

NAILS..... PAGES 15-16

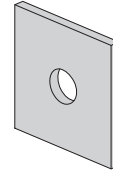
- **NA Series**
USP structural nails and common nail design information.



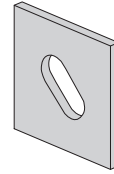
NA

BEARING PLATES..... PAGE 17

- **BP Series**
Standard bearing plates.
- **HBPS/LBPS Series**
Slotted bearing plates.
- **LBP Series**
Galvanized standard bearing plates.



BP/LBP



HBPS/LBPS

WOOD SCREWS..... PAGES 18-21

- **WS Series**
USP self-drilling wood screws.
- **Wood Screw Applications**
Information on joining multiple ply truss, LVL, or PSL members.



WS

LUMBERLOK SCREWS..... PAGES 22-23

- **LL Series**
Self-drilling screws for a number of USP Structural Connectors and wood-to-wood applications.



LL



Proper fasteners are a critical component in a sound wood frame structure. To ensure successful installations of its connectors, USP offers a full range of structurally-rated nails. All galvanized nails supplied by USP are Hot-dipped for greater corrosion resistance. Any USP connector requiring a NA16D-RS or NA20D nail is shipped with the nails attached to the connector in convenient poly bags.

Finish: See chart

Materials: ASTM A 123; ASTM A 153 (HDG)

AVAILABLE IN



Installation:

- Allowable shear values assume nail embedment into the wood of the entire nail or 10 nail diameters (whichever is less). Otherwise, the nail must be embedded at least 6 nail diameters, with the load reduced using the equation below:

$$\text{Reduced Load} = \frac{\text{Published Load} \times \text{Actual Penetration}}{\text{Nail Diameter} \times 10}$$

- Load reductions may occur if nails are used other than those specified. See the chart Optional Nails for Face Mount Hangers and Straight Straps on page 16 for load reduction factors regarding nail substitutions.
- For pneumatic nail use, see Installation Notes on page 13 and reference USP's technical bulletins.

Nail Specification table

USP Stock No.	Ref. No.	Finish ⁴	Description	Nail Diameter	Length	Withdrawal Load ⁷	Nails Per Lb.	Allowable Shear per Nail (Lbs.) ^{1,2,3,5}								
								Steel Gauge								
								3	7	10	12	14	16	18	20	22
NA11	N8	HDG	8d x 1-1/2	0.131	1-1/2	48	152	---	---	---	---	---	96	95	94	94
N8-GC	---	GC	8d x 1-1/2	0.131	1-1/2	48	152	---	---	---	---	---	96	95	94	94
NA9D	N10	HDG	10d x 1-1/2	0.148	1-1/2	54	100	---	---	126	118	114	112	112	112	111
N10-GC	---	GC														
NA16D	N16	HDG	16d x 2-1/2	0.162	2-1/2	99	66	192	177	158	147	140	138	136	136	---
NA16D-RS	---	Bright	16d Ring Shank	0.148	3-1/2	140	47	181	164	147	---	---	---	---	---	---
NA20D	---	HDG	20d x 2-1/2	0.192	2-1/2	117	41	231	202	184	174	167	---	---	---	---
8d Common	---	Bright	8d Common	0.131	2-1/2	80	126	---	---	---	---	98	96	95	94	94
10d Common	---	Bright	10d Common	0.148	3	108	70	---	154	136	125	118	115	114	113	112
N10C-GC	---	GC	10d Common	0.148	3	108	70	---	154	136	125	118	115	114	113	112
16d Sinker	---	Bright	16d Sinker	0.148	3-1/4	117	60	160	154	136	125	118	115	114	113	---
N16C-GC	---	GC	16d Common	0.162	3-1/2	138	48	192	177	158	147	140	138	136	136	---
16d Common	---	Bright	16d Common													
20d Common	---	Bright	20d Common													

- 1) Loads are calculated according to specifications of Part II of the National Design Specifications for Wood Construction (NDS®), 2005 Edition.
- 2) Loads apply to Douglas Fir-Larch (G=0.50) and Southern Pine (G=0.55). For Spruce-Pine-Fir (G=0.42) multiply above values by 0.86, for other wood types refer to NDS® or consult USP.
- 3) Shear values assumes full penetration of at least 10 nail diameters.
- 4) HDG = Hot-Dip Galvanized; GC = Gold Coat; Bright = No Finish.
- 5) For steel with Fu=45,000 psi, and gage minimum bare metal thickness.
- 6) Fastener values may be increased for duration of load.
- 7) Withdrawal loads assume full penetration.

Minimum Fastener Penetration table

Nail Penny	Wire Gauge	Shank Diameter (inches)	Minimum Penetration for Full Shear Load (inches)	Minimum Penetration for Reduced Shear Load ² (inches)
6d	11-1/2	.113	1.13	0.68
8d	10-1/4	.131	1.31	0.79
10d	9	.148	1.48	0.89
12d	9	.148	1.48	0.89
16d Sinker	9	.148	1.48	0.89
16d	8	.162	1.62	0.97
20d	6	.192	1.92	1.15

- 1) Less than the specified nail penetration shall be multiplied by the applicable adjustment factor.
- 2) For penetration less than this distance, the nail has no value.
- 3) Penetrations are derived according to the 2005 NDS®.

⚠ Reduced Fastener Penetration Example (See chart on left):

HD210 – listed load is 1690 lbs. @ 100% for 16d common nails.

Reduced HD210 capacity if using a 2x DF-L or SP header:

$$\frac{1690 \text{ lbs.} \times 1.5}{1.62} = 1565 \text{ lbs. @ 100\%}$$

continued on next page

NA20D

.192 x 2 1/2"



NA16D-RS

.148 x 3 1/2"



NA16D

.162 x 2 1/2"



NA9D

.148 x 1 1/2"



N8-GC

.148 x 1 1/2"



NA11

.131 x 1 1/2"



Optional Nails for Face Mount Hangers (excludes slant nail hangers)

Catalog Nail	Replacement Fastener ¹	Allowable Load Adjustment Factor			
		DF-L	SP	S-P-F	LVL
16d common	8d common	0.70	0.75	0.60	0.70
16d common	10d Box	0.67	0.72	0.58	0.67
16d common	10d common	0.83	0.91	0.72	0.83
16d common	12d common	0.83	0.91	0.72	0.83
16d common	10d x 1-1/2	0.81	0.88	0.70	0.81
16d common	10d Sinker	0.59	0.64	0.51	0.59
16d common	16d Box	0.74	0.80	0.64	0.74
16d common	16d Sinker	0.83	0.91	0.72	0.83
16d common	16d x 2-1/2	1.00	1.00	0.86	1.00
16d common	No. 8 x 1-1/2 Wood Screw	0.60	0.66	0.52	0.60
10d common	8d Box	0.63	0.68	0.54	0.63
10d common	10d Sinker	0.70	0.77	0.61	0.70
10d common	8d common	0.83	0.90	0.72	0.83
10d common	10d Box	0.80	0.87	0.70	0.80
10d common	8d x 1-1/4	0.64	0.69	0.55	0.64
10d common	No. 8 x 1-1/2 Wood Screw	0.72	0.79	0.63	0.72
10d common	10d x 1-1/2	0.97	1.00	0.84	0.97
10d common	16d Sinker	1.00	1.00	0.86	1.00
10d common	No. 8 x 1-1/2 Wood Screw	0.72	0.79	0.63	0.72
12d common	10d x 1-1/2	0.97	1.00	0.84	0.97
12d common	16d Sinker	1.00	1.00	0.86	1.00
12d common	No. 8 x 1-1/2 Wood Screw	0.72	0.79	0.63	0.72
8d common	8d Box	0.75	0.81	0.65	0.75
8d common	8d x 1-1/4	0.76	0.83	0.66	0.76
8d common	No. 8 x 1-1/2 Wood Screw	0.86	0.95	0.75	0.86
8d x 1-1/2	8d x 1-1/4	0.76	0.83	0.66	0.76
8d x 1-1/2	No. 8 x 1-1/2 Wood Screw	0.86	0.95	0.75	0.86
10d x 1-1/2	8d x 1-1/2	0.86	0.93	0.74	0.86
10d x 1-1/2	No. 8 x 1-1/2 Wood Screw	0.74	0.81	0.64	0.74

1) No. 8 x 1-1/2 Wood Screw has a shank diameter of 0.164" and shall conform to ANSI/ASME Standard B18.6.1-1981.

2) This chart does not apply to HUS, JDS, JH, JPF, JUS, MSH, MUS or THDH slant nail hangers.

New products or updated product information are designated in bold font.

How to Use:

The base value is the catalog listed nail in Douglas Fir-Larch and the adjustment factor is the multiplier for the applicable replacement nail and wood combination.

- Adjustment factors may vary with some custom hangers or steel thicker than 10 gauge. Contact USP for exceptions.

- **Roofing nails shall not be substituted for any nail size or type.**

Optional Nails Example:

JL210 – listed load is 1595 lbs. @ 100% for 10d common nails.

If substituting:

8d common nails with DF-L or LVL:
1595 lbs. x .83 = 1323 lbs.

8d common nails with SP:
1595 lbs. x .90 = 1435 lbs.

8d common nails with S-P-F:
1595 lbs. x .72 = 1148 lbs.

No further reductions are required.

BP – Designed to meet code requirements for mudsill-to-foundation.

HBPS/LBPS – Offers anchor bolt adjustment slots.

LBP – Galvanized finish for corrosion resistance.

Materials: See chart

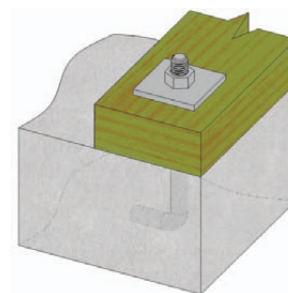
Finish: BP & HBPS – none;

LBP & LBPS – G-185 galvanizing

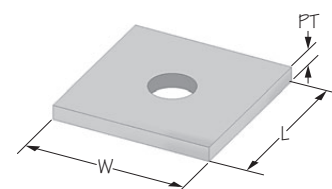
Options: BP12, BP583 & HBPS12 models are available in Hot-dip galvanized. To order, add *HDG* to end of stock number, as in **BP12-HDG**.

Installation:

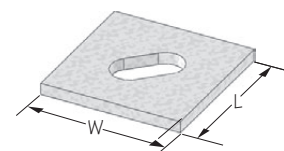
- Bolt holes are sized 1/16" larger than Bolt Dia. shown in chart.



Typical Bearing Plate installation



BP/LBP Standard Bearing Plate



HBPS/LBPS Slotted Bearing Plate

USP Stock No.	Ref. No.	Plate Thickness (PT)	Dimensions		Bolt Dia.	Code Ref.
			W	L		
LBP12-TZ	LBP1/2, LBP1/2Z	10 Ga	2	2	1/2	120
LBP58-TZ	LBP5/8, LBP5/8Z	10 Ga	2	2	5/8	100
LBPS12-TZ	LBPS1/2, LBPS1/2Z	10 Ga	3	3	1/2	120
LBPS58-TZ	LBPS5/8, LBPS5/8Z	10 Ga	3	3	5/8	120
HBPS12	BPS1/2-3	3 Ga	3	3	1/2	100
HBPS34	BPS3/4-3	3 Ga	3	3	3/4	100
HBPS58	BPS5/8-3	3 Ga	3	3	5/8	100
BP12	BP1/2	7 Ga	2	2	1/2	100
BP582	BP5/8-2	7 Ga	2	2	5/8	100
BP583	BP5/8-3	3 Ga	3	3	5/8	100
BP343	BP3/4-3	3 Ga	3	3	3/4	100

In some applications the code requires specific size plate washers be provided between the foundation sill plate and the nut. **IRC R602.11.1, IBC 2308.12.8.**

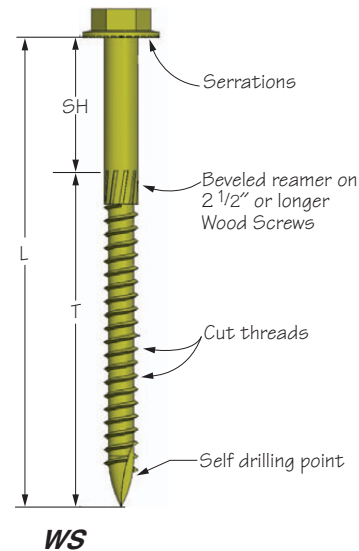
The WS Wood Screw is a self-drilling screw used for numerous framing applications. This screw features a reverse locking serration on the bottom of the screw head to help prevent over tightening against a steel plate. The USP head stamp identifies screws for easy inspection.

Screw shear capacities are based on a diameter of 0.242" when the shear plane is on the screw shank (SH) and 0.185" when the shear plane is on the knurl or threads (T). USP WS Wood Screws have a bending yield strength of 217,000 psi. For conditions not charted here, screw loads may be calculated as shown in the NDS® and increased for duration of load.

Materials: 1/4" diameter Grade 5 steel
Finish: See chart
Codes: ESR-2761, FL13170

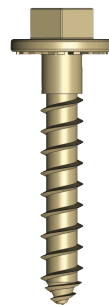
Installation:

- Screws are self-drilling.
- Install using a low speed clutch drill with 3/8" hex head driver. The washer head should be flat to the surface and the serrations will oppose turning and release the clutch. Do not over-tighten the screws.
- Installing the screw at an angle may introduce additional bending and tension forces into the fastener if the screw head is not flat on the bearing surface. Care should be given to ensure the fastener is installed perpendicular to the plane of the side plate.

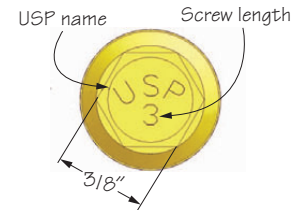


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For Attaching Multi-Ply Wood Trusses or LVL or PSL members, or floor trusses, see pages 19-21.



**AVAILABLE IN
GOLD
COAT**



USP Stock No.	Ref. No.	Description	Dimensions				DF-L / SP ^{2,4,5}					S-P-F ^{2,4,5}					Code Ref.		
			L	SH	T	Finish ¹	Shear (100%)				Withdrawal Capacity	Shear (100%)				Withdrawal Capacity			
							Wood to Wood ³	Steel to Wood ⁶				Wood to Wood ³	Steel to Wood ⁶						
							14 Ga	10 Ga	7 Ga	3 Ga	100%		14 Ga	10 Ga	7 Ga	3 Ga	100%		
WS15	SDS25112	1/4" x 1-1/2"	1/2	1/4	1-1/4	Zinc	---	230	261	259	266	164	---	188	211	190	217	103	12, F29
WS15-GC	---	---	---	---	---	GC	---	---	---	---	---	---	---	---	---	---	---	---	
WS2	SDS25200	1/4" x 2"	2	1/4	1-3/4	Zinc	---	306	307	289	316	160	---	215	244	249	248	117	
WS25	SDS25212	1/4" x 2-1/2"	2-1/2	1/4	2-1/4	Zinc	193	362	352	338	369	199	141	256	292	286	294	141	
WS3	SDS25300	1/4" x 3"	3	3/4	2-1/4	Zinc	227	418	396	387	457	199	164	297	340	322	365	141	
WS35	SDS25312	1/4" x 3-1/2"	3-1/2	3/4	2-3/4	Zinc	233	451	460	454	481	208	181	338	380	356	370	154	
WS45	SDS25412	1/4" x 4-1/2"	4-1/2	1-1/4	3-1/4	Zinc	233	516	588	589	531	214	181	421	460	425	379	163	
WS6	SDS25600	1/4" x 6"	6	1-3/4	4-1/4	Zinc	233	516	588	589	531	214	181	421	460	425	379	163	

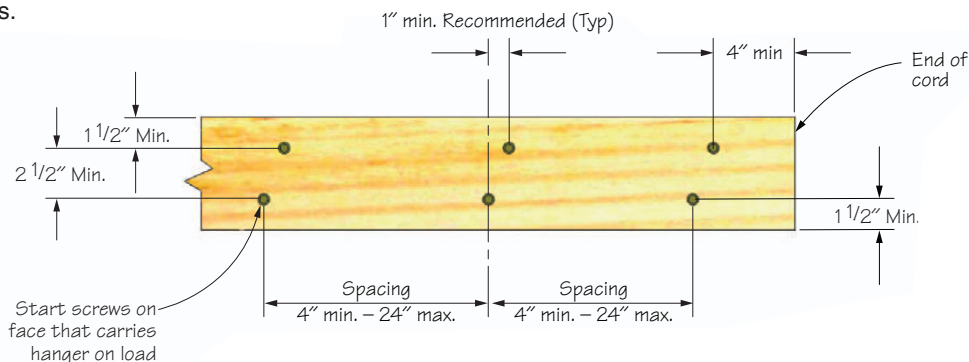
1) Zinc = Yellow Zinc Dichromate; GC = Gold Coat.
 2) Allowable shear loads assume a side plate tensile strength of 45 ksi for 14 gauge and 10 gauge, 52 ksi for 7 gauge and 58 ksi for 3 gauge.
 3) Shear loads for wood-to-wood connections assume a side member thickness of 1-1/2".
 4) Loads are for 100% duration of load factors, and may be increased for other duration factors in accordance with the NDS.
 5) Loads are for shear applications when used as described in this catalog. Please contact USP for applications and installations involving tension forces.
 6) Withdrawal loads for steel-to-wood connections assume a side plate thickness of 1/4" or less.
 New products or updated product information are designated in bold font.

JOINING 2, 3, OR 4 PLY WOOD TRUSSES

The installation instructions and design example shown below are intended for a design professional who will be responsible for determining the location and number of wood screws to adequately transfer all loads on the truss.

Installation:

- Screw spacing shall not be greater than 24" on center and less than 4" on center. However, the location of any individual screw may be adjusted up to one-half the required screw spacing to avoid lumber defects or interference with other hardware.
- Load or hanger spacing shall not be greater than 24" center-to-center.
- The last truss ply must have a minimum of 1 1/4" of screw penetration and no more than 1/8" gap between each ply.
- Screws cannot be installed through metal truss plates unless the Truss Engineer approves predrilling.
- On 2x4 members, use one row of wood screws. On 2x6 and 2x8 use two rows, and on 2x10 use three rows. Stagger all rows.
- The truss bottom chord shall have lateral bracing installed as called out by the Truss Engineer to prevent any displacement from torsional forces.
- Install screws from one side without flipping the truss.
- Top and bottom chords require screws and in some cases the webs may require screws.
- All lateral bracing should be attached to each truss ply.
- Increase edge and end distances if wood splitting occurs.



USP Stock No.	Ref. No.	Description	Dimensions				Finish	Shear Plane Location ³	Allowable Shear Loads (Lbs.) ^{1,2}							
			L	SH	T	Douglas Fir-Larch (G = 0.50)			Southern Pine (G = 0.55)			Spruce-Pine-Fir (G = 0.42)				
						Floor			Roof		Floor	Roof		Floor	Roof	
			100%	115%	125%	100%			115%	125%	100%	115%	125%			
WS3	SDS25300	1/4" x 3"	3	3/4	2-1/4	Zinc	SH, T	227	261	284	266	306	333	164	189	205
WS45	SDS25412	1/4" x 4-1/2"	4-1/4	1-1/4	3-1/4	Zinc	SH, T	233	268	291	266	306	333	181	208	226
WS6	SDS25600	1/4" x 6"	6	1-3/4	4-1/4	Zinc	T	243	279	304	266	306	333	206	237	258
							SH	276	317	345	320	368	400	211	243	264

1) The Truss Engineer shall apply all adjustment factors required per 2005 NDS®.
 2) Loads are based on 1-1/2" thick wood side members. Side and main members of same wood species.
 3) SH = screw shank; T = threads.
 New products or updated product information are designated in bold font.

Design Example

3 Ply with Mixed Wood Species:

Bottom Chord: 2x6 Southern Pine
 Top Chord: 2x4 Spruce-Pine-Fir

WS45 Wood Screw Allowable Loads:

(Assume shear plane across the screw shank)
 Southern Pine: 306 lbs. each at 115%
 Spruce-Pine-Fir: 208 lbs. each at 115%

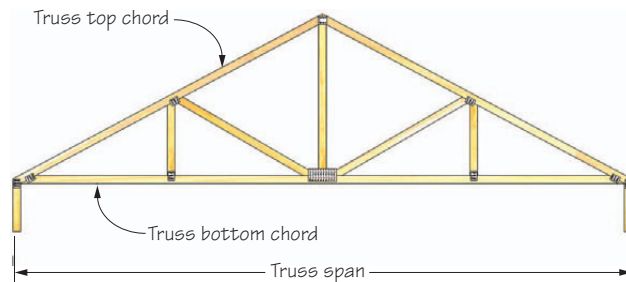
Bottom Chord Wood Screw Spacing:

Using 2 rows of WS45 Wood Screws in 2x6
 $2 \times 306/500 \times \frac{\# \text{ Plys}}{\# \text{ Plys} - 1} = 1.84 \text{ ft.}$
 Use maximum spacing of 24".

Top Chord Wood Screw Spacing:

Only 1 row of WS45 Wood Screws in 2x4 member
 $1 \times 208/60 \times \frac{\# \text{ Plys}}{\# \text{ Plys} - 1} = 5.20 \text{ ft.}$
 Use maximum spacing of 24".

Required Loads:
 Bottom Chord Load: 500 plf
 Top Chord Load: 60 plf
 (Roof Live Load: CD = 1.15)



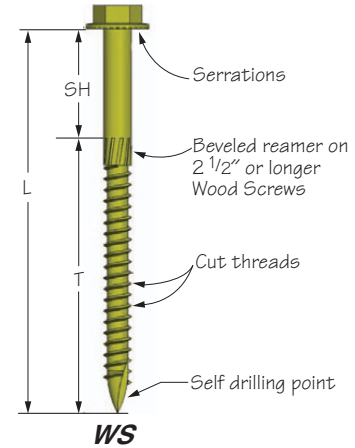
Typical Truss Profile (profile may vary)

continued on next page

JOINING 2, 3, OR 4 PLY LVL, LSL OR PSL MEMBERS

Installation Notes:

- For 2 ply members, wood screws shall be installed with the screw heads in the loaded ply.
- For 3 or 4 ply members, wood screws shall be installed in both outer plys.
- Designer shall specify all wood screws locations.
- Increase edge and end distances if wood splitting occurs.
- Stagger all screws installed into the opposite face.
- A minimum of 2 rows of screws shall be used for all members with $H = 5\ 1/2"$ and larger.



USP Stock No.	Ref. No.	Description	Dimensions			Multiple Members Installation Figure ²	Maximum Allowable Uniform Loads that can be applied to either outside member (Lbs. Per Lineal Ft.) ^{1,3,4,5,6}					
			L	SH	T		DF-L / SP					
							Wood Screw Spacing					
			12" O.C.		18" O.C.		24" O.C.		2		3	
2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2	3	2	3			
WS35	SDS25312	1/4" x 3-1/2"	3-1/2	1	2-1/2	1	970	1460	650	970	490	730
						2	730	1095	490	730	365	550
						4	730	1095	490	730	365	550
						5	650	970	430	650	325	485
WS6	SDS25600	1/4" x 6"	6	1-3/4	4-1/4	3	650	970	430	650	325	485
						6	970	1460	650	970	490	730

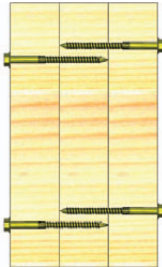
- 1) Based on Zscrew = 243 pounds in Douglas Fir-Larch with a side member thickness of not less than 1-3/4".
 - 2) Load values depicted assume all uniform load is applied to the most narrow outside ply only.
 - 3) Load values neglect any contribution of screws installed to opposite side, even if they extend significantly into the loaded ply.
 - 4) Loads are for normal (100%) duration of load, and may be increased in accordance with the code.
 - 5) Uniform loads in table represent the capacity of the fasteners. The capacity of the LVL or PSL beam may be less and should be checked by a qualified designer or with the manufacturer's literature.
 - 6) A qualified designer shall ensure the adequacy of a 7" wide beam to resist the applied load on one edge; otherwise, the loads shall be uniformly distributed across the width or applied equally on both sides.
 - 7) Wood screws longer than 3-1/2" are not recommended for use with Parallam® PSL or TimberStrand® LSL.
 - 8) For Figures 2, 3, 5, and 6: Stagger the screws on opposite face by half minimum spacing requirements.
- New products or updated product information are designated in bold font.

Figure 1



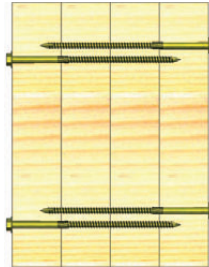
WS35 installed in (2) 1 3/4" Ply

Figure 2



WS35 installed in (3) 1 3/4" Ply

Figure 3



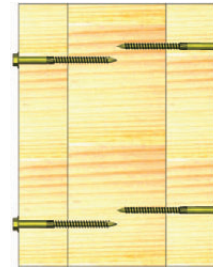
WS6 installed in (4) 1 3/4" Ply

Figure 4



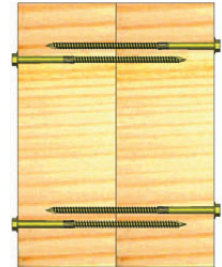
WS35 installed in (1) 1 3/4", (1) 3 1/2" Ply

Figure 5



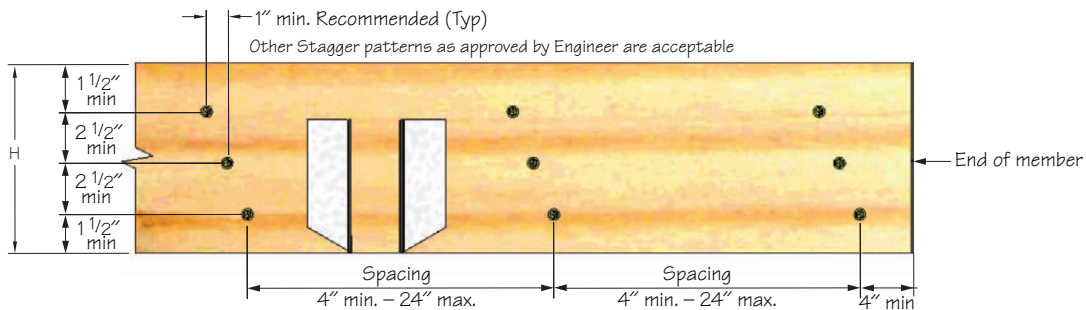
WS35 installed in (2) 1 3/4", (1) 3 1/2" Ply

Figure 6



WS6 installed in (2) 3 1/2" Ply

Recommended Row Guidelines



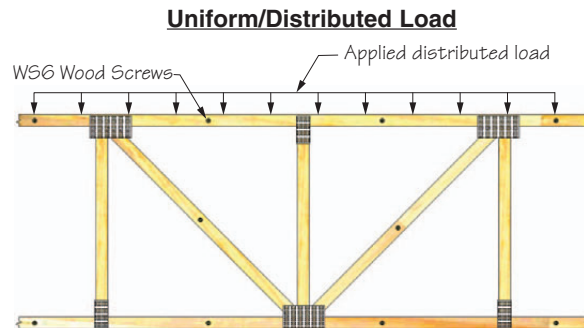
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JOINING 2 PLY 4x2 FLOOR TRUSSES

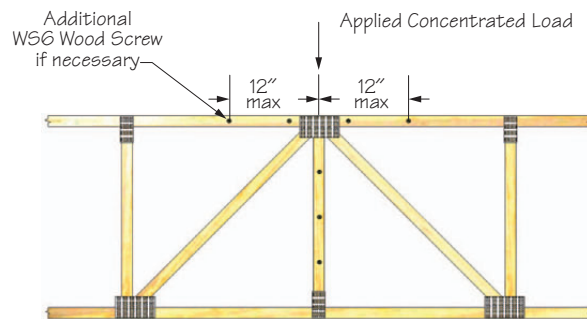
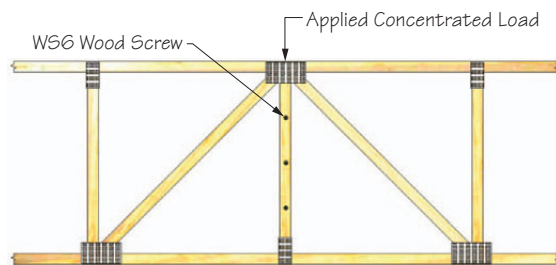
The following information pertains to the use of the USP's WS6 Wood Screws to fasten together a two-ply 4x2 floor truss girder, such that the induced loads are supported by both truss plies. Screw spacing and the location of each specific screw may vary depending on the design criteria for each application, and therefore must be determined by the truss or building designer. However, in the determination of screw locations, the following criterion shall also be considered. These criterion are varying dependent upon how trusses are loaded as follows:

Uniform/Distributed Load

- Screws shall be installed into the top chord with a horizontal spacing between screws of not less than 4-inches on center and not more than 24-inches on center.
- A minimum end distance of 4-inches must be maintained. If necessary, additional screws may be installed in the bottom chord.
- Center screw vertically on 1 1/2" dimension of top chord. If splitting occurs, it may be necessary to pre-drill the holes in accordance with the code.
- The screws shall be installed with the headed end of the screw on the loaded truss. If either ply is "the loaded truss", the screws shall be divided between the two plies, with the spacing on each side twice the minimum indicated above.
- The screws shall not be installed through the metal truss plates, unless approved by the truss designer and the plates are pre-drilled, on each side to a 1/4-inch diameter. Do not drill through the wood.
- The maximum gap between the wood members of the two trusses shall be 1/8-inch.
- The truss designer shall design the truss members with the capacity and capability of the screws in mind, and shall meet all provisions of the code and ANSI/TPI.
- Individual screw locations may need to be adjusted to avoid conflicts with connectors, problematic wood or other framing members. Adjustments should follow the criteria described in this section.



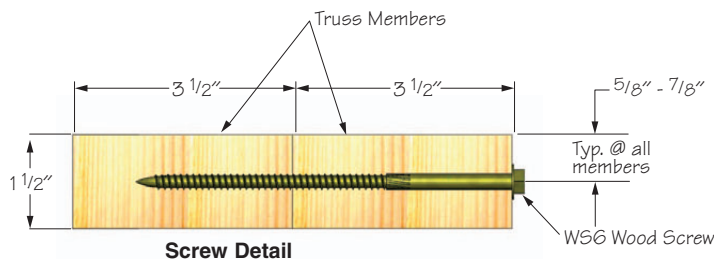
Concentrated/Point Load



Concentrated/Point Load

The placement of fasteners for concentrated loading includes all requirements of uniform loading with the additional following criteria:

- Loads must occur over a vertical member, and the necessary concentration of screws shall be installed in the vertical member.
- Additional screws may be installed on the top chord and adjacent web members if necessary.
- The fasteners should be grouped as close to the concentrated load as possible, but satisfy the same minimum spacing indicated for uniform loading.
- In no case shall the required group of fasteners extend beyond 12-inches from the location of the concentrated load.



USP Stock No.	Ref. No.	Allowable Shear Loads		
		Douglas Fir-Larch (G = 0.50)	Southern Pine (G = 0.55)	Spruce-Pine-Fir (G = 0.42)
		Floor (100%)	Floor (100%)	Floor (100%)
WS6	SDS25600	243	266	206

New products or updated product information are designated in bold font.

LUMBERLOK™

STRUCTURAL CONNECTOR SCREWS



- » Designed specifically for attaching wood connectors!
- » Replaces Nails! Structurally Rated.
- » Developed and tested to meet high load requirements. (High tensile structural capacity)
- » Available in two sizes: #9 x 1 3/8" and #9 x 2 7/8".
- » Torx #20 head to eliminate stripping.
- » Self Tapping Shank Slot.



Double Barrier Corrosion Resistant coating to complement the Gold Coat product line.

The LumberLok Structural Connector Screw is a self-drilling screw that can be used with a number of USP Structural Connectors and also for wood-to-wood applications. The screws feature a T20 Torx® head with integral washer and gimlet point for ease of installation. The twin-lead threads drive in twice as fast as the single lead threads significantly reducing installation time. The USP head stamp identifies the screw length for easy inspection.

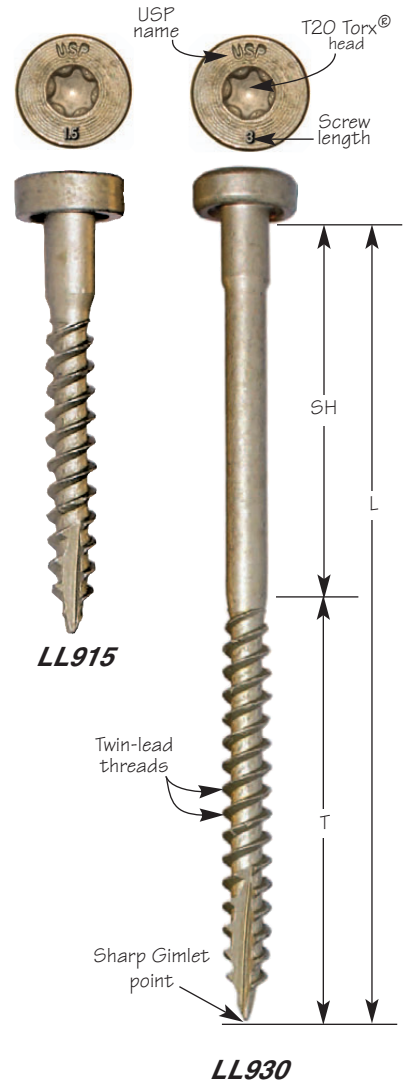
Screw shear capacities are based on a diameter of 0.162" when the shear plane is on the screw shoulder (SH) and 0.109" when the shear plane is on the threads (T). USP LumberLok Structural Connector Screws have a bending yield strength of 180,000 psi

Materials: Low carbon hardened steel.
Finish: See chart



Installation:

- Screws are self-drilling.
- Install using a low speed clutch drill with T20 Torx® bit. The washer head should be flat to the surface. Do not over-tighten the screws.
- Installing the screw at an angle may introduce additional bending and tension forces into the fastener if the screw head is not flat to the bearing surface. Care should be given to ensure the fastener is installed perpendicular to the plane of the fastener hole.



Fasteners

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USP Stock No.	Ref. No.	Description	Dimensions (in.)			Finish ¹	DF-L / SP Allowable Shear (Lbs.) ^{2,3,4,5}				S-P-F Allowable Shear (Lbs.) ^{2,3,4,5}				Code Ref.
			L	SH	T		Wood-to-Wood	Steel-to-Wood			Wood-to-Wood	Steel-to-Wood			
								Withdrawal Capacity	18 Ga	16 Ga		Withdrawal Capacity	18 Ga	16 Ga	
LL915	SD9112	#9 (0.131") x 1-1/2	1 7/8	0.162	1 1/8	GC	--	121	105	131	--	96	113	104	130
LL930	SD9212	#9 (0.131") x 3	2 7/8	0.162	1 1/2	GC	104	146	176	163	100	128	147	138	

1) GC = Gold Coat over Clear Zinc Trivalent.
 2) Allowable shear loads assume a side plate tensile strength of 45 ksi.
 3) Withdrawal loads for steel-to-wood connections assume a side plate thickness of 1/4" or less.
 4) Shear loads for wood-to-wood connections assume a side member thickness of 1 1/2".
 5) Loads are for 100% duration of load factors and may be increased for other duration factors in accordance with the NDS.
 New products or updated product information are designated in bold font.