



FB33 w/ Structural Studs

INSTALLATION REQUIREMENTS FOR LATERAL PRESSURE OF STUDS at 16" o.c. with Bracing Distance from 4-ft to 8-ft

Stud Section	Stud Thickness ga (mils.)	FastBridge Type	Lateral Pressure (psf) and Bracing Distance (ft)																																				
			5psf				10psf				20psf				25psf				30psf				35psf				40psf				50psf								
			4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'
362S162	20 (33)	CDBS-FB33	1*																																				
	18 (43)		1*																																				
	16 (54)		1*																																				
362S200	20 (33)	CDBS-FB33	1*																																				
	18 (43)		1*																																				
	16 (54)		1*																																				
362S250	20 (33)	CDBS-FB33	1*																																				
	18 (43)		1*																																				
	16 (54)		1*																																				
400S162	20 (33)	CDBS-FB33	1*																																				
	18 (43)		1*																																				
	16 (54)		1*																																				
400S200	20 (33)	CDBS-FB33	1*																																				
	18 (43)		1*																																				
	16 (54)		1*																																				
400S250	20 (33)	CDBS-FB33	1*																																				
	18 (43)		1*																																				
	16 (54)		1*																																				
600S162	20 (33)	CDBS-FB33	1*																																				
	18 (43)		1*																																				
	16 (54)		1*																																				
600S200	20 (33)	CDBS-FB33	1*																																				
	18 (43)		1*																																				
	16 (54)		1*																																				
600S250	20 (33)	CDBS-FB33	1*																																				
	18 (43)		1*																																				
	16 (54)		1*																																				
800S162	18 (43)	CDBS-FB33	1*																																				
	16 (54)		1*																																				
	16 (54)		1*																																				
800S200	18 (43)	CDBS-FB33	1*																																				
	16 (54)		1*																																				
	16 (54)		1*																																				
800S250	18 (43)	CDBS-FB33	1*																																				
	16 (54)		1*																																				
	16 (54)		1*																																				

INSTALLATION REQUIREMENTS FOR LATERAL PRESSURE OF STUDS at 24" o.c. with Bracing Distance from 4-ft to 8-ft

Stud Section	Stud Thickness ga (mils.)	FastBridge Type	Lateral Pressure (psf) and Bracing Distance (ft)																															
			5psf				10psf				20psf				25psf				30psf				35psf				40psf				50psf			
			4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'
362S162	20 (33)	CDBS-FB33	1*																															
	18 (43)		1*																															
	16 (54)		1*																															
362S200	20 (33)	CDBS-FB33	1*																															
	18 (43)		1*																															
	16 (54)		1*																															
362S250	20 (33)	CDBS-FB33	1*																															
	18 (43)		1*																															
	16 (54)		1*																															
400S162	20 (33)	CDBS-FB33	1*																															
	18 (43)		1*																															
	16 (54)		1*																															
400S200	20 (33)	CDBS-FB33	1*																															
	18 (43)		1*																															
	16 (54)		1*																															
400S250	20 (33)	CDBS-FB33	1*																															
	18 (43)		1*																															
	16 (54)		1*																															
600S162	20 (33)	CDBS-FB33	1*																															
	18 (43)		1*																															
	16 (54)		1*																															
600S200	20 (33)	CDBS-FB33	1*																															
	18 (43)		1*																															
	16 (54)		1*																															
600S250	20 (33)	CDBS-FB33	1*																															
	18 (43)		1*																															
	16 (54)		1*																															
800S162	18 (43)	CDBS-FB33	1*																															
	16 (54)		1*																															
	16 (54)		1*																															
800S200	18 (43)	CDBS-FB33	1*																															
	16 (54)		1*																															
	16 (54)		1*																															
800S250	18 (43)	CDBS-FB33	1*																															
	16 (54)		1*																															
	16 (54)		1*																															

- NOTES:
- Lateral pressure shall be determined based on load combinations of the applicable code. For designs in accordance with the 2009 IBC or earlier, wind pressures are at working stress level.
 - For designs in accordance with the 2012 IBC, wind pressures are at strength level and must be multiplied by 0.6 for ADS load combinations.
 - Tabulated tables are for ASD lateral pressure. Please contact ClarkDietrich Technical Support for LRFD solutions.
 - 1* designates One #10 screw can be used for FB33 Bridge Clip.
 - 2* designates Two #10 screws should be used for FB33 Bridge Clip.
 - Blank areas in the tables indicate that FB33 Bridge Clip cannot be used. Please contact ClarkDietrich Technical Support for more information and alternatives.



FB33: FastBridge Connectors w/ Structural Studs

Model No.	Stud Depth (in)	Allowable Connector Capacity	No. of Screws	Stud Thickness, ga (mils.)		
				20 (33)	18 (43)	16 (54)
CDBS-FB33	3.625	Axial Brace Stiffness (lbs/in)	1	1027	1330	2016
			2	1220	1480	2270
		Axial Brace Strength (lbs)	1	148	172	181
			2	246	269	364
		Torsional Moment (in-lbs)	1	148	182	208
			2	286	343	467
CDBS-FB33	4.000	Axial Brace Stiffness (lbs/in)	1	950	1460	1982
			2	1072	1520	2690
		Axial Brace Strength (lbs)	1	153	173	173
			2	245	291	384
		Torsional Moment (in-lbs)	1	137	182	198
			2	287	346	482
CDBS-FB33	6.000	Axial Brace Stiffness (lbs/in)	1	260	590	1380
			2	380	860	1660
		Axial Brace Strength (lbs)	1	107	169	169
			2	239	288	402
		Torsional Moment (in-lbs)	1	166	170	172
			2	277	332	445
CDBS-FB33	8.000	Axial Brace Stiffness (lbs/in)	1	-	312	760
			2	-	420	916
		Axial Brace Strength (lbs)	1	-	177	178
			2	-	261	390
		Torsional Moment (in-lbs)	1	-	152	211
			2	-	332	414

Table Notes:

- Allowable loads are based on cold-formed steel studs with a minimum yield strength, Fy=33ksi and tensile strength, Fu=45ksi for 43 mil (18 ga) or thinner and a minimum yield strength, Fy=50ksi and tensile strength, Fu=65ksi for 54 mil (16 ga) or thicker
- Allowable loads are based on 54 mil (16 ga.) u-channel bridging with a minimum yield strength, Fy=33ksi and tensile strength, Fu=45ksi.
- Allowable loads consider the bridging connection only. It is the responsibility of the designer to verify the strength and serviceability of the framing members.
- Allowable loads are based on #10 self-drilling screws with a nominal diameter of 0.190-in and a washer diameter of 0.375-in. Fasteners must have a minimum nominal shear strength, Pss=1718-lbs and a nominal tensile strength, Pts=2654-lbs
- Allowable loads may not be increased for wind or seismic load
- Allowable loads are for use when utilizing ASD (Allowable Stress Design) methodology. For LRFD loads multiply the ASD tabulated values by 1.6
- Allowable brace strength are based on ultimate test load divided by a safety factor. Serviceability limit is not considered, as brace stiffness requirements are given in section D3.3 of AISI S100-2007 w/ S2-10 or 2012
- Tabulated stiffness values apply to both ASD and LRFD designs



FB33 w/ Structural Studs

Design Examples

Example-1: Exterior Bearing-Wall Stud

Input

- 2012 IBC (ASCE 7-10 & AISI S100-07 w/ S2-10 Supplement)
- 600S162-43 (33-ksi) studs at 16" o.c., 10 ft. tall
- Bracing at 5-ft o.c. (Mid-point bracing)
- Nominal axial stud strength, $P_n=5400$ lbs (2008 AISI Manual, Table III-8)
- Distance from shear center to mid-plane of web, $m=0.670$ -in (2008 AISI Manual, Table I-2)
- Wind Design Pressure = 20psf

Laterally-Loaded Stud Design

Design Load tributary to brace:

$$W=(0.6)(20)(16/12)(5) = 80 \text{ lbs}$$

Note - IBC 2012 load combinations for ASD include a factor of 0.6 for wind loads.

Required flange force (AISI S100 Eq. D3.2.1-3)

$$P = 1.5(m/d)W = 1.5(0.67/6)80 = 10.05 \text{ lbs}$$

Torsional Moment

$$M = P(d) = 10.05(6) = 60.3 \text{ in-lbs}$$

From Allowable Loads Table for 6-in deep 43-mil stud,

Select CDBS-FB33 clip with One #10 fasteners

Allowable Torsional Moment = 172 in-lbs > 60.3 in-lbs **OK**

Axially-Loaded Stud Design

Required brace strength (AISI S100 Eq. D3.3-1)

$$P = 0.01(P_n) = 0.01(5400) = 54 \text{ lbs.}$$

For ASD, divide by 1.5 (2008 AISI Cold-Formed Steel Design Manual, Pg. III-54)

$$(54)/(1.5) = 36.0 \text{ lbs.}$$

Required brace stiffness (AISI S100 Eq. D3.3-2)

$$\beta = 2[4-(2/n)](P_n)/(L) = 2[4-(2/1)](5400)/(60) = 360 \text{ lbs/in}$$

From Allowable Loads Table for 6-in deep 43-mil stud,

Select CDBS-FB33 clip with One #10 fasteners

Allowable brace strength = 169 lbs > 54 lbs. **OK**

Brace stiffness = 1380 lbs/in > 360 lbs/in. **OK**

Example-2: Curtain-Wall Stud

Input

- 2012 IBC (ASCE 7-10 & AISI S100-07 w/ S2-10 Supplement)
- 362S162-43 (33-ksi) studs at 16" o.c., 10 ft. tall
- Bracing at 5-ft o.c. (Mid-point bracing)
- Wind Design Pressure = 34psf

Select CDBS-FB33 clip using design table

ASD wind pressure:

$$P=(0.6)(34) = 20.4\text{-psf}$$

Note - IBC 2012 load combinations for ASD include a factor of 0.6 for wind loads.

For 362S162-43 stud with CDBS-FB33 connector, 20-psf wind pressure w/ 5-ft bracing distance,

CDBS-FB33 with One-#10 fasteners **OK**

GENERAL NOTES:

- Bridging connectors may also be designed using Allowable Loads Tables
- Only lateral load has been included for clarity.
- Design of curtain wall studs should consider load combinations in accordance with the applicable building code.