

Framing Connectors

Introduction

Framing connectors are made of sheet metal and are manufactured with prepunched holes to accept nails as shown in Table 1 below.

They are used to provide a more positive connection between wood members by allowing the nails securing the framing connector to be loaded laterally rather than in partial withdrawal as would be the case if the members were toenailed together. They are also used in frame construction where additional protection is required against uplift from seismic or wind induced forces.

Framing connectors are suitable for most joints in wood framing of 38mm (2" nom.) and thicker lumber. These include connections between joists and headers; rafters and plates or ridges; purlins and trusses; and studs and sill plates.

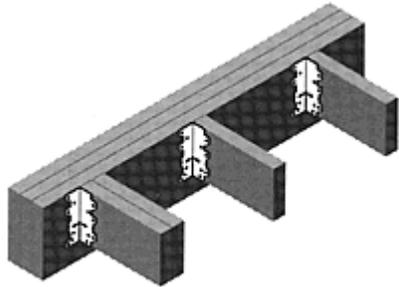
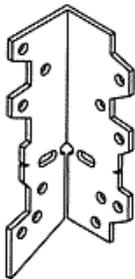
The load transfer capacity of framing connectors is affected by the thickness of steel used. Standard duty framing connectors are commonly made of 18-gauge zinc coated sheet steel.

Medium and heavy-duty anchors are made from heavier zinc-coated steel usually 12 gauge and 7 gauge respectively. They are suitable for similar connections between larger members where the loads to be carried exceed those permissible for the light anchors such as: header or beam to post; purlin to beam; and purlin to truss.

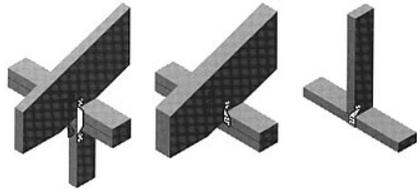
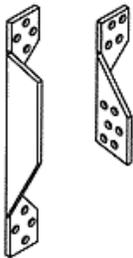
Special nails are provided with framing anchors, and the required number must be used with each anchor to provide the load carrying capacity of the anchor. Anchors are typically used in pairs to avoid eccentricity.

Table 1: Framing Connectors

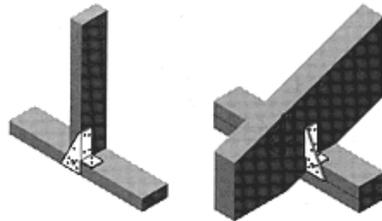
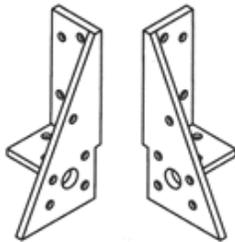
All-purpose framing anchor



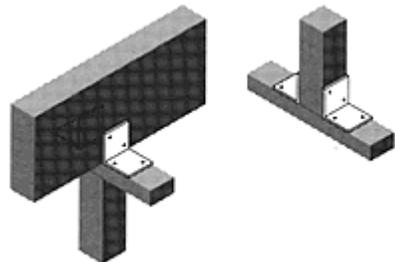
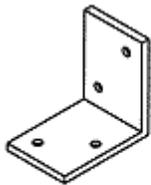
Tie-down framing anchor



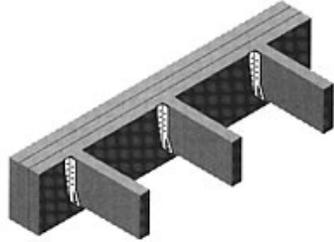
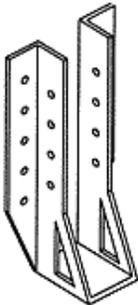
Triple grip framing anchor



Framing angle



Joist and purlin hangers

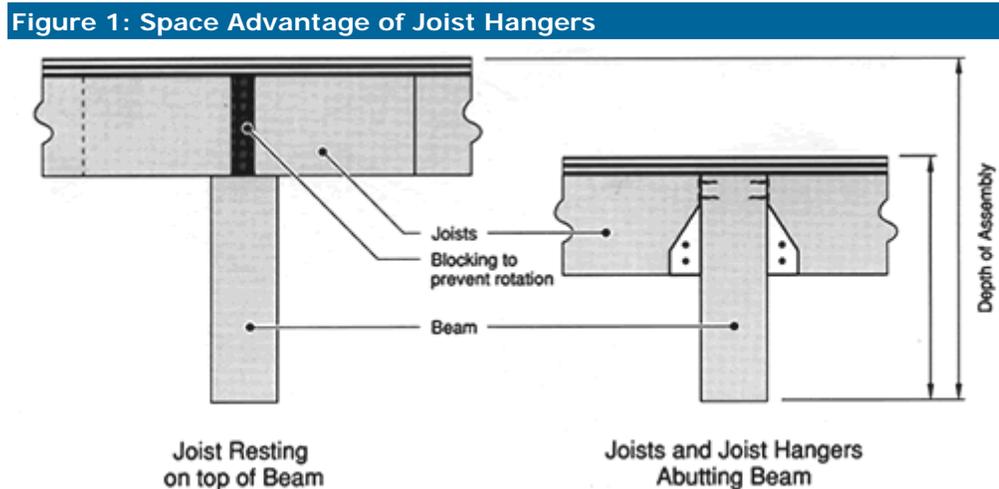


Joist and Purlin Hangers

Framing connectors are manufactured to connect joists and purlins to supporting wood members. They are generally available for member sizes from 38 x 89mm (2" x 4") joists to 89 x 377mm (4" x 14") purlins or double joists.

Joists and purlin hangers are made from light gauge galvanized sheet metal and are affixed to wood members with special nails. As with framing anchors, the required number of nails must be used to provide the load-carrying capacity.

Hangers can reduce the overall depth of a floor or roof assembly or increase clearance below the framing where joists abut headers rather than rest on top of them as in Figure 1 below.



Truss Plates

Truss plates are light gauge metal plates used to connect prefabricated light frame wood trusses. Truss plates are produced by punching light gauge galvanized steel (usually 16, 18, or 20 gauge) so that the teeth protrude from one side.

Since most truss plate designs are proprietary, North American engineering design standards do not provide design values but rather require that plates be tested and accredited to establish design values. There are a number of truss plate manufacturers and each has its own tooth pattern for which design values have been determined through testing and accreditation by independent testing agencies.

Light frame trusses connected with truss plates should not be used in corrosive conditions, or when fire-retardant treated lumber in wet service conditions due to the potential for loss of strength if deterioration of the teeth takes place.

Truss plates are installed by first orienting the members to be connected and then pressing the plate into the members using a hydraulic press, roller, or ram.

Good practice dictates that: identical truss plates placed on opposite faces are directly opposite each other; the plates are not deformed during installation; the teeth are normal to the surface of the lumber; the teeth are fully imbedded in the wood so that the plate is tight to the wood surface (the plate must not be imbedded into the lumber deeper than half the plate thickness); and the lumber where the plates are situated must not contain wane, loose knots, or knot holes.

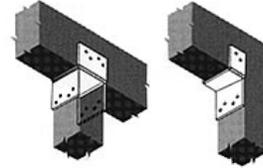
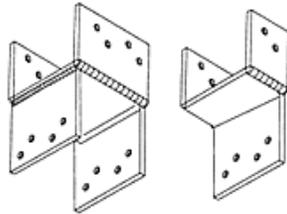


Miscellaneous

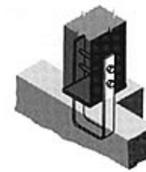
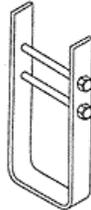
Some other types of light metal connectors are shown in Table 2 below, and many other types can be specially ordered to suit a specific need.

Table 2: Miscellaneous Connectors

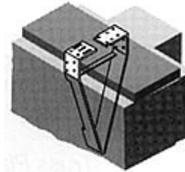
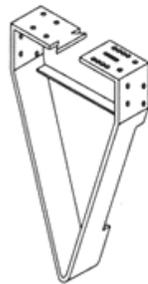
Post caps



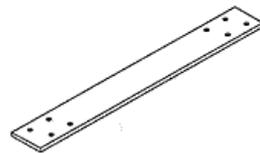
Post anchor



Sill plate anchor



Straps



Nail-on plates

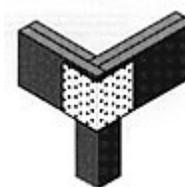
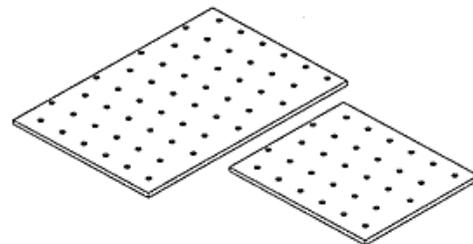
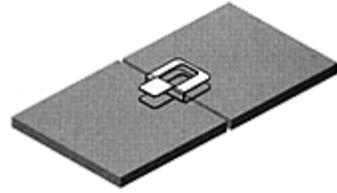
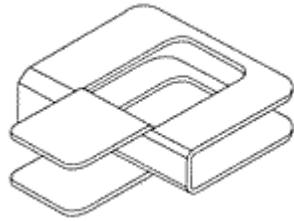
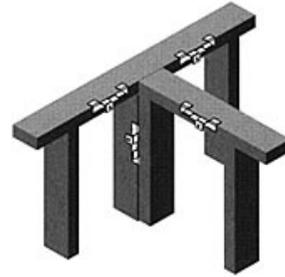
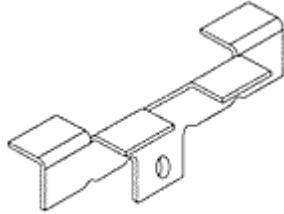


Table 2 (con't): Miscellaneous Connectors

H-clip



Back-up gypsum wallboard clip



Links

Cleveland Steel

Mitek Canada, Inc.

Simpson Strong-Tie

USP Connectors