

PA/PAHD/HPAHD HOLDOWNS

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

MATERIAL: HPA—10 gauge x 2 1/4"; all others—12 gauge x 2 1/4"

FINISH: Galvanized. Selected products available in Z-MAX coating; see page 5.

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

- See StrapMate, page 29, for attachment to form board.
- Bending the strap 90° to aid wall placement may cause spalling behind the strap. If the spall is 1" or less, measured from the embedment line to the bottom of the spall, full loads apply. For spalls between 1" and 4" (see illustration), the allowable load is 0.90 of the table loads.
- 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 1/2" wide. To lessen splitting of 3x's or double 2x's, either fill every nail hole with 10d x 1 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 the slab is designed to resist the load imposed by the anchor; or (b) 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.
- There is an increase in the amount of deflection if the strap is installed on the outside of the shear panel versus under the shear panel directly to the framing. Ask for Form T-PLYWOOD for complete details.

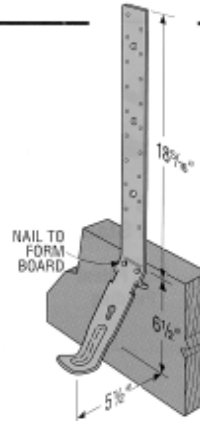
FOUNDATION CORNERS: Nail and bolt quantities have been reduced when the load is limited by tested concrete pullout strength (fill holes from bottom up); additional nail holes need not be filled. Nail and bolt quantities may be reduced further for less than 8" corner distance design loads—use code allowable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

TWO-POUR SYSTEMS: When a cold joint exists between slab and foundation, the holddown will be lower on the stud wall since the embedded portion of the holddown must be in the foundation (see table footnote 1 for exception). Fewer fasteners are used, reducing allowable loads. Loads are calculated using a 4" slab over 6" 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 31). 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 HDA Holdowns, LTT, MTT, HTT Tension Ties.

CODES: BOCA, ICBO, SBCCI NER-393 and NER-469.



Typical PAHD42 before the Concrete Pour (HPAHD22-2P and HPAHD similar)



SPALL REDUCTION SYSTEM FOR THE STHD AND HPAHD

Keyhole feature allows attachment of duplex nail before the concrete pour to hold the STHD and HPAHD Strap-Ties in place. (see page 28)

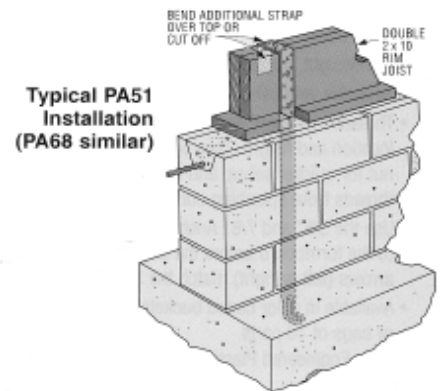
STEEL PRODUCTS

| Model No. | L | Min. Embed. Depth | Nails | Allowable Uplift Loads | |
|-----------|----|-------------------|-------|------------------------|-------|
| | | | | (133) | (160) |
| PA51 | 51 | 4 | 9-16d | 1690 | 2030 |
| PA68 | 70 | 4 | 9-16d | 1690 | 2030 |

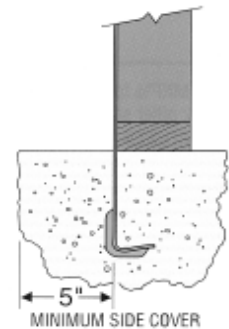
1. Loads have been increased 33% and 60% for earthquake or wind loading with no further increase allowed.
2. 16d sinkers (9 ga x 3 1/4") or 10d commons may be substituted for the specified 16d commons at 0.85 of the table loads.
3. Optional fastener holes provided. Calculate loads according to the code to a maximum of 3685 lbs. Minimum embedment is 4"; 5" to the nearest edge.

| Model No. | Min Stem Wall | Le | Nails | Avg UH 2000 psi 8" | Allowable Loads (133 & 160) | | | | | | | |
|--------------------|---------------|---------|--------|--------------------|-----------------------------|------|------|------|-------------------|------|------|------|
| | | | | | 2000 psi Concrete | | | | 2500 psi Concrete | | | |
| | | | | | 1/2" | | 8" | | 1/2" | | 8" | |
| | | | | | 133 | 160 | 133 | 160 | 133 | 160 | 133 | 160 |
| SINGLE POUR | | | | | | | | | | | | |
| PAHD42 | 6 | 6 1/2" | 12-16d | 5891 | 920 | 920 | 1960 | 1960 | 920 | 920 | 2205 | 2205 |
| | 8 | | 16-16d | 8555 | 1050 | 1050 | 2620 | 2620 | 1050 | 1050 | 2945 | 2945 |
| HPAHD22 | 6 | 10" | 16-16d | 9494 | 1315 | 1315 | 2965 | 2970 | 1315 | 1315 | 3330 | 3335 |
| | 8 | | 23-16d | 14420 | 2030 | 2030 | 4065 | 4590 | 2030 | 2030 | 4570 | 5160 |
| DOUBLE POUR | | | | | | | | | | | | |
| PAHD42 | 6 | 6 1/2" | 12-16d | 5891 | 920 | 920 | 1960 | 1960 | 920 | 920 | 2205 | 2205 |
| | 8 | | 12-16d | 8555 | 1050 | 1050 | 2005 | 2405 | 1050 | 1050 | 2255 | 2705 |
| HPAHD22 | 6 | 10" | 16-16d | 9494 | 1315 | 1315 | 2965 | 2970 | 1315 | 1315 | 3330 | 3335 |
| | 8 | | 19-16d | 14420 | 2030 | 2030 | 3360 | 4030 | 2030 | 2030 | 3775 | 4530 |
| HPAHD22-2P | 6 | 14 3/8" | 16-16d | 9494 | 2030 | 2030 | 2830 | 2970 | 2030 | 2030 | 3180 | 3335 |
| | 8 | | 23-16d | 14420 | 2030 | 2030 | 4065 | 4590 | 2030 | 2030 | 4570 | 5160 |

1. HPAHD22 may be embedded 4" into the slab and 6" into the 8" stemwall beneath for a maximum load of 2810 lbs. at 8" minimum from the closest corner, and 1200 lbs. at 1/2" from the closest corner (like installation 4).
2. Allowable loads have been increased 33% and 60% for earthquake or wind loading with no further increase allowed; reduce for other load durations according to the code.
3. 16d sinkers (9 ga x 3 1/4") or 10d commons may be substituted for specified 16d commons at 0.84 of table loads.
4. Minimum nail end distance to prevent splitting is 10x the nail diameter, or 1 3/4" for 16d nails.
5. Calculate loads using straight line interpolation for corner distances between 1/2" and 8".
6. Optional fastener holes are provided on selected products. Because the product is limited by the concrete foundation, you may not need to install optional fasteners.
7. Strap may be bent one full cycle.
8. Rim Joist application: see Installation 3 for corner condition.



Typical PA51 Installation (PA68 similar)



Typical PA connecting Stud to Foundation (use PAHD42 or HPAHD22 for edge applications)