *(3.56)*
P2232A	12 *304.8*	292 *132.4*	P1000	12	800 *(3.56)*
			P1100	14	600 *(2.67)*
			P2000	16	400 *(1.78)*

Safety Factor - 2½

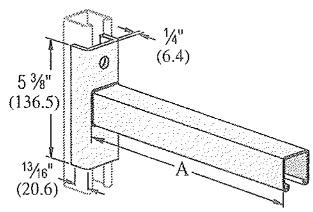
P2233, P2234



Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*	Vertical Channel Part No.	Gauge	Uniform Design Load Lbs *(kN)*
P2233	18 *457.2*	436 *197.8*	P1000	12	600 *(2.67)*
			P1100	14	450 *(2.00)*
			P2000	16	300 *(1.33)*
P2234	24 *609.6*	536 *243.1*	P1000	12	450 *(2.00)*
			P1100	14	330 *(1.47)*
			P2000	16	220 *(.98)*

Safety Factor - 2½

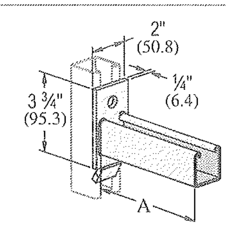
P2233A, P2234A



Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*	Vertical Channel Part No.	Gauge	Uniform Design Load Lbs *(kN)*
P2233A	18 *457.2*	436 *197.8*	P1000	12	600 *(2.67)*
			P1100	14	450 *(2.00)*
			P2000	16	300 *(1.33)*
P2234A	24 *609.6*	536 *243.1*	P1000	12	450 *(2.00)*
			P1100	14	330 *(1.47)*
			P2000	16	220 *(.98)*

Safety Factor - 2½

P2513 THRU P2516

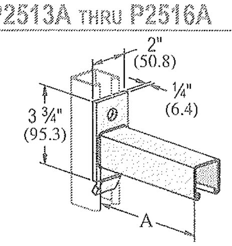


When installed in inverted position use 60% of loads shown.

Safety Factor 2½

Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*	Vertical Channel Part No.	Gauge	Uniform Design Load Lbs *(kN)*
P2513	6 *152.4*	161 *73.0*	P1000	12	1,200 *(5.34)*
			P1100	14	800 *(3.56)*
			P2000	16	600 *(2.67)*
P2514	12 *304.8*	261 *118.4*	P1000	12	600 *(2.67)*
			P1100	14	400 *(1.78)*
			P2000	16	300 *(1.33)*
P2515	18 *457.2*	361 *163.7*	P1000	12	400 *(1.78)*
			P1100	14	270 *(1.20)*
			P2000	16	200 *(.89)*
P2516	24 *609.6*	461 *209.1*	P1000	12	300 *(1.33)*
			P1100	14	200 *(.89)*
			P2000	16	150 *(.67)*

P2513A THRU P2516A



When installed in inverted position use 60% of loads shown.

Safety Factor 2½

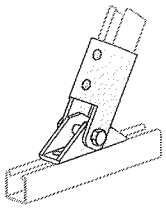
Part Number	"A" In *(mm)*	Wt/100 pcs Lbs *(kg)*	Vertical Channel Part No.	Gauge	Uniform Design Lbs *(kN)*
P2513A	6 *152.4*	161 *73.0*	P1000	12	1,200 *(5.34)*
			P1100	14	800 *(3.56)*
			P2000	16	600 *(2.67)*
P2514A	12 *304.8*	261 *118.4*	P1000	12	600 *(2.67)*
			P1100	14	400 *(1.78)*
			P2000	16	300 *(1.33)*
P2515A	18 *457.2*	361 *163.7*	P1000	12	400 *(1.78)*
			P1100	14	270 *(1.20)*
			P2000	16	200 *(.89)*
P2516A	24 *609.6*	461 *209.1*	P1000	12	300 *(1.33)*
			P1100	14	200 *(.89)*
			P2000	16	150 *(.67)*

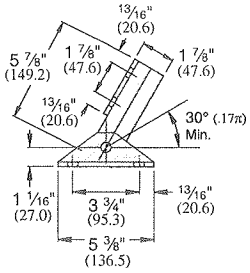
Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*

Hole Diameter: 9/16" (14mm); Hole Spacing - From End: 13/16" (21mm); Hole Spacing - On Center: 1⅞" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)

Note : When used for mechanical supports, load capacities of brackets and fittings should be in compliance with the American Standard Code for Pressure Piping.

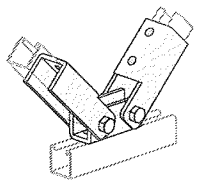
P2815 Adjustable Brace Fitting

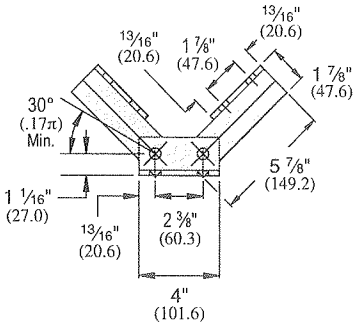




Wt/100 pcs: 307 Lbs (139.3 kg)

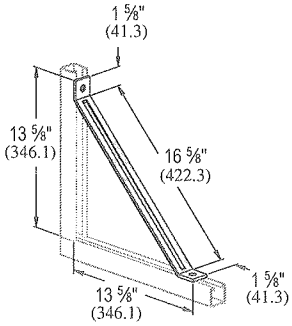
P2815D Adjustable Brace Fitting





Wt/100 pcs: 497 Lbs (225.4 kg)

P2452 Knee Brace

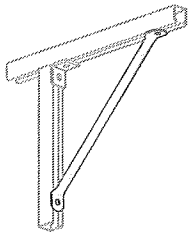


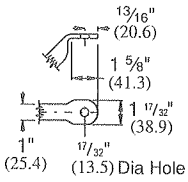
Design Axial Load
1200 Lbs (5.34 kN)

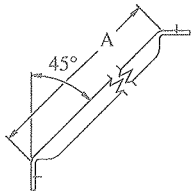
Material: ¼" (6.4) thick steel.

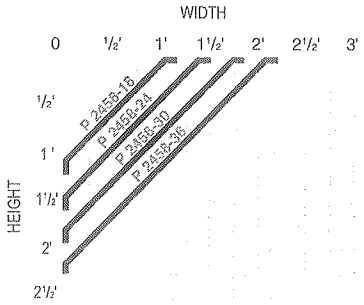
Wt/100 pcs: 277 Lbs (125.6 kg)

P2458-18 thru P2458-36 Tubular Knee Braces





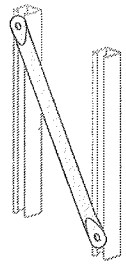




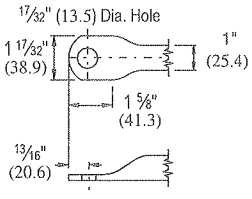
Part Number	"A" In (mm)	Wt/100 pcs Lbs (kg)
P2458-18	18 457.2	146 66.2
P2458-24	24 609.6	186 84.4
P2458-30	30 762.0	227 103.0
P2458-36	36 914.4	267 121.1

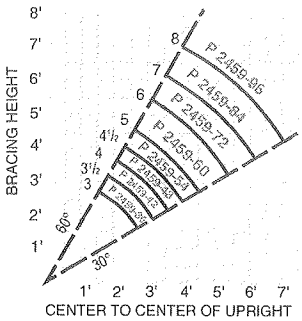
Design Loads
Compression = 1500 Lbs (6.67 kN)
Tension = 300 Lbs (1.33 kN)

P2459-36 thru P2459-96 Tubular Back Braces



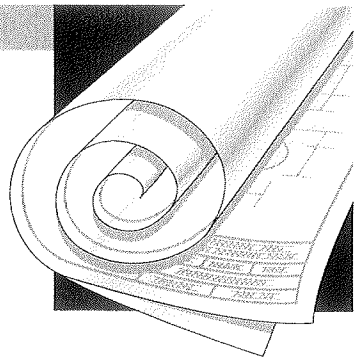
1. The vertical lines of the graph correspond to the center to center line dimension of the uprights.
2. Along this vertical line locate the (maximum usable) horizontal bracing height line.
3. The arc line that intersects the point formed by the intersection of the two lines, indicates the brace required.
4. 60° - 30° maximum, minimum brace angles are indicated for maximum effect.





Part Number	"A" In (mm)	Wt/100 pcs Lbs (kg)
P2459-36	36 914.4	255 115.7
P2459-42	42 1,066.8	296 134.3
P2459-48	48 1,219.2	336 152.4
P2459-54	54 1,371.6	377 171.0
P2459-60	60 1,524.0	418 189.6
P2459-72	72 1,828.8	499 226.3
P2459-84	84 2,133.6	580 263.1
P2459-96	96 2,438.4	661 299.8

Standard Dimensions for 1⅝" (41mm) width series channel fittings *(Unless Otherwise Shown on Drawing)*
Hole Diameter: ⅝" (14mm); Hole Spacing - From End: 13/16" (21mm); Hole Spacing - On Center: 1⅛" (48mm); Width: 1⅝"(41mm); Thickness: ¼" (6mm)
Note : When used for mechanical supports, load capacities of brackets and fittings should be in compliance with the American Standard Code for Pressure Piping.



Load-Span Tables for PS-1 Plywood

Number Z802K

March 1998

Load-span tables for specific wood structural panel applications are included in several APA publications. Recommended loads for sheathing and flooring applications in these publications directly reflect minimum performance criteria given in Voluntary Product Standard PS 1-95, Voluntary Product Standard PS 2-92 and in APA PRP-108 Performance Standards and Policies for Structural-Use Panels. To qualify for a given Span Rating under these standards, a panel must meet all of the criteria for that rating. As a result, mechanical properties that are characteristic of APA wood structural panels are actually greater than the minimum necessary to pass one criterion.

Because it is sometimes necessary to have engineering design information for PS-1 plywood for conditions not specifically covered in the other APA literature, APA publishes separate design section properties and working stresses for the various grades and thicknesses. These values are listed in APA's Plywood Design Specification (PDS), and are recognized by the model building codes. The uniform loads in the following tables were calculated using these properties and stresses, or resulting section capacities for the various Span Ratings. These loads are recommended when engineering principles are used for design. It is important to remember that structural engineering principles alone do not necessarily take into account other factors, such as moisture and thermal conditions, which may impact design.

The following load-span tables apply to sanded, touch-sanded, and unsanded plywood manufactured in accordance with Voluntary Product Standard PS 1-95, with face grain parallel to supports, and face grain across supports. For each combination of span and thickness (or Span Rating), loads are given for deflections of L/360, L/240 and L/180, and maximum loads controlled by bending and shear capacity. Uniform loads for some applications can be read directly from the tables. In other cases, the values given in the tables should be adjusted for special conditions using the factors listed in the "Table of Adjustment Factors."

Table 1 applies to unsanded plywood and is based on APA RATED SHEATHING (marked PS 1) grade. For touch-sanded grades such as C-D Plugged, C-C Plugged, UNDERLAYMENT and APA RATED STURD-I-FLOOR (marked PS 1), see Table 2. Table 3 applies to sanded grades such as A-D and B-D.

The tables also assume dry conditions, normal duration of load, and untreated plywood with interior glue. For other conditions, the loads should be appropriately adjusted using the factors given. For instance, roof loads based on bending and shear stress may be increased 15% for short duration of snow load. See the examples for proper application of adjustment factors. Further details on plywood stresses and adjustments are given in the PLYWOOD DESIGN SPECIFICATION.

For face grain across supports, and spans of 32" and less, three spans are assumed, and two spans for spans greater than 32". For face grain parallel to supports, tables are based on three spans for spans of 16" and less, and two spans for 24". The tables do not apply directly to plywood having a single span. For one-span conditions, use the span adjustment factors.

Effects of support width have been considered when determining the loads based on shear and deflection. Supports are assumed to be 2x nominal members for spans less than 48", and 4x members for 48" and greater spans. Support-width factors are those established by *APA Laboratory Report 120.*

It is important to note that some plywood applications are not controlled by uniform loads. Residential floors are a good example. They are commonly designed for 40 psf live load. The allowable uniform floor load on plywood applied at maximum span according to APA recommendations is greatly in excess of the typical design loads. This excess does not mean that floor spans for plywood can be increased, but only that there is considerable reserve strength and stiffness for *uniform* loads. Actually, the recommendations for plywood floors are based on performance under concentrated loads, how the floor "feels" to passing foot traffic, and other subjective factors which relate to public acceptance. Always check the maximum floor and roof spans for plywood before making a final plywood selection for these applications.

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TABLE OF ADJUSTMENT FACTORS

Duration of Load (Applies to Bending and Shear Only):	
Permanent load (over 10 years)	0.90
2 months, as for snow	1.15
7 days	1.25
Wind or earthquake (check local code)	1.6 or 1.33
Impact	2.00
Basic Stresses for Plywood Grades:	
Exposure 1 or exterior glue	1.10 (shear)
STRUCTURAL I	1.56 (shear)
Groups 2 and 3 for sanded or touch sanded (Tables 2 & 3)	0.73 (bending) 0.67 (deflection)
Group 4 for sanded or touch sanded (Tables 2 & 3)	0.67 (bending) 0.56 (deflection)
Preservative Treatment:	
No adjustment required	
Fire-Retardant Treatments:	
Check with company providing the treatment and redrying service for adjustment recommendations.	
Wet or Damp Locations (Moisture Content 16% or more):	
Exterior and Exposure 1 (Interior with exterior glue) only	
Deflection	0.83
Bending	0.70
Shear	0.83
Span Adjustments:	
2-span to 1-span	
Deflection	0.42
Bending	1.00
Shear	1.25
3-span to 1-span	
Deflection	0.53
Bending	0.80
Shear	1.20

TABLE 1

UNIFORM LOADS (PSF) ON UNSANDED (SPAN RATED) PLYWOOD PANELS MULTI-SPAN, NORMAL DURATION OF LOAD, DRY CONDITIONS

Span Rating	Load Governed By	Face Grain Across Supports Span, Center-to-Center of Supports (inches)										Face Grain Parallel to Supports Span, Center-to-Center of Supports (inches)		
		12	16	19.2	24	30	32	36	40	48	60	12	16	24
12/0	L/360	92	37	21	10							8	3	
	L/240	138	55	31	15							11	4	
	L/180	184	73	41	20							15	6	
	Bending	117	66	46	29							27	15	
	Shear	234	170	139	109							552	400	
16/0	L/360	110	44	25	12	6						8	3	
	L/240	165	66	37	18	8						12	5	
	L/180	220	88	49	24	12						16	6	
	Bending	126	71	49	31	20						28	16	
	Shear	234	170	139	109	86						499	361	
20/0	L/360	165	66	37	18	9	7					10	4	
	L/240	247	99	55	27	14	11					15	6	
	L/180	329	132	74	36	18	15					20	8	
	Bending	154	87	60	39	25	22					31	17	
	Shear	234	170	139	109	86	81					411	298	
24/0	L/360	278	114	64	32	16	13	11				17	7	
	L240	417	171	96	48	24	20	17				26	10	
	L/180	556	227	129	64	32	26	23				35	14	
	Bending	208	117	81	52	33	29	19				46	26	
	Shear	284	206	168	132	105	98	83				236	171	
32/16	L/360	420	181	105	53	27	22	19	14			32	13	5
	L/240	631	271	157	80	40	33	29	21			48	19	7
	L/180	841	362	209	106	54	44	39	28			64	26	9
	Bending	293	165	114	73	47	41	26	21			77	44	15
	Shear	358	259	212	167	132	123	105	94			225	163	101
40/20	L/360	657	298	176	91	47	39	34	25	16		66	28	10
	L/240	985	447	265	137	70	58	51	37	25		98	41	15
	L/180	1313	596	353	183	94	77	68	49	33		131	55	20
	Bending	522	293	204	130	83	73	46	38	26		125	70	25
	Shear	457	331	271	213	168	157	134	120	104		284	206	127
48/24	L/360	1073	511	311	165	86	71	62	46	31	15	217	95	35
	L/240	1609	767	466	248	129	107	94	69	46	23	325	142	52
	L/180	2145	1023	622	330	172	142	125	92	61	30	434	189	70
	Bending	646	363	252	161	103	91	57	47	32	21	319	180	64
	Shear	590	428	350	276	218	203	173	155	134	105	330	239	148
1-1/8" (Groups 1 & 2)	L/360	1677	904	590	338	186	156	137	102	70	36	1062	515	206
	L/240	2516	1357	885	506	280	234	206	154	105	53	1593	773	309
	L/180	3355	1809	1181	675	373	312	274	205	140	71	2124	1031	412
	Bending	1047	589	409	262	168	147	93	75	52	34	768	432	154
	Shear	911	659	540	425	335	313	266	238	206	162	725	525	325

TABLE 2

UNIFORM LOADS (PSF) ON TOUCH-SANDED (GROUP 1 OR SPAN RATED) PLYWOOD PANELS
MULTI-SPAN, NORMAL DURATION OF LOAD, DRY CONDITIONS

Thickness (inches) or Span Rating	Load Governed By	Face Grain Across Supports Span, Center-to-Center of Supports (inches)										Face Grain Parallel to Supports Span, Center-to-Center of Supports (inches)		
		12	16	19.2	24	30	32	36	40	48	60	12	16	24
1/2 or 16 oc	L/360	433	197	116	60	31	25	22	16	11		40	17	6
	L/240	650	295	175	91	46	38	34	24	16		61	25	9
	L/180	867	393	233	121	62	51	45	33	22		81	34	12
	Bending	345	194	135	86	55	49	31	25	17		84	47	17
	Shear	389	281	231	181	143	134	114	102	88		251	182	113
19/32, 5/8 or 20 oc	L/360	607	275	163	85	43	36	31	23	15	7	109	46	17
	L/240	911	413	245	127	65	54	47	34	23	11	164	69	25
	L/180	1214	551	326	169	87	71	63	46	30	15	219	92	33
	Bending	401	225	157	100	64	56	36	29	20	13	186	105	37
	Shear	490	354	290	228	180	169	143	128	111	87	295	214	132
23/32, 3/4 or 24 oc	L/360	915	436	265	141	73	61	53	39	26	13	197	86	32
	L/240	1373	655	398	211	110	91	80	59	39	19	295	129	47
	L/180	1831	873	531	282	147	121	107	78	52	26	393	171	63
	Bending	535	301	209	134	86	75	48	39	27	17	287	161	57
	Shear	602	436	357	281	222	207	176	158	136	107	333	241	149
1-1/8 2-4-1 (Groups 1, 2 or 3) or 48 oc	L/360	1884	1016	663	379	209	175	154	115	78	40	1202	583	233
	L/240	2826	1524	995	569	314	263	231	172	118	60	1803	875	349
	L/180	3768	2032	1326	758	419	351	308	230	157	80	2405	1167	466
	Bending	1343	755	524	336	215	189	119	97	67	43	1022	575	204
	Shear	1029	745	610	480	379	354	301	269	233	184	781	566	350

TABLE 3

UNIFORM LOADS (PSF) ON GROUP 1 SANDED PLYWOOD PANELS
MULTI-SPAN, NORMAL DURATION OF LOAD, DRY CONDITIONS

Thickness (inches)	Load Governed By	Face Grain Across Supports Span, Center-to-Center of Supports (inches)										Face Grain Parallel to Supports Span, Center-to-Center of Supports (inches)		
		12	16	19.2	24	30	32	36	40	48	60	12	16	24
11/32	L/360	139	56	32	16	8	6	6				8	3	1
	L/240	209	84	47	24	12	10	8				12	5	2
	L/180	278	112	63	31	16	13	11				16	6	2
	Bending	128	72	50	32	20	18	11				22	12	4
	Shear	253	183	150	118	93	87	74				237	171	106
3/8	L/360	192	79	44	22	11	9	8				12	5	2
	L/240	288	118	67	33	17	14	12				18	7	2
	L/180	384	157	89	44	22	18	16				23	9	3
	Bending	172	97	67	43	27	24	15				32	18	6
	Shear	282	204	167	132	104	97	82				321	232	144
15/32	L/360	428	182	104	53	27	22	19	14	9		45	18	6
	L/240	642	273	157	79	40	33	29	21	14		68	27	10
	L/180	856	363	209	105	53	43	38	28	18		90	36	13
	Bending	294	166	115	74	47	41	26	21	15		92	52	18
	Shear	376	272	223	175	139	129	110	98	85		223	161	100
1/2	L/360	483	208	120	61	31	25	22	16	11		63	26	9
	L/240	724	312	180	91	46	38	33	24	16		95	38	14
	L/180	966	415	240	122	62	50	44	32	21		126	51	18
	Bending	325	183	127	81	52	46	29	23	16		120	67	24
	Shear	408	296	242	191	150	141	119	107	92		252	182	113
19/32	L/360	649	290	171	88	45	37	33	24	16	8	143	60	21
	L/240	973	435	256	132	67	55	49	35	23	12	215	89	32
	L/180	1297	581	342	176	90	74	65	47	31	15	286	119	43
	Bending	433	244	169	108	69	61	39	31	22	14	188	106	38
	Shear	500	362	297	233	184	172	146	131	113	89	262	189	117
5/8	L/360	701	318	188	98	50	41	36	26	17	9	180	76	27
	L/240	1052	477	283	147	75	62	54	40	26	13	270	113	41
	L/180	1403	636	377	195	100	82	72	53	35	17	360	151	54
	Bending	466	262	182	117	75	66	41	34	23	15	226	127	45
	Shear	532	386	316	248	196	183	156	139	121	95	285	206	128
23/32	L/360	870	410	247	131	68	56	49	36	24	12	311	134	49
	L/240	1305	615	371	196	102	84	74	54	36	18	466	201	74
	L/180	1740	819	495	261	136	112	98	72	48	24	621	268	98
	Bending	535	301	209	134	86	75	48	39	27	17	318	179	64
	Shear	602	436	357	281	222	207	176	158	136	107	349	253	156
3/4	L/360	922	439	267	142	74	61	54	39	26	13	382	166	61
	L/240	1382	659	401	213	111	92	81	59	39	20	573	250	92
	L/180	1843	879	534	284	148	122	107	79	52	26	764	333	123
	Bending	567	319	221	142	91	80	50	41	28	18	392	220	78
	Shear	618	448	367	289	228	213	181	162	140	110	373	270	167
7/8	L/360	1116	557	347	189	100	83	73	54	36	18	570	258	97
	L/240	1675	836	521	284	151	125	110	81	54	27	855	386	146
	L/180	2233	1115	695	378	201	167	146	108	72	36	1139	515	195
	Bending	708	398	277	177	113	100	63	51	35	23	542	305	108
	Shear	736	533	437	343	271	253	215	193	167	131	464	336	208
1	L/360	1460	760	485	271	147	122	107	80	54	27	912	427	166
	L/240	2190	1139	727	406	220	183	161	119	81	41	1368	641	249
	L/180	2920	1519	970	541	293	244	215	159	108	54	1824	855	332
	Bending	913	514	357	228	146	128	81	66	46	29	813	457	163
	Shear	812	588	482	379	299	280	237	213	184	145	643	466	288
1-1/8	L/360	1632	880	574	328	181	152	133	100	68	35	1199	582	232
	L/240	2448	1320	861	493	272	228	200	149	102	52	1799	873	349
	L/180	3264	1760	1149	657	363	304	267	199	136	69	2399	1164	465
	Bending	1128	634	440	282	180	159	100	81	56	36	1023	575	205
	Shear	904	654	536	422	333	311	264	237	205	161	771	558	345

Examples Showing Use of Plywood Load-Span Tables

Example 1: Find the allowable uniform floor load for APA RATED SHEATHING 32/16 Exposure 1. Assume 10 psf dead load, and face grain across supports 16" o.c. Unless stated otherwise, assume floor deflection criteria to be L/360 under live load only and L/240 under total load.

Load Governed By	Load (psf)		Adjustment for Exposure 1		Load (psf)
L/360	181				181
L/240	271				271
L/180	362				362
Bending	165				165
Shear	259	x	1.10	=	285

From Table 1, for Unsanded Panels with Face Grain Across Supports:

Allowable total load for floors is the least of loads for L/240, bending and shear. Allowable total load is 165 psf.

Live load is the lesser of the load for L/360 and total load as determined above, minus dead load.

L/360 = 181 psf

Total load – dead load = 165 – 10 = 155 psf

Allowable live load is 155 psf.

Note: Do not increase span even though the allowable uniform live load greatly exceeds the 40 psf design live load normally used for floor design. Recommended maximum span reflects performance under concentrated and impact loads in addition to uniform load.

Example 2: Find allowable snow loads on APA RATED SHEATHING 48/24 Exposure 1 if face grain is across supports spaced 32" o.c. In question are several panels in the 1-span condition. Deflection criteria are L/240 under live load only and L/180 under total load. Assuming a 2-month duration of load for snow, allowable loads for bending and shear may be increased 15%. Assume 10 psf dead load supported by the plywood.

Load Governed By	Load (psf)		Adjustment for Duration of Load		Adjustment for Span		Adjustment for Exposure 1		Adjusted Load (psf)
L/360	71			x	0.53			=	38
L/240	107			x	0.53			=	57
L/180	142			x	0.53			=	75
Bending	91	x	1.15	x	0.80			=	84
Shear	203	x	1.15	x	1.20	x	1.10	=	308

From Table 1, for Unsanded Panels with Face Grain Across Supports:

Allowable total load is the least of loads for L/180, bending and shear. Allowable total load is 75 psf.

Live load is the lesser of total load minus dead load (75 – 10 = 65 psf), and load at L/240 (57 psf).

In this case, live load is controlled by deflection of L/240: Allowable live load = 57 psf, or 55 psf (rounded to nearest 5 psf).

Example 3: Find allowable soil pressure on 23/32" APA C-C Plugged Group 1 EXT if supports are 16" o.c. Face grain is across supports. Deflection need not be considered. Assume soil pressure is permanent load.

Load Governed By	Load (psf)		Adjustment for Duration of Load		Adjustment for Moisture		Adjustment for Exterior Glue		Adjusted Load (psf)
L/360	436			x	.83			=	362
L/240	655			x	.83			=	544
L/180	873			x	.83			=	725
Bending	301	x	0.90	x	.70			=	190
Shear	436	x	0.90	x	.83	x	1.10	=	358

From Table 2, for Group 1 Touch-Sanded Panels with Face Grain Across Supports:

Allowable load = 190 psf.

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