Holdowns & Tension Ties

**PAHD/HPAHD Strap Tie Holdowns**

Wood-to-concrete connectors that satisfy engineering and code requirements.

**MATERIAL:** HPA—10 gauge; all others—12 gauge  **FINISH:** Galvanized

**INSTALLATION:** Use all specified fasteners. See General Notes.

- **Install before concrete pour with a StrapMate® or other holding device.**
- **Strap may be bent one full cycle.** Bending the strap 90° to aid wall placement may cause splitting behind the strap. If the strap is 1" or less, measured from the embedment line to the bottom of the strap, full loads apply. For spalls between 1" and 4" (see illustration on page 45), the allowable load is 0.90 of the table loads.
- **For two pour installations spalling is measured from the first pour.**
- **Nail strap from bottom up.**
- **Where fewer fasteners are used in the structural wood member, reduce loads according to the code.** A wood splitting problem may occur when holdowns are nailed to lumber less than 3\(\frac{1}{2}\)" wide. To lessen splitting of 3x's or double 2x's, either fill every nail hole with 10dx1\(\frac{1}{2}\)" nails or fill every other nail hole with 16d commons. Reduce the allowable load based on the size and quantity of fasteners used.
- **Unless otherwise noted, do NOT install where:** (a) a horizontal cold joint exists within the embedment depth between the slab and foundation wall or footing beneath, unless provisions are made to transfer the load, or (b) the slab is designed to resist the load imposed by the anchor; or (c) slabs are poured over concrete block foundation walls.
- **To get the full table load, the minimum center-to-center spacing is twice the embedment depth when resisting tension loads at the same time.**
- **To tie multiple 2x members together, the Designer must determine the fasteners required to join members to act as one unit without splitting the wood.**
- **Additional studs attached to the shearwall studs or post may be required by the Designer for wall sheathing nailing.**

**FOUNDATION CORNERS:** Nail and bolt quantities have been reduced when the load is limited by tested concrete pullout strength (fill holes from bottom up); additional nail holes need not be filled. Nail and bolt quantities may be reduced further for less than 8" corner distance design loads—use code allowable loads for fasteners used in shear.

**TWO-POUR SYSTEMS:** When a cold joint exists between slab and foundation, the holdown will be lower on the stud wall since the embedded portion of the holdown must be in the foundation. Rebar should be a minimum length of 2x embedment depth + 12" (except corner installations, page 45). Filler fasteners are used, reducing allowable loads. Loads are calculated using a 4" slab over 8" and 8" foundation walls.

**PAHD42, HPAHD22, HPAHD22-2P HOLDOWNS:** Designed to be installed at the edge of concrete. Tests determined the pullout strength with one horizontal #4 rebar in the shear cone. Rebar should be a minimum length of 2x embedment depth + 12" (except corner installations, page 45). Install before pouring concrete by nailing to form. Installation holes allow nailing to the form, resulting in 1" deeper embedment; see illustration.

**OPTIONS:** See also STHD Holdowns, LIT, HTT Tension Ties.

**CODES:** See page 12 for Code Reference Key Chart.

### SINGLE POUR INSTALLATIONS

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### INSTALLATION 1

Typical HPAHD Single Pour Edge Installation

### INSTALLATION 2

Typical HPAHD Single Pour Corner and Endwall Installation

### INSTALLATION 3

Typical HPAHD Single Pour Rim Joint Installation (Reduce allowable load based on quantity of effective nails used.)
TWO POUR INSTALLATIONS

Spalling may occur if the anchor is bent horizontally 90° before installation, and then bent up vertically to attach to the stud. Load reduction may apply.

INSTALLATION 4
Typical HPAHD22-2P Two Pour Edge Installation. Unless noted, install other models with bend embedment line at cold joint between slab and foundation.

INSTALLATION 5
Typical HPAHD Two Pour Corner Installation

SPALL REDUCTION SYSTEM
FOR PAHD AND HPAHD

FEATURES
• Secures holdown to wood form-board.
• Allows for proper side-cover.
• Keeps strap vertical.
• Prevents tilting or twisting of strap during the concrete pour.
• Uses one 16d duplex nail.

BENEFITS
• Greatly reduces spalling and costly retrofits.
• Helps prevent strap movement parallel and perpendicular to plate.
• Decreases possibility of misinstallation of strap to wood member.
• Simple to use: — Common jobsite nail.
  — No additional expense.

When using keyhole feature, care should be taken when removing form boards. If concrete is not set, the duplex nail will move the strap placement.

SPALLING
Spalling may occur if the anchor is bent horizontally 90° before installation, and then bent up vertically to attach to the stud. Load reduction may apply.

PA Strap Tie Holdowns

Wood-to-concrete connectors that satisfy engineering and code requirements.

MATERIAL: 12 gauge
FINISH: Galvanized or ZMAX® coating
INSTALLATION: • Use all specified fasteners.
  • Refer to technical bulletin T-PAUPLIFT (see page 191 for details)

CODES: See page 12 for Code Reference Key Chart.

These products are available with additional corrosion protection. Additional products on this page may also be available with this option, check with Simpson Strong-Tie for details.

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1. Loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. 16d sinkers (9 ga x 3¼”) or 10d commons may be substituted for the specified 16d commons at 0.84 of the table loads.
3. Optional fastener holes provided. Calculate loads according to the code to a maximum of 3685 lbs. Minimum embedment is 4”; 5” to the nearest edge.


Pilot holes for manufacturing purposes and should not be used to attach to framing members unless approved by the Engineer of Record or specified in Simpson Strong-Tie literature.