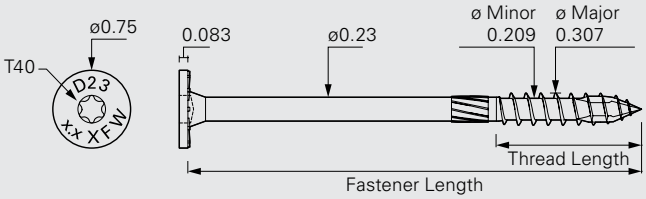
STARBORN®

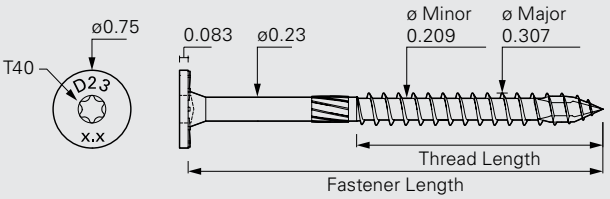
Multi-Ply Dimensional Wood Connections
Structural *F23-W* and *F23*

Starborn® Structural *F23-W* Multi-Ply Dimensional Wood screws are designed for single-sided joining of multi-ply 2x wood beams in interior applications. For exterior applications use *F23* Multipurpose screws.

Structural *F23-W* (Interior Use)



Structural *F23* (Exterior Use)



Installation Instructions

- Select the proper length screw according to Table 2, ensuring a minimum 1" penetration into the main member (final member in the multi-ply assembly).
- Install using a high-torque low-speed drill with a Torx® T40 star driver bit. Pre-drilling is not required, but can be used where lumber is prone to splitting.
- Drive until the washer is drawn firm and flush. Do not overdrive or countersink.
- Caution: Do not connect warped or curved wood members. Forcing alignment with clamps, screws or bolts may decrease the carrying load of the beam or split the wood.

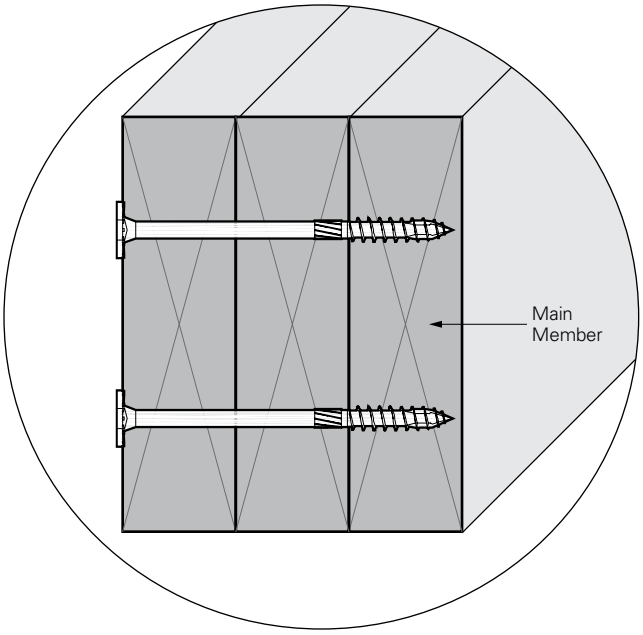


Figure 1

Finish and Coating

- Structural *F23-W* screws have a gray e-coat finish and are designed for interior use only.
- Structural *F23* screws have a black, high-adhesion exterior grade coating and are a code compliant alternative to hot-dip galvanized fasteners. This coating is approved for use in ACQ, Fire Retardant Treated (FRT), and other pressure treated lumbers. *F23* screws are not designed for use in or near saltwater environments.

Table 1: Screw Properties

Product Name	Head Marking	Unthreaded Shank Diameter (in)	Head Type	Screw Length (in)	Thread Length (in)
Structural *F23-W* (interior)	D23 2.9 XFW	0.23	Flat T40	2-7/8	1.4
	D23 4.4 XFW			4-3/8	
	D23 5.9 XFW			5-7/8	
Structural *F23* (exterior)	D23 2.9	0.23	Flat T40	2-7/8	1.4
	D23 4			4	2-3/8
	D23 6			6	2-3/4

For the most up to date version of this Technical Guide and more detailed information contained in the Multi-Ply Applications code compliance report (DrJ TER 1703-03), visit *starbornindustries.com.* For applications outside the scope of this Technical Guide, an engineered design is required.

Figure 2—Minimum Spacing Requirements

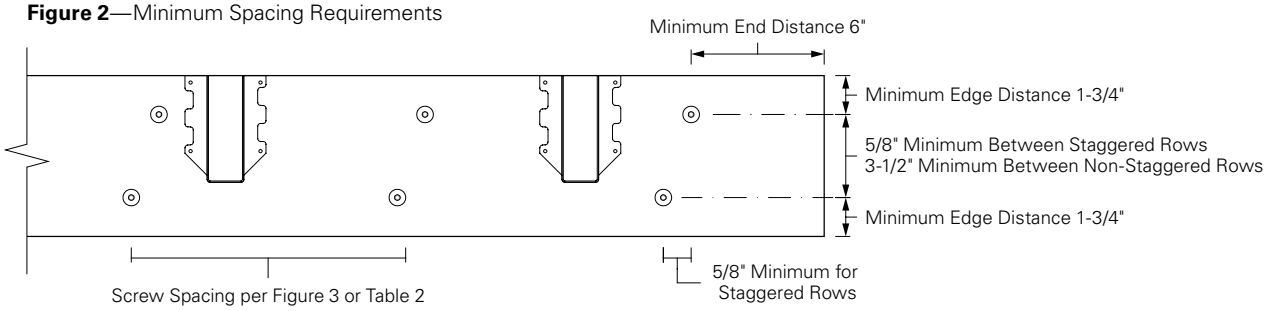


Figure 3—Top Loaded Beams

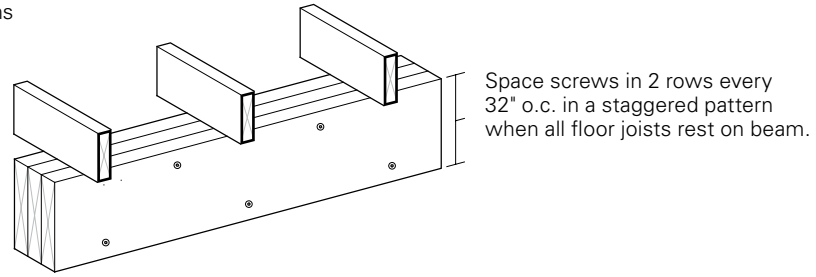


Figure 4—Dimensional Wood Assemblies

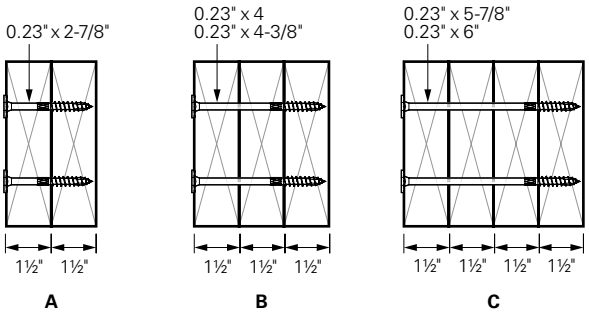


Table 2: Allowable Side Load Capacity (plf)

Wood Species (Specific Gravity)			HF/SPF (0.42)						DF/SP (0.50)					
Assembly	Components	Product: Screw Length (in)	12" o.c.		16" o.c.		24" o.c.		12" o.c.		16" o.c.		24" o.c.	
			2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows
A	2-ply 1-1/2"	F23-W: 2-7/8 F23: 2-7/8	1640	2460	1235	1855	820	1230	1760	2460	1325	1990	880	1320
B	3-ply 1-1/2"	F23-W: 4-3/8 F23: 4	1230	1845	925	1390	615	925	1320	1980	990	1485	660	990
C	4-ply 1-1/2"	F23-W: 5-7/8 F23: 6	1175	1765	885	1330	590	885	1175	1765	885	1330	590	885

1. May be loaded from either the head or point side.
2. Design values include a duration load (C_D) = 1.0. Values may be multiplied by all applicable adjustment factors per NDS.

plf = pounds per linear foot HF = Hem-Fir SPF = Spruce-Pine-Fir DF = Douglas Fir
SP = Southern Pine o.c. = on-center