

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
GOLD
COAT

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.