

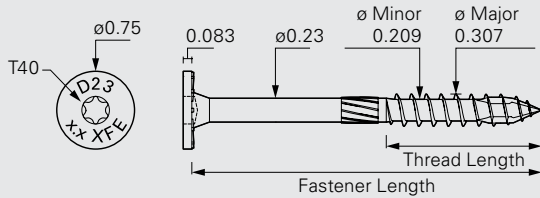


# Multi-Ply Engineered Wood Connections

## Structural *F23-E*

Starborn® Structural *F23-E* Multi-Ply Engineered Wood screws are designed for single-sided joining of multi-ply engineered wood beams in interior applications. For use in LVL, LSL, and PSL.

### Structural *F23-E*



### 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 driver bit. For best results, use a ½" corded drill. 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.

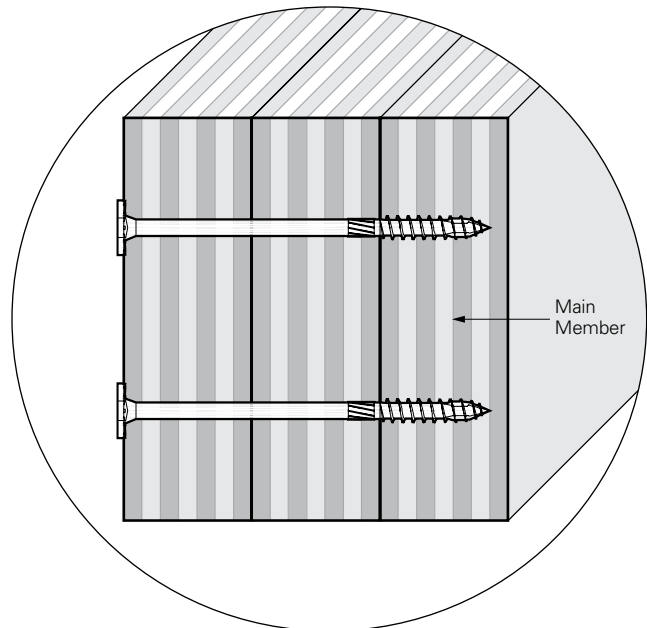


Figure 1

### Finish and Coating

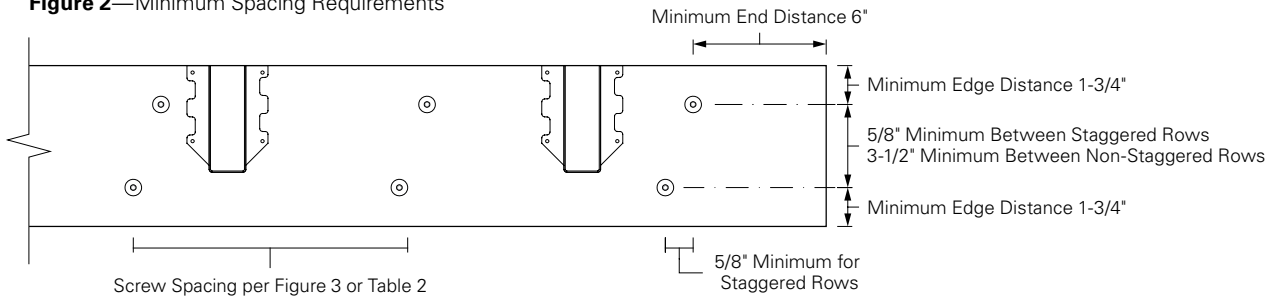
- Structural *F23-E* screws have a gray e-coat finish and are designed for interior use only.
- For exterior applications use Structural *F23* black coated screws.

Table 1: Screw Properties

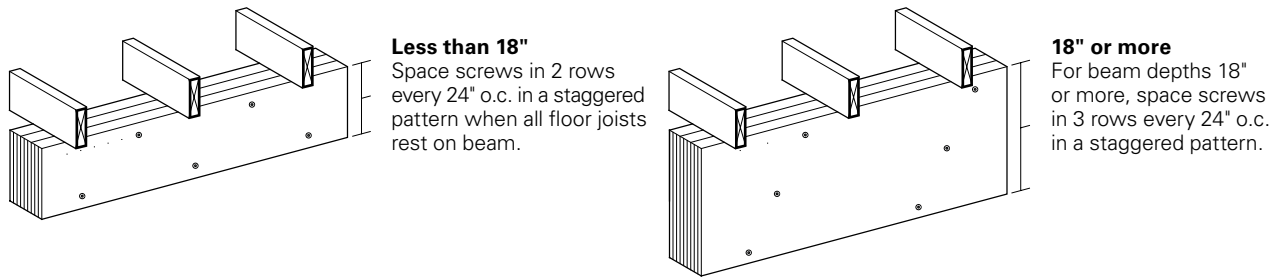
Product Name	Head Marking	Unthreaded Shank Diameter (in)	Head Type	Screw Length (in)	Thread Length (in)
Structural <i>F23-E</i>	D23 3.4 XFE	0.23	Flat T40	3-3/8	1-1/2
	D23 5 XFE			5	
	D23 6.8 XFE			6-3/4	

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](http://starbornindustries.com). For applications outside the scope of this Technical Guide, an engineered design is required.

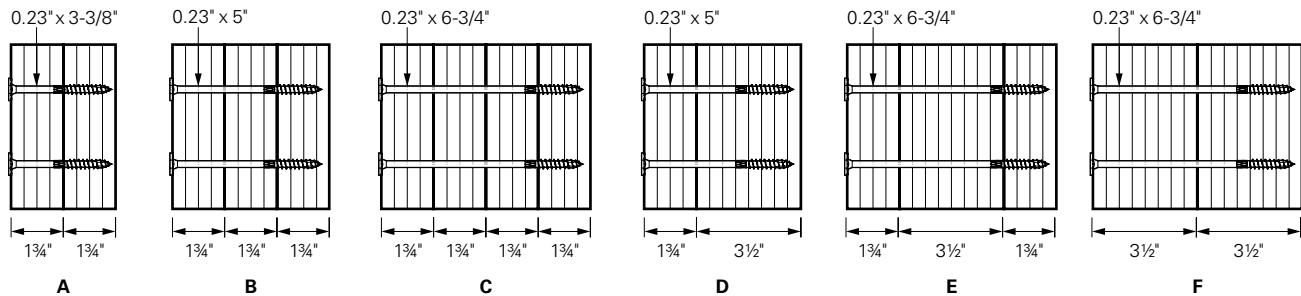
**Figure 2**—Minimum Spacing Requirements



**Figure 3**—Top Loaded Beams



**Figure 4**—Engineered Wood Assemblies



**Table 2: Allowable Side Load Capacity (plf)**

Assembly	Components	Screw Length (in)	12" o.c.		16" o.c.		24" o.c.	
			2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows
A	2-ply 1-3/4"	3-3/8	1760	2640	1325	1990	880	1320
B	3-ply 1-3/4"	5	1320	1980	990	1485	660	990
C	4-ply 1-3/4"	6-3/4	1175	1765	885	1330	590	885
D	2-ply 1-3/4" & 3-1/2"	5	1320	1980	990	1485	660	990
E	3-ply 1-3/4" & 3-1/2"	6-3/4	1175	1765	885	1330	590	885
F	2-ply 3-1/2"	6-3/4	1760	2640	1325	1990	880	1320

1. May be loaded from either the head or point side.
2. Engineered Wood Product (EWP) minimum specific gravity of 0.50 or greater.
3. 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      LVL = Laminated Veneer Lumber      LSL = Laminated Strand Lumber      PSL = Parallel Strand Lumber  
o.c. = on-center