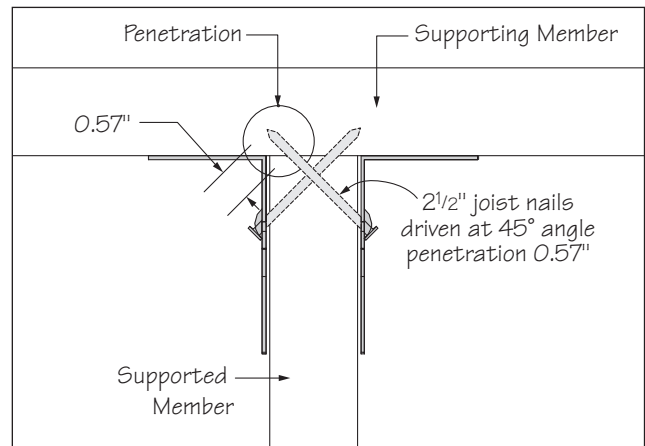


HUS, JUS & MUS SLANT NAIL HANGERS AND THE USE OF PNEUMATIC GUNS

USP addresses the reduction of load capacities of the *HUS*, *JUS* & *MUS* Slant Nail Joist Hangers when joist nails are installed with a pneumatic nail gun. Air driven nails are an inadequate substitution of double shear slant nails for the reason that a common pneumatic nail length of 2½" is not long enough to provide adequate penetration into the supporting member. The allowable load on the connection will be significantly reduced without the correct installation of the slant nail into the joist. In this installation, the *HUS*, *JUS* & *MUS* hangers have no load capacity when installing 2½" pneumatic nails as a double shear slant nail into the joist. The high allowable load of these hangers is achieved through the installation of double shear slant nails. Reference the chart below for Full and Reduced Shear Capacities for specific nail diameters.

USP publishes nail design shear and withdrawal load values based on the American Forest and Paper Association's National Design Specification for Wood Construction (NDS®). The 2005 NDS® calculation criteria states to achieve full shear value of a nail, the minimum nail embedment must equal at least 10 nail diameters. To achieve a reduced nail shear value, the nail must be embedded at least 6 nail diameters. **Nail penetration of less than 6 nail diameters does not have an allowable shear value.**



Drawing above illustrates the penetration achieved with a 2½" joist nail driven at a 45° angle into the supporting member.

	Nail Diameter D (in.)	Nail Length (in.)	Minimum Penetration		Slant Nail Penetration for Joist Nail Installed at 45° Angle
			FULL Shear Load 10D (in.)	REDUCED Shear Load 6D (in.)	
Common Available Pneumatic Nail Sizes	0.162	2-1/2	1.62	0.972	0.57
	0.148	2-1/2	1.48	0.888	0.57
	0.148	1-1/2	1.48	0.888	0
	0.131	2-1/2	1.31	0.786	0.57
	0.131	1-1/2	1.31	0.786	0

Note: Nail selection can be confusing. Nail manufacturers assign different diameters and lengths to nails of the same name. (i.e. 16d common nail could have a diameter of 0.162, 0.148, or 0.131 with a length of 2½" or 1½" in any combination) The length and diameter are essential.

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