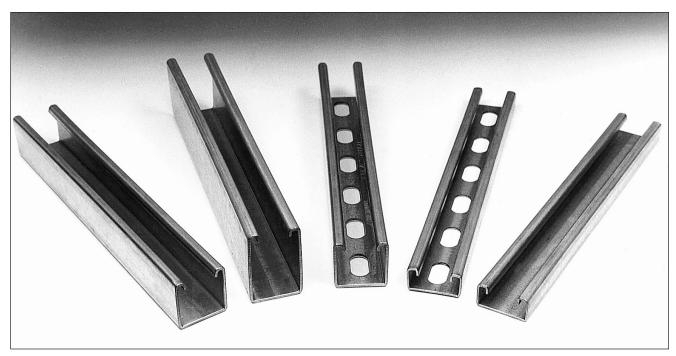


ENGINEERING CATALOG

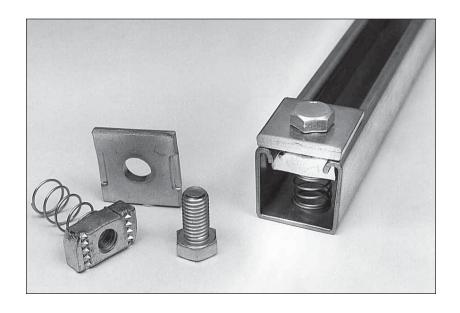
No. F-1010



(800) FX-STRUT

Tel: (800) 397-8788 Tel: (330) 372-9999 Fax: (330) 372-3666

www.flexstrut.com





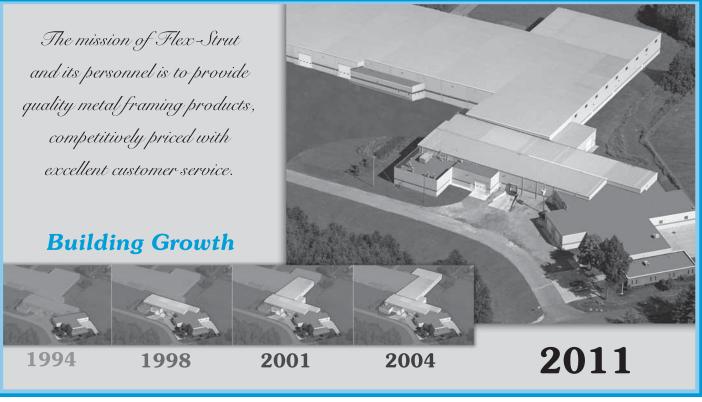
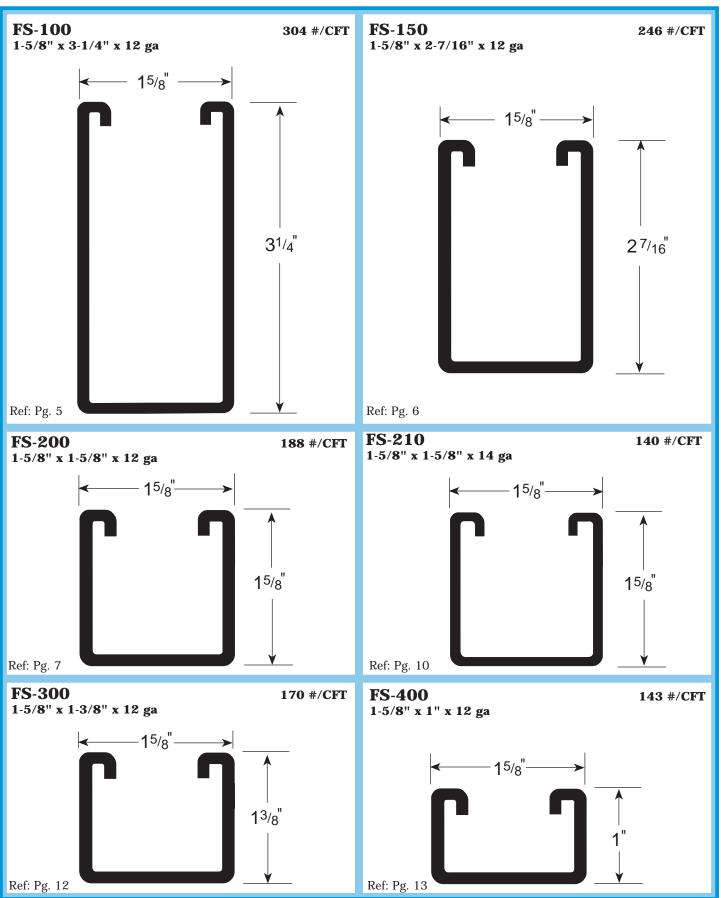


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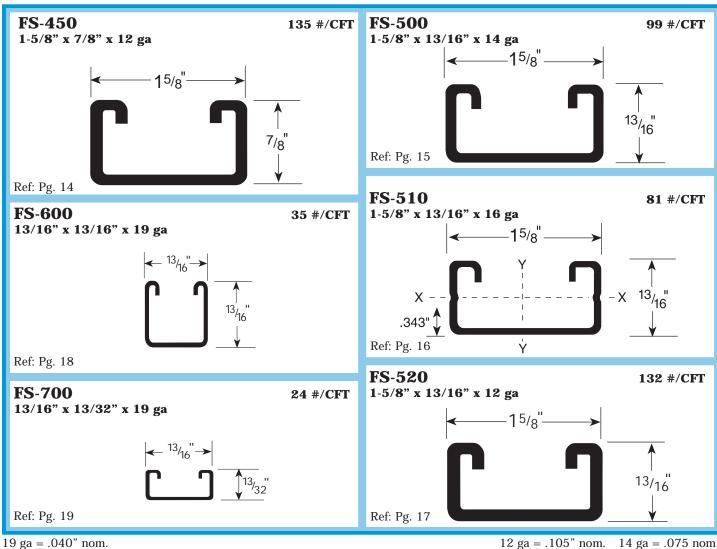






Flex-Strut CHANNEL



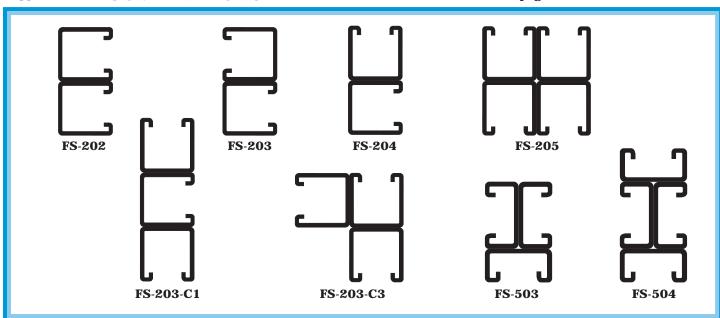


12 ga = .105" nom. 14 ga = .075 nom.



(Back-to-Back shown on Channel pages)

(Scaled Down to Size)



REDUCTION FACTOR



MATERIAL SPECIFICATIONS and GENERAL INFORMATION

CHANNEL

General - Flex-Strut channels are manufactured by Roll-forming strip steel into channel configurations.

Material - Hot-Roll, Green and Hot dip galvanized..... ASTM A1011 (Meets the physical requirements of Grade 33)

Stainless Steel (Type 316 or 304)..... ASTM A240

Design – Design tables are based on AISI "Cold Formed Steel Design Manual".

Welding – Channel combinations are made by spot welding or plug welding. Weld spacing is three inches (3") on center

Finishes – Channels are available in Plain (PL), Pre-galvanized (PG)(G90 per ASTM A653(0.90oz/sq ft; 0.77 mil thickness and Green (GR). Some channels are available in Aluminum (AL), Stainless Steel (ST4 or ST6), Hot-Dip Galvanized After

Fabrication (HD)(Per ASTM A123 Grade 85(3.3mil thickness)), Gold (GD)(Per ASTM B633 Type II SC2 with yellow chromate (0.30 mil thickness)), fiberglass, and PVC coated. Custom colors are available upon request.

LOAD REDUCTIONS

CONDITIONS

Values in load tables assume simply supported, solid steel channel with uniform loading. Reduction factors for other conditions can be seen in the table below.

Short Slot (SS) and Holes (H)	0.85
Slotted (SL)	0.90
Knock-out (KO)	0.95
Center Point Load (Published Allowable Stress Values)	0.50
Center Point Load (Published Allowable Deflection Values)	0.80
Slotted, Back to Back Channel (Table values marked with *)	0.75
Aluminum Strut w/ Uniform Load (Published Allowable Stress Values)	0.60
Aluminum Strut w/ Uniform Load (Published Allow. Deflection Values)	0.33

Aluminum Strut w/ Center Point Load (Published Allowable Stress Values)

Aluminum Strut w/ Center Point Load (Published Allowable Deflection Values)

*NOTE: Load reductions can be combined for multiple reduction conditions Ex: FS-200SS AL @ 120.00"

(Allowable Uniform load (1/240 deflection) = 120*.85*.33=34lbs

CHANNEL NUTS

General – Flex-Strut channel nuts are stamped from steel bar and case hardened after forming and tapping.

Material – Steel bar used to manufacture Channel nuts conforms to ASTM A1011.

Finish – Electro-galvanized (E/G) zinc per ASTM B-633 (Type III SC1 (0.2 mil thickness)). Aluminum (ASTM B221, Type 6063-T5), Stainless Steel (ASTM B783 (Type 316N2-33) or ASTM A276) and Fiberglass nuts are available in some sizes.

FITTINGS

General – Flex-Strut fittings are manufactured by punching and cold forming steel for specific channel connection applications. Typical fittings are $\frac{1}{4}$ " thick and $1-\frac{5}{8}$ " wide. Typical holes are $\frac{9}{16}$ " diameter, $1-\frac{7}{8}$ " on center and $\frac{13}{16}$ " from ends.

Material - Steel bar used to manufacture fittings conforms to ASTM A575 or ASTM A1011 GR 33

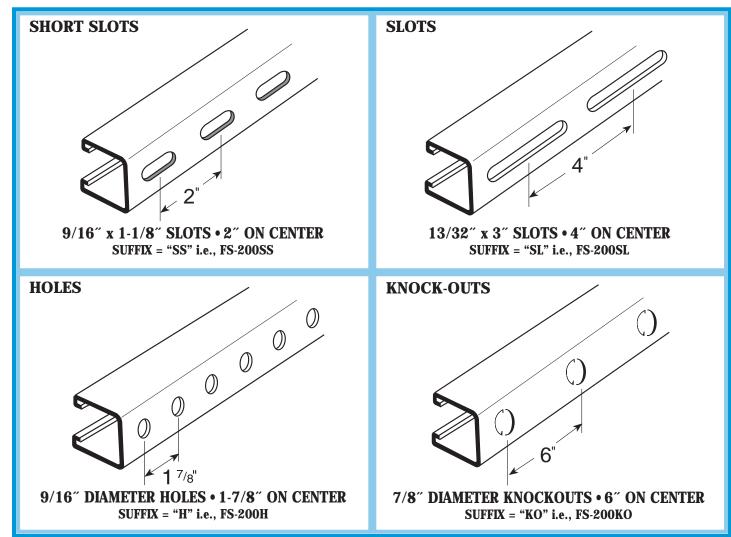
Finish – Electro-galvanized (E/G) zinc per ASTM B-633 (Type III SC1 (0.2 mil thickness)). Some fittings available in Aluminum (5052-H32), Stainless Steel (ASTM A276) and Fiberglass.

LOAD DATA

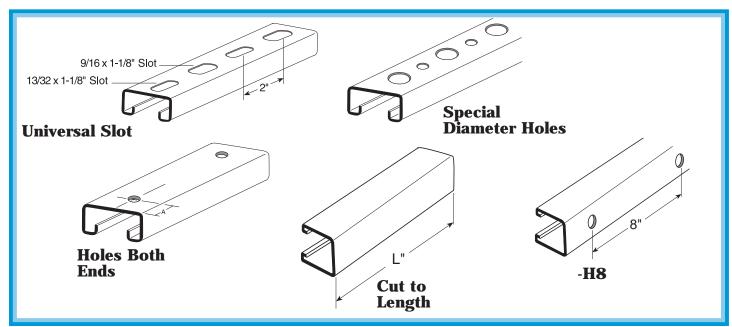
Allowable channel beam and column loads shown in the following tables were developed per the NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS 2007 Edition (ASD Method).

CHANNEL FABRICATIONS





SPECIAL FABRICATIONS



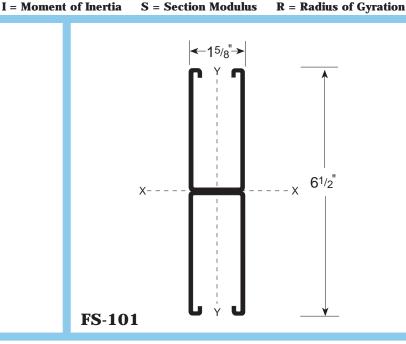
(800) FX-STRUT



FS-100 • 3-1/4" CHANNEL • 12 Gauge

SECTIO	N PROPE	ERTIES	X-X AXIS			Y-Y AXIS				
CHNL P/N	WT/FT LBS.	AREA SQ. IN.	Ix in ⁴	Sx in ³	Rx in	Iy in ⁴	Sy in ³	Ry in		
FS-100 FS-101	3.04 6.08	.894 1.788	1.089 6.222	.624 1.914	1.104 1.865	.432 .863	.532 1.063	.695 .695		

15/8" 31/4 1.504 " FS-100



CHANNEL FINISH:

- PLAIN (PL) PRE-GALVANIZED (PG) GREEN (GR)
- HOT-DIPPED GALVANIZED (HD) ALUMINUM (AL)

STANDARD LENGTH: 20 FT. • 10 FT.

> **CHNL** P/N

FS-100 Stress

FS-101

1/240 Stress 1/240

ALLOW	ABLE	BEAM	LOA	DS -	_	Span 1	In Inches	

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
5,200	4,160	3,470	2,970	2,600	2,080	1,730	1,490 1,480	1,300 1,130	1,160 900	1,040 730
5,020*	5,020*	5,020* ***	5,020*	5,020* ***	5,020*	5,020* ***	4,560	3,990	3,545	3,190

- 2. Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.

 3. Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)

 4. Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.

- * Load limited by spot weld shear.
- 6. For punched channel, reduce weld limited loads by 0.75 due to 4° weld spacing. 7. *** Load controlled by 25,000 PSI design stress.

CHNL P/N FS-100 FS-101

ALLOWABLE COLUMN LOADS — Unsupported Height of Column in Inches

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
13,400	11,590	9,805	8,140	6,655	4,630	3,520	2,840	2,385	2,070	1,830
32,700	32,700	32,330	31,300	30,160	27,580	24,730	21,735	18,730	15,820	13,070

- 1. COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.
- 2. ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K=0.8 standard engineering practice required for evaluation of other conditions.

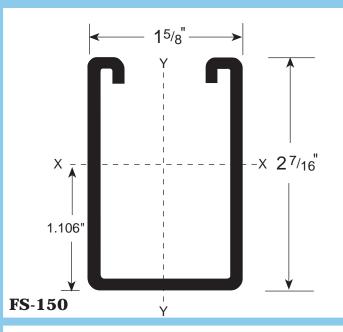
FS-150 • 2-7/16" CHANNEL • 12 Gauge

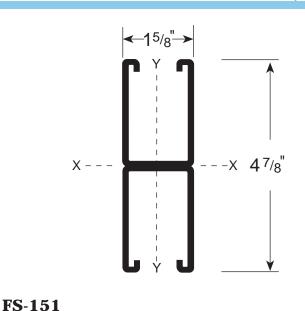


SECTIO	N PROPE	ERTIES	X-X AXIS			Y-Y AXIS				
CHNL P/N	WT/FT LBS.	AREA SQ. IN.	Ix in ⁴	Sx in ³	Rx in	Iy in ⁴	Sy in ³	Ry in		
FS-150	2.46	.723	.516	.388	.845	.333	.410	.679		
FS-151	4.92	1.447	2.801	1.149	1.392	.666	.820	.679		

I = Moment of Inertia S = **Section Modulus**

R = **Radius** of Gyration





CHANNEL FINISH:

- PLAIN (PL) PRE-GALVANIZED (PG) GREEN (GR) • HOT-DIPPED GALVANIZED (HD) • ALUMINUM (AL)
- STANDARD LENGTH: 20 FT. • 10 FT.

CHNL P/N

FS-150 Stress 1/240

FS-151 Stress 1/240

ALLOWABLE	BEAM	LOADS	_	Span In Inches

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
3,230	2,580	2,150	1,850	1,620	1,290	1,080	920	810	720	650
***	***	***	***	***	***	940	700	540	430	340
3,800*	3,800*	3,800*	3,800*	3,800*	3,800*	3,190	2,740	2,390	2,130	1,920
***	***	***	***	***	***	***	***	***	***	1,870

- 2. Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.

 3. Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)

 4. Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.

- 5. * Load limited by spot weld shear.
- 6. For punched channel, reduce weld limited loads by 0.75 due to 4" weld spacing. 7. *** Load controlled by 25,000 PSI design stress.

CHNL P/N FS-150 FS-151

ALLOWABLE COLUMN LOADS — Unsupported Height of Column in Inche										in Inches
24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
11,240	9,850	8,490	7,240	6,130	4,440	3,470	2,865	2.450	2,150	1,915
28,010	27,375	26,600	25,700	24,695	22,440	19,965	17,390	14,825	12,375	10,110

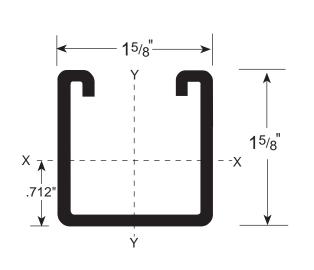
- 1. COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.
- 2. ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K=0.8 standard engineering practice required for evaluation of other conditions.

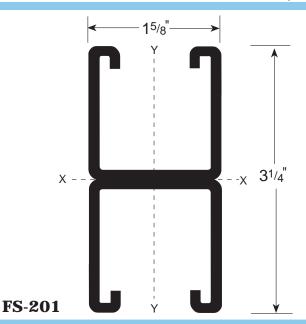


FS-200 • 1-5/8" CHANNEL • 12 Gauge

SECTIO	N PROPE	ERTIES	X-X AXIS			Y-Y AXIS				
CHNL	WT/FT	AREA	Ix	Sx	Rx	Iy	Sy	Ry		
P/N	LBS.	SQ. IN.	in ⁴	in^3	in	in^4	in^3	in		
FS-200	1.88	.553	.182	.199	.574	.234	.289	.651		
FS-201	3.76	1.105	.925	.569	.915	.469	.577	.651		

I = Moment of Inertia **S** = **Section Modulus R** = **Radius** of Gyration





FS-200

• PLAIN (PL) • PRE-GALVANIZED (PG) • GREEN (GR)

• HOT-DIPPED GALVANIZED (HD) • ALUMINUM (AL) • STAINLESS (ST4) TYPE 304

PVC Coated

• STAINLESS (ST6) TYPE 316

STANDARD LENGTH: 20 FT. • 10 FT.

> CHNL P/N

CHANNEL FINISH:

FS-200 Stress 1/240

FS-201

Stress 1/240

ALLOWABLE BEAM LOADS	_	Span In Inches
----------------------	---	-----------------------

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
1,660	1,330	1,110	950	830	660	550	480	420	370	330
***	***	***	***	760	490	340	250	190	150	120
2,550*	2,550*	2,550*	2,550*	2,370	1,900	1,580	1,360	1,190	1,050	950
***	***	***	***	***	***	***	1,260	960	760	620

- 2. Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.

 3. Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)

 4. Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.

- * Load limited by spot weld shear.
- 6. For punched channel, reduce weld limited loads by 0.75 due to 4° weld spacing. 7. *** Load controlled by 25,000 PSI design stress.

ALLOWABLE COLUMN LOADS —

CHNL P/N FS-200 FS-201

Unsupported Height of Column in Inches 24" 30" 36" 42" 60" 72" 84" 96" 120" 48" 108" 2,285 9,050 8,090 7,185 6,370 5,650 4,470 3,615 3,040 2,615 2,015 21,995 21,445 20,840 20,045 19,170 17,220 15,105 12,940 10,820 8,820 7,145

(800) **FX-STRUT**

^{1.} COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.

^{2.} ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K=0.8 standard engineering practice required for evaluation of other conditions.



5TRUT

FTS-200H3 and FS-200H3 sold separately



Slip Load Resistance (Safety Factor = 3)

Typical 1/4" thick 2-hole fitting with (2) ½" bolts and nuts	700 lbs
½" bolt and nut	3600 lbs

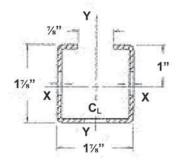
Standard Finish: Available in Green (GR)

Pre-galvanized (PG)

FTS-200H3

Telescopng Strut (1-7/8" x 1-7/8" 12 gauge channel — fits over 1-5/8" x 1-5/8" channels 9/16" holes on 1-7/8" centers)

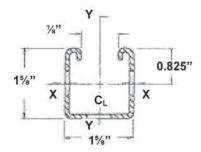
Section P	roperties*	0 2	X-X Axis		Y-Y Axis			
Weight lbs/ft	Area In ²	I _x In ⁴	S _x In ³	r _x In	I _y In ⁴	S _y In ³	r _y In	
1.93	0.458	0.253	0.253	0.743	0.276	0.294	0.776	



FS-200H3

3-Hole Strut (1-5/8" x 1-5/8" 12 gauge channel with 9/16" holes on 1-7/8" centers on three sides)

Section P	roperties*	2	X-X Axis				
Weight lbs/ft	Area In ²	I _x In ⁴	S _x In ³	r _x In	I _y In ⁴	S _y In ³	r _y In
1.66	0.386	0.160	0.194	0.640	0.172	0.212	0.664

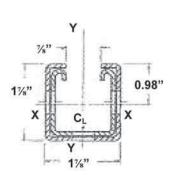


FTS-200H3 and FS-200H3 (combination)

1-5/8" x 1-5/8" 12 gauge channel with 9/16" holes on 1-7/8" centers on three sides

Section P	roperties*	2	X-X Axis			Y-Y Axis			
Weight lbs/ft	Area In ²	I _x In ⁴	S_x In^3	r _x In	I _y In ⁴	S _y In ³	r _y In		
3.60	0.847	0.413	0.422	0.698	.0448	0.477	0.727		

^{*}Section properties are based on nominal metal thickness and overall dimensions.





Beam Loading Data

1	Beam Load data x	x-x Axis
Allowable Load (lbs)	Resulting Deflection (inches)	Allowable Load @ Deflection = 1/240 Span
4203	0.012	4203
2099	0.050	2099
1396	0.112	1396
1044	0.200	1044
831	0.312	664
689	0.450	456
587	0.612	330
510	0.799	248
450	1.012	190
401	1.249	149
	Allowable Load (lbs) 4203 2099 1396 1044 831 689 587 510 450	Load (lbs) Deflection (inches) 4203 0.012 2099 0.050 1396 0.112 1044 0.200 831 0.312 689 0.450 587 0.612 510 0.799 450 1.012



FS-200H3



	I	Beam Load data x	x-x Axis
Beam Span (inches)	Allowable Load (lbs)	Resulting Deflection (inches)	Allowable Load @ Deflection = 1/240 Span
12	2225	0.015	3225
24	1610	0.061	1610
36	1071	0.136	1071
48	800	0.243	658
60	637	0.379	417
72	528	0.546	286
84	449	0.743	206
96	390	0.970	153
108	344	1.228	116
120	306	1.516	90

FTS-200H3 and FS-200H3 (both pieces equal length)

	I	Beam Load data x	x-x Axis
Beam Span (inches)	Allowable Load (lbs)	Resulting Deflection (inches)	Allowable Load @ Deflection = 1/240 Span
12	7033	0.013	7033
24	3511	0.051	3511
36	2335	0.115	2335
48	1745	0.205	1705
60	1389	0.320	1082
72	1151	0.460	742
84	980	0.627	536
96	851	0.819	401
108	749	1.036	307
120	668	1.279	239

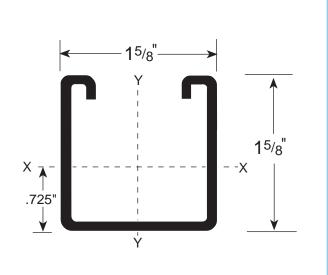


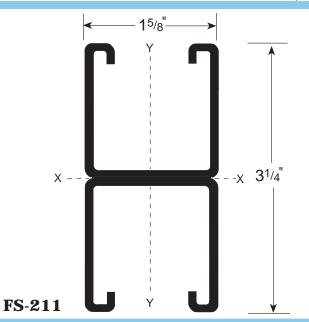
FS-210 • 1-5/8" CHANNEL • 14 Gauge



SECTION PROPERTIES				X-X AXIS		Y-Y AXIS			
CHNL P/N	WT/FT LBS.	AREA SQ. IN.	Ix in ⁴	Sx in ³	Rx in	Iy in ⁴	Sy in ³	Ry in	
FS-210	1.40	.412	.145	.161	.592	.180	.180	.661	
FS-211	2.80	.824	.722	.444	.936	.361	.444	.661	

R = **Radius** of Gyration **I = Moment of Inertia S** = **Section Modulus**





FS-210

• PLAIN (PL) • PRE-GALVANIZED (PG) • GREEN (GR)

• HOT-DIPPED GALVANIZED (HD)

STANDARD LENGTH: 20 FT. • 10 FT.

> **CHNL** P/N

CHANNEL FINISH:

FS-210 Stress 1/240

FS-211 Stress 1/240

ALLOWABLE	BEAM	LOADS	—	Span In Inches
-----------	-------------	--------------	---	----------------

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
1,340	1,070	900	770	670	540	450	380	340	300	270
***	***	***	***	600	390	270	200	150	120	100
2,180*	2,180*	2,180*	2,115	1,850	1,480	1,225	1,060	930	820	740
***	***	***	***	***	***	***	980	750	590	480

- 2. Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.

 3. Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)

 4. Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.

- 5. * Load limited by spot weld shear.
- 6. For punched channel, reduce weld limited loads by 0.75 due to 4" weld spacing. 7. *** Load controlled by 25,000 PSI design stress.

CHNL P/N FS-210 FS-211

ALLOWABLE COLUMN LOADS — Unsupported Height of Column in Inches

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
6,600	5,845	5,090	4,385	3,745	2,715	2,100	1,720	1,460	1,270	1,125
15,890	15,455	14,965	14,450	13,920	12,650	11,170	9,650	8,145	6,725	5,455

^{1.} COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.

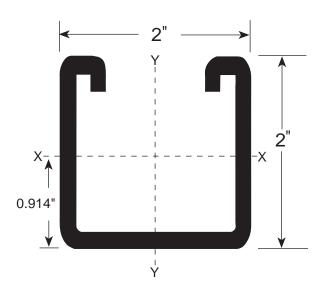
^{2.} ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K=0.8 standard engineering practice required for evaluation of other conditions.



FS-280 • 2" CHANNEL • 10 Gauge

SECTIO	SECTION PROPERTIES			X-X AXIS		Y-Y AXIS			
CHNL P/N	WT/FT LBS.	AREA SQ. IN.	Ix in ⁴	Sx in ³	Rx in	Iy in ⁴	Sy in ³	Ry in	
FS-280	3.10	.912	.476	.438	.723	.569	.569	.790	

I = Moment of Inertia **S** = **Section Modulus R** = **Radius** of Gyration



FS-280

• PLAIN (PL) **CHANNEL FINISH:**

• HOT-DIPPED GALVANIZED (HD)

STANDARD LENGTH: 20 FT. • 10 FT.

CHNL P/N FS-280

ALLOWABLE BEAM LOADS -**Span In Inches**

24" 36" 48" 84" 108" 120" 132" 144" 156" 180" Stress 610 490 3,650 2,440 1,830 1,460 1,220 1,040 910 810 730 660 560 1/240 1,270 880 650 500 390 320 260 220 190 140

- 1. TOTAL STATIC LOAD in LBS.
- 2. Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.

 3. Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)
- 4. Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.
- 5. * Load controlled by 25,000 PSI design stress.

ALLOWABLE COLUMN LOADS — Unsupported Height of Column in Inches

CHNL P/N FS-280

2	4"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
16	,320	15,055	13,765	12,520	11,350	9,300	7,635	6,315	5,385	4,690	4,135

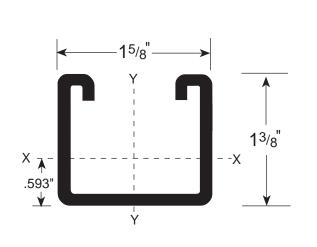
- 1. COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.
- 2. ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K = 0.8 standard engineering practice required for evaluation of other conditions.

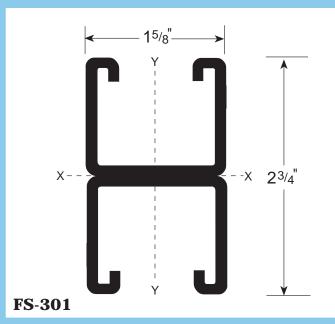
FS-300 • 1-3/8" CHANNEL • 12 Gauge



SECTIO	SECTION PROPERTIES			X-X AXIS		Y-Y AXIS			
CHNL P/N	WT/FT LBS.	AREA SQ. IN.	Ix in ⁴	Sx in ³	Rx in	Iy in ⁴	Sy in ³	Ry in	
FS-300	1.70	.500	.118	.151	.487	.204	.251	.639	
FS-301	3.40	1.000	.589	.428	.767	.408	.502	.639	

I = Moment of Inertia **S** = **Section Modulus R** = **Radius** of Gyration





FS-300

• PLAIN (PL) • PRE-GALVANIZED (PG) • GREEN (GR)

HOT-DIPPED GALVANIZED (HD)

STANDARD LENGTH: 20 FT. • 10 FT.

> **CHNL** P/N

CHANNEL FINISH:

FS-300 Stress 1/240 FS-301 Stress

1/240

ALLOWABLE BEAM LOADS — Span In Inches

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
1,260	1,010	840	720	630	500	420	360	310	280	250
***	***	***	640	490	320	220	160	120	100	80
2,160*	2,160*	2,160*	2,040	1,785	1,430	1,190	1,020	890	795	715
***	***	***	***	***	***	1,090	800	615	485	395

- 2. Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.

 3. Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)

 4. Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.

- 5. * Load limited by spot weld shear.
- 6. For punched channel, reduce weld limited loads by 0.75 due to 4" weld spacing. 7. *** Load controlled by 25,000 PSI design stress.

CHNL P/N FS-300 FS-301

ALLOWABLE COLUMN LOADS — **Unsupported Height of Column in Inches** 24" 30" 36" 42" 48" 60" 72" 84" 96" 108" 120" 7,360 6,745 6,170 5,645 5,175 4,375 3,705 3,120 2,670 2,275 1,845 17,215 16,840 16,435 15,875 15,255 13,860 12,330 10,735 9,150 7,635 6,235

^{1.} COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.

^{2.} ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K=0.8 standard engineering practice required for evaluation of other conditions.



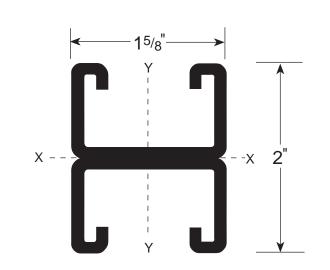
FS-400 • 1" CHANNEL • 12 Gauge

R = **Radius** of Gyration

SECTIO	SECTION PROPERTIES			X-X AXIS		Y-Y AXIS			
CHNL P/N	WT/FT LBS.	AREA SQ. IN.	Ix in ⁴	Sx in ³	Rx in	Iy in ⁴	Sy in ³	Ry in	
FS-400 FS-401	1.43 2.86	.421 .843	.052 .250	.089 .250	.350 .545	.159 .317	.195 .390	.613 .613	

I = Moment of Inertia

15/8"



S = Section Modulus

FS-400

FS-401

• PLAIN (PL) • PRE-GALVANIZED (PG) • GREEN (GR) **CHANNEL FINISH:**

• HOT-DIPPED GALVANIZED (HD) • ALUMINUM (AL)

STANDARD LENGTH: 20 FT. • 10 FT.

> CHNL P/N

FS-400 Stress

FS-401

1/240 Stress 1/240

ALLOWABLE	BEAM	LOADS	_	Span In Inches
-----------	-------------	--------------	---	-----------------------

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
750	600	500	430	370	300	250	210	190	170	150
***	560	390	280	220	140	100	70	50	40	35
1,540*	1,540*	1,390	1,190	1,040	830	695	595	520	465	420
***	***	***	***	***	670	465	340	260	205	170

- 2. Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.

 3. Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)

 4. Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.
- * Load limited by spot weld shear.
- 6. For punched channel, reduce weld limited loads by 0.75 due to 4° weld spacing. 7. *** Load controlled by 25,000 PSI design stress.

CHNL P/N FS-400 FS-401

ALLO	ALLOWABLE COLUMN LOADS — Unsupported Height of Column in Inche													
24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"				
7,350	6,765	6,240	5,555	4,750	3,260	2,265	1,665	****	****	****				
14,420	13,965	13,420	12,805	12,130	10,655	9,090	7,540	6,070	4,800 ***** = K	3,890 L/R>200				

- 1. COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.
- 2. ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K = 0.8 standard engineering practice required for evaluation of other conditions.

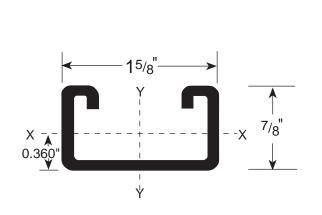
(800) **FX-STRUT**

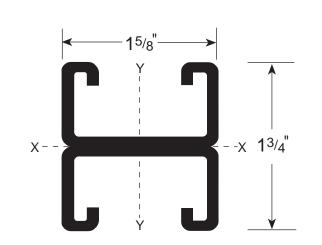
FS-450 • 7/8" CHANNEL • 12 Gauge



SECTIO	SECTION PROPERTIES			X-X AXIS		Y-Y AXIS			
CHNL P/N	WT/FT LBS.	AREA SQ. IN.	Ix in ⁴	Sx in ³	Rx in	Iy in ⁴	Sy in ³	Ry in	
FS-450	1.35	.400	.037	.073	.305	.146	.180	.603	
FS-451	2.70	.800	.183	.208	.475	.294	.361	.603	

R = **Radius** of Gyration I = Moment of Inertia **S** = **Section Modulus**





FS-450

FS-451

CHANNEL FINISH: • PLAIN (PL) • PRE-GALVANIZED (PG) • GREEN (GR)

HOT-DIPPED GALVANIZED (HD)

STANDARD LENGTH: 20 FT. • 10 FT.

> **CHNL** P/N

FS-450 Stress 1/240

FS-451 Stress 1/240

ALLOWABLE	BEAM	LOADS	_	Span In Inches
------------------	-------------	--------------	---	-----------------------

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
600	480 400	400 270	340 201	300 150	240 100	200 70	170 50	150 40	130 30	120 25
1,380*	1,380*	1,160	995 ***	870 765	695 490	580 340	500 250	435 190	385 150	350 120

- 2. Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.

 3. Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)

 4. Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.

- 5. * Load limited by spot weld shear.
- 6. For punched channel, reduce weld limited loads by 0.75 due to 4" weld spacing. 7. *** Load controlled by 25,000 PSI design stress.

CHNL P/N FS-450 FS-451

ALLOWABLE COLUMN LOADS — Unsupported Height of Column in Inches

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
5,965	5,390	4,755	4,100	3,450	2,305	1,600	****	****	****	****
13,280	12,715	12,060	11,325	10,535	8,855	7,160	5,570	4,265	3,370 ***** = K	**** L/R>200

^{1.} COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.

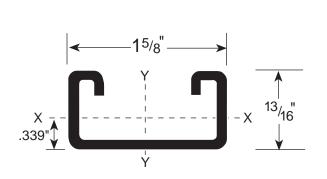
^{2.} ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K=0.8 standard engineering practice required for evaluation of other conditions.

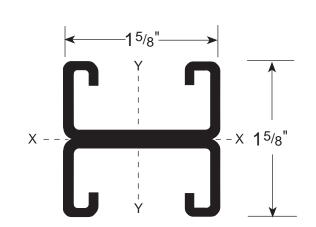


FS-500 • 13/16" CHANNEL • 14 Gauge

SECTIO	N PROPE	ERTIES		X-X AXIS		Y-Y AXIS			
CHNL	WT/FT	AREA	Ix	Sx	Rx	Iy	Sy	Ry	
P/N	LBS.	SQ. IN.	in ⁴	in ³	in	in ⁴	in ³	in	
FS-500	.99	.290	.025	.053	.295	.107	.132	.607	
FS-501	1.98	.581	.117	.144	.449	.214	.263	.607	

I = Moment of Inertia S = Section Modulus **R** = **Radius** of Gyration





FS-500

FS-501

CHANNEL FINISH: • PLAIN (PL) • PRE-GALVANIZED (PG) • GREEN (GR)

• HOT-DIPPED GALVANIZED (HD) • ALUMINUM (AL) • STAINLESS (ST4) TYPE 304

PVC COATED

• STAINLESS (ST6) TYPE 316

STANDARD LENGTH: 20 FT. • 10 FT.

> CHNL P/N

FS-500 Stress 1/240

FS-501

Stress 1/240

ALLOWABLE BEAM LOADS — Span In Inches

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
440	350	290	250	220	180	150	130	110	100	90
420	270	190	140	100	70	50	35	25	20	15
1070*	960	800	690	600	480	400	340	300	270	240
***	***	***	640	490	310	220	160	120	100	80

- 2. Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.

 3. Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)

 4. Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.
- * Load limited by spot weld shear.

11,230 10,610

6. For punched channel, reduce weld limited loads by 0.75 due to 4" weld spacing 7. *** Load controlled by 25,000 PSI design stress.

ALLOWABLE COLUMN LOADS -

9,115

CHNL P/N FS-500 FS-501

24" 30" 36" 42" 72" 120" 48" 84" 96" 108" **** 4,855 4,325 3,685 3,055 2,455 1,570 1,090

6,600

4,995

1. COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.

9,895

2. ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K=0.8 standard engineering practice required for evaluation of other conditions.

3,675

Unsupported Height of Column in Inches

2,815

2,225

(800) **FX-STRUT**

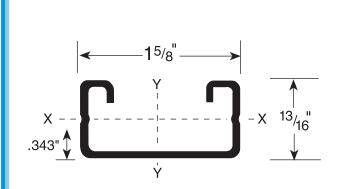
8,290

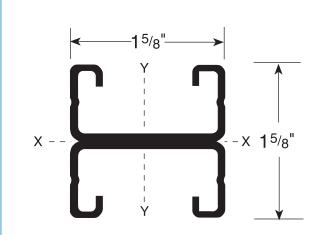
FS-510 • 13/16" CHANNEL • 16 Gauge



SECTIO	N PROPE	ERTIES		X-X AXIS		Y-Y AXIS			
CHNL	WT/FT	AREA	Ix	Sx	Rx	Iy	Sy	Ry	
P/N	LBS.	SQ. IN.	in ⁴	in ³	in	in ⁴	in ³	in	
FS-510	.81	.241	.022	.064	.302	.091	.112	.614	
FS-511	1.62	.483	.102	.126	.460	.182	.224	.614	

I = Moment of Inertia **S** = **Section Modulus R** = **Radius** of Gyration





FS-510

FS-511

• PLAIN (PL) • PRE-GALVANIZED (PG) • GREEN (GR) **CHANNEL FINISH:**

• HOT-DIPPED GALVANIZED (HD)

PVC COATED

STANDARD LENGTH: 20 FT. • 10 FT.

> **CHNL** P/N

FS-510 Stress 1/240

FS-511 Stress 1/240

ALLOWABLE	BEAM	LOADS	_	Span In Inches
-----------	-------------	--------------	---	-----------------------

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
390	310	260	225	195	155	130	110	100	90	80
370	235	165	120	90	60	40	30	25	20	15
810*	810*	700	600	525	420	350	300	260	230	210
***	***	***	555	425	270	190	140	105	85	70

- 2. Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.

 3. Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)

 4. Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.

- 5. * Load limited by spot weld shear.
- 6. For punched channel, reduce weld limited loads by 0.75 due to 4" weld spacing 7. *** Load controlled by 25,000 PSI design stress.

CHNL P/N FS-510 FS-511

ALLOWABLE COLUMN LOADS — Unsupported Height of Column in Inches

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
3,890	3,470	3,070	2,570	2,100	1,350	940	****	****	****	****
9,090	8,610	8,060	7,450	6,810	5,480	4,205	3,115	2,385	1,885 ***** = k	***** (L/R>200

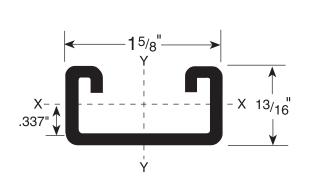
- 1. COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.
- 2. ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K=0.8 standard engineering practice required for evaluation of other conditions.

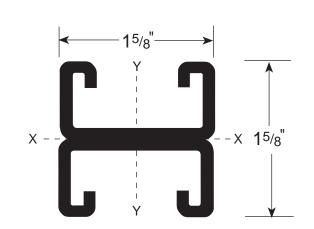


FS-520 • 13/16" CHANNEL • 12 Gauge

SECTIO	N PROPE	RTIES		X-X AXIS		Y-Y AXIS			
CHNL	WT/FT	AREA	Ix	Sx	Rx	Iy	Sy	Ry	
P/N	LBS.	SQ. IN.	in ⁴	in ³	in	in ⁴	in ³	in	
FS-520	1.32	.375	.030	.062	.282	.140	.172	.600	
FS-521	2.64	.750	.145	.180	.435	.280	.345	.600	

I = Moment of Inertia S = Section Modulus **R** = Radius of Gyration





FS-520

FS-521

CHANNEL FINISH: • PLAIN (PL) • PRE-GALVANIZED (PG) • GREEN (GR)

• HOT-DIPPED GALVANIZED (HD)

STANDARD LENGTH: 20 FT. • 10 FT.

> CHNL P/N

FS-520 Stress 1/240

FS-521

Stress 1/240

ALLOWABLE BEAM LOADS — Span In Inches

24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"
530	420	350	300	260	210	175	150	130	120	105
500	320	220	160	125	80	55	40	30	25	20
1,245*	1,190	990	850	745	595	495	425	370	330	295
***	***	***	790	605	385	270	195	150	120	95

- TOTAL STATIC LOAD in LBS.
 Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.
- Upper line is how TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)
 Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.

- 5. * Load limited by spot weld shear.
 6. *** Load controlled by 25,000 PSI design stress.

CHNL P/N FS-520 FS-521

ALLO	ALLOWABLE COLUMN LOADS — Unsupported Height of Column in Inches														
24"	30"	36"	42"	48"	60"	72"	84"	96"	108"	120"					
5,600	4,960	4,280	3,595	2,940	1,895	****	****	****	****	****					
15,300	14,365	13,300	12,145	10,930	8,495	6,230	4,575	3,505	2,765	**** T /R>200					

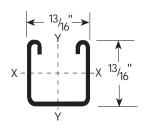
- 1. COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.
- 2. ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K = 0.8 standard engineering practice required for evaluation of other conditions.

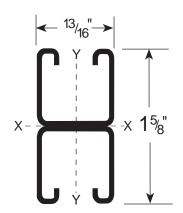
FS-600 • 13/16" CHANNEL • 19 Gauge



SECTIO	ON PROPE	ERTIES		X-X AXIS		Y-Y AXIS			
CHNL	WT/FT	AREA	Ix	Sx	Rx	Iy	Sy	Ry	
P/N	LBS.	SQ. IN.	in ⁴	in ³	in	in ⁴	in ³	in	
FS-600	.35	.103	.009	.018	.289	.009	.028	.332	
FS-601	.70	.206	.042	.051	.450	.042	.056	.332	

I = Moment of Inertia **S** = **Section Modulus R** = **Radius** of Gyration





FS-600 FS-601

• PLAIN (PL) • GREEN (GR) **CHANNEL FINISH:**

STANDARD LENGTH: 10 FT.

Stress

CHNL P/N FS-600

> 1/240 Stress

FS-601 1/240 ALLOWABLE BEAM LOADS — Span In Inches

12"	18"	24"	30"	36"	42"	48"	60"	72"
330	220	165	135	110	95	85	65	55
***	***	150	95	65	50	40	25	15
405*	405*	405*	345	285	245	215	170	145
***	***	***	***	***	230	175	110	80

- 2. Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.

 3. Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)

 4. Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.

- 5. * Load limited by spot weld shear.
 6. *** Load controlled by 25,000 PSI design stress.

CHNL P/N FS-600 FS-601

ALLOWABLE COLUMN LOADS — Unsupported Height of Column in In													
	12"	18"	24"	30"	36"	42"	48"	60"	72"				
	1,745	1,365	1,025	755	590	485	415	320	****				
	4,180	3,955	3,675	3,325	2,935	2,540	2,145	1,440	1,000 KL/R>200				

^{1.} COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.

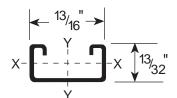
^{2.} ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K=0.8 standard engineering practice required for evaluation of other conditions.

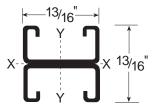


FS-700 • 13/32" CHANNEL • 19 Gauge

SECTION PROPERTIES			X-X AXIS			Y-Y AXIS		
CHNL P/N	WT/FT LBS.	AREA SQ. IN.	Ix	Sx in ³	Rx	Iy in ⁴	Sy in ³	Ry
FS-700	.24	.071	.002	.006	.144	.007	.016	.304
FS-701	.48	.141	.007	.016	.215	.013	.032	.304

R = Radius of Gyration I = Moment of Inertia S = Section Modulus





FS-701 **FS-700**

CHANNEL FINISH: • PLAIN (PL) • GREEN (GR)

STANDARD LENGTH: 10 FT.

> **CHNL** P/N

FS-700 Stress 1/240

FS-701 Stress 1/240 ALLOWABLE BEAM LOADS — Span In Inches

12"	18"	24"	30"	36"	42"	48"	60"	72"
140	95	70	55	45	40	35	30	25
135	60	35	20	15	10	8	5	5
200*	190	145	115	95	80	70	55	50
***	***	115	75	50	40	30	20	15

- Upper line is MAXIMUM ALLOWABLE UNIFORM LOAD creating 25,000 PSI Bending Stress about the X-Axis based on SIMPLE BEAM condition.
 Lower line shows TOTAL UNIFORM LOAD which produces a deflection of 1/240th of the SPAN, (i.e.; 1/2" Def. for 120" Span)
 Multiply values in upper line by 0.5 to obtain ALLOWABLE CENTER CONCENTRATED LOAD at 25,000 PSI Stress. Deflection by 0.8.

- 5. * Load limited by spot weld shear.
 6. *** Load controlled by 25,000 PSI design stress.

CHNL P/N FS-700 FS-701

ALLOWABLE COLUMN LOADS — Unsupported Height of Column in Inches

12"	18"	24"	30"	36"	42"	48"	60"	72"
1,290	975	655	420	290	****	****	****	****
2,930	2,610	2,185	1,740	1,320	970	745	475	**** = KL/R>200

^{1.} COLUMN LOADS are allowable axial loads applied at the section centroid. Loads applied at the slot face must be reduced for Eccentricity.

^{2.} ALLOWABLE COLUMN LOADS shown are based upon an effective length factor K=0.8 standard engineering practice required for evaluation of other conditions.

CHANNEL NUTS



10.6

14.0

14.0

6.5

8.5

14.0

Wt. Lbs./C

8.7

9.0

8.2

14.0

Wt. Lbs./C

10.0

11.5

15.0

15.0

15.0

Thread Thickness Wt. Lbs./C

1/2"

7/16"

7/16

1/4"

3/8"

3/8

Thickness

3/8"

3/8

3/8"

3/8

Thickness

3/8"

1/2"

7/16'

7/16"

7/16'

DESIGN BOLT TORQUE

Foot Pounds

6

11

19

50

100

125



Cat. No.

FS-0832NS

FS-1032NS

FS-1024NS

FS-1/4NS

FS-5/16NS

FS-3/8NS

Cat. No.

FS-0832SS

FS-1032SS

FS-1024SS

FS-1/4SS

Cat. No.

FS-0832RS

FS-1032RS

FS-1024RS

FS-5/16RS

Cat. No.

FS-1/4LS

FS-3/8LS

FS-1/2LS

FS-5/8LS

FS-3/4LS

FS-1/4RS

Size

#8

#10

#10

1/4"

5/16'

3/8'

Size

#8

#10

#10

1/4

Size

#10

#10

1/4"

5/16"

Size

1/4"

3/8

1/2"

5/8"

3/4"

Thread

32

32

24

20

18

16

Thread

32

32

24

20

Thread

32

32

24

20

18

Thread

20

16

13

11

10

Thickness

1/4"

1/4"

1/4"

1/4"

3/8"

3/8"

Thickness

1/4"

1/4"

1/4"

1/4"

Thickness

1/4"

1/4"

1/4"

1/4"

3/8"

Thickness

1/4"

3/8"

1/2"

7/16"

7/16"

Wt. Lbs./C

6.5

6.5

6.5

6.5

8.7

90

Wt. Lbs./C

7.5

7.5

7.5

7.5

Wt. Lbs./C

7.5

7.5

7.5

7.5

9.7

Wt. Lbs./C

7.5

10.0

12.0

16.0

15.5

Cat. No.

FS-1/2NS

FS-5/8NS

FS-3/4NS

FS-3/8NSS

FS-1/2NSS

FS-5/8NSS

Cat. No.

FS-5/16SS

FS-3/8SS

FS-1/2SS

FS-5/8SS

Cat. No.

FS-3/8RS

FS-1/2RS

FS-5/8RS

FS-3/4RS

FS-7/8RS

Size

1/2"

5/8"

3/4

3/8"

1/2"

5/8

Size

5/16'

3/8"

1/2"

5/8"

Size

3/8"

1/2"

5/8"

3/4"

7/8"

13

11

10

16

13

11

Thread

18

16

13

11

Thread

13

11

10

9

Bolt Size

1/4"-20

3/8"-16

1/2"-13

5/8"-11

3/4"-10

5/16"-18

NO SPRING



SHORT SPRING

FS-400, 450, 500, 520 CHANNEL



REGULAR SPRING

FS-200, 300 CHANNEL



LONG SPRING

FS-100, 150 CHANNEL



TOP SPRING

	Allowable Pull-C	Out & Slip Loads	
1/2" Thick Nuts	in 12 Ga. Channel	1/2" Thick Nuts in	n 14 Ga. Channel
Resistance to	Resistance to	Resistance to	Resistance to
PULL-OUT	SLIP	PULL-OUT	SLIP

1/2" Thick Nuts	in 12 Ga. Channel	1/2" Thick Nuts in	ı 14 Ga. Channel
Resistance to	Resistance to	Resistance to	Resistance to
PULL-OUT	SLIP	PULL-OUT	SLIP
2,000 Lbs.	1,500 Lbs.	1,400 Lbs.	1,000 Lbs.

Cat. No.	Size	Thread	Thickness	Wt. Lbs./C	Cat. No.	Size	Thread	Thickness	Wt. Lbs./C
FS-0832TG	#8	32	1/4"	7.5	FS-5/16TG	5/16"	18	3/8"	9.7
FS-1032TG	#10	32	1/4"	7.5	FS-3/8TG	3/8"	16	3/8"	10.0
FS-1024TG	#10	24	1/4"	7.5	FS-1/2TG	1/2"	13	1/2"	11.5
FS-1/4TG	1/4"	20	1/4"	7.5	FS-1/2TGS	1/2"	13	3/8"	8.2



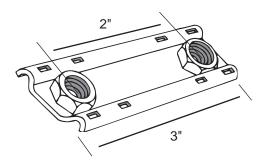
FS-700 CHANNEL

MINI NUT	мт	ONI NIIT

FS-600 CHANNEL

Cat. No.	Size	Thread	Thickness	Wt. Lbs./C
FS-7-0836	#8	36	.150"	1.0
FS-7-0832	#8	32	.150"	1.0
FS-7-1032	#10	32	.150"	1.0
FS-7-1024	#10	24	.150"	1.0
FS-7-1/4	1/4"	20	.150"	1.0

Cat. No.	Size	Thread	Thickness	Wt. Lbs./C
FS-6-0836	#8	36	.150"	1.0
FS-6-0832	#8	32	.150"	1.0
FS-6-1032	#10	32	.150"	1.0
FS-6-1024	#10	24	.150"	1.0
FS-6-1/4	1/4"	20	.150"	1.0



FS-2626 17#/Cpc DOUBLE CONVEYOR ADJUSTING NUT 3/8-16 TAP SIZE

ALSO AVAILABLE IN METRIC SIZES





Item

Item

FS-7420

FS-7421

FS-7422

FS-7423

FS-7424

FS-7471A

FS-7471

FS-7472

FS-7473

FS-7474

FS-7475

FS-7476

FS-7477

FS-7478

FS-7479

FS-7430

FS-7431

FS-7432

FS-7433

FS-7434

FS-7435

FS-7440

FS-7441

FS-7442

FS-7443

FS-7444

FS-7446

FS-7450

FS-7451

FS-7452

FS-7460

FS-7461

FS-7462

FS-7463

FS-7464

FS-7465

FS-7466

FS-7481

FS-7482

FS-7483

Item FS-7480

Item

Item

Item

Item

Item



HHCS

FS-7400	1/4"	1/2"	1.0
FS-7401	1/4"	3/4"	1.3
FS-7402	1/4"	1"	1.7
FS-7403	3/8"	3/4"	4.0
FS-7404	3/8"	1"	4.5
FS-7405	3/8"	1-1/4"	5.3
FS-7406	3/8"	1-1/2"	6.1
FS-7407	3/8"	2"	7.6
FS-7408	3/8"	2-1/4"	8.5
FS-7409B	1/2"	3/4"	8.9
FS-7409A	1/2"	7/8"	9.0
FS-7409	1/2"	1"	9.1
FS-7410	1/2"	1-1/4"	10.0
FS-7411	1/2"	1-1/2"	11.6
FS-7412	1/2"	1-3/4"	13.2
FS-7413	1/2"	2"	14.7
FS-7414	1/2"	2-1/4"	16.0
FS-7415	1/2"	2-1/2"	17.5

Diameter

1/4"

5/16"

3/8"

3/8"

3/8"

Diameter

1/4"

1/4"

1/4"

5/16"

5/16"

5/16"

3/8"

3/8"

3/8"

3/8"

Size

1/4"

3/8"

1/2"

5/8"

3/4"

7/8"

Size

1/4"

3/8"

1/2"

5/8"

3/4"

7/8"

Size

1/4"

3/8"

1/2"

Size

1/4"

5/16"

3/8"

1/2"

5/8"

3/4"

7/8"

Size

1/4"

5/16"

3/8"

1/2"

Diameter

Length

Length

5/8" 1" 2"

2-1/4"

2-1/2"

Length

3/4"

1-1/4"

1-1/4"

1-1/2"

1-1/4"

1-1/2" 2-1/2"

Wt./C

.3 .7

1.5

2.6

4.0

6.0

Wt./C

.7

1.5

3.5

7.7

11.0

15.3

Wt./C

3.0

3.0

5.0

Wt./C

.6

1.2

1.6

4.8

7.3

12.0

19.0

Wt./C

.9

1.6

2.7

5.8

Wt./C

Wt./C

1.2

2.6

6.5

7.1

7.7

Wt./C

1.2

1.5

1.8

4.1

4.7



FHMS



RHMS





FW





HN



3	Y	1	A	

STANDARD FINISH = ELECTRO-GALVANIZED

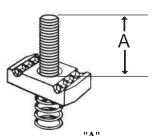
WHIZLOCK **BOLTS**



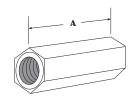
Item	Diameter	Length	Wt./C
FS-7496	1/2"	1-1/2"	12
FS-7497	1/2"	2"	14

Available in electro-galvanized (E/G) or yellow-cadmium (YLCD) finish

STUD NUTS



			M.	
Cat. No.	Size	Thread	Length	Wt. Lbs./C
FS-1/4-1SN	1/4"	20	7/8"	9
FS-1/4-2SN	1/4"	20	1-1/8"	9
FS-1/4-3SN	1/4"	20	1-3/8"	9
FS-3/8-1SN	3/8"	16	7/8"	13
FS-3/8-2SN	3/8"	16	1-1/8"	13
FS-3/8-3SN	3/8"	16	1-3/8"	14
FS-3/8-4SN	3/8"	16	1-5/8"	15
FS-3/8-5SN	3/8"	16	1-7/8"	16
FS-3/8-6SN	3/8"	16	2-1/8"	16
FS-1/2-2SN	1/2"	13	1-1/8"	15
FS-1/2-3SN	1/2"	13	1-3/8"	16
FS-1/2-4SN	1/2"	13	1-5/8"	17
FS-1/2-5SN	1/2"	13	1-7/8"	18
FS-1/2-6SN	1/2"	13	2-1/8"	19
FS-5/8-2SN	5/8"	11	1-1/8"	22
FS-5/8-3SN	5/8"	11	1-3/8"	23



FS-7134/38 **ROD COUPLERS**

	Hole		"A"	
Cat. No.	Size	Thread	Length	Wt. Lbs./C
FS-7134	1/4"	20	7/8"	2
FS-7134A	5/16"	18	7/8"	2
FS-7135	3/8"	16	1-3/4"	11
FS-7136	1/2"	13	1-3/4"	11
FS-7137	5/8"	11	2-1/8"	16
FS-7138	3/4"	10	2-1/4"	28

ALL-THREAD



LENGTH = 3', 6', 10', OR 12'**FINISH = ELECTRO-GALVANIZED**

	Diameter		
Cat. No.	Size	Thread	Wt. Lbs./C
FS-7124	1/4"	20	12
FS-7125	3/8"	16	30
FS-7126	1/2"	13	52
FS-7127	5/8"	11	85
FS-7128	3/4"	10	123

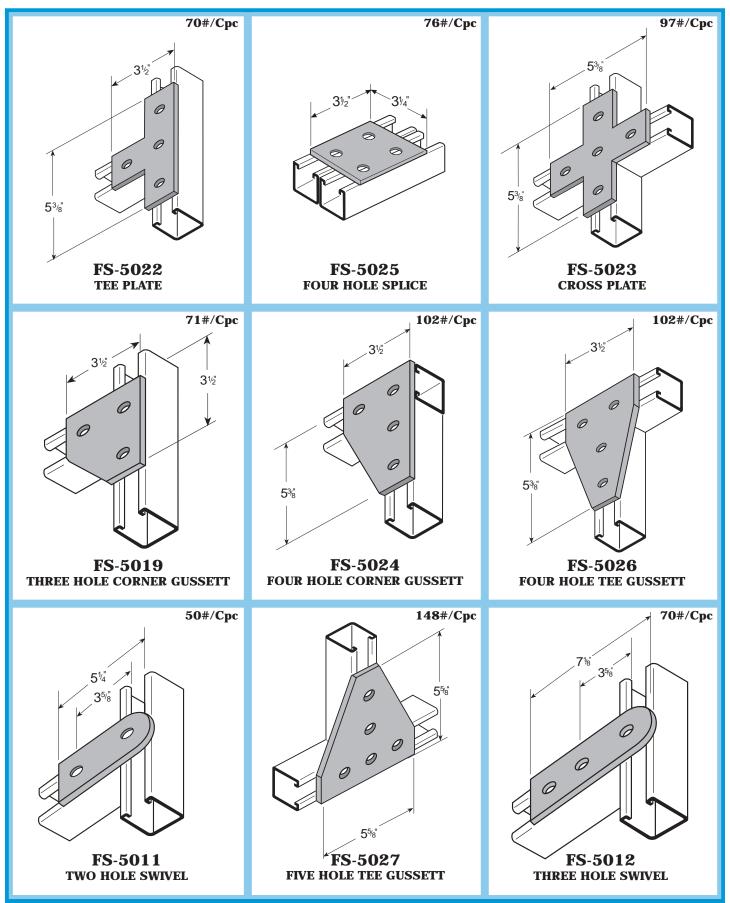
FLAT PLATE FITTINGS



FS-5003 Series Part No. **Bolt Size** Wt./C **SQUARE WASHER** FS-5003-1/4 1/4" 18# FS-5003-3/8 3/8" 18# FS-5003-1/2 1/2" 17# FS-5003-5/8 5/8" 16# FS-5003-3/4 3/4" 15# Part No. **Bolt Size** Wt./C FS-5004-1/4 1/4" 18# FS-5004-3/8 3/8" 18# FS-5004-1/2 1/2" 17# FS-5004 Series FS-5004-5/8 5/8" 16# **SQUARE WASHER** FS-5004-3/4 3/4" 15# WITH CHANNEL GUIDE 38#/Cpc 57#/Cpc 77#/Cpc **FS-5007 FS-5009 FS-5008** TWO HOLE SPLICE THREE HOLE SPLICE FOUR HOLE SPLICE 95#/Cpc 60#/Cpc 57#/Cpc $3^{1}/_{2}^{"}$ 0 0 53/8 **FS-5010** FS-5020 FS-5021 FOUR HOLE CORNER THREE HOLE CORNER FIVE HOLE SPLICE



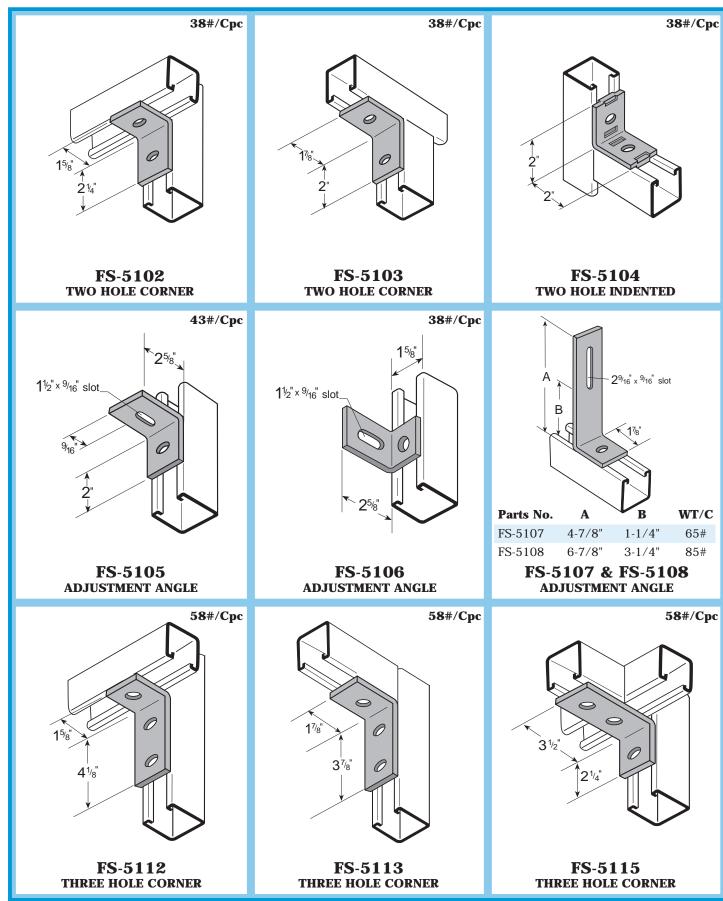
FLAT PLATE FITTINGS



Thickness = $\frac{1}{4}$ " • Width = $\frac{15}{8}$ " • Hole Diameter = $\frac{9}{16}$ " • Hole Spacing = $\frac{17}{8}$ " • Edge Distance = $\frac{13}{16}$ "

90° ANGLE FITTINGS

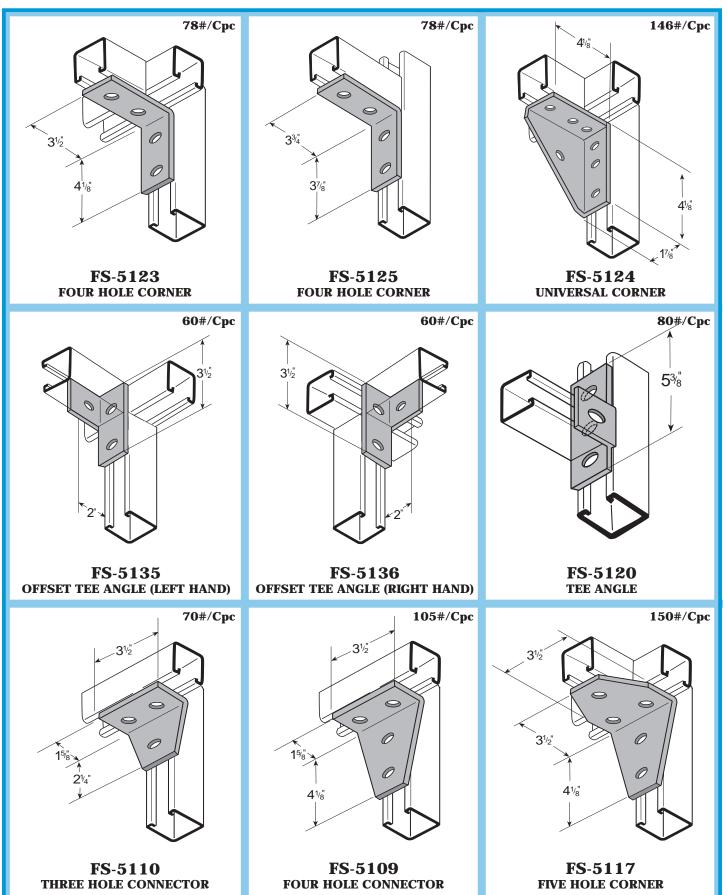




Thickness = $\frac{1}{4}$ " • Width = $\frac{15}{8}$ " • Hole Diameter = $\frac{9}{16}$ " • Hole Spacing = $\frac{17}{8}$ " • Edge Distance = $\frac{13}{16}$ "



90° ANGLE FITTINGS



Thickness = $\frac{1}{4}$ " • Width = $\frac{15}{8}$ " • Hole Diameter = $\frac{9}{16}$ " • Hole Spacing = $\frac{17}{8}$ " • Edge Distance = $\frac{13}{16}$ "

ANGULAR FITTINGS

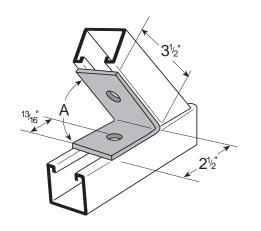


57#/Cpc

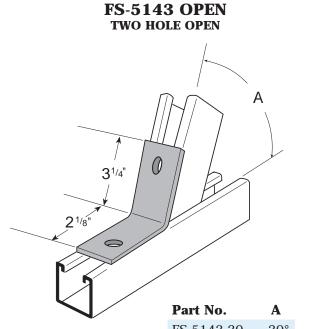
78#/Cpc



58#/**Cpc**

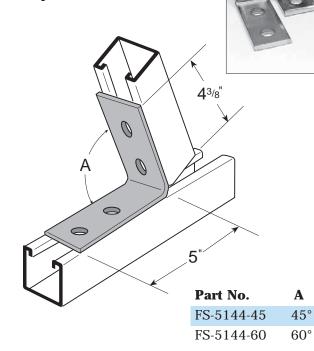


Part No.	A
FS-5142-45	45°
FS-5142-60	60°

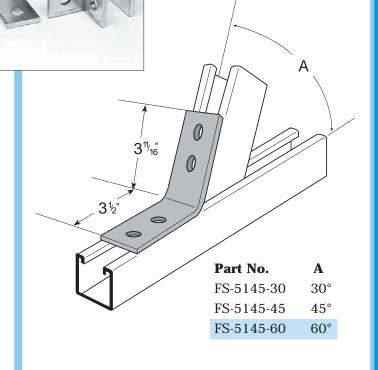


FS-5143-30 30° FS-5143-45 45° FS-5143-60 60°

78#/Cpc



FS-5144 CLOSED FOUR HOLE CLOSED



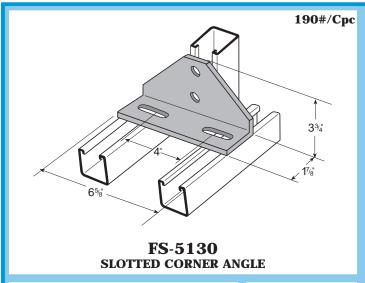
FS-5145 OPEN

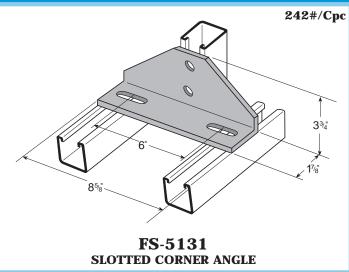
FOUR HOLE OPEN

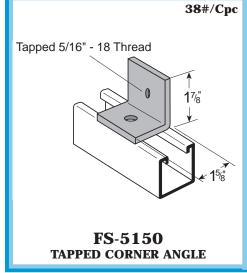
Thickness = $^{1}/_{4}$ " • Width = $1^{5}/_{8}$ " • Hole Diameter = $^{9}/_{16}$ " • Hole Spacing = $1^{7}/_{8}$ " • Edge Distance = $^{13}/_{16}$ "

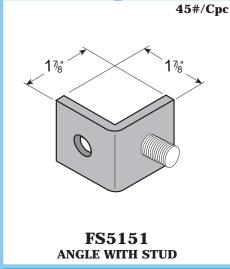


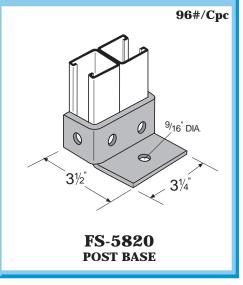
MISCELLANEOUS ANGLES



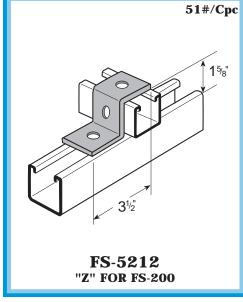




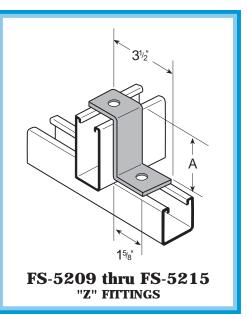




"Z" FITTINGS



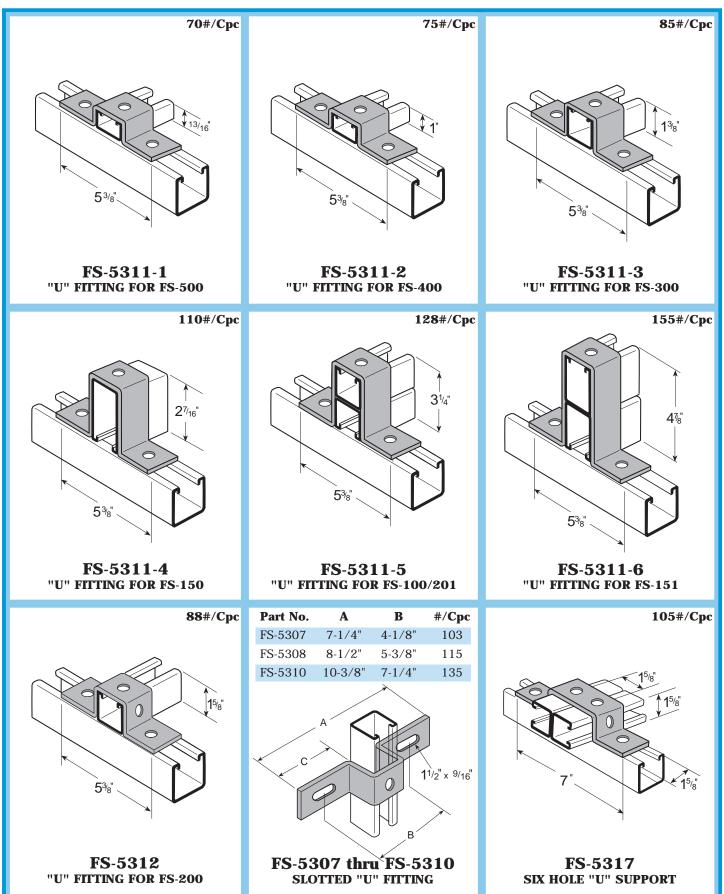
Part No.	A	Channel	#/Cpc
FS-5209	4-7/8"	FS-151	93
FS-5210	3-1/4"	FS-100 FS-201	70
FS-5211	2-7/16"	FS-150	66
FS-5213	1-3/8"	FS-300	52
FS-5214	1"	FS-400	48
FS-5215	13/16"	FS-500 FS-520	47



Thickness = $\frac{1}{4}$ " • Width = $\frac{15}{8}$ " • Hole Diameter = $\frac{9}{16}$ " • Hole Spacing = $\frac{17}{8}$ " • Edge Distance = $\frac{13}{16}$ "

"U" FITTINGS





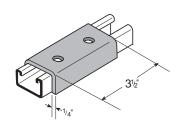




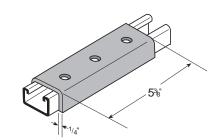
84#/Cpc



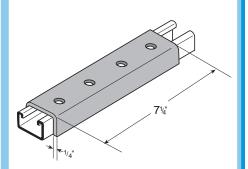
178#/Cpc



FS-5342 TWO HOLE CLEVIS SPLICE FOR FS-500



FS-5343 THREE HOLE CLEVIS SPLICE FOR FS-500

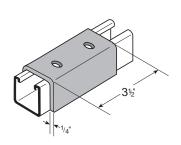


FS-5344 FOUR HOLE CLEVIS SPLICE FOR FS-500

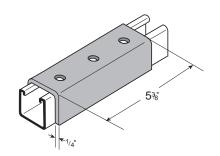
122#/Cpc

196#/Cpc

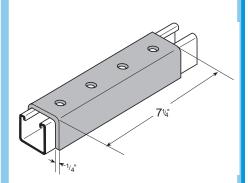
265#/Cpc



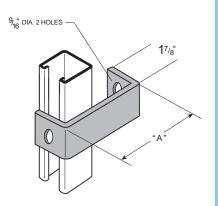
FS-5352 TWO HOLE CLEVIS SPLICE FOR FS-200



FS-5353 THREE HOLE CLEVIS SPLICE FOR FS-200



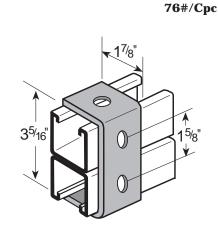
FS-5354 FOUR HOLE CLEVIS SPLICE FOR FS-200



FS-5324 SERIES TWO HOLE CLEVIS

Part No.	A	#Срс
FS-5324-4	4"	89
FS-5324-5	5"	93
FS-5324-6	6"	106
FS-5324-7	7"	118
FS-5324-8	8"	132

"A" = Outside Dimension



FS-5325 FOUR HOLE CLEVIS

BRACES

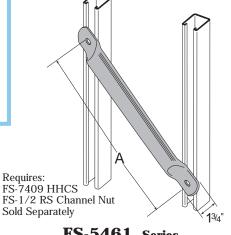




FS-5460 Series TWO HOLE 45 TUBING KNEE BRACE

Part No.	A	#Cpc
FS-5460-18	18"	115#
FS-5460-24	24"	150#
FS-5460-30	30"	180#
FS-5460-36	36"	215#

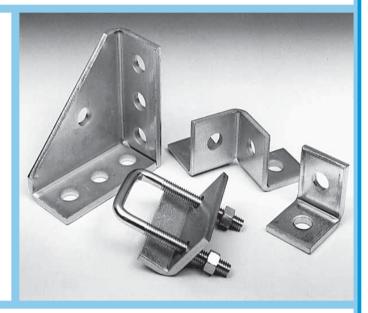
Part No.	A	#Срс
FS-5461-36	36"	205#
FS-5461-42	42"	235#
FS-5461-48	48"	270#
FS-5461-54	54"	300#
FS-5461-60	60"	335#

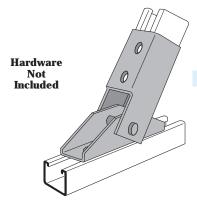


FS-5461 Series TWO HOLE STRAIGHT TUBING BRACE

Requires: FS-7409 HHCS FS-1/2 RS Channel Nut Sold Separately

A	#Срс	
12"	170#	
16"	230#	A// //
18"	238#	// //
	15/8"	45°
	12" 16"	12" 170# 16" 230# 18" 238# 2 Series





FS-5481 305#/Cpc SINGLE ADJUSTABLE CHANNEL BRACE

FS-5481 (Hardware Required Sold Separately

(1) FS-7415D 1/2 x 2-3/4 HHCS

(1) FS-7463 1/2" HN

FS-5482 (Hardware Required Sold Separately

(2) FS-7415D 1/2 x 2-3/4 HHCS

(2) FS-7463 1/2" HN

Hardware Not Included

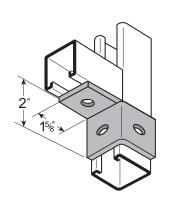
FS-5482 495#/Cpc DOUBLE ADJUSTABLE CHANNEL BRACE





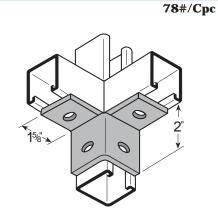
54#/Cpc

FS-5510 THREE-HOLE CORNER CONNECTION (RIGHT-HAND)

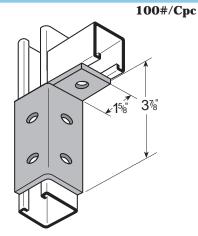


54#/Cpc

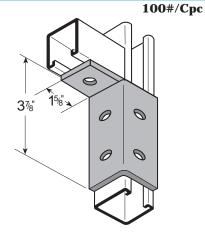
FS-5511 THREE-HOLE CORNER CONNECTION (LEFT-HAND)



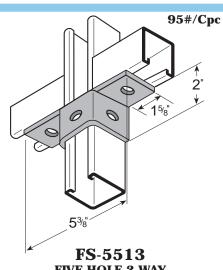
FS-5512 FOUR-HOLE 2-WAY CORNER CONNECTION



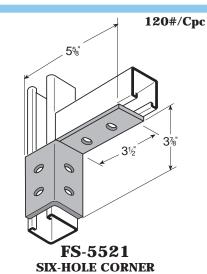
FS-5516 FIVE-HOLE CORNER CONNECTION (RIGHT-HAND)



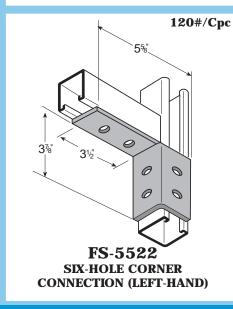
FS-5517 FIVE-HOLE CORNER CONNECTION (LEFT-HAND)

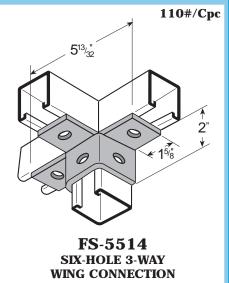


FIVE-HOLE 2-WAY WING CONNECTION



CONNECTION (RIGHT-HAND)

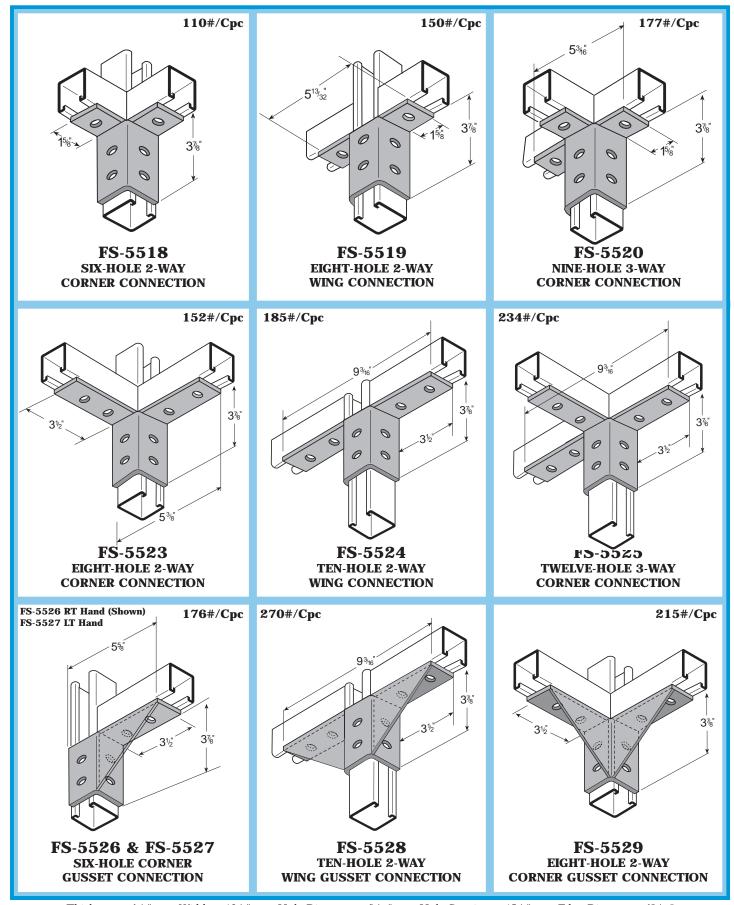




Thickness = $\frac{1}{4}$ " • Width = $\frac{15}{8}$ " • Hole Diameter = $\frac{9}{16}$ " • Hole Spacing = $\frac{17}{8}$ " • Edge Distance = $\frac{13}{16}$ "

WING FITTINGS

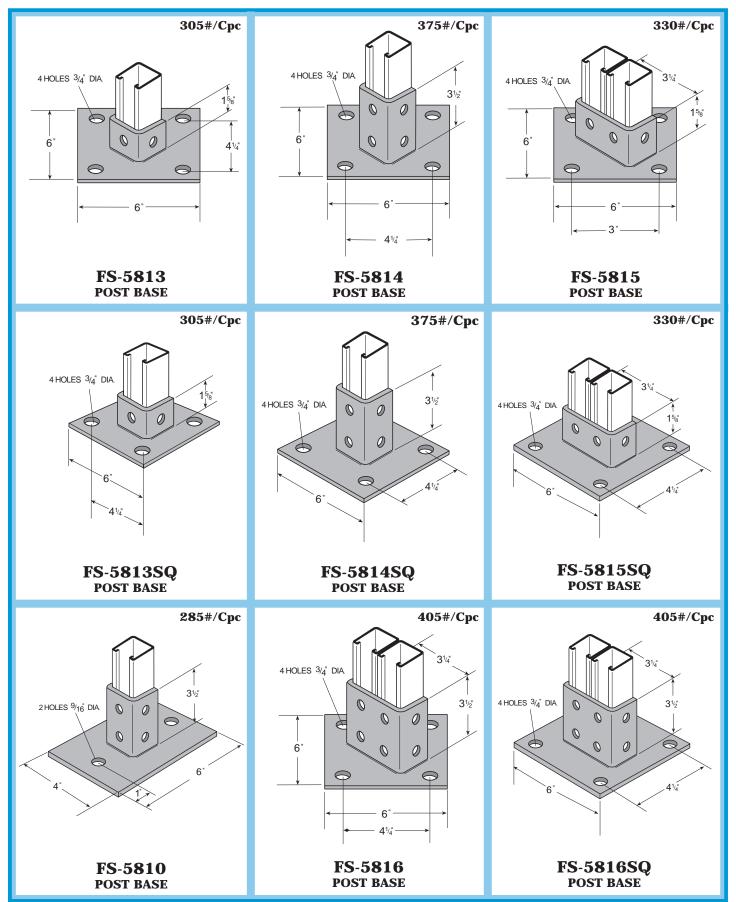




Thickness = $\frac{1}{4}$ " • Width = $\frac{15}{8}$ " • Hole Diameter = $\frac{9}{16}$ " • Hole Spacing = $\frac{17}{8}$ " • Edge Distance = $\frac{13}{16}$ "

POST BASES

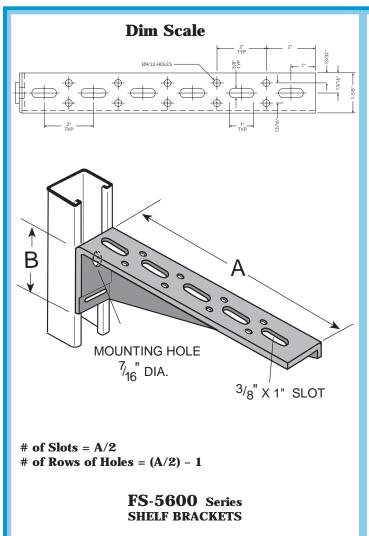




Thickness = $\frac{1}{4}$ " • Typical Hole Diameter = $\frac{9}{16}$ " unless noted

SHELF BRACKETS



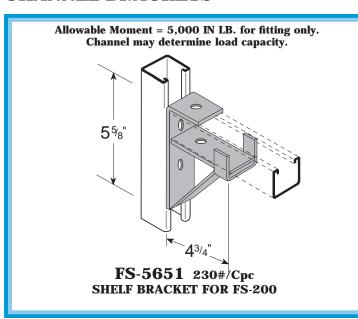


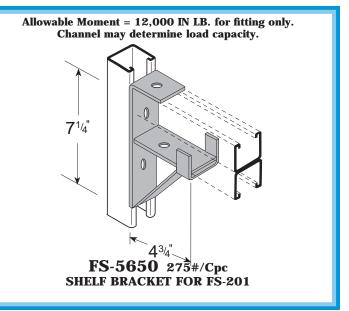
FS-5600-R	FS-5600-L	A	В	#/Cpc
FS-5600-6R	FS-5600-6L	6"	1-15/16"	57#
FS-5600-8R	FS-5600-8L	8"	2-7/16"	82#
FS-5600-10R	FS-5600-10L	10"	2-15/16"	105#
FS-5600-12R	FS-5600-12L	12"	3-7/16"	138#
FS-5600-14R	FS-5600-14L	14"	3-15/16"	175#
FS-5600-16R	FS-5600-16L	16"	4-7/16"	180#
FS-5600-18R	FS-5600-18L	18"	4-15/16"	225#
FS-5600-20R	FS-5600-20L	20"	5-7/16"	260#
FS-5600-22R	FS-5600-22L	22"	5-15/16"	325#
FS-5600-24R	FS-5600-24L	24"	6-7/16"	385#
FS-5600-26R	FS-5600-26L	26"	6-15/16"	435#
FS-5600-28R	FS-5600-28L	28"	7-7/16"	488#
FS-5600-30R	FS-5600-30L	30"	7-15/16"	530#

FS-5600-R RIGHT HAND (SHOWN)

UNIFORM DESIGN LOAD = 300# WITH 12 GA. CHANNEL SAFETY FACTOR = 2-1/2

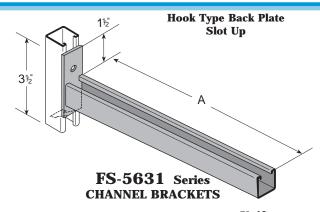
CHANNEL BRACKETS



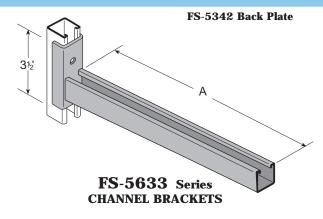




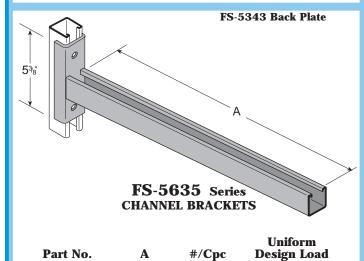
CHANNEL BRACKETS



Part No.	A	#/Cpc	Uniform Design Load
FS-5631-6	6"	160#	1,200#
FS-5631-12	12"	260#	600#
FS-5631-18	18"	350#	400#
FS-5631-24	24"	440#	300#



Part No.	A	#/Cpc	Uniform Design Load
FS-5633-6	6"	190#	1,600#
FS-5633-12	12"	290#	800#

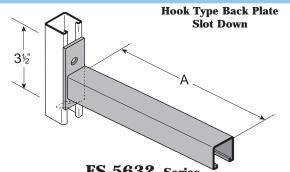


435#

525#

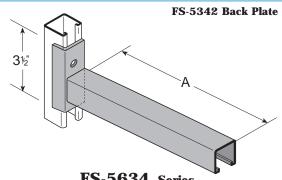
18"

24"



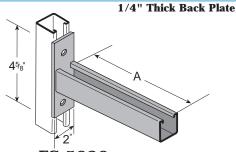
FS-5632 Series CHANNEL BRACKETS

Part No.	A	#/Cpc	Uniform Design Load
FS-5632-6	6"	160#	1,200#
FS-5632-12	12"	260#	600#
FS-5632-18	18"	350#	400#
FS-5632-24	24"	440#	300#



FS-5634 Series CHANNEL BRACKETS

Part No.	A	#/Cpc	Uniform Design Load
FS-5634-6	6"	190#	1,600#
FS-5634-12	12"	290#	800#



FS-5636 Series CHANNEL BRACKETS

			Uniform
Part No.	A	#/Cpc	Design Load
FS-5636-6	6"	150#	1,500#
FS-5636-12	12"	245#	750#
FS-5636-18	18"	340#	500#
FS-5636-24	24"	435#	250#

600#

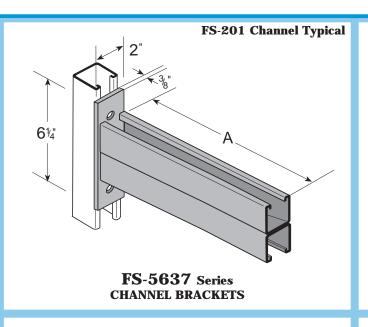
400#

FS-5635-18

FS-5635-24

CHANNEL BRACKETS



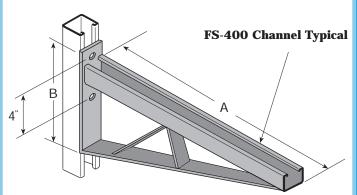


Part No.	A	#/Cpc	Uniform Design Load
FS-5637-12	12"	480#	2,000#
FS-5637-18	18"	665#	1,200#
FS-5637-24	24"	850#	1,000#
FS-5637-30	30"	1,020#	800#
FS-5637-36	36"	1,235#	600#

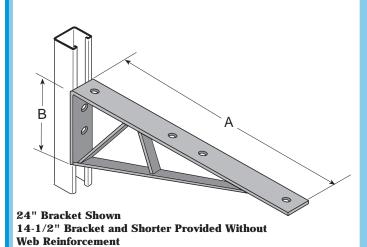
Part No.	A	В	#/Cpc	Uniform Design Load
FS-5638-12	12"	8-3/4"	360#	1,200#
FS-5638-18	18"	8-3/4"	475#	1,000#
FS-5638-24	24"	8-3/4"	710#	800#
FS-5638-30	30"	11-1/4"	925#	600#
FS-5638-36	36"	11-1/4"	1,090#	500#

FS-400 Channel Typical

30" Bracket Shown Web Reinforcement Varies with Length



FS-5638 Series CHANNEL BRACKETS



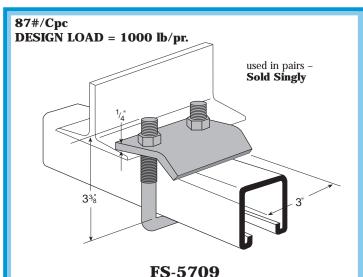
FS-5639 Series

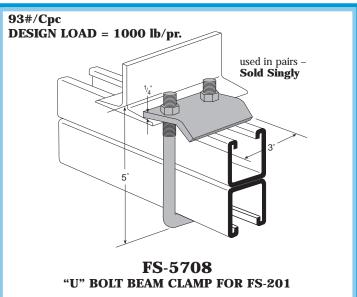
Part No.	A	В	#/Cpc	Uniform Design Load
FS-5639-8 1/2	8-1/2"	4"	175#	800#
FS-5639-10 1/2	10-1/2"	4"	205#	800#
FS-5639-12	12"	6"	245#	900#
FS-5639-12 1/2	12-1/2"	6"	265#	900#
FS-5639-14 1/2	14-1/2"	6"	300#	900#
FS-5639-16 1/2	16-1/2"	6"	300#	1,200#
FS-5639-18	18"	6"	395#	1,000#
FS-5639-24	24"	6"	435#	600#

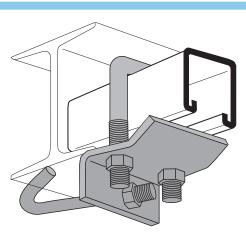
Design load when used in 12 ga channel

CHANNEL BRACKETS



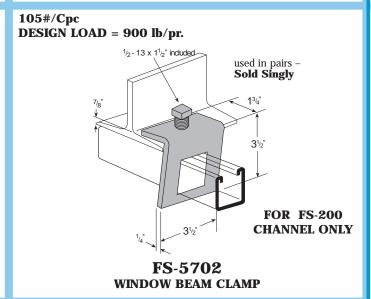


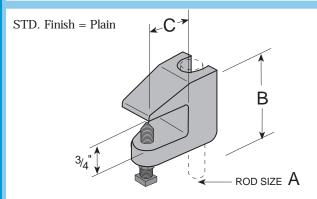




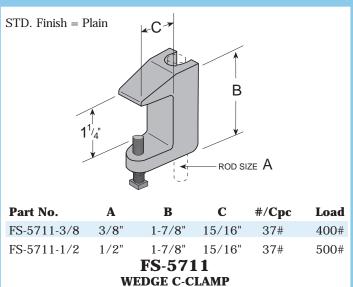
"U" BOLT BEAM CLAMP FOR FS-200

FS-5709-J6 130#/Cpc FS-5709-J12 143#/Cpc "U" BOLT BEAM CLAMP WITH J-HOOK



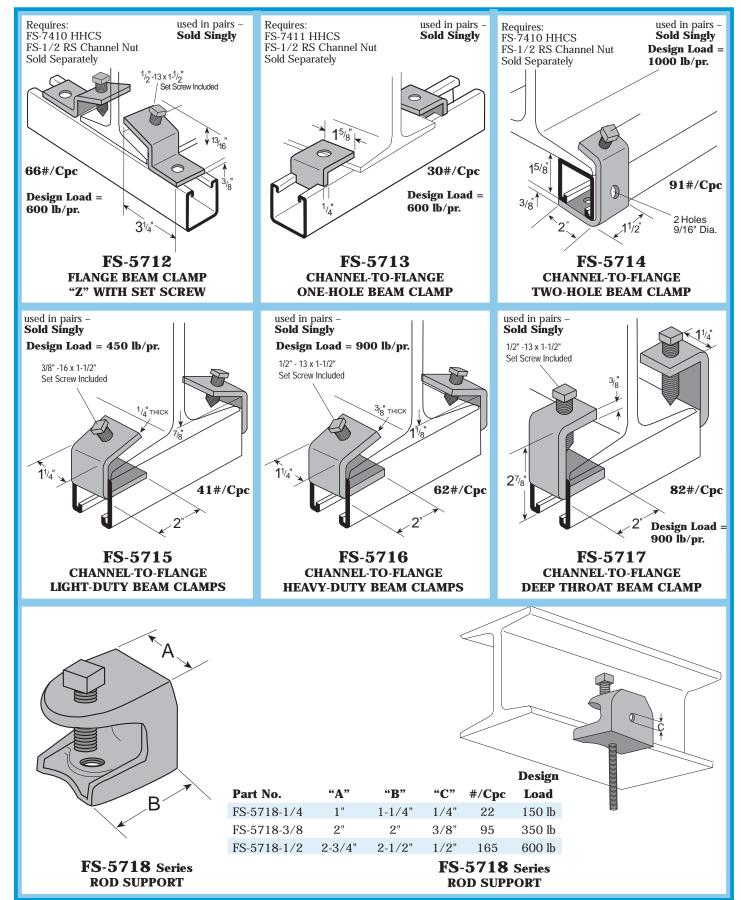


Part No.	A	В	C	#/Cpc	Load	
FS-5710-3/8	3/8"	1-1/2"	15/16"	34#	400#	
FS-5710-1/2	1/2"	1-1/2"	15/16"	34#	500#	
FS-5710 WEDGE C-CLAMP						

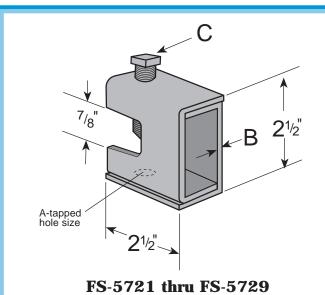


[•] Standard Fitting Finish = Electro-Galvanized (Plated), Unless Otherwise Noted •

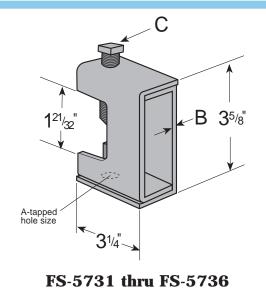




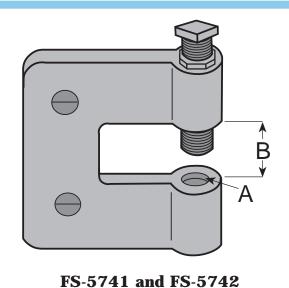




					Allowable
Part No.	A	В	C	#/Cpc	Load
FS-5721	1/4"-20	1/8"	3/8" x 1-1/2"	65	650#
FS-5722	5/16"-18	1/8"	3/8" x 1-1/2"	65	650#
FS-5723	3/8"-16	1/8"	3/8" x 1-1/2"	65	650#
FS-5724	3/8"-16	3/16"	1/2" x 1-1/2"	100	1100#
FS-5725	1/2"-13	3/16"	1/2" x 1-1/2"	100	1100#
FS-5726	1/2"-13	1/4"	1/2" x 1-1/2"	130	1600#
FS-5727	5/8"-11	1/4"	1/2" x 1-1/2"	130	1600#
FS-5728	5/8"-11	5/16"	5/8" x 1-1/2"	160	2400#
FS-5729	3/4"-10	5/16"	5/8" x 1-1/2"	160	2400#

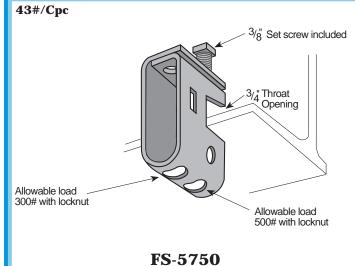


Part No.	A	В	C	#/Cpc	Allowable Load
FS-5731	1/4"-20	1/8"	3/8" x 2"	105	800#
FS-5734	3/8"-16	3/16"	1/2" x 2"	160	1300#
FS-5736	1/2"-13	1/4"	1/2" x 2"	200	1900#



Loading					
Part No.	Tapped Hole Size A		A #/Cpc	llowable Load	
FS-5741	3/8"-16	3/4"	50#	400#	
FS-5742	1/2"-13	3/4"	55#	500#	
Also Available in Stainless Steel					

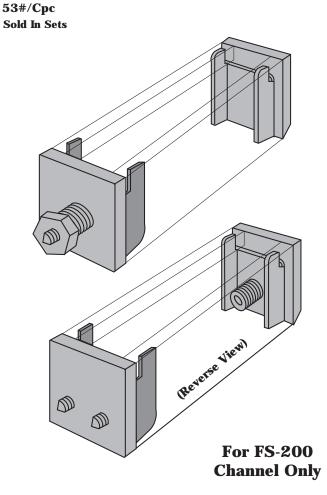




ALL-PURPOSE BEAM CLAMP

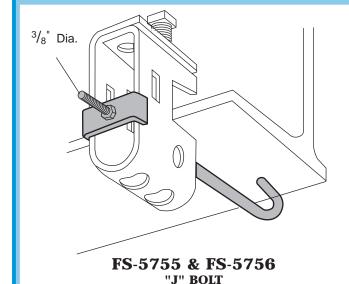


FS-5751 **SWIVEL HANGER**



FS-5760 COLUMN ATTACHMENT FLANGE-TO-FLANGE CLAMP

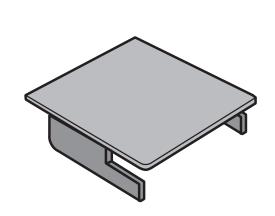
FS-200 CHANNEL ORDERED SEPARATELY. CHANNEL SHOULD BE CUT 1-1/2" SHORTER THAN INSIDE DIMENSION BETWEEN COLUMN FLANGES. ALLOWABLE LOAD 800#.



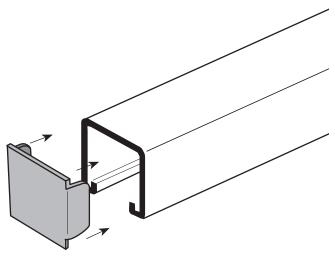
Part No.	Flange Min.	Width Max.	J-Bolt Length	Wt./ 100 pcs.
FS-5755	3"	7"	8-5/8"	24
FS-5756	7"	11"	12-5/8"	33
		~1		

Use with FS-5750 Beam Clamp





FS-5920-W 13#/Cpc WIREWAY END CAP FOR FS-200 CHANNEL



FS-5910 SINGLE PIECE END CAP FOR FS-100 CHANNEL 15# / Cpc

FS-5915 SINGLE PIECE END CAP FOR FS-150 CHANNEL 6# / Cpc

FS-5920 Single Piece end CAP for FS-200 Channel 5# /Cpc

FS-5921 SINGLE PIECE END CAP FOR FS-210 CHANNEL 5# / Cpc

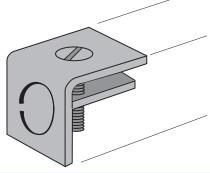
FS-5933 SINGLE PIECE END CAP FOR FS-300 CHANNEL 4# / Cpc

FS-5934 SINGLE PIECE END CAP FOR FS-400 CHANNEL 4# / Cpc

FS-5935 SINGLE PIECE END CAP FOR FS-500 AND FS-450 CHANNEL \$4#\$ / Cpc

FS-5910 thru FS-5935

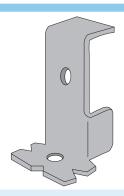




FS-5940-1/2" END CAP WITH 1/2" KNOCKOUT 26# / Cpc

FS-5940-3/4" END CAP WITH 3/4" KNOCKOUT 26# / Cpc

FS-5940 Series



FS-5952 ANCHOR END CAP FOR FS-200 CHANNEL 21# / Cpc

FS-5953 ANCHOR END CAP FOR FS-300 CHANNEL 21# / Cpc

 $\begin{array}{ccc} \textbf{FS-5954} & \text{ANCHOR END CAP FOR FS-400 CHANNEL} \\ & 21\#\ /\ \text{Cpc} \end{array}$



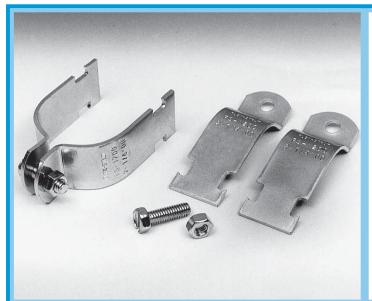
PLASTIC END CAPS FOR SECTONS

1		Channel	
Part No.	Color	Size	#/Cpc
FS-5960-1W	White	FS-100	5
FS-5960-15B	Black	FS-150	5
FS-5960-2BL	Blue	FS-200	4
FS-5960-2R	Red	FS-200	4
FS-5960-2W	White	FS-200	4
FS-5960-2Y	Yellow	FS-200	4
FS-5960-2BR	Brown	FS-200	4
FS-5960-2B	Black	FS-200	4
FS-5960-5R	Red	FS-500	4
FS-5960-5W	White	FS-500	4
FS-5960-7B	Black	FS-700	2
Also Available in	Other Stand	lard Strut Siz	es

(800) **FX-STRUT**

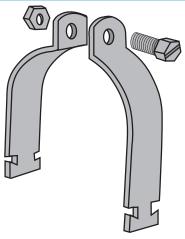
PIPE CLAMPS





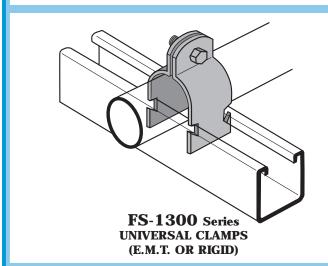
FS-1000 Series THINWALL CONDUIT CLAMPS (E.M.T.)

Part No.	Nominal Size	#/Cpc	Gauge	Allowable Load	Slotted Indented Hex Cap Screw
FS-1000-3/8	3/8"	9#	16	400#	1/4" x 3/4"
FS-1000-1/2	1/2"	11#	16	400#	1/4" x 3/4"
FS-1000-3/4	3/4"	12#	16	400#	1/4" x 3/4"
FS-1000-1	1"	15#	14	600#	1/4" x 3/4"
FS-1000-1-1/4	1-1/4"	15#	14	600#	1/4" x 3/4"
FS-1000-1-1/2	1-1/2"	29#	12	800#	5/16" x 1"
FS-1000-2	2"	33#	12	800#	5/16" x 1"



FS-1100 Series RIGID CONDUIT CLAMPS (PIPE)

Part No.	Nominal Size	#/Cpc	Gauge	Allowable Load	Slotted Indented Hex Cap Screw
FS-1100-3/8	3/8"	10#	16	400#	1/4" x 3/4"
FS-1100-1/2	1/2"	11#	16	400#	1/4" x 3/4"
FS-1100-3/4	3/4"	12#	16	400#	1/4" x 3/4"
FS-1100-1	1"	15#	14	600#	1/4" x 3/4"
FS-1100-1-1/4	1-1/4"	19#	14	600#	1/4" x 3/4"
FS-1100-1-1/2	1-1/2"	29#	12	800#	5/16" x 1"
FS-1100-2	2"	34#	12	800#	5/16" x 1"
FS-1100-2-1/2	2-1/2"	40#	12	800#	5/16" x 1"
FS-1100-3	3"	47#	12	800#	5/16" x 1"
FS-1100-3-1/2	3-1/2"	62#	11	1000#	3/8" x 1-1/4"
FS-1100-4	4"	67#	11	1000#	3/8" x 1-1/4"
FS-1100-5	5"	80#	11	1000#	3/8" x 1-1/4"
FS-1100-6	6"	102#	10	1000#	3/8" x 1-1/4"
FS-1100-8	8"	116#	10	1000#	3/8" x 1-1/4"
FS-1100-10	10"	145#	10	1000#	3/8" x 1-1/4"
FS-1100-12	12"	160#	10	1000#	3/8" X 1-1/4"



Part No.	Nominal Size	#/Cpc	Gauge	Allowable Load	Slotted Indented Hex Cap Screw
FS-1300-3/8	3/8"	9#	16	400#	5/16" x 1-1/4"
FS-1300-1/2	1/2"	11#	16	400#	5/16" x 1-1/4"
FS-1300-3/4	3/4"	12#	16	400#	5/16" x 1-1/4"
FS-1300-1	1"	15#	14	600#	5/16" x 1-1/4"
FS-1300-1-1/4	1-1/4"	18#	14	600#	5/16" x 1-1/4"
FS-1300-1-1/2	1-1/2"	28#	12	800#	5/16" x 1-1/4"
FS-1300-2	2"	32#	12	800#	5/16" x 1-1/4"

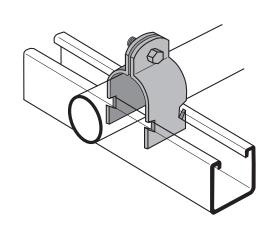
FOR ASSEMBLED, USE "A" SUFFIX Example: FS-1300A-2





	O.D. Tube			Allowable	Slotted e Indented
Part No.	Size	#/Cpc	Gauge		Hex Cap Screw
FS-1200-1/4	1/4"	8#	16	400#	1/4" x 3/4"
FS-1200-3/8	3/8"	8#	16	400#	1/4" x 3/4"
FS-1200-1/2	1/2"	9#	16	400#	1/4" x 3/4"
FS-1200-5/8	5/8"	10#	16	400#	1/4" x 3/4"
FS-1200-3/4	3/4"	11#	16	400#	1/4" x 3/4"
FS-1200-7/8	7/8"	12#	16	400#	1/4" x 3/4"
FS-1200-1	1"	14#	14	600#	1/4" x 3/4"
FS-1200-1-1/8	1-1/8"	15#	14	600#	1/4" x 3/4"
FS-1200-1-1/4	1-1/4"	16#	14	600#	1/4" x 3/4"
FS-1200-1-3/8	1-3/8"	17#	14	600#	1/4" x 3/4"
FS-1200-1-1/2	1-1/2"	18#	14	600#	1/4" x 3/4"
FS-1200-1-5/8	1-5/8"	19#	14	600#	1/4" x 3/4"
FS-1200-1-3/4	1-3/4"	29#	12	800#	5/16" x 1"
FS-1200-1-7/8	1-7/8"	28#	12	800#	5/16" x 1"
FS-1200-2	2"	31#	12	800#	5/16" x 1"
FS-1200-2-1/8	2-1/8"	32#	12	800#	5/16" x 1"
FS-1200-2-1/4	2-1/4"	33#	12	800#	5/16" x 1"
FS-1200-2-3/8	2-3/8"	34#	12	800#	5/16" x 1"
FS-1200-2-1/2	2-1/2"	35#	12	800#	5/16" x 1"
FS-1200-2-5/8	2-5/8"	37#	12	800#	5/16" x 1"
FS-1200-2-3/4	2-3/4"	38#	12	800#	5/16" x 1"
FS-1200-2-7/8	2-7/8"	40#	12	800#	5/16" x 1"
FS-1200-3	3"	41#	12	800#	5/16" x 1"
FS-1200-3-1/8	3-1/8"	43#	12	800#	5/16" x 1"
FS-1200-3-1/4	3-1/4"	45#	12	800#	5/16" x 1"
FS-1200-3-3/8	3-3/8"	46#	12	800#	5/16" x 1"
FS-1200-3-1/2	3-1/2"	47#	12	800#	5/16" x 1"
FS-1200-3-5/8	3-5/8"	56#	11	1000#	3/8" x 1-1/4"
FS-1200-3-3/4	3-3/4"	58#	11	1000#	3/8" x 1-1/4"
FS-1200-3-7/8	3-7/8"	60#	11	1000#	3/8" x 1-1/4"
FS-1200-4	4"	62#	11	1000#	
FS-1200-4-1/8	4-1/8"	62#	11	1000#	3/8" x 1-1/4"
FS-1200-4-1/4	4-1/4"	64#	11	1000#	3/8" x 1-1/4"
FS-1200-4-3/8	4-3/8"	66#	11		3/8" x 1-1/4"
FS-1200-4-1/2	4-1/2"	67#	11	1000#	3/8" x 1-1/4"
FS-1200-4-5/8	4-5/8"	70#	11		3/8" x 1-1/4"
FS-1200-4-3/4	4-3/4"	72#	11		3/8" x 1-1/4"
FS-1200-4-7/8	4-7/8"	73#	11		3/8" x 1-1/4"
FS-1200-5	5"	74#	11		3/8" x 1-1/4"
FS-1200-5-1/8	5-1/8"	76#	11		3/8" x 1-1/4"
FS-1200-5-1/4	5-1/4"	77#	11		3/8" x 1-1/4"
FS-1200-5-3/8	5-3/8"	78#	11		3/8" x 1-1/4"
FS-1200-5-1/2	5-1/2"	79#	11		3/8" x 1-1/4"
FS-1200-5-5/8	5-5/8"	88#	10		3/8" x 1-1/4"
FS-1200-5-3/4	5-3/4"	90#	10		3/8" x 1-1/4"
FS-1200-5-7/8	5-7/8"	92#	10		3/8" x 1-1/4"
FS-1200-6	6"	92#	10	1000#	3/8" x 1-1/4"
(For	Larger S	Sizes-Ca	ntact T	he Fact	ory)





FS-1200 Series O.D. TUBING CLAMPS

Standard Finish = Electro-Galvanized E/G

Special Material	Add Suffix to Part Number	Example
Copper Plated Clamp and Hardware	C/P	FS-1200-2 ¹ / ₈ C/P
Aluminum	AL	FS-1200-2 AL
Stainless Steel Type 304	ST4	FS-1200-2 ST4
Stainless Steel Type 316	ST6	FS-1200-2 ST6
For Assembled Clamps	-A	FS-1200A-2

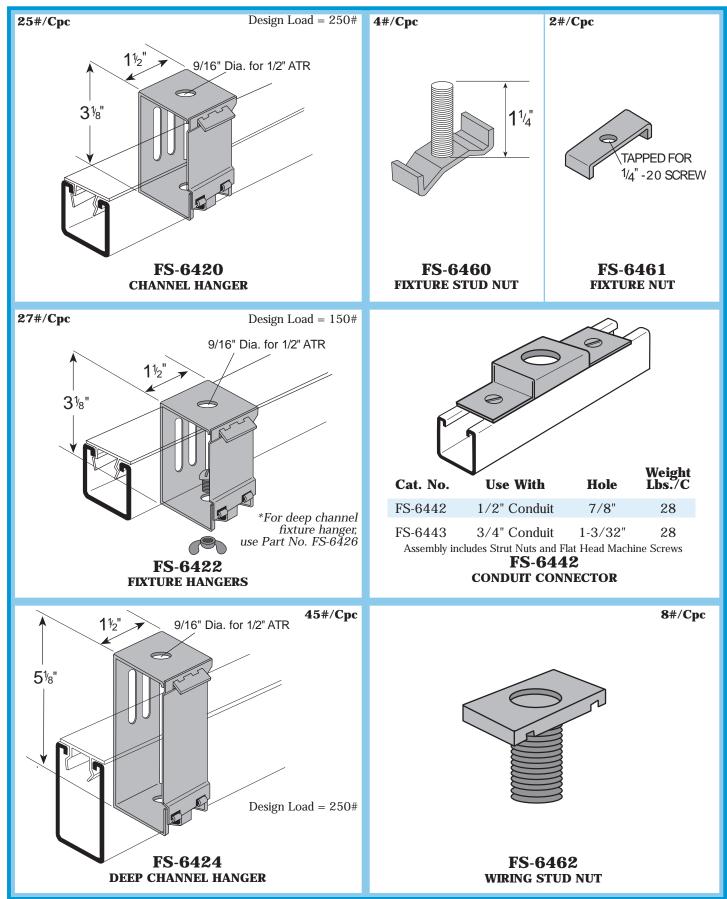
Special Materials Available for FS-1100 and FS-1200 Series (Any pipe clamp may be assembled)

LARGER SIZES AVAILABLE UPON REQUEST



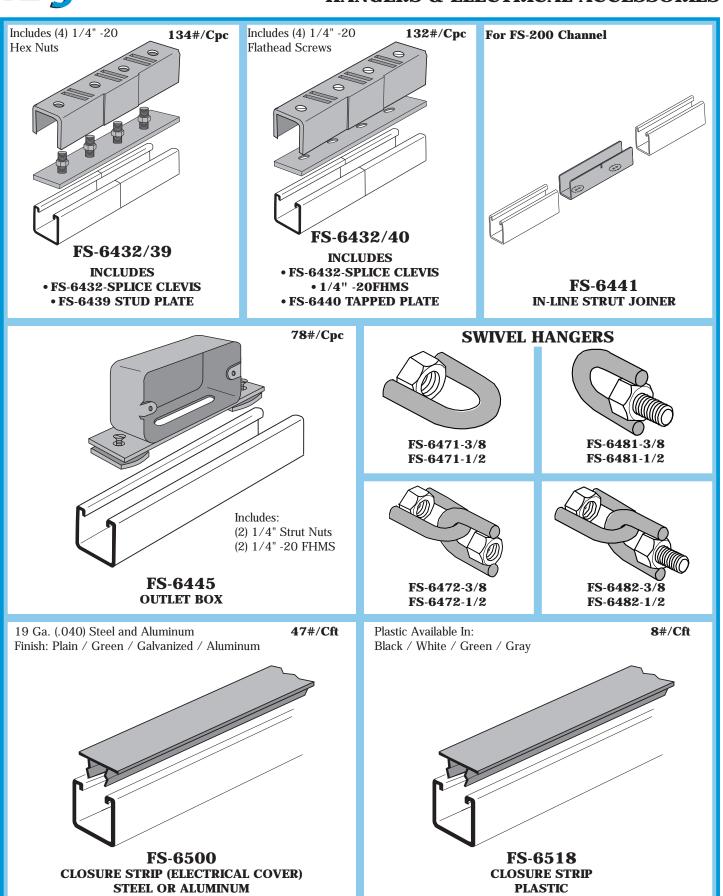
HANGERS & ELECTRICAL ACCESSORIES







HANGERS & ELECTRICAL ACCESSORIES



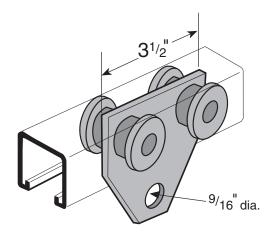
TROLLEYS



59#/Cpc

106#/Cpc

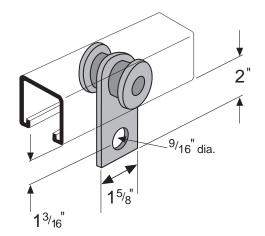
Design Load = 600#



Fits FS-200 Channel

FS-6600 FOUR WHEEL TROLLEY

Design Load = 300#



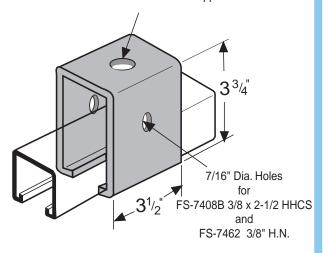
Fits FS-200 Channel

105#/Cpc

FS-6602 TWO WHEEL TROLLEY

240#/Cpc

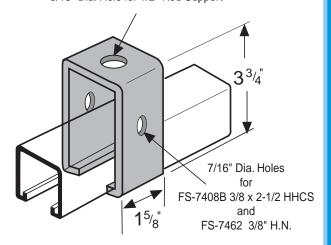
9/16" Dia. Hole for 1/2" Rod Support



Hardware Sold Separately

FS-6603
TROLLEY BEAM JOINT SUPPORT

9/16" Dia. Hole for 1/2" Rod Support

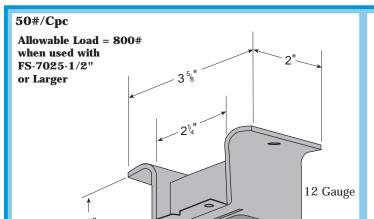


Hardware Sold Separately

FS-6604
TROLLEY BEAM INTERMEDIATE SUPPORT

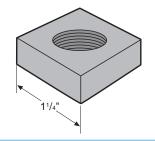


CONCRETE INSERTS



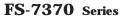
FS-7000 SPOT CONCRETE INSERT

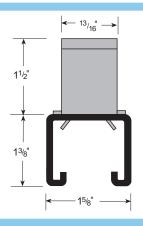
Cat. No.	Tapped Size	#/Cpc
FS-7025-1/4"	1/4" -20	11#
FS-7025-3/8"	3/8" -16	15#
FS-7025-1/2"	1/2" -13	19#
FS-7025-5/8"	5/8" -11	18#
FS-7025-3/4"	3/4" -10	17#
FS-7025-7/8"	7/8" -9	15#

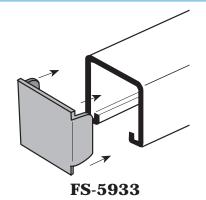


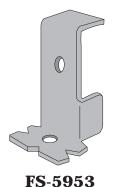
FS-7025 Series INSERT SQUARE NUT

P/N	Allowable Load
FS-7350	800#
FS-7351	1000#
FS-7352	1200#
FS-7353	2000#
FS-7354/70	2000#/FT

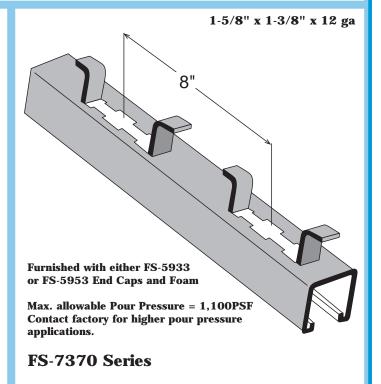








	Insert	End Cap	Weight
Cat. No.	Length	Furnished	Cpcs
FS-7350	4"	FS-5953	100#
FS-7351	6"	FS-5953	130#
FS-7352	8"	FS-5953	160#
FS-7353	12"	FS-5953	220#
FS-7354	16"	FS-5933	250#
FS-7355	20"	FS-5933	310#
FS-7356	24"	FS-5933	370#
FS-7357	32"	FS-5933	490#
FS-7357A	36"	FS-5933	550#
FS-7358	40"	FS-5933	610#
FS-7359	4'	FS-5933	730#
FS-7360	5'	FS-5933	910#
FS-7361	6'	FS-5933	1090#
FS-7362	7'	FS-5933	1270#
FS-7363	8'	FS-5933	1450#
FS-7364	9'	FS-5933	1630#
FS-7365	10'	FS-5933	1810#
FS-7366	12'	FS-5933	2170#
FS-7367	14'	FS-5933	2530#
FS-7368	16'	FS-5933	2890#
FS-7369	18'	FS-5933	3250#
FS-7370	20'	FS-5933	3610#

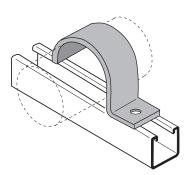


TUBING CLAMPS & PIPE STRAPS



FS-7730 Series ONE-HOLE TUBING CLAMPS

Use with any 1-5/8" wide channel

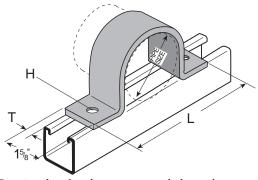


Requires FS-7401 (hex head cap screw) and FS-1/4RS (channel nut); order separately.

	O.D. Tube	
Cat. No.	Size	#/Cpc
FS-7730-1/4	1/4"	4
FS-7730-5/16	5/16"	5
FS-7730-3/8	3/8"	5
FS-7730-1/2	1/2"	6
FS-7730-5/8	5/8"	8
FS-7730-3/4	3/4"	9
FS-7730-7/8	7/8"	10
FS-7730-1	1"	11

Standard Finish – electro-galvanized (Available in Stainless Steel)

FS-7870 Series STANDARD PIPE STRAPS

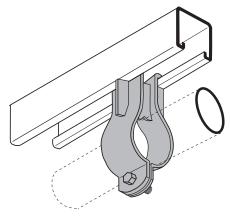


Requires hex head cap screw and channel nuts; order separately.

Standard Finish – electro-galvanized Available in Stainless Steel

Cat. No.	Pipe Size	"L" Length	"T" Material Thickness	"H" Hole Size	#/Cpc
FS-7870-1/2	1/2"	3"	1/8"	9/32"	24
FS-7870-3/4	3/4"	3-1/4"	1/8"	9/32"	28
FS-7870-1	1"	3-9/16"	1/8"	9/32"	32
FS-7870-1-1/4	1-1/4"	3-13/16"	1/8"	9/32"	35
FS-7870-1-1/2	1-1/2"	4-1/16"	1/8"	9/32"	40
FS-7870-2	2"	5-13/16"	1/4'	7/16"	95
FS-7870-2-1/2	2-1/2"	6-1/4"	1/4"	7/16"	116
FS-7870-3	3"	7"	1/4"	7/16"	135
FS-7870-3-1/2	3-1/2"	7-7/8"	1/4"	7/16"	155
FS-7870-4	4"	8"	1/4"	7/16"	180
FS-7870-5	5"	9-1/8"	1/4"	7/16"	195
FS-7870-6	6"	10-5/16"	1/4"	7/16"	240

FS-7880 Series PARALLEL PIPE CLAMPS



Standard Finish - electro-galvanized

Cat. No.	Pipe Size	Material Thickness	Allowable Load	#/Cpc
FS-7880-3/8	3/8"	16 Ga.	300#	24
FS-7880-1/2	1/2"	16 Ga.	300#	25
FS-7880-3/4	3/4"	14 Ga.	300#	31
FS-7880-1	1"	14 Ga.	400#	32
FS-7880-1-1/4	1-1/4"	14 Ga.	400#	37
FS-7880-1-1/2	1-1/2"	12 Ga.	500#	49
FS-7880-2	2"	12 Ga.	500#	52
FS-7880-2-1/2	2-1/2"	12 Ga.	500#	59
FS-7880-3	3"	12 Ga.	500#	65
FS-7880-3-1/2	3-1/2"	11 Ga.	500#	81
FS-7880-4	4"	11 Ga.	500#	88



CUSHION CLAMP ASSEMBLIES

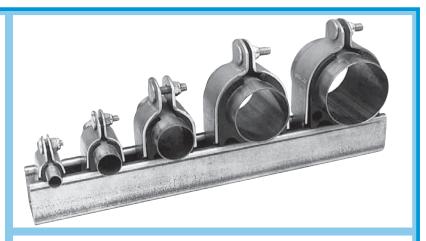


FS-1400 SERIES HYDRA-ZORB CUSHION CLAMPS

Copper &

Part	No.	CT Size	Steel Tube O.D. Size
FS-1	400-025	1/8"	1/4"
FS-1	400-037	1/4"	3/8"
FS-1	400-050	3/8"	1/2"
FS-1	400-062	1/2"	5/8"
FS-1	400-075	5/8"	3/4"
FS-1	400-087	3/4"	7/8"
FS-1	400-112	1"	1-1/8"
FS-1	400-137	1-1/4"	1-3/8"
FS-1	400-162	1-1/2"	1-5/8"
FS-1	400-212	2"	2-1/8"
FS-1	400-262	2-1/2"	2-5/8"
FS-1	400-312	3"	3-1/8"
FS-1	400-362	3-1/2"	3-5/8"
FS-1		4" ory For Additional S	

Part No.	Nom. Pipe Size	Part No.	Nom. Pipe Size
FS-1400P-025	1/4"	FS-1400P-200.	2"
FS-1400P-037	3/8"	FS-1400P-250.	2-1/2"
FS-1400P-050	1/2"	FS-1400P-300.	3"
FS-1400P-075	3/4"	FS-1400P-350.	3-1/2"
FS-1400P-100	1"	FS-1400P-400.	4"
FS-1400P-125	.1-1/4"	FS-1400P-500.	5"
FS-1400P-150	.1-1/2"	FS-1400P-600	6"
Contact F	actory Fo	r Additional Sizes	



HYDRA-ZORB CUSHION CLAMP ASSEMBLIES FOR PIPES, TUBES, AND HOSES.

- Reduce noise, shock and vibration caused by fluid surges in tubes, pipes, and hoses used in the construction of stationery and mobile equipment.
- Eliminate metal to metal contact between fluid conductors and clamps.
- Resist most fuels, oils, gases, greases, solvents, mineral acids, etc.
- Allow fluid conductors to be added or removed from installations without disturbing adjacent conductors.
- Permit various fluid conductors to be mixed to suit installation.
- Allow center distances between fluid conductors to be variable and not critical for compact installation.
- Are usable to temperatures down to -65°F and up to 275°F.
- Provide fast and simple installation. Only one man and one tool needed for assembly after base channel is in place.

Standard Finish – electro-galvanized with yellow chromate rinse *Also available in stainless steel, 304 or 316, aluminum and hot dip galvanized.*

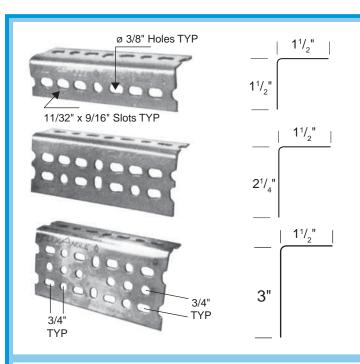


FLEX-WRAP - FS-3792



FLEXANGLE® KLO-SHURE®





Part No.	Ga.	Length	#/Cft.
FA-110 PG	14	10 Ft.	78
FA-112 PG	14	12 Ft.	

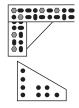
Part No.	Ga.	Length	#/Cft.
FA-210 PG	14	10 Ft.	95
FA-212 PG	14	12 Ft.	

Part No.	Ga.	Length	#/Cft.
FA-310 PG	12	10 Ft.	135
FA-312 PG	12	12 Ft.	

Packages contain 10 lengths of angle and 75 nuts and bolts. (Bulk bundles available upon request.) Standard Finish = Pre-Galvanized (Plain finish available upon request)

FLEXANGLE GUSSET PLATES

Heavy, flat plates used for extra bracing, extra rigidity in severe service. Can be added to existing structures without disassembling corner joints. Shipping weight 5 lbs. per package of ten.



EXTRA NUTS AND BOLTS

Heat-treated, zinc-coated, $5/16^{\circ}$ x $3/4^{\circ}$ bolt with load bearing shoulder and washer face for rapid assembly. Safe load 2000 lbs. per bolt. Nut is serrated for permanent, shake-proof locking. Sets of 75 per box. Weight 3-1/2 lbs.



The Klo-Shure® Insulation Coupling reduces the time required to insulate copper tubing used for refrigerant lines, hot and cold water plumbing, and chilled water systems.

They are easy to install. The Klo-Shure® Insulation Coupling can be slit open to facilitate installation, and later secured with the provided metal clip. They also can be used unopened by sliding the coupling over tubing as it is installed.

No special tools, glue or tape required. Klo-Shure® Couplings are recommended for pipe fitters to support and level tubing during installation. This will allow insulation to be secured in seconds.



Klo-Shure® Insulation Couplings



7 series strut mount The Klo-Shure® 7 series coupling supports and secures tubing in strut mounted applications.



8 series strut mount The new Klo-Shure® 8 series coupling installs in seconds without metal clamps.



clevis system The Klo-Shure® clevis system locks the coupling into clevis hanger.



The patented coupling allows sections of closed-cell, elastomeric insulation to be secured at suspension points. This eliminates having to double wrap, glue, and tape insulation.

The Klo-Shure® coupling can also be used to simply join and secure two lengths of insulation.





HEAVY DUTY CONCRETE INSERT

FS-9319 CONCRETE INSERT WITH STUDS

AND INSTALLED NUTS

For use in heavy loading conditions; i.e. glass and stone retention; anchoring cutain wall mullions and structural grids.

Inserts come complete with anchor end caps, plastic closure and two (2) 1/2 - 13 channel nuts factory installed.

Channel nuts should be placed a minimum of 3" on center.

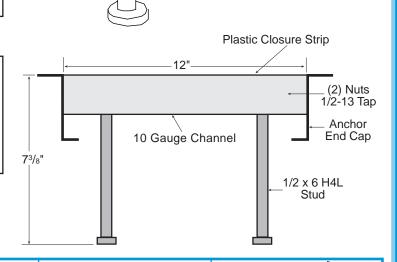
Design Load = 7,500# Safety Factor = 2-1/2

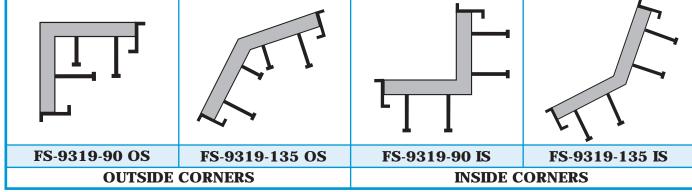
When properly imbedded in concrete with a minimum compressive strength of 4,000 psi and a minimum edge distance of 5" from center line of insert to edge of concrete. Loading based on using a (2) nut & bolt connection with "T" clip attachment.

Design Load = 6,000# Safety Factor = 3

When properly imbedded in concrete with a minimum compressive strength of 3,000 psi and a minimum edge distance of 2-3/4" from center line of insert to edge of concrete. Loading based on using a (2) nut & bolt connection with "T" clip attachment.

Contact factory regarding special loading conditions and special fabrications.





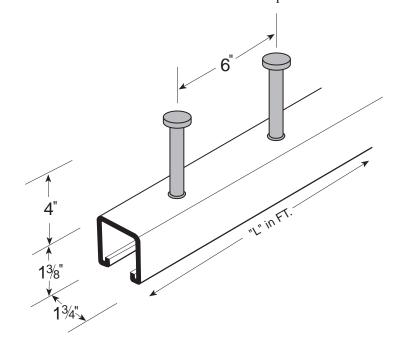
STANDARD FINISH = ELECTRO-GALVANIZED (GD) or HOT DIP GALVANIZED (HD)



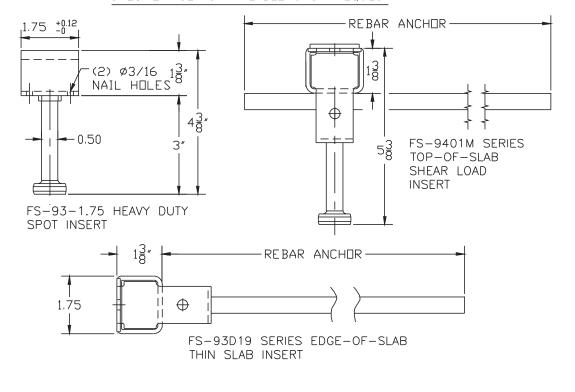


Finish: Hot Dip Galvanized Provided with Foam Filler or Plastic Closure Available in 1 foot increments Design Load = 7,500 lb./Ft. Safety Factor = 2.5 with full embedment multiple 1/2" connections

Part No.	"L"
FS-9401	1'
FS-9402	2'
FS-9403	3'
FS-9404	4'
FS-9405	5'
FS-9406	6'
FS-9407	7'
FS-9408	8'
FS-9409	9'
FS-9410	10'



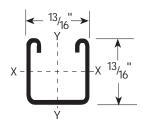
SPECIAL INSERTS AVAILABLE UPON REQUEST



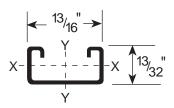




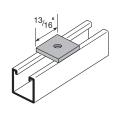
FOR FS-600 Series



FOR FS-700 Series

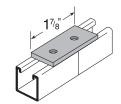


2#/Cpc



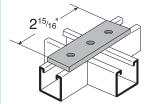
FS-8003 SQUARE WASHER

5#/Cpc



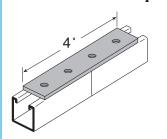
FS-8007 TWO HOLE SPLICE

8#/Cpc



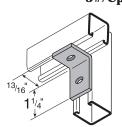
FS-8008 THREE HOLE SPLICE

10#/Cpc



FS-8009 FOUR HOLE SPLICE

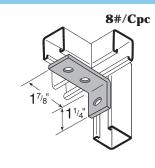
5#/Cpc



FS-8102

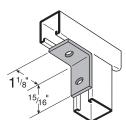


TWO HOLE CORNER

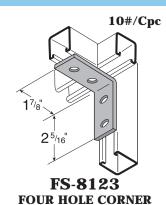


FS-8115 THREE HOLE CORNER

5#/Cpc

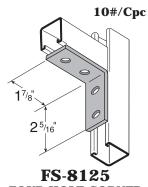


FS-8103 TWO HOLE CORNER

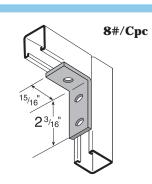


8#/Cpc

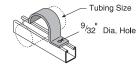
FS-8112 THREE HOLE CORNER



FOUR HOLE CORNER



FS-8113 THREE HOLE CORNER



O.D. Tube Size	Wt./100 pcs
1/4"	
3/8"	0
1/2"	2
5/8"	
3/4"	
7/8"	3
1"	-

FS-8730 SERIES TUBING CLAMPS

PART NUMBER INDEX

	FS-0832TG20		FS-521427
CHANNEL	FS-1032TG20	FLAT PLATE FITTINGS	FS-5215
	FS-1024TG20		15-5215
FS-1005	FS-1/4TG20	FS-5003 SERIES 22	WIN EFFERICE
FS-1015	FS-5/16TG20	FS-5004 SERIES 22	"U" FITTINGS
FS-1506	FS-3/8TG20	FS-500722	FS-530728
FS-1516	FS-1/2TG 20	FS-500822	
FS-2007	FS-1/2TGS	FS-500922	FS-5308
FS-2017	FS-6-083620	FS-501022	FS-5310
FS-200H38	FS-6-083220	FS-501123	FS-5311-1
FTS-200H38	FS-6-103220	FS-501223	FS-5311-2
FS-210 10	FS-6-103220 FS-6-102420	FS-501923	FS-5311-3
FS-21110	FS-6-102420 FS-6-1/420	FS-502022	FS-5311-4
FS-28011		FS-502122	FS-5311-5
FS-30012	FS-7-083620	FS-502223	FS-5311-6
FS-30112	FS-7-083220	FS-502323	FS-531228
FS-40013	FS-7-103220	FS-502423	FS-531728
FS-40113	FS-7-102420	FS-502523	
FS-45014	FS-7-1/420	FS-502623	CLEVIS FITTINGS
FS-45114		FS-502723	
FS-50015	STUD NUTS		FS-5324-429
FS-50115		NINETY DEGREE	FS-5324-529
FS-51016	FS-1/4-1SN21		FS-5324-629
FS-51116	FS-1/4-2SN 21	ANGLES	FS-5324-729
FS-52017	FS-1/4-3SN 21		FS-5324-829
FS-52117	FS-3/8-1SN 21	FS-510224	FS-532529
FS-60018	FS-3/8-2SN 21	FS-510324	FS-534229
FS-60118	FS-3/8-3SN21	FS-510424	FS-534329
FS-70019	FS-3/8-4SN21	FS-510524	FS-534429
FS-70119	FS-3/8-5SN21	FS-510624	FS-535229
15 70110	FS-3/8-6SN21	FS-510724	FS-535329
	FS-1/2-2SN21	FS-510824	FS-535429
CHANNEL NUTS	FS-1/2-3SN21	FS-510925	
	FS-1/2-4SN21	FS-511025	BRACES
FS-0832NS 20	FS-1/2-5SN21	FS-511224	BRACES
		FS-511324	FS-5460-1830
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Terms and Conditions of Sale



1. Acceptance

No order shall be binding upon us until accepted in writing by an authorized official at Flex-Strut Inc. Any contract for sale of goods, and these Conditions of Sale, shall be governed by and constructed to the Uniform Commercial Code as adopted in the state of Ohio.

2. Errors

Should an error be made filling an order, notify Flex-Strut promptly and we will immediately attempt to adjust the matter without any expense to the purchaser.

3. Cancellation

Cancellation of orders will be accepted only with the understanding that Flex-Strut will be reimbursed for expenses incurred as a result of the cancellation. Orders for special, non-cataloged items are not subject to cancellation after production is started.

4. Returned Material

Permission to return any standard merchandise must be obtained in writing from Flex-Strut in Warren, Ohio. A Returned Goods Authorization (RGA) form will be provided and must accompany the material upon receipt. Request for RGA must be made within 60 days from the date of shipment and be subject to conditions spelled out in the RGA including, but not limited to the following:

- a. Return transportation must be pre-paid.
- Material not in first-class, saleable condition will be subject to the cost of reconditioning.
- c. Merchandise credit will be allowed on the basis of the price charged for the merchandise, less handling and restocking charge defined in RGA less any outbound freight allowed or paid by Flex-Strut.
- Returns will only be considered for standard catalog items. Any special, non-cataloged items are not subject to return for credit under any circumstances.

5. Prices

Prices are subject to change without notice. The price list supersedes and cancels all previous quotations on any part listed in this catalog. Orders are accepted with the understanding that material will be billed at the price in affect at the time of shipment, unless otherwise specified in quotation or order.

6. Minimum Order

\$30.00 Net

7. Terms

1% 10 days date of invoice Net 30 days date of invoice

8. Terms of Payment

Failure by customer to meet punctual payment shall subject any further deliveries to be suspended or cancelled at the manufacturer's option; without prejudice to the manufacturer's rights to claim for material supplied or work done at the time of cancellation, and for any loss or injury occasioned thereby.

9. Taxes

Prices are exclusive of all Federal, State and Local Taxes.

10. Finance Charges

Any amount not timely paid by the customer shall bear interest at the maximum rate permitted by law, not to exceed 1.5% per month.

11. Freight

All prices are FOB point of shipment, unless otherwise stated.

12. Catalog Weights, Dimensions and Design LoadsCatalog weights and dimensions are careful estimates but not guaranteed. Design loads are based on testing or by calculations based on static load conditions.

13. Damage or Loss in Transit

Delivery of goods to a carrier at our plant or other shipping point shall constitute delivery to purchaser; and regardless of freight payment all risk of loss or damage in transit shall pass to the purchaser at that time. Purchaser shall make claims for loss or damage to goods while in transit against the carrier; Flex-Strut will assist in securing satisfactory adjustment of such claims.

14. Claims

Claims for defective material, shortages, delays, failures in shipment or delivery for any other cause shall be deemed waived and released by purchaser unless made in writing within 30 days after arrival of material. Under no circumstances shall purchaser install damaged or defective material if claims are to be made.

15. Liability for Misuse

Flex-Strut shall not be liable for damages to property or persons due to improper installation of its material or through attempts to utilize the material under conditions which exceed the designed capabilities.

Purchaser agrees to indemnify and hold harmless from any and all claims, liabilities, damages, costs and expenses asserted against Flex-Strut or incurred by Flex-Strut because of injuries to persons or damages to property resulting from the improper installation or misuse of the material.

16. Material Supplier Only

Flex-Strut is a material supplier and fabricator and not a construction sub-contractor. We assume no responsibility for any terms, conditions, or special provisions contained in any contract between purchaser and any other party, including, but not limited to, provisions regarding warranties, time and method of payment and retainage, cancellation and penalties for delay in completion.

17. Purchaser's Specifications

Purchaser agrees to protect, defend, indemnify, and hold Flex-Strut harmless from and against all claims, liabilities, demands, causes of action, losses, damages, costs and expenses, including by way of description but not by way of limitation, attorney's fees, expenses which may be asserted against us or may be incurred by us arising out of manufacture and/or sale of any material furnished to or for purchaser in compliance with purchaser's designs, plans or specifications, including any claim, demand, or liability on account of actual or alleged infringement of any United States or foreign patent or trademark.

18. Warranties

We guarantee to replace, or at our option to repair, any material which we find in our sole discretion to be defective in material or workmanship provided that a claim, and proof thereof, is made in writing to us within 30 days after purchaser's receipt of material. Our obligation with respect to material found by us to be defective shall be limited to replacement or repair. No other warranty or guarantee of any kind is made, expressed or implied, statutory, by operation of law, or otherwise including warranties for merchantability and fitness for a particular purpose.