

GENERAL INFORMATION

POWER-STUD® HD5

Hot-Dip Galvanized Wedge Expansion Anchor

PRODUCT DESCRIPTION

The Power-Stud HD5 anchor is a fully threaded, torque-controlled, wedge expansion anchor. Suitable base materials include normal-weight concrete, sand-lightweight concrete and grouted concrete masonry. The anchor is manufactured with a hot-dip galvanized carbon steel body and stainless steel expansion clip. Nut and washer are included.

GENERAL APPLICATIONS AND USES

- Racking and Shelving
- Material Handling
- Support Ledgers
- Storage Facilities
- Fencing
- Repairs
- Maintenance
- Retrofits

FEATURES AND BENEFITS

- + Consistent performance in high and low strength concrete
- + Nominal drill bit size is the same as the anchor diameter
- + Anchor can be installed through standard fixture holes
- + Length ID code and identifying marking stamped on head of each anchor

GUIDE SPECIFICATIONS

CSI Divisions: 03 16 00 - Concrete Anchors, 04 05 19.16 - Masonry Anchors and 05 05 19 Post - Installed Concrete Anchors. Expansion Anchors shall be Power-Stud HD5 as supplied by DEWALT, Towson, MD. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

MATERIAL SPECIFICATIONS

| Anchor Component | Specification |
|-------------------------------------|--|
| Anchor body | Medium carbon steel |
| Hex Nut | Carbon steel, ASTM A 563, Grade A |
| Washer | Carbon steel ASTM F 844; meets dimensional requirements of ANSI B18.22.2, Type A plain |
| Expansion wedge (clip) | Type 304 Stainless Steel |
| Plating (anchor, body, nut, washer) | Zinc Galvanized According to ASTM A 153 Class C or D |

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POWER-STUD HD5 ASSEMBLY

THREAD VERSION

- UNC Threaded Stud

ANCHOR MATERIALS

- Hot-dip galvanized carbon steel body, stainless steel expansion clip, hot-dip galvanized nut and washer

ROD/ANCHOR SIZE RANGE (TYP.)

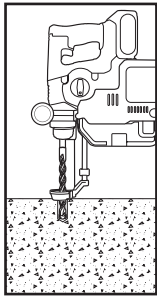
- 3/8" diameter through 3/4" diameter

SUITABLE BASE MATERIALS

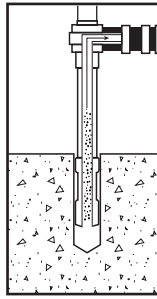
- Normal-weight concrete
- Sand-lightweight concrete
- Grouted concrete masonry (CMU)

INSTALLATION INSTRUCTIONS

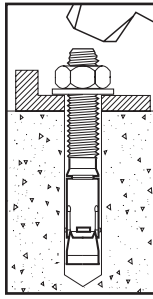
Installation Instructions for Power-Stud HD5



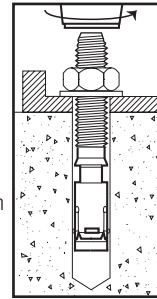
Step 1
Using the proper drill bit size, drill a hole into the base material to the required depth. The tolerances of the drill bit used should meet the requirements of ANSI Standard B212.15.



Step 2
Remove dust and debris from the hole during drilling (e.g. dust extractor, hollow bit) or following drilling (e.g. suction, forced air) to extract loose particles created by drilling.

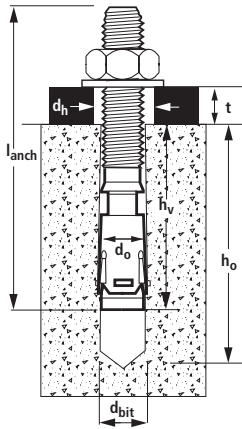


Step 3
Position the washer on the anchor and thread on the nut. If installing through a fixture, drive the anchor through the fixture into the hole. Be sure the anchor is driven to the minimum required embedment depth, h_v .



Step 4
Tighten the anchor with a torque wrench by applying the required installation torque, T_{inst} .

Anchor Specifications



Length Identification

| Mark | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| From | 1-1/2" | 2" | 2-1/2" | 3" | 3-1/2" | 4" | 4-1/2" | 5" | 5-1/2" | 6" | 6-1/2" | 7" | 7-1/2" | 8" | 8-1/2" |
| Up to but not including | 2" | 2-1/2" | 3" | 3-1/2" | 4" | 4-1/2" | 5" | 5-1/2" | 6" | 6-1/2" | 7" | 7-1/2" | 8" | 8-1/2" | 9" |

Length identification mark indicates overall length of anchor.

REFERENCE DATA (ASD)

Installation Specification for Power-Stud HD5 in Concrete

| Anchor Property/ Setting Information | Notation | Units | Nominal Anchor Diameter (inch) | | | | | | | | | |
|---|------------|-------------------|--------------------------------|----------------|-----------------|----------------|-----------------|----------------|------------------|----------------|----------------|----------------|
| | | | 3/8 | | 1/2 | | 5/8 | | 3/4 | | | |
| Anchor outside diameter | d | in. (mm) | 0.375 (9.525) | | 0.500 (12.7) | | 0.625 (15.9) | | 0.750 (19.05) | | | |
| Minimum diameter of hole clearance in fixture | d_h | in. (mm) | 7/16 (11.1) | | 9/16 (14.3) | | 11/16 (17.5) | | 13/16 (20.6) | | | |
| Nominal drill bit diameter | d_{bit} | in. (mm) | 3/8 ANSI | | 1/2 ANSI | | 5/8 ANSI | | 3/4 ANSI | | | |
| Minimum nominal embedment depth | h_v | in. (mm) | 1-3/4 (44) | 2-3/8 (60) | 2 (51) | 2-1/2 (64) | 3-3/4 (95) | 2-3/8 (60) | 3-3/8 (86) | 4-5/8 (117) | 3-3/8 (66) | 5 (127) |
| Minimum hole depth | h_o | in. (mm) | 2 (51) | 2-5/8 (67) | 2-1/2 (64) | 3 (76) | 4-1/4 (108) | 2-7/8 (73) | 3-7/8 (98) | 5-1/8 (130) | 3-7/8 (98) | 5-1/2 (140) |
| Minimum member thickness | h_{min} | in. (mm) | 3-1/4 (83) | 4 (102) | 4 (102) | 5 (127) | 6 (152) | 5 (127) | 6 (152) | 7 (178) | 6 (152) | 10 (254) |
| Minimum overall anchor length ¹ | l_{anch} | in. (mm) | 3 (76) | 3 (76) | 2-3/4 (70) | 3-3/4 (95) | 4-1/2 (114) | 3-1/2 (89) | 5 (127) | 6 (152) | 4-3/4 (121) | 5-1/2 (140) |
| Minimum edge distance | c_{min} | in. (mm) | 3 (76) | 2-1/4 (57) | 4 (102) | 5-1/4 (133) | 4 (102) | 4-1/4 (108) | 5-1/2 (140) | 4-1/4 (108) | 5 (127) | 4-1/2 (114) |
| Minimum spacing distance | s_{min} | in. (mm) | 5-1/4 (133) | 3-3/4 (95) | 6 (152) | 7-1/4 (184) | 5 (127) | 7-1/8 (181) | 10-1/8 (257) | 4-1/4 (108) | 9 (229) | 6 (152) |
| Critical edge distance | c_{ac} | in. (mm) | 5 (127) | 6-1/2 (165) | 8 (203) | 8-1/2 (216) | 8 (203) | 8 (203) | 6 (152) | 10 (254) | 5 (127) | 12 (305) |
| Installation torque (Normal-weight concrete) | T_{inst} | ft.-lbf. (N-m) | 20 (27) | | 40 (54) | | 60 (81) | | 110 (149) | | | |
| Installation torque (Grout Filled CMU) | T_{inst} | ft.-lbf. (N-m) | 20 (27) | | 40 (54) | | 50 (68) | | 80 (108) | | | |
| Torque wrench/socket size | - | in. | 9/16 | | 3/4 | | 15/16 | | 1-1/8 | | | |
| Nut height | - | in. | 21/64 | | 7/16 | | 35/64 | | 41/64 | | | |

For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m.

1. The listed minimum overall anchor length is based on anchor sizes available at the time of publication compared with the requirements for the minimum nominal embedment depth and fixture attachment.

Ultimate Load Capacities for Power-Stud HD5 in Normal-Weight Concrete^{1,2}

| Nominal Anchor Diameter (in.) | Minimum Embedment Depth (in.) | Minimum Concrete Compressive Strength - f'c (psi) | | | | | | | | | |
|-------------------------------|-------------------------------|---|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | | 2,500 psi | | 3,000 psi | | 4,000 psi | | 6,000 psi | | 8,000 psi | |
| | | Tension (lbs) | Shear (lbs) | Tension (lbs) | Shear (lbs) | Tension (lbs) | Shear (lbs) | Tension (lbs) | Shear (lbs) | Tension (lbs) | Shear (lbs) |
| 3/8 | 1-3/4 | 2,470 | 3,925 | 2,710 | 3,925 | 3,130 | 3,925 | 3,220 | 3,925 | 3,715 | 3,925 |
| | 2-3/8 | 3,620 | 3,925 | 3,965 | 3,925 | 4,580 | 3,925 | 5,470 | 3,925 | 6,320 | 3,925 |
| 1/2 | 2 | 2,690 | 4,195 | 2,950 | 4,195 | 3,405 | 4,195 | 4,170 | 4,195 | 4,815 | 4,195 |
| | 2-1/2 | 4,140 | 4,195 | 4,540 | 4,195 | 5,240 | 4,195 | 6,415 | 4,195 | 7,410 | 4,195 |
| | 3-3/4 | 8,580 | 4,195 | 9,400 | 4,195 | 10,300 | 4,195 | 10,300 | 4,195 | 10,300 | 4,195 |
| 5/8 | 2-1/2 | 4,115 | 6,815 | 4,505 | 6,815 | 5,200 | 6,815 | 6,370 | 6,815 | 7,355 | 6,815 |
| | 3-3/8 | 7,305 | 6,815 | 8,000 | 6,815 | 9,240 | 6,815 | 11,315 | 6,815 | 13,065 | 6,815 |
| | 4-5/8 | 11,715 | 6,815 | 12,830 | 6,815 | 14,815 | 6,815 | 16,400 | 6,815 | 16,400 | 6,815 |
| 3/4 | 3-3/8 | 7,080 | 11,570 | 7,750 | 11,570 | 8,955 | 11,570 | 12,125 | 11,570 | 14,000 | 11,570 |
| | 5 | 16,965 | 11,570 | 18,580 | 11,570 | 21,330 | 11,570 | 21,330 | 11,570 | 21,330 | 11,570 |

1. Tabulated load values are applicable to single anchors installed in uncracked concrete with no edge or spacing considerations. Concrete compressive strength must be at the specified minimum at the time of installation.
2. Ultimate load capacities must be reduced by a minimum safety factor of 4.0 or greater to determine allowable working load.



Allowable Load Capacities for Power-Stud HD5 in Normal-Weight Concrete¹

| Nominal Anchor Diameter (in.) | Minimum Embedment Depth (in.) | Minimum Concrete Compressive Strength - f'c (psi) | | | | | | | | | |
|-------------------------------|-------------------------------|---|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | | 2,500 psi | | 3,000 psi | | 4,000 psi | | 6,000 psi | | 8,000 psi | |
| | | Tension (lbs) | Shear (lbs) | Tension (lbs) | Shear (lbs) | Tension (lbs) | Shear (lbs) | Tension (lbs) | Shear (lbs) | Tension (lbs) | Shear (lbs) |
| 3/8 | 1-3/4 | 620 | 980 | 680 | 980 | 785 | 980 | 805 | 980 | 930 | 980 |
| | 2-3/8 | 905 | 980 | 990 | 980 | 1,145 | 980 | 1,370 | 980 | 1,580 | 980 |
| 1/2 | 2 | 675 | 1,050 | 740 | 1,050 | 850 | 1,050 | 1,045 | 1,050 | 1,205 | 1,050 |
| | 2-1/2 | 1,035 | 1,050 | 1,135 | 1,050 | 1,310 | 1,050 | 1,605 | 1,050 | 1,855 | 1,050 |
| | 3-3/4 | 2,145 | 1,050 | 2,350 | 1,050 | 2,575 | 1,050 | 2,575 | 1,050 | 2,575 | 1,050 |
| 5/8 | 2-1/2 | 1,030 | 1,705 | 1,125 | 1,705 | 1,300 | 1,705 | 1,595 | 1,705 | 1,840 | 1,705 |
| | 3-3/8 | 1,825 | 1,705 | 2,000 | 1,705 | 2,310 | 1,705 | 2,830 | 1,705 | 3,265 | 1,705 |
| | 4-5/8 | 2,930 | 1,705 | 3,210 | 1,705 | 3,705 | 1,705 | 4,100 | 1,705 | 4,100 | 1,705 |
| 3/4 | 3-3/8 | 1,770 | 2,895 | 1,940 | 2,895 | 2,240 | 2,895 | 3,030 | 2,895 | 3,500 | 2,895 |
| | 5 | 4,240 | 2,895 | 4,645 | 2,895 | 5,335 | 2,895 | 5,335 | 2,895 | 5,335 | 2,895 |

1. Allowable load capacities listed are calculated using and applied safety factor of 4.0.
2. Allowable load capacities are multiplied by reduction factors when anchor spacing or edge distances are less than critical distances.

Spacing Distance and Edge Distance Tension (F_{NS} , F_{NC}) Adjustment Factors for Normal-Weight Concrete

| Spacing Distance - Tension (F_{NS}) | | | | | | | | | | |
|---|--------|-------|------|-------|-------|-------|--------|-------|-------|------|
| Diameter, d (in) | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 5/8 | 5/8 | 5/8 | 3/4 | 3/4 |
| Minimum Embedment, h_v (in) | 1-3/4 | 2-3/8 | 2 | 2-1/2 | 3-3/4 | 2-3/8 | 3-3/8 | 4-5/8 | 3-3/8 | 5 |
| Minimum Spacing, s_{min} (in) | 5-1/4 | 3-3/4 | 6 | 7-1/4 | 5 | 7-1/8 | 10-1/8 | 4-1/4 | 9 | 6 |
| Spacing Distance (inches) | 3-3/4 | - | 0.80 | - | - | - | - | - | - | - |
| | 4 | - | 0.82 | - | - | - | - | - | - | - |
| | 4-1/4 | - | 0.83 | - | - | - | - | 0.69 | - | - |
| | 4-1/2 | - | 0.85 | - | - | - | - | 0.70 | - | - |
| | 5 | - | 0.88 | - | - | 0.75 | - | 0.71 | - | - |
| | 5-1/2 | 1.00 | 0.91 | - | - | 0.77 | - | 0.73 | - | - |
| | 6 | 1.00 | 0.93 | 1.00 | - | 0.79 | - | 0.74 | - | 0.74 |
| | 6-1/2 | 1.00 | 0.96 | 1.00 | - | 0.81 | - | 0.76 | - | 0.75 |
| | 7 | 1.00 | 0.99 | 1.00 | - | 0.83 | - | 0.78 | - | 0.77 |
| | 7-1/4 | 1.00 | 1.00 | 1.00 | 0.99 | 0.84 | - | 0.78 | - | 0.78 |
| | 7-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.79 | - | 0.78 |
| | 8 | 1.00 | 1.00 | 1.00 | 1.00 | 0.87 | 1.00 | 0.81 | - | 0.80 |
| | 8-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.89 | 1.00 | 0.83 | - | 0.81 |
| | 9 | 1.00 | 1.00 | 1.00 | 1.00 | 0.91 | 1.00 | 0.84 | 0.94 | 0.83 |
| | 9-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | 1.00 | 0.86 | 0.97 | 0.84 |
| | 10 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.87 | 0.99 | 0.86 |
| | 10-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 0.89 | 1.00 | 0.87 |
| | 11 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 | 1.00 | 0.91 | 1.00 | 0.88 |
| 11-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.92 | 1.00 | 0.90 | |
| 12 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.94 | 1.00 | 0.91 | |
| 12-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.96 | 1.00 | 0.93 | |
| 13 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 0.94 | |
| 13-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 | 1.00 | 0.96 | |
| 14 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | |
| 14-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 | |
| 15 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

| Edge Distance - Tension (F_{NC}) | | | | | | | | | | |
|---------------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|
| Diameter, d (in) | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 5/8 | 5/8 | 5/8 | 3/4 | 3/4 |
| Minimum Embedment, h_v (in) | 1-3/4 | 2-3/8 | 2 | 2-1/2 | 3-3/4 | 2-3/8 | 3-3/8 | 4-5/8 | 3-3/8 | 5 |
| Minimum Edge Distance, c_{min} (in) | 3 | 2-1/4 | 4 | 5-1/4 | 4 | 4-1/4 | 5-1/2 | 4-1/4 | 5 | 4-1/2 |
| Edge Distance (inches) | 2-1/4 | - | 0.35 | - | - | - | - | - | - | - |
| | 2-1/2 | - | 0.38 | - | - | - | - | - | - | - |
| | 3 | 0.60 | 0.46 | - | - | - | - | - | - | - |
| | 3-1/2 | 0.70 | 0.54 | - | - | - | - | - | - | - |
| | 4 | 0.80 | 0.62 | 0.50 | - | 0.50 | - | - | - | - |
| | 4-1/4 | 0.85 | 0.65 | 0.53 | - | 0.53 | 0.53 | - | 0.43 | - |
| | 4-1/2 | 0.90 | 0.69 | 0.56 | - | 0.56 | 0.56 | - | 0.45 | 0.38 |
| | 5 | 1.00 | 0.77 | 0.63 | - | 0.63 | 0.63 | - | 0.50 | 0.42 |
| | 5-1/4 | 1.00 | 0.81 | 0.66 | 0.62 | 0.66 | 0.66 | - | 0.53 | 0.44 |
| | 5-1/2 | 1.00 | 0.85 | 0.69 | 0.65 | 0.69 | 0.69 | 0.92 | 0.55 | 0.46 |
| | 6 | 1.00 | 0.92 | 0.75 | 0.71 | 0.75 | 0.75 | 1.00 | 0.60 | 0.50 |
| | 6-1/2 | 1.00 | 1.00 | 0.81 | 0.76 | 0.81 | 0.81 | 1.00 | 0.65 | 0.54 |
| | 7 | 1.00 | 1.00 | 0.88 | 0.82 | 0.88 | 0.88 | 1.00 | 0.70 | 0.58 |
| | 7-1/2 | 1.00 | 1.00 | 0.94 | 0.88 | 0.94 | 0.94 | 1.00 | 0.75 | 0.63 |
| | 8 | 1.00 | 1.00 | 1.00 | 0.94 | 1.00 | 1.00 | 1.00 | 0.80 | 0.67 |
| | 8-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.85 | 0.71 |
| | 9 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.90 | 0.75 |
| | 9-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.79 |
| 10 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.83 | |
| 10-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.88 | |
| 11 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.92 | |
| 11-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.96 | |
| 12 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

MECHANICAL ANCHORS

POWER-STUD® HD5

Hot-Dip Galvanized Wedge Expansion Anchor

Spacing Distance Shear (F_{vs}) Adjustment Factors for Normal-Weight Concrete

| Spacing Distance - Shear (F_{vs}) | | | | | | | | | | | |
|--|-------|-------|------|-------|-------|-------|-------|-------|-------|------|------|
| Diameter, d (in) | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 5/8 | 5/8 | 5/8 | 3/4 | 3/4 | |
| Minimum Embedment, h _v (in) | 1-3/4 | 2-3/8 | 2 | 2-1/2 | 3-3/4 | 2-3/8 | 3-3/8 | 4-5/8 | 3-3/8 | 5 | |
| Minimum Spacing, s _{min} (in) | 5-1/4 | 3-3/4 | 6 | 7-1/4 | 5 | 7-1/8 | 11 | 4-1/4 | 9 | 6 | |
| Spacing Distance (inches) | 3-3/4 | - | 0.87 | - | - | - | - | - | - | - | |
| | 4 | - | 0.88 | - | - | - | - | - | - | - | |
| | 4-1/4 | - | 0.89 | - | - | - | - | 0.78 | - | - | |
| | 4-1/2 | - | 0.90 | - | - | - | - | 0.79 | - | - | |
| | 5 | - | 0.92 | - | - | 0.82 | - | 0.80 | - | - | |
| | 5-1/2 | 1.00 | 0.94 | - | - | 0.84 | - | 0.81 | - | - | |
| | 6 | 1.00 | 0.96 | 1.00 | - | 0.85 | - | 0.82 | - | 0.82 | |
| | 6-1/2 | 1.00 | 0.98 | 1.00 | - | 0.87 | - | 0.83 | - | 0.83 | |
| | 7 | 1.00 | 1.00 | 1.00 | - | 0.88 | - | 0.84 | - | 0.84 | |
| | 7-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.89 | 1.00 | - | 0.85 | - | 0.85 |
| | 8 | 1.00 | 1.00 | 1.00 | 1.00 | 0.91 | 1.00 | - | 0.87 | - | 0.86 |
| | 8-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.92 | 1.00 | - | 0.88 | - | 0.87 |
| | 9 | 1.00 | 1.00 | 1.00 | 1.00 | 0.94 | 1.00 | - | 0.89 | 0.96 | 0.88 |
| | 9-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | - | 0.90 | 0.98 | 0.89 |
| | 10 | 1.00 | 1.00 | 1.00 | 1.00 | 0.96 | 1.00 | - | 0.91 | 1.00 | 0.90 |
| 10-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | - | 0.92 | 1.00 | 0.91 | |
| 11 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | 0.93 | 1.00 | 0.92 | |
| 11-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.93 | |
| 12 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.96 | 1.00 | 0.94 | |
| 12-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 0.95 | |
| 13 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | 0.96 | |
| 13-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 | 1.00 | 0.97 | |
| 14 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | |
| 14-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 | |
| 15 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

Edge Distance Shear (F_{vc}) Adjustment Factors for Normal-Weight Concrete

| Edge Distance - Shear (F_{vc}) | | | | | | | | | | | |
|--|--------|-------|------|-------|-------|-------|-------|-------|-------|------|---|
| Diameter, d (in) | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 5/8 | 5/8 | 5/8 | 3/4 | 3/4 | |
| Minimum Embedment, h _v (in) | 1-3/4 | 2-3/8 | 2 | 2-1/2 | 3-3/4 | 2-3/8 | 3-3/8 | 4-5/8 | 3-3/8 | 5 | |
| Minimum Edge Distance, c _{min} (in) | 5 | 6-1/2 | 6 | 8-1/2 | 8 | 7-1/8 | 6 | 10 | 5 | 12 | |
| Edge Distance (inches) | 5 | 0.95 | - | - | - | - | - | - | 0.49 | - | |
| | 5-1/2 | 1.00 | - | - | - | - | - | - | 0.54 | - | |
| | 6 | 1.00 | - | 1.00 | - | - | - | 0.59 | 0.59 | - | |
| | 6-1/2 | 1.00 | 0.91 | 1.00 | - | - | - | 0.64 | 0.64 | - | |
| | 7 | 1.00 | 0.98 | 1.00 | - | - | - | 0.69 | 0.69 | - | |
| | 7-1/2 | 1.00 | 1.00 | 1.00 | - | - | 1.00 | 0.74 | 0.74 | - | |
| | 8 | 1.00 | 1.00 | 1.00 | - | 0.71 | 1.00 | 0.79 | 0.79 | - | |
| | 8-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.76 | 1.00 | 0.84 | 0.84 | - | |
| | 9 | 1.00 | 1.00 | 1.00 | 1.00 | 0.80 | 1.00 | 0.89 | 0.89 | - | |
| | 9-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.84 | 1.00 | 0.94 | 0.94 | - | |
| | 10 | 1.00 | 1.00 | 1.00 | 1.00 | 0.89 | 1.00 | 0.99 | 0.72 | 0.99 | - |
| | 10-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | 1.00 | 1.00 | 0.76 | 1.00 | - |
| | 11 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.79 | 1.00 | - |
| | 11-1/4 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.81 | 1.00 | - |
| | 11-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.83 | 1.00 | - |
| 12 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.86 | 1.00 | 0.80 | |
| 12-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.90 | 1.00 | 0.83 | |
| 13 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.94 | 1.00 | 0.87 | |
| 13-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 0.90 | |
| 14 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | |
| 14-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | |
| 15 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

MECHANICAL ANCHORS

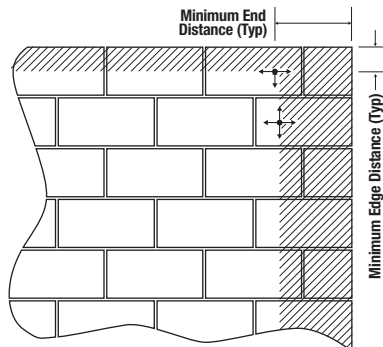
POWER-STUD® HD5
Hot-Dip Galvanized Wedge Expansion Anchor

MASONRY PERFORMANCE DATA

Ultimate and Allowable Load Capacities for Power-Stud HD5 in Grout-filled Concrete Masonry^{1,2,3}

| Anchor Diameter d in. | Minimum Embed. h, in. (mm) | Nominal Drill Bit Diameter in. | Minimum Edge Distance in. (mm) | Minimum End Distance in. (mm) | Ultimate Loads | | Allowable Loads | |
|-----------------------------|-------------------------------------|-----------------------------------|--------------------------------------|-------------------------------------|-------------------------|-----------------------|-------------------------|-----------------------|
| | | | | | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) |
| 3/8 | 1-1/2 (38.1) | 3/8 ANSI | 4 (102) | 4 (102) | 1,185 (5.3) | 1,340 (6.0) | 235 (1.0) | 270 (1.2) |
| 1/2 | 2 (50.8) | 1/2 ANSI | 4 (102) | 4 (102) | 1,670 (7.4) | 2,110 (9.4) | 335 (1.5) | 420 (1.9) |
| | | | 12 (305) | 12 (305) | 1,860 (8.3) | 2,560 (11.4) | 370 (1.6) | 510 (2.3) |
| 5/8 | 2-3/8 (60.3) | 5/8 ANSI | 4 (102) | 4 (102) | 2,155 (9.6) | 2,110 (9.4) | 430 (1.9) | 420 (1.9) |
| | | | 12 (305) | 12 (305) | 2,850 (12.7) | 5,225 (23.2) | 570 (2.5) | 1,045 (4.6) |
| 3/4 | 3-3/8 (85.7) | 3/4 ANSI | 12 (305) | 12 (305) | 5,660 (25.2) | 8,115 (36.1) | 1,130 (5.0) | 1,625 (7.2) |
| | | | 20 (508) | 20 (508) | 5,660 (25.2) | 9,360 (41.6) | 1,130 (5.0) | 1,870 (8.3) |

1. Tabulated load values are for anchors installed in minimum 6-inch wide, Grade N, Type II, lightweight concrete masonry units conforming to ASTM C 90 that have reached the minimum designated ultimate compressive strength at the time of installation ($f'm \geq 1,500$ psi).
2. Allowable load capacities listed are calculated using an applied safety factor of 5.0. Consideration of safety factors of 10 or higher may be necessary depending on the application, such as life safety.
3. The tabulated values are for anchors installed at a minimum spacing of 16 anchor diameters on center for 100 percent capacity. Spacing distances may be reduced to 8 anchor diameters on center provided the capacities are reduced by 50 percent. Linear interpolation may be used for intermediate spacing. Anchors with 3/4-inch diameter are limited to one anchor per cell.



MECHANICAL ANCHORS

POWER-STUD® HD5
Hot-Dip Galvanized Wedge Expansion Anchor

ORDERING INFORMATION

Power-Stud HD5 (Carbon Steel Body and Stainless Steel Expansion Clip)

| Cat. No. | Anchor Size | Thread Length | Box Qty. | Carton Qty. | Wt/100 (lbs.) | Suggested ANSI Carbide Drill Bit Cat. No. | | | | |
|----------|---------------|---------------|----------|-------------|---------------|---|----------|---------|---------------------|--------------------|
| | | | | | | Full Head SDS-Plus | SDS-Plus | SDS-Max | Hollow Bit SDS-Plus | Hollow Bit SDS-Max |
| 7713HD5 | 3/8" x 3" | 1-1/2" | 50 | 300 | 10 | DW5527 | DW5427 | - | - | - |
| 7715HD5 | 3/8" x 3-3/4" | 2-3/8" | 50 | 300 | 13 | DW5527 | DW5427 | - | - | - |
| 7716HD5 | 3/8" x 5" | 3-1/2" | 50 | 300 | 15 | DW55300 | DW5429 | - | - | - |
| 7717HD5 | 3/8" x 7" | 5-1/2" | 50 | 200 | 21 | DW55300 | DW5429 | - | - | - |
| 7720HD5 | 1/2" x 2-3/4" | 1" | 50 | 200 | 21 | DW5537 | DW5437 | DW5803 | DWA54012 | - |
| 7722HD5 | 1/2" x 3-3/4" | 2" | 50 | 200 | 19 | DW5537 | DW5437 | DW5803 | DWA54012 | - |
| 7723HD5 | 1/2" x 4-1/2" | 2-3/4" | 50 | 200 | 23 | DW5539 | DW5438 | DW5803 | DWA54012 | - |
| 7724HD5 | 1/2" x 5-1/2" | 3-3/4" | 50 | 150 | 27 | DW5539 | DW5438 | DW5803 | DWA54012 | - |
| 7726HD5 | 1/2" x 7" | 5-1/4" | 25 | 100 | 30 | DW5539 | DW5438 | DW5803 | DWA54012 | - |
| 7730HD5 | 5/8" x 3-1/2" | 1-1/2" | 25 | 100 | 44 | - | DW5446 | DW5806 | DWA54058 | DWA58058 |
| 7733HD5 | 5/8" x 5" | 3" | 25 | 100 | 43 | - | DW5446 | DW5806 | DWA54058 | DWA58058 |
| 7734HD5 | 5/8" x 6" | 4" | 25 | 75 | 47 | - | DW5446 | DW5806 | DWA54058 | DWA58058 |
| 7738HD5 | 5/8" x 8-1/2" | 6-1/2" | 25 | 50 | 60 | - | DW5447 | DW5809 | DWA54058 | DWA58058 |
| 7741HD5 | 3/4" x 4-3/4" | 2-1/4" | 20 | 60 | 68 | - | DW5453 | DW5810 | DWA54034 | DWA58034 |
| 7742HD5 | 3/4" x 5-1/2" | 3" | 20 | 60 | 76 | - | DW5453 | DW5810 | DWA54034 | DWA58034 |
| 7746HD5 | 3/4" x 7" | 4-1/2" | 20 | 60 | 92 | - | DW5455 | DW5810 | DWA54034 | DWA58034 |
| 7748HD5 | 3/4" x 8-1/2" | 6" | 10 | 40 | 107 | - | DW5455 | DW5812 | DWA54034 | DWA58034 |

The published size includes the diameter and the overall length of the anchor.
 All anchors are packaged with nuts and washers.
 A manual hand pump is available (Cat. No. 08280).
 Hollow drill bits must be used with a dust extraction vacuum (Cat. No. DW012).



MECHANICAL ANCHORS

POWER-STUD® HD5
Hot-Dip Galvanized Wedge Expansion Anchor