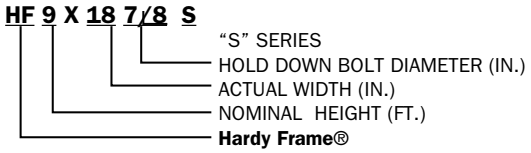
Steel Framing General Information

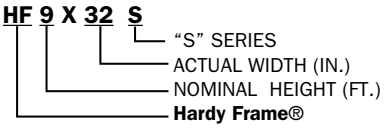
Hardy Frame® Panels and Brace Frames are both available in an "S" series, which are intended for, but not restricted to, installation in steel frame structures. The only difference between the Standard and "S" series Panels and Brace Frames is the net height of the product. Standard Panels and Brace Frames are built to a standard wood stud height (8' nominal equals 92-¼" actual), the "S" series are built to a standard steel stud height (8' nominal equals 96-5/8" actual). The width, depth, steel gauge and hole patterns are the same for the Standard and "S" series products.

Specifying Tips

MODEL NUMBERING



MODEL NUMBERING



Provide Call-Out on Foundation Plan

- For Panel call-outs remember to specify the hold down bolt diameter (7/8" or 1-1/8")
- Brace Frames are manufactured for installation with 7/8" diameter hold down bolts only, so it is not necessary to specify a hold down bolt diameter.
- Reference the appropriate "Embed Type" from ICC-ES detail 29A for Panels or 29B for Brace Frames.
- Reference a footing section view or elevation view to convey the appropriate bolt height above finish concrete. Typically for steel frame structures the installation will be either directly on the concrete or on a bottom track.

Provide Call-Out on Framing Plan

- Provide full model numbering on the call-out. For "S" Series Panels and Frames be sure to add an "S" at the end of the model number. For Panels include the hold down bolt diameter. Check that the nominal height of the Panel/Frame being specified fits the height of the wall to be framed.
- Reference the appropriate elevation view that illustrates the desired bearing condition (concrete, raised floor system, upper floor, etc.) and the connection at the Panel/Frame top (to top track, filler, etc.)

Remember:

- When specifying Panels on Floor Systems to note if a **Hardy Frame®** Bearing Plate is required below the Panel.
- When specifying Brace Frames on Floor Systems that **Hardy Frame®** Bearing Plates are not installed below the Frame as they are below Panels.
- When specifying installation on an Upper Floor, be sure to indicate hold down bolt connections to Panels, Brace Frames, Posts, underside of a Beam, etc.
- When specifying "Portal" installations (header over the top of the Panel) include a note if straps from the Panel to the face of the header are required.

1997 UBC Table 2.1: Hardy Frame® Panels - "S" Series on FOUNDATIONS[1]

Model Number	Net Height H (in)	HD Bolt Diameter (in)	Values for R = 5.5			Values for R = 4.4			Screw [3,4] Qty at Top	Add'l [5] Vertical Load P (lbs)
			Allowable[2] In-Plane Shear V (lbs)	Drift at V (in)	Uplift at V (lbs)	Allowable[2] In-Plane Shear V (lbs)	Drift at V (in)	Uplift at V (lbs)		
12" Wide Panels										
HF8x12 7/8 S	96-5/8"	7/8	1,281	0.275	12,074	1,601	0.344	15,092	7	4,000
HF9x12 7/8 S	108-5/8"	7/8	1,137	0.348	12,047	1,421	0.435	15,059	6	2,000
HF10x12 7/8 S	120-5/8"	7/8	1,024	0.450	12,051	1,280	0.563	15,063	6	1,000
18" Wide Panels										
HF8x18 7/8 S	96-5/8"	7/8	1,840	0.170	10,941	2,300	0.213	13,676	9	7,500
HF8x18 1-1/8 S	96-5/8"	1-1/8	2,900	0.269	17,244	3,625	0.336	21,555	13	7,500
HF9x18 7/8 S	108-5/8"	7/8	1,635	0.216	10,931	2,044	0.270	13,663	8	7,264
HF9x18 1-1/8 S	108-5/8"	1-1/8	2,580	0.340	17,246	3,225	0.425	21,558	11	7,264
HF10x18 7/8 S	120-5/8"	7/8	1,473	0.266	10,933	1,841	0.333	13,666	8	6,530
HF10x18 1-1/8 S	120-5/8"	1-1/8	2,324	0.420	17,251	2,905	0.525	21,564	11	6,530
HF11x18 7/8 S	132-5/8"	7/8	1,340	0.322	10,937	1,675	0.402	13,671	7	5,000
HF11x18 1-1/8 S	132-5/8"	1-1/8	2,114	0.507	17,250	2,642	0.634	21,563	10	5,000
HF12x18 7/8 S	144-5/8"	7/8	1,228	0.382	10,929	1,535	0.478	13,662	7	4,000
HF12x18 1-1/8 S	144-5/8"	1-1/8	1,938	0.603	17,252	2,423	0.754	21,565	10	4,000
HF13x18 7/8 S	156-5/8"	7/8	1,134	0.447	10,934	1,418	0.559	13,667	6	4,000
HF13x18 1-1/8 S	156-5/8"	1-1/8	1,792	0.707	17,272	2,240	0.884	21,590	9	4,000
24" Wide Panels										
HF8x24 7/8 S	96-5/8"	7/8	2,598	0.089	11,284	3,248	0.111	14,105	12	10,000
HF8x24 1-1/8 S	96-5/8"	1-1/8	4,294	0.146	18,646	5,367	0.183	23,307	18	5,000
HF9x24 7/8 S	108-5/8"	7/8	2,312	0.112	11,287	2,890	0.140	14,109	11	10,000
HF9x24 1-1/8 S	108-5/8"	1-1/8	3,820	0.185	18,649	4,775	0.231	23,312	16	5,000
HF10x24 7/8 S	120-5/8"	7/8	2,082	0.138	11,289	2,603	0.172	14,112	10	7,500
HF10x24 1-1/8 S	120-5/8"	1-1/8	3,440	0.228	18,649	4,300	0.285	23,312	14	4,000
HF11x24 7/8 S	132-5/8"	7/8	1,894	0.166	11,287	2,367	0.208	14,109	9	6,000
HF11x24 1-1/8 S	132-5/8"	1-1/8	3,130	0.275	18,655	3,912	0.344	23,318	12	3,000
HF12x24 7/8 S	144-5/8"	7/8	1,737	0.198	11,289	2,171	0.248	13,721	9	6,000
HF12x24 1-1/8 S	144-5/8"	1-1/8	2,870	0.327	18,652	3,587	0.409	22,671	10	3,000
HF13x24 7/8 S	156-5/8"	7/8	1,604	0.233	11,291	2,005	0.291	14,114	8	5,000
HF13x24 1-1/8 S	156-5/8"	1-1/8	2,650	0.384	18,657	3,313	0.480	23,321	9	1,000

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N **Custom heights available up to the maximum height listed in Table 2.1.**

Notes: 1) Installation on Foundations includes concrete, masonry, or double nut & washer

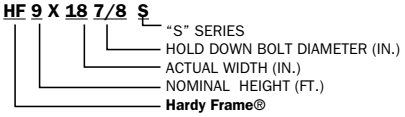
2) Loads shown are Allowable Stress Design per the UBC, include a 1.33 stress increase and are restricted to designs based on the Alternate Basic Load combinations. For design values under the UBC97/IBC2000 Basic Load Combinations, divide the allowable shear, corresponding drift and additional vertical load by 1.33. For design values under the IBC2003/2006, divide the allowable shear, corresponding drift and additional vertical load by 1.33 for both Basic and Alternate Basic Load combinations.

3) The 1/4" diameter Self-Tapping screws comply with SAE J78 and ASTM C 954. Installed fasteners must protrude three full threads beyond the minimum No. 18 gauge steel attached members. The minimum allowable load for the **Hardy Frame®** Panel to metal must be 351 lbs. Complying screws are Grabber Self-Drilling Screws (ICC-ES ER-5280), Darts Brand (ICC-ES ER-5202) or equal.

4) Connections apply for No.12-gauge steel (Panel) in contact with screw head and 18 gauge steel not in contact with screw head.

5) Load P indicates maximum allowable uniformly distributed vertical load permitted on top of Panel in addition to the vertical load produced by overturning at maximum allowable shear V.

MODEL NUMBERING



IBC Table 2.1: Hardy Frame® Panels - "S" Series on FOUNDATIONS [1]

Model Number	Net Height H (in)	HD Bolt Dia. (in)	V - Seismic Governs			V - Wind Governs			Screw Qty [6,7] at Top	Add'l [8] Vertical Load Pseismic (lbs)	Add'l [8] Vertical Load Pwind (lbs)
			Allowable [2,3] In-Plane Shear V (lbs)	Drift [5] at V (in)	Uplift [4,5] at V (lbs)	Allowable [2,3] In-Plane Shear V (lbs)	Drift [5] at V (in)	Uplift [4,5] at V (lbs)			
12" Wide Panels											
HF8x12 7/8 S	96 5/8	7/8	1,220	0.262	11,501	1,220	0.262	11,501	3	4,000	4,000
HF9x12 7/8 S	108 5/8	7/8	1,085	0.332	11,498	1,085	0.332	11,498	4	2,000	2,000
HF10x12 7/8 S	120 5/8	7/8	977	0.430	11,498	977	0.430	11,498	4	1,000	1,000
18" Wide Panels											
HF8x18 7/8 S	96 5/8	7/8	1,771	0.164	10,531	1,934	0.179	11,500	5	7,500	7,500
HF8x18 1-1/8 S	96 5/8	1-1/8	2,791	0.259	16,596	2,791	0.259	16,596	7	7,500	7,500
HF9x18 7/8 S	108 5/8	7/8	1,574	0.208	10,522	1,720	0.227	11,498	5	7,264	7,264
HF9x18 1-1/8 S	108 5/8	1-1/8	2,483	0.327	16,598	2,483	0.327	16,598	6	7,264	7,264
HF10x18 7/8 S	120 5/8	7/8	1,418	0.256	10,526	1,549	0.280	11,498	4	6,530	6,530
HF10x18 1-1/8 S	120 5/8	1-1/8	2,237	0.404	16,605	2,237	0.404	16,605	6	6,530	6,530
HF11x18 7/8 S	132 5/8	7/8	1,290	0.310	10,528	1,409	0.338	11,500	4	5,000	5,000
HF11x18 1-1/8 S	132 5/8	1-1/8	2,034	0.488	16,601	2,034	0.488	16,601	5	5,000	5,000
HF12x18 7/8 S	144 5/8	7/8	1,182	0.368	10,520	1,292	0.402	11,499	4	4,000	4,000
HF12x18 1-1/8 S	144 5/8	1-1/8	1,866	0.581	16,607	1,866	0.581	16,607	5	4,000	4,000
HF13x18 7/8 S	156 5/8	7/8	1,092	0.430	10,525	1,193	0.470	11,499	4	4,000	4,000
HF13x18 1-1/8 S	156 5/8	1-1/8	1,725	0.681	16,626	1,725	0.681	16,626	5	4,000	4,000
24" Wide Panels											
HF8x24 7/8 S	96 5/8	7/8	2,501	0.085	10,861	2,648	0.090	11,499	7	10,000	10,000
HF8x24 1-1/8 S	96 5/8	1-1/8	4,133	0.141	17,948	4,133	0.141	17,948	10	5,000	5,000
HF9x24 7/8 S	108 5/8	7/8	2,225	0.108	10,863	2,356	0.114	11,502	6	10,000	10,000
HF9x24 1-1/8 S	108 5/8	1-1/8	3,677	0.178	17,951	3,677	0.178	17,951	9	5,000	5,000
HF10x24 7/8 S	120 5/8	7/8	2,004	0.132	10,864	2,121	0.140	11,499	6	7,500	7,500
HF10x24 1-1/8 S	120 5/8	1-1/8	3,311	0.219	17,950	3,311	0.219	17,950	8	4,000	4,000
HF11x24 7/8 S	132 5/8	7/8	1,823	0.160	10,866	1,929	0.170	11,498	5	6,000	6,000
HF11x24 1-1/8 S	132 5/8	1-1/8	3,012	0.265	17,954	3,012	0.265	17,954	8	3,000	3,000
HF12x24 7/8 S	144 5/8	7/8	1,672	0.191	10,868	1,769	0.202	11,499	5	6,000	6,000
HF12x24 1-1/8 S	144 5/8	1-1/8	2,762	0.315	17,953	2,762	0.315	17,953	7	3,000	3,000
HF13x24 7/8 S	156 5/8	7/8	1,544	0.224	10,869	1,634	0.237	11,502	4	5,000	5,000
HF13x24 1-1/8 S	156 5/8	1-1/8	2,551	0.370	17,957	2,551	0.370	17,957	7	1,000	1,000

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N

Notes

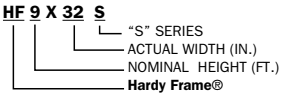
1) Installation on Foundations includes concrete, masonry, or double nut & washer.
2) Loads shown are Allowable Stress Design per the IBC and exclude a stress increase of 1.33. When designing with Alternate Basic Load combinations specified in 2000 IBC Section 1605.3.2 a 1.33 stress increase is allowed.
3) For seismic loads under the 2000 IBC, R=6, Ωo =3 and Cd =4 applies. For seismic loads under the 2003/2006 IBC R=6.5, Wo =3 and Cd =4.
4) The uplift values listed are those corresponding to the allowable shear V.
5) For reduced shear loading the uplift and drift are proportionately reduced.
6) The 1/4" diameter Self-Tapping screws comply with SAE J78 and ASTM C 954.. Installed fasteners must protrude three full threads beyond the minimum No.18 gauge steel attached members. The minimum allowable load for the Hardy Frame Panel to metal must be 351 lbs. Complying screws are Grabber Self-Drilling Screws (ICC-ES ER-5280), Darts Brand (ICC-ES ER-5202 or equal.
7) Connections apply for No.12-gauge steel (Panel) in contact with screw head and 18 gauge steel not in contact with screw head.
8) Load P indicates maximum allowable uniformly distributed vertical load permitted on top of Panel in addition to the vertiacl load produced by overturning at maximum allowable shear V.

1997 UBC Table 4.1: Hardy Frame® Brace Frames - "S" Series on FOUNDATIONS [1]

Model Number	Net Height H (in)	HD Bolt Dia. (in)	Values for R = 5.5			Values for R = 4.4			Screw [3,4] Qty at Top	Add'l [5] Vertical Load W (plf)	Add'l [5] Vertical Load P (lbs)
			Allowable[2] In-Plane Shear V (lbs)	Drift at V (in)	Uplift at V (lbs)	Allowable[2] In-Plane Shear V (lbs)	Drift at V (in)	Uplift at V (lbs)			
32" Wide Brace Frames											
HF8x32 S	96-5/8"	7/8	3,280	0.290	10,477	4,100	0.362	13,096	16	2,644	9,483
HF9x32 S	108-5/8"	7/8	2,760	0.342	9,911	3,450	0.427	12,389	14	2,644	8,601
HF10x32 S	120-5/8"	7/8	2,280	0.384	9,092	2,850	0.480	11,365	12	2,644	7,787
48" Wide Brace Frames											
HF8x48 S	96-5/8"	7/8	4,600	0.182	9,610	5,750	0.228	12,013	22	960	10,566
HF9x48 S	108-5/8"	7/8	3,920	0.216	9,207	4,900	0.270	11,508	18	960	9,482
HF10x48 S	120-5/8"	7/8	3,440	0.240	8,972	4,300	0.300	11,215	16	960	7,937
HF11x48 S	132-5/8"	7/8	2,680	0.258	7,685	3,350	0.322	9,606	14	960	7,537
64" Wide Brace Frames											
HF8x64 S	96-5/8"	7/8	5,800	0.141	9,003	7,250	0.176	11,254	26	491	11,325
HF9x64 S	108-5/8"	7/8	4,800	0.157	8,376	6,000	0.196	10,470	22	491	10,520
HF10x64 S	120-5/8"	7/8	4,080	0.169	7,906	5,100	0.211	9,883	20	491	9,269
HF11x64 S	132-5/8"	7/8	3,320	0.183	7,073	4,150	0.229	8,842	16	491	8,301
HF12x64 S	144-5/8"	7/8	2,520	0.182	5,855	3,150	0.227	7,318	14	491	7,653
HF13x64 S	156-5/8"	7/8	1,902	0.166	4,785	2,377	0.207	5,981	12	491	6,914
80" Wide Brace Frames											
HF8x80 S	96-5/8"	7/8	6,200	0.110	7,656	7,750	0.137	9,570	28	298	13,009
HF9x80 S	108-5/8"	7/8	5,200	0.120	7,219	6,500	0.150	9,023	24	298	11,967
HF10x80 S	120-5/8"	7/8	4,280	0.132	6,598	5,350	0.165	8,247	22	298	10,905
HF11x80 S	132-5/8"	7/8	3,600	0.136	6,102	4,500	0.170	7,627	18	298	9,516
HF12x80 S	144-5/8"	7/8	2,680	0.134	4,953	3,350	0.167	6,192	15	298	8,779
HF13x80 S	156-5/8"	7/8	1,776	0.103	3,555	2,220	0.129	4,444	12	298	8,451

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N **Custom heights available up to the maximum height listed in Table 4.1.**

MODEL NUMBERING



Notes: 1) Installation on Foundations includes concrete, masonry, or double nut & washer

2) Loads shown are Allowable Stress Design per the UBC, include a 1.33 stress increase and are restricted to designs based on the Alternate Basic Load combinations. For design values under the UBC97/IBC2000 Basic Load Combinations, divide the allowable shear, corresponding drift and additional vertical load by 1.33. For design values under the IBC2003/2006, divide the allowable shear, corresponding drift and additional vertical load by 1.33 for both Basic and Alternate Basic Load combinations.

3) The 1/4" diameter Self-Tapping screws comply with SAE J78 and ASTM C 954. Installed fasteners must protrude three full threads beyond the minimum No. 18 gauge steel attached members. The minimum allowable load for the **Hardy Frame®** Brace Frame to metal must be 351 lbs. Complying screws are Grabber Self-Drilling Screws (ICC-ES ER-5280), Darts Brand (ICC-ES ER-5202) or equal.

4) Connections apply for No.14-gauge steel (Brace Frame) in contact with screw head and 18 gauge steel not in contact with screw head.

5) Loads "W" & "P" indicate the maximum allowable vertical load permitted on top of Brace Frames. In addition to the vertical load produced by overturning at the maximum Allowable Shear V.

6) Loads "W" & "P" can act concurrently provided that the actual total load resultant does not exceed 2 x P.

7) Refer to Table 7.1 for the maximum allowable compression load in each end post.

IBC Table 4.1: Hardy Frame® Brace Frames - "S" Series on FOUNDATIONS [1]

Model Number	Net Height H (in)	HD Bolt Dia. (in)	V-Seismic Governs			V-Wind Governs			Screw [6,7] Qty at Top	Add'l [8,9] Vertical Load W (plf)	Add'l [8,9] Vertical Load P (lbs)
			Allowable[2,3] In-Plane Shear V (lbs)	Drift[5] at V (in)	Uplift[4,5] at V (lbs)	Allowable[2,3] In-Plane Shear V (lbs)	Drift[5] at V (in)	Uplift[4,5] at V (lbs)			
32" Wide Brace Frames											
HF8x32 S	96 5/8	7/8	3,083	0.272	9,848	3,083	0.272	9,848	10	1,988	7,576
HF9x32 S	108.625	7/8	2,594	0.321	9,315	2,594	0.321	9,315	9	1,988	7,576
HF10x32 S	120.625	7/8	2,143	0.361	8,545	2,143	0.361	8,545	7	1,988	7,576
48" Wide Brace Frames											
HF8x48 S	96 5/8	7/8	4,323	0.171	9,032	4,323	0.171	9,032	14	1,988	7,576
HF9x48 S	108 5/8	7/8	3,684	0.203	8,652	3,684	0.203	8,652	12	1,988	7,576
HF10x48 S	120 5/8	7/8	3,233	0.226	8,432	3,233	0.226	8,432	11	1,988	7,576
HF11x48 S	132 5/8	7/8	2,519	0.242	7,223	2,519	0.242	7,223	9	1,988	7,576
64" Wide Brace Frames											
HF8x64 S	96 5/8	7/8	5,451	0.132	8,461	5,451	0.132	8,461	18	1,988	7,576
HF9x64 S	108 5/8	7/8	4,511	0.147	7,872	4,511	0.147	7,872	15	1,988	7,576
HF10x64 S	120 5/8	7/8	3,835	0.159	7,431	3,835	0.159	7,431	13	1,988	7,576
HF11x64 S	132 5/8	7/8	3,120	0.172	6,647	3,120	0.172	6,647	11	1,988	7,576
HF12x64 S	144 5/8	7/8	2,368	0.171	5,502	2,368	0.171	5,502	8	1,988	7,576
HF13x64 S	156 5/8	7/8	1,787	0.156	4,496	1,787	0.156	4,496	6	1,988	7,576
80" Wide Brace Frames											
HF8x80 S	96 5/8	7/8	5,827	0.103	7,195	5,827	0.103	7,195	19	1,988	7,576
HF9x80 S	108 5/8	7/8	4,887	0.113	6,784	4,887	0.113	6,784	16	1,988	7,576
HF10x80 S	120 5/8	7/8	4,023	0.124	6,202	4,023	0.124	6,202	14	1,988	7,576
HF11x80 S	132 5/8	7/8	3,383	0.128	5,734	3,383	0.128	5,734	11	1,988	7,576
HF12x80 S	144 5/8	7/8	2,519	0.126	4,656	2,519	0.126	4,656	9	1,988	7,576
HF13x80 S	156 5/8	7/8	1,669	0.097	3,341	1,669	0.097	3,341	6	1,988	7,576

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N

NOTES

1) Installation on Foundations includes concrete, masonry, or double nut & washer.
2) Loads shown are Allowable Stress Design per the IBC and exclude a stress increase of 1.33. When designing with Alternate Basic Load combinations specified in 2000 IBC Section 1605.3.2 a 1.33 stress increase is allowed.
3) For seismic loads under the 2000/2003 IBC, R=4.0, Ωo =2.0 and Cd =3.5 applies.
4) The uplift values listed are those corresponding to the allowable shear V.
5) For reduced shear loading the uplift and drift are proportionately reduced.
6) The 1/4" diameter Self-Tapping screws comply with SAE J78 and ASTM C 954.. Installed fasteners must protrude three full threads beyond the minimum No. 18 gauge steel attached members. The minimum allowable load for the Hardy Frame Brace Frame to metal must be 351 lbs. Complying screws are Grabber Self-Drilling Screws (ICC-ES ER-5280), Darts Brand (ICC-ES ER-5202) or equal.
7) Connections apply for No.14-gauge steel (Brace Frame) in contact with screw head and 18 gauge steel not in contact with screw head.
8) Loads "W" & "P" indicate the maximum allowable vertical load permitted on top of Brace Frames. In addition to the vertical load produced by overturning at the maximum Allowable Shear V.
9) Loads "W" & "P" can act concurrently provided that the actual total load resultant does not exceed 2 x P.