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# TECHNICAL DATA

Timberlinx recommends use of the following reference design values when designing connections that include one two-pin pipe connector (A095, B095, A135, A155, B155, A175, B175) or a pair of one-pin half connectors (two A475).

Reference Design Values for Timberlinx Connectors			
Load Direction	Timber Species	CSA Limit States Design Capacity (pounds)	CSA Working Stress Design Capacity (pounds)
Tension parallel to grain	Eastern White Pine	4,700	3,270
	Douglas Fir	4,790	3,330
	Port Orford Cedar	5,080	3,530
	White Oak	7,640	5,320
Tension perpendicular to grain	Eastern White Pine	2,780	1,930
	Douglas Fir	3,170	2,210
	Port Orford Cedar	3,500	2,440
	White Oak	7,640	5,320

Connector types AA675 and AB675 have increased capacity, as much as twice that of those with one pin. However, in no case can the connector capacity exceed the value associated with white oak in the above table, for which yielding of the connector tube is the limiting factor.

When the Timberlinx connector is installed at an angle to the grain (such as in a timber-frame knee brace) and subjected to direct tension loading, use of the Hankinson formula is recommended. For this case, the design value  $Z_{\theta}$  of the inclined connector can be determined as



$$Z_{\theta} = \frac{Z_{\parallel} Z_{\perp}}{Z_{\parallel} \sin^2 \theta + Z_{\perp} \cos^2 \theta}$$

where:

$Z_{\theta}$  = the tension capacity of the connector when loaded at an angle to grain

$Z_{\parallel}$  = the tension capacity of the connector when loaded parallel to grain

$Z_{\perp}$  = the tension capacity of the connector when loaded perpendicular to grain

$\theta$  = the angle between the tube connector and the longitudinal direction of the timber

These recommend reference design values were determined from physical tests of connections using the A475 connector and followed the procedures of ASTM D 1761. Detailing dimensions corresponded to CSA 086-01.

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