

GENERAL INFORMATION

POWER-BOLT®+

Heavy Duty Sleeve Anchor

PRODUCT DESCRIPTION

The Power-Bolt+ anchor is a torque controlled, heavy duty sleeve style anchor which is designed for consistent performance in cracked and uncracked concrete. Suitable base materials include normal-weight concrete and lightweight concrete. The anchor is manufactured with a zinc plated carbon steel bolt, sleeve, cone and expansion clip. The Power-Bolt+ has a low profile finished hex head and a full size thick bearing sleeve to provide increased capacity in shear connections.

GENERAL APPLICATIONS AND USES

- Structural connections, i.e., beam and column anchorage
- Cracked concrete / tension zone applications
- Seismic Attachments (SDC A - F)
- Conveyors and Material Handling
- Base Plates and Racking
- Guards, Bumpers and Barriers
- Mounting Machinery

FEATURES AND BENEFITS

- + Consistent performance in high and low strength concrete
- + Anchor design allows for follow-up expansion after setting under tensile loading
- + Drill bit size is the same as the nominal anchor diameter
- + Anchor can be installed through standard fixture holes
- + Length ID code and identifying marking stamped on head of each anchor
- + High shear load capacity
- + Low profile finished hex bolt head
- + DEWALT dust removal drilling system (with HEPA dust extractor) can be used for an OSHA 1926.1153 Table 1 compliant solution

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-3260 for concrete; code complaint with the 2021 IBC/IRC, 2018 IBC/IRC, 2015 IBC/IRC and 2012 IBC/IRC
- Tested in accordance with ACI 355.2/ASTM E488 and ICC-ES AC193 for use in structural concrete under the design provisions of ACI 318 (-19 or -14) Chapter 17 or ACI 318-11 Appendix D
- Evaluated and qualified by an accredited independent testing laboratory for recognition in cracked and uncracked concrete including seismic and wind loading (anchor category 1 for 1/2" to 3/4" sizes)
- City of Los Angeles, LABC Supplement (within ESR-3260)
- Florida Building Code, FBC Supplement including HVHZ (within ESR-3260)

GUIDE SPECIFICATIONS

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

MATERIAL SPECIFICATIONS

| Anchor Component | Carbon Steel Hex Head |
|----------------------------------|--|
| Internal bolt | SAE Grade 8 equivalent (fy ≥ 130,000 psi) |
| Washer | Carbon steel, ASTM F844; meets dimensional requirements of ANSI B18.22.2, Type A Plain |
| Extension sleeve | Carbon Steel |
| Expansion clip | Carbon steel |
| Compression ring / Retention nut | Engineered plastic (Nylon) |
| Zinc plating | ASTM B633, SC1, Type III (Fe/Zn 5) – Mild service condition |

SECTION CONTENTS

General Information..... 1
 Material Specifications 1
 Installation Instructions 2
 Installation Specifications 2
 Performance Data (ASD) 3
 Strength Design Information 5
 Design Strength Tables (SD) 8
 Ordering Information..... 9



POWER-BOLT+ ASSEMBLY

HEAD STYLES

- Finished Hex Head

ANCHOR MATERIALS

- Zinc plated carbon steel bolt, washer, cone, sleeve, and expansion clip; assembled with a plastic compression ring and retainer nut

ANCHOR SIZE RANGE (TYP.)

- 1/4" through 3/4" diameters

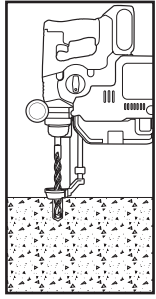
SUITABLE BASE MATERIALS

- Normal-weight concrete
- Lightweight concrete

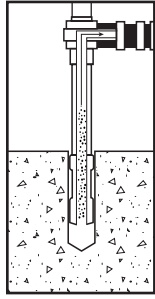


INSTALLATION INSTRUCTIONS

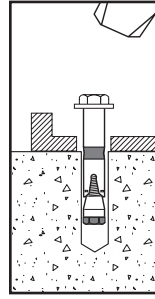
Installation Instructions for Power-Bolt+ Anchor



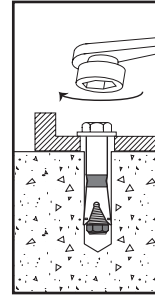
Step 1
Using the proper drill bit size, drill a hole into the base material to the required depth. The tolerances of the drill bit used should meet the requirements of ANSI Standard B212.15.



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. Ensure the cone is snug and uniformly under the expansion wedge (clip) with the clip fingers overlapping the anchor cone, prior to installation using the retention nut (see photo below).



Step 3
Drive anchor through the fixture into the hole. Be sure the anchor is driven to the minimum required embedment depth, h_{nom} .



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

Head Marking

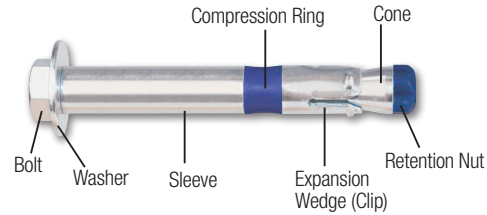


Legend

'PB+' Symbol = Power-Bolt+ Strength Design Compliant (see ordering information)

Letter Code = Length Identification Mark

Power-Bolt+ Anchor Assembly



Length Identification

| Mark | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| 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" | 9" | 9-1/2" | 10" |
| 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" | 9-1/2" | 10" | 11" |

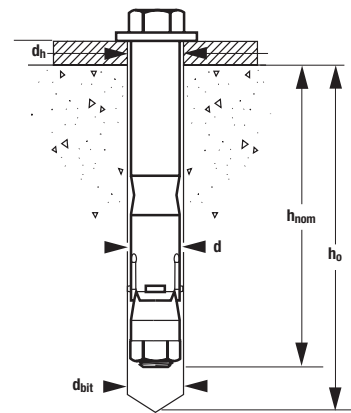
Length identification mark indicates the length of the anchor measured from under the washer to the end of the anchor.

INSTALLATION SPECIFICATIONS

Power-Bolt+ Anchor Installation Specifications

| Anchor Property/Setting Information | Notation | Units | Nominal Anchor Diameter (in.) | | | | |
|---|------------|----------------|-------------------------------|-------------|--------------|--------------|--------------|
| | | | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 |
| Anchor outside diameter | d | in. (mm) | 0.250 (6.4) | 0.375 (9.5) | 0.500 (12.7) | 0.625 (15.9) | 0.750 (19.1) |
| Internal Bolt Diameter (UNC) | - | in. (mm) | #8 (4) | 1/4 (6.4) | 3/8 (9.5) | 7/16 (11.1) | 9/16 (14.3) |
| Nominal drill bit diameter (ANSI) | d_{bit} | in. | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 |
| Minimum diameter of hole clearance in fixture | d_h | in. (mm) | 5/16 (8) | 7/16 (11) | 9/16 (14) | 11/16 (17) | 13/16 (21) |
| Minimum nominal embedment depth | h_{nom} | in. (mm) | 1-1/4 (32) | 1-5/8 (41) | 2-1/2 (64) | 2-3/4 (70) | 3 (76.2) |
| Minimum hole depth | h_o | in. (mm) | 1-1/2 (38) | 1-7/8 (48) | 3 (76) | 3-1/4 (83) | 3-5/8 (92) |
| Minimum member thickness | h_{min} | in. (mm) | 3-1/2 (89) | 4-1/2 (114) | 5 (127) | 6-1/2 (165) | 7 (178) |
| Minimum edge distance | c_{min} | in. (mm) | 1-3/4 (44) | 2-3/4 (70) | 3-1/4 (83) | 4-1/2 (114) | 6 (152) |
| Minimum spacing distance | s_{min} | in. (mm) | 2 (51) | 3-1/2 (89) | 4-1/2 (114) | 6 (152) | 6 (152) |
| Installation torque | T_{inst} | ft.-lbf. (N-m) | 4 (5) | 20 (27) | 40 (54) | 60 (81) | 110 (149) |
| Torque wrench/socket size | - | in. | 3/8 | 1/2 | 5/8 | 3/4 | 15/16 |
| Bolt Head Height | - | in. (mm) | 1/8 (3) | 13/64 (5) | 9/32 (7) | 5/16 (8) | 3/8 (10) |
| Washer O.D. | - | in. | 7/16 | 47/64 | 1 | 1-1/4 | 1-15/32 |

See Strength Design Information for installation specifications in strict accordance with ICC-ES ESR-3260.



PERFORMANCE DATA (ASD)

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

| Nominal Anchor Diameter d in. | Minimum Embed. Depth in. (mm) h _{nom} | Minimum Concrete Compressive Strength | | | | | | | | | |
|-------------------------------|--|---------------------------------------|-----------------|----------------------------|-----------------|----------------------------|-----------------|----------------------------|-----------------|----------------------------|-----------------|
| | | f'c = 2,500 psi (17.3 MPa) | | f'c = 3,000 psi (20.7 MPa) | | f'c = 4,000 psi (27.6 MPa) | | f'c = 6,000 psi (41.4 MPa) | | f'c = 8,000 psi (55.2 MPa) | |
| | | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) |
| 1/4 | 1-1/4 (32) | 1,245 (5.5) | 1,670 (7.4) | 1,260 (5.6) | 1,670 (7.4) | 1,290 (5.7) | 1,670 (7.4) | 1,345 (6.0) | 1,670 (7.4) | 1,397 (6.2) | 1,670 (7.4) |
| | 1-3/4 (44) | 1,740 (7.7) | 1,670 (7.4) | 1,905 (8.5) | 1,670 (7.4) | 1,945 (8.7) | 1,670 (7.4) | 1,945 (8.7) | 1,670 (7.4) | 1,945 (8.7) | 1,670 (7.4) |
| 3/8 | 1-5/8 (41) | 1,420 (6.3) | 2,420 (10.8) | 1,555 (6.9) | 2,460 (10.9) | 1,795 (8.0) | 2,460 (10.9) | 2,105 (9.4) | 2,470 (11.0) | 2,430 (10.8) | 2,810 (12.5) |
| | 2 (51) | 2,740 (12.2) | 3,990 (17.7) | 3,000 (13.3) | 3,990 (17.7) | 3,465 (15.4) | 3,990 (17.7) | 4,140 (18.4) | 3,990 (17.7) | 4,425 (19.7) | 3,990 (17.7) |
| | 2-3/4 (70) | 4,130 (18.4) | 3,990 (17.7) | 4,425 (19.7) | 3,990 (17.7) | 4,425 (19.7) | 3,990 (17.7) | 4,425 (19.7) | 3,990 (17.7) | 4,425 (19.7) | 3,990 (17.7) |
| 1/2 | 2-1/2 (64) | 3,880 (17.3) | 7,420 (33.0) | 4,250 (18.9) | 8,030 (35.7) | 4,905 (21.8) | 8,030 (35.7) | 5,150 (22.9) | 8,030 (35.7) | 5,518 (24.5) | 8,030 (35.7) |
| | 3 (76) | 5,190 (23.1) | 8,030 (35.7) | 5,685 (25.3) | 8,030 (35.7) | 6,560 (29.2) | 8,030 (35.7) | 7,985 (35.5) | 8,030 (35.7) | 9,065 (40.3) | 8,030 (35.7) |
| | 3-1/4 (83) | 7,120 (31.7) | 8,030 (35.7) | 7,660 (34.1) | 8,030 (35.7) | 8,645 (38.5) | 8,030 (35.7) | 9,400 (41.8) | 8,030 (35.7) | 10,835 (48.2) | 8,030 (35.7) |
| 5/8 | 2-3/4 (70) | 4,745 (21.1) | 9,975 (44.4) | 5,195 (23.1) | 10,930 (48.6) | 6,000 (26.7) | 12,620 (56.1) | 6,845 (30.4) | 13,155 (58.5) | 7,200 (32.0) | 13,155 (58.5) |
| | 3-1/2 (89) | 6,995 (31.1) | 9,975 (44.4) | 7,660 (34.1) | 10,930 (48.6) | 8,845 (39.3) | 12,620 (56.1) | 11,325 (50.4) | 13,155 (58.5) | 12,900 (57.4) | 13,155 (58.5) |
| | 3-3/4 (95) | 8,710 (38.7) | 12,015 (53.4) | 9,545 (42.5) | 14,320 (63.7) | 11,020 (49.0) | 16,535 (73.6) | 12,820 (57.0) | 18,250 (81.2) | 14,800 (65.8) | 18,250 (81.2) |
| 3/4 | 3 (76) | 5,655 (25.2) | 10,950 (48.7) | 6,195 (27.6) | 11,995 (53.4) | 7,155 (31.8) | 13,850 (61.6) | 8,385 (37.3) | 18,510 (82.3) | 9,685 (43.1) | 21,370 (95.1) |
| | 4-3/8 (111) | 10,870 (48.4) | 18,635 (82.9) | 11,910 (53.0) | 20,415 (90.8) | 13,750 (61.2) | 23,575 (104.9) | 14,705 (65.4) | 23,575 (104.9) | 16,975 (75.5) | 23,575 (104.9) |
| | 7 (178) | 18,145 (80.7) | 24,290 (108.0) | 19,880 (88.4) | 24,290 (108.0) | 22,955 (102.1) | 24,290 (108.0) | 28,445 (126.5) | 24,290 (108.0) | 29,863 (132.8) | 24,290 (108.0) |

1. The 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 loads.

Allowable Load Capacities for Power-Bolt+ in Normal-Weight Concrete^{1,2,3}



| Nominal Anchor Diameter d in. | Minimum Embed. Depth in. (mm) h _{nom} | Minimum Concrete Compressive Strength | | | | | | | | | |
|-------------------------------|--|---------------------------------------|-----------------|----------------------------|-----------------|----------------------------|-----------------|----------------------------|-----------------|----------------------------|-----------------|
| | | f'c = 2,500 psi (17.3 MPa) | | f'c = 3,000 psi (20.7 MPa) | | f'c = 4,000 psi (27.6 MPa) | | f'c = 6,000 psi (41.4 MPa) | | f'c = 8,000 psi (55.2 MPa) | |
| | | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) |
| 1/4 | 1-1/4 (32) | 310 (1.4) | 420 (1.9) | 315 (1.4) | 420 (1.9) | 325 (1.4) | 420 (1.9) | 335 (1.5) | 420 (1.9) | 350 (1.6) | 420 (1.9) |
| | 1-3/4 (44) | 435 (1.9) | 420 (1.9) | 475 (2.1) | 420 (1.9) | 485 (2.2) | 420 (1.9) | 485 (2.2) | 420 (1.9) | 485 (2.2) | 420 (1.9) |
| 3/8 | 1-5/8 (41) | 355 (1.6) | 605 (2.7) | 390 (1.7) | 615 (2.7) | 450 (2.0) | 615 (2.7) | 525 (2.3) | 620 (2.8) | 610 (2.7) | 705 (3.1) |
| | 2 (51) | 685 (3.0) | 1,000 (4.4) | 750 (3.3) | 1,000 (4.4) | 865 (3.8) | 1,000 (4.4) | 1,035 (4.6) | 1,000 (4.4) | 1,105 (4.9) | 1,000 (4.4) |
| | 2-3/4 (70) | 1,035 (4.6) | 1,000 (4.4) | 1,105 (4.9) | 1,000 (4.4) | 1,105 (4.9) | 1,000 (4.4) | 1,105 (4.9) | 1,000 (4.4) | 1,105 (4.9) | 1,000 (4.4) |
| 1/2 | 2-1/2 (64) | 970 (4.3) | 1,855 (8.3) | 1,065 (4.7) | 2,010 (8.9) | 1,225 (5.4) | 2,010 (8.9) | 1,290 (5.7) | 2,010 (8.9) | 1,380 (6.1) | 2,010 (8.9) |
| | 3 (76) | 1,300 (5.8) | 2,010 (8.9) | 1,420 (6.3) | 2,010 (8.9) | 1,640 (7.3) | 2,010 (8.9) | 1,995 (8.9) | 2,010 (8.9) | 2,265 (10.1) | 2,010 (8.9) |
| | 3-1/4 (83) | 1,780 (7.9) | 2,010 (8.9) | 1,915 (8.5) | 2,010 (8.9) | 2,160 (9.6) | 2,010 (8.9) | 2,350 (10.5) | 2,010 (8.9) | 2,710 (12.1) | 2,010 (8.9) |
| 5/8 | 2-3/4 (70) | 1,185 (5.3) | 2,495 (11.1) | 1,300 (5.8) | 2,735 (12.2) | 1,500 (6.7) | 3,155 (14.0) | 1,710 (7.6) | 3,290 (14.6) | 1,800 (8.0) | 3,290 (14.6) |
| | 3-1/2 (89) | 1,750 (7.8) | 2,495 (11.1) | 1,915 (8.5) | 2,735 (12.2) | 2,210 (9.8) | 3,155 (14.0) | 2,830 (12.6) | 3,290 (14.6) | 3,225 (14.3) | 3,290 (14.6) |
| | 3-3/4 (95) | 2,180 (9.7) | 3,005 (13.4) | 2,385 (10.6) | 3,580 (15.9) | 2,755 (12.3) | 4,135 (18.4) | 3,205 (14.3) | 4,565 (20.3) | 3,700 (16.5) | 4,565 (20.3) |
| 3/4 | 3 (76) | 1,415 (6.3) | 2,740 (12.2) | 1,550 (6.9) | 3,000 (13.3) | 1,790 (8.0) | 3,465 (15.4) | 2,095 (9.3) | 4,630 (20.6) | 2,420 (10.8) | 5,345 (23.8) |
| | 4-3/8 (111) | 2,720 (12.1) | 4,660 (20.7) | 2,980 (13.3) | 5,105 (22.7) | 3,440 (15.3) | 5,895 (26.2) | 3,675 (16.3) | 5,895 (26.2) | 4,245 (18.9) | 5,895 (26.2) |
| | 7 (178) | 4,535 (20.2) | 6,075 (27.0) | 4,970 (22.1) | 6,075 (27.0) | 5,740 (25.5) | 6,075 (27.0) | 7,110 (31.6) | 6,075 (27.0) | 7,465 (33.2) | 6,075 (27.0) |

1. Allowable load capacities listed are calculated using an applied safety factor of 4.0.
2. Tabulated load values are for anchors installed in uncracked concrete. Concrete compressive strength must be at the specified minimum at the time of installation.
3. Allowable load capacities are multiplied by reduction factors when anchor spacing or edge distances are less than critical distances.

Load Adjustment Factors for Normal-Weight Concrete

Spacing Reduction Factors - Tension (F_{NS})

| Diameter (in) | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 | |
|----------------------------------|-------|-------|-------|-------|------|------|
| Nominal Embedment h_{nom} (in) | 1-1/4 | 2 | 2-1/2 | 2-3/4 | 3 | |
| Minimum Spacing s_{min} (in) | 2 | 3-1/2 | 4-1/2 | 6 | 5 | |
| Spacing Distance (inches) | 2 | 0.78 | - | - | - | - |
| | 2-1/2 | 0.82 | - | - | - | - |
| | 3 | 0.87 | - | - | - | - |
| | 3-1/2 | 0.91 | 0.80 | - | - | - |
| | 4 | 0.96 | 0.83 | - | - | - |
| | 4-1/2 | 1.00 | 0.86 | 0.83 | - | - |
| | 5 | 1.00 | 0.89 | 0.85 | - | 0.77 |
| | 5-1/2 | 1.00 | 0.92 | 0.88 | - | 0.79 |
| | 6 | 1.00 | 0.95 | 0.91 | 0.85 | 0.81 |
| | 6-1/2 | 1.00 | 0.98 | 0.93 | 0.87 | 0.83 |
| | 7 | 1.00 | 1.00 | 0.96 | 0.90 | 0.85 |
| | 7-1/2 | 1.00 | 1.00 | 0.98 | 0.92 | 0.87 |
| | 8 | 1.00 | 1.00 | 1.00 | 0.95 | 0.89 |
| | 8-1/2 | 1.00 | 1.00 | 1.00 | 0.97 | 0.92 |
| | 9 | 1.00 | 1.00 | 1.00 | 1.00 | 0.94 |
| 9-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.96 | |
| 10 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | |
| 10-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

Edge Distance Reduction Factors - Tension (F_{NC})

| Diameter (in) | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 | |
|--------------------------------------|-------|-------|-------|-------|------|------|
| Nominal Embedment h_{nom} (in) | 1-1/4 | 2 | 2-1/2 | 2-3/4 | 3 | |
| Minimum Edge Distance c_{min} (in) | 1-3/4 | 2-3/4 | 3-1/4 | 4-1/2 | 6 | |
| Edge Distance (inches) | 1-3/4 | 0.39 | - | - | - | - |
| | 2 | 0.44 | - | - | - | - |
| | 2-1/2 | 0.56 | - | - | - | - |
| | 3 | 0.67 | 0.46 | - | - | - |
| | 3-1/4 | 0.72 | 0.50 | 0.41 | - | - |
| | 3-1/2 | 0.78 | 0.54 | 0.44 | - | - |
| | 4 | 0.89 | 0.62 | 0.50 | - | - |
| | 4-1/2 | 1.00 | 0.69 | 0.56 | 0.75 | - |
| | 5 | 1.00 | 0.77 | 0.63 | 0.83 | - |
| | 5-1/2 | 1.00 | 0.85 | 0.69 | 0.92 | - |
| | 6 | 1.00 | 0.92 | 0.75 | 1.00 | 0.75 |
| | 6-1/2 | 1.00 | 1.00 | 0.81 | 1.00 | 0.81 |
| | 7 | 1.00 | 1.00 | 0.88 | 1.00 | 0.88 |
| | 7-1/2 | 1.00 | 1.00 | 0.94 | 1.00 | 0.94 |
| | 8 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Spacing Reduction Factors - Shear (F_{VS})

| Diameter (in) | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 | |
|----------------------------------|-------|-------|-------|-------|------|------|
| Nominal Embedment h_{nom} (in) | 1-1/4 | 2 | 2-1/2 | 2-3/4 | 3 | |
| Minimum Spacing s_{min} (in) | 2 | 3-1/2 | 4-1/2 | 6 | 5 | |
| Spacing Distance (inches) | 2 | 0.86 | - | - | - | - |
| | 2-1/2 | 0.89 | - | - | - | - |
| | 3 | 0.92 | - | - | - | - |
| | 3-1/2 | 0.94 | 0.88 | - | - | - |
| | 4 | 0.97 | 0.90 | - | - | - |
| | 4-1/2 | 1.00 | 0.91 | 0.89 | - | - |
| | 5 | 1.00 | 0.93 | 0.91 | - | 0.84 |
| | 5-1/2 | 1.00 | 0.95 | 0.93 | - | 0.86 |
| | 6 | 1.00 | 0.97 | 0.94 | 0.89 | 0.87 |
| | 6-1/2 | 1.00 | 0.99 | 0.96 | 0.91 | 0.88 |
| | 7 | 1.00 | 1.00 | 0.97 | 0.93 | 0.90 |
| | 7-1/2 | 1.00 | 1.00 | 0.99 | 0.94 | 0.91 |
| | 8 | 1.00 | 1.00 | 1.00 | 0.96 | 0.93 |
| | 8-1/2 | 1.00 | 1.00 | 1.00 | 0.98 | 0.94 |
| | 9 | 1.00 | 1.00 | 1.00 | 1.00 | 0.96 |
| 9-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | |
| 10 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 | |
| 10-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

Edge Distance Reduction Factors - Shear (F_{VC})

| Diameter (in) | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 | |
|--------------------------------------|-------|-------|-------|-------|------|------|
| Nominal Embedment h_{nom} (in) | 1-1/4 | 2 | 2-1/2 | 2-3/4 | 3 | |
| Minimum Edge Distance c_{min} (in) | 1-3/4 | 2-3/4 | 3-1/4 | 4-1/2 | 6 | |
| Edge Distance (inches) | 1-3/4 | 0.39 | - | - | - | - |
| | 2 | 0.44 | - | - | - | - |
| | 2-1/2 | 0.56 | - | - | - | - |
| | 3 | 0.67 | 0.44 | - | - | - |
| | 3-1/4 | 0.72 | 0.48 | 0.41 | - | - |
| | 3-1/2 | 0.78 | 0.52 | 0.44 | - | - |
| | 4 | 0.89 | 0.59 | 0.51 | - | - |
| | 4-1/2 | 1.00 | 0.67 | 0.57 | 0.50 | - |
| | 5 | 1.00 | 0.74 | 0.63 | 0.56 | - |
| | 5-1/2 | 1.00 | 0.81 | 0.70 | 0.61 | - |
| | 6 | 1.00 | 0.89 | 0.76 | 0.67 | 0.57 |
| | 6-1/2 | 1.00 | 0.96 | 0.83 | 0.72 | 0.62 |
| | 7 | 1.00 | 1.00 | 0.89 | 0.78 | 0.67 |
| | 7-1/2 | 1.00 | 1.00 | 0.95 | 0.83 | 0.71 |
| | 8 | 1.00 | 1.00 | 1.00 | 0.89 | 0.76 |
| 8-1/2 | 1.00 | 1.00 | 1.00 | 0.94 | 0.81 | |
| 9 | 1.00 | 1.00 | 1.00 | 1.00 | 0.86 | |
| 9-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 0.90 | |
| 10 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | |
| 10-1/2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

STRENGTH DESIGN INFORMATION

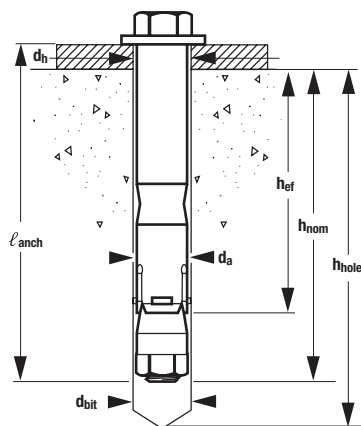
Power-Bolt+ Anchor Installation Specifications in Concrete and Supplemental Information ¹

| Anchor Property/Setting Information | Notation | Units | Nominal Anchor Diameter (in.) | | |
|--|-------------|---------------------------------------|-------------------------------|------------------|-------------------------|
| | | | 1/2 | 5/8 | 3/4 |
| Anchor outside diameter | d_a | in. (mm) | 0.500 (12.7) | 0.625 (15.9) | 0.750 (19.1) |
| Internal bolt diameter (UNC) | - | in. (mm) | 3/8 (9.5) | 7/16 (11.1) | 9/16 (14.3) |
| Minimum diameter of hole clearance in fixture | d_h | in. (mm) | 9/16 (14.3) | 11/16 (17.5) | 13/16 (21.6) |
| Nominal drill bit diameter (ANSI) | d_{bit} | in. | 1/2 | 5/8 | 3/4 |
| Minimum nominal embedment depth | h_{nom} | in. (mm) | 3-1/4 (83) | 3-3/4 (95) | 4-3/8 (111) |
| Effective embedment | h_{ef} | in. (mm) | 2-5/8 (67) | 3 (76) | 3-1/2 (89) |
| Minimum hole depth | h_{hole} | in. (mm) | 3-3/4 (95) | 4-1/4 (108) | 5 (127) |
| Minimum member thickness | h_{min} | in. (mm) | 5 (127) | 6-1/2 (165) | 7 (178) |
| Minimum overall anchor length ² | l_{anch} | in. (mm) | 3-1/2 (89) | 4 (102) | 5-1/4 (133) |
| Minimum edge distance | c_{min} | in. (mm) | 3-1/4 (83) | 4-1/2 (114) | 6 (152) 8 (203) |
| Minimum spacing distance | s_{min} | in. (mm) | 4-1/2 (114) | 6 (152) | 6 (152) 5 (127) |
| Installation torque | T_{inst} | ft.-lbf. (N-m) | 40 (54) | 60 (81) | 110 (149) |
| Bolt Head Height | - | in. (mm) | 9/32 (7.1) | 5/16 (7.9) | 3/8 (9.6) |
| Torque wrench/socket size | - | in. | 5/8 | 3/4 | 15/16 |
| Washer O.D. | - | in. | 1 | 1-1/4 | 1-15/32 |
| Minimum specified yield strength | f_y | ksi (N/mm ²) | 130 (896) | 130 (896) | 130 (896) |
| Minimum specified ultimate tensile strength ⁸ | f_{uta} | ksi (N/mm ²) | 150 (1,034) | 150 (1,034) | 150 (1,034) |
| Effective tensile stress area (threads) | $A_{se, N}$ | in ² (mm ²) | 0.0775 (50) | 0.1063 (68.6) | 0.1820 (117.4) |

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

- The information presented in this table is to be used in conjunction with the design criteria of ACI 318 (-19 or -14) Chapter 17 or ACI 318-11 Appendix D.
- 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.

Power-Bolt+ Anchor Detail



Tension Design information for Power-Bolt+ Anchor in Concrete

CODE LISTED
 ICC-ES ESR-3260


| Design Characteristic | Notation | Units | Nominal Anchor Diameter | | |
|---|--------------|-------------|-----------------------------|-----------------------------|-----------------------------|
| | | | 1/2 | 5/8 | 3/4 |
| Anchor category | 1,2 or 3 | - | 1 | 1 | 1 |
| Nominal embedment depth | h_{nom} | in. (mm) | 3-1/4 (83) | 3-3/4 (95) | 4-3/8 (111) |
| Effective embedment | h_{ef} | in. (mm) | 2.625 (67) | 3.000 (76) | 3.500 (89) |
| STEEL STRENGTH IN TENSION¹ | | | | | |
| Steel strength in tension | N_{sa} | lb (kN) | 9,685 (43.1) | 13,285 (59.1) | 27,300 (121.4) |
| Reduction factor for steel strength ² | ϕ | - | 0.75 | | 0.65 |
| CONCRETE BREAKOUT STRENGTH IN TENSION¹ | | | | | |
| Effectiveness factor for uncracked concrete | k_{ucr} | - | 27 (11.3) | 27 (11.3) | 24 (10.0) |
| Effectiveness factor for cracked concrete | k_{cr} | - | 17 (7.1) | 17 (7.1) | 17 (7.1) |
| Modification factor for cracked and uncracked concrete ⁵ | $\Psi_{c,N}$ | - | 1.0 | 1.0 | 1.0 |
| Critical edge distance (uncracked concrete) | c_{ac} | in. (mm) | 8 (203) | 6 (152) | 8 (203) |
| Reduction factor for concrete breakout strength ⁴ | ϕ | - | 0.65 (Condition B) | | |
| PULLOUT STRENGTH IN TENSION (NON-SEISMIC APPLICATIONS)⁷ | | | | | |
| Characteristic pullout strength, uncracked concrete (2,500 psi) | $N_{p,uncr}$ | lb (kN) | Not Applicable ⁶ | Not Applicable ⁶ | Not Applicable ⁶ |
| Characteristic pullout strength, cracked concrete (2,500 psi) | $N_{p,cr}$ | lb (kN) | Not Applicable ⁶ | Not Applicable ⁶ | Not Applicable ⁶ |
| Reduction factor for pullout strength | ϕ | - | 0.65 (Condition B) | | |
| PULLOUT STRENGTH IN TENSION FOR SEISMIC APPLICATIONS⁷ | | | | | |
| Characteristic pullout strength, seismic (2,500 psi) | $N_{p,eq}$ | lb (kN) | Not Applicable ⁶ | Not Applicable ⁶ | Not Applicable ⁶ |
| Reduction factor for pullout strength | ϕ | - | 0.65 (Condition B) | | |

For SI: 1 inch = 25.4 mm; 1 ksi = 6.894 N/mm²; 1 lbf = 0.0044 kN.

- The data in this table is intended to be used with the design provisions of ACI 318 (-19 or -14) Chapter 17 or ACI 318-11 Appendix D, as applicable; for anchors resisting seismic load combinations the additional requirements of ACI 318-19 17.10, ACI 318-14 17.2.3 or ACI 318-11 D.3.3, as applicable, shall apply.
- Installation must comply with the manufacturer's published installation instructions.
- The tabulated value of ϕ for steel strength applies when the load combinations of Section 1605.2 of the IBC, ACI 318 (-19 or -14) Section 5.3 or ACI 318-11 Section 9.2, as applicable, are used. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of ϕ for steel strength must be determined in accordance with ACI 318-11 D.4.3. The anchors are ductile steel elements as defined in ACI 318 (-19 or -14) 2.3 or ACI 318-11 D.1, as applicable, except for the 3/4-inch-diameter, which is considered a brittle steel element for the purposes of design.
- The tabulated value of ϕ for concrete breakout strength applies when both the load combinations of Section 1605.2 of the IBC, ACI 318 (-19 or -14) Section 5.3 or ACI 318-11 Section 9.2, as applicable, are used and the requirements of ACI 318-19 17.5.3, ACI 318-14 17.3.3 or ACI 318-11 D.4.3, as applicable, for Condition B are satisfied. If the load combinations of Section 1605.2 of the IBC, ACI 318 (-19 or -14) Section 5.3 or ACI 318-11 Section 9.2, as applicable, are used and the requirements of ACI 318-19 17.5.3, ACI 318-14 17.3.3 or ACI 318-11 D.4.3, as applicable, for Condition A are satisfied, the appropriate value of ϕ for concrete breakout strength must be determined in accordance with ACI 318-19 17.5.3, ACI 318-14 17.3.3 or ACI 318-11 D.4.3, as applicable. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of ϕ for concrete breakout strength must be determined in accordance with ACI 318-11 D.4.4.
- For all design cases use $\Psi_{c,N} = 1.0$. The appropriate effectiveness factor for cracked concrete (k_{cr}) or uncracked concrete (k_{ucr}) must be used.
- Pullout strength does not control design and does not need to be calculated for indicated size and embedment.
- Anchors are permitted to be used in lightweight concrete provided the modification factor λ_a equal to 0.8λ is applied to all values of $\sqrt{f'_c}$ affecting N_b and V_n . λ shall be determined in accordance with the corresponding version of ACI 318.
- In accordance with ACI 318-19 17.6.1.2 and Eq. 17.6.1.1, ACI 318-14 17.4.1.2 and Eq. 17.4.1.2 or ACI 318-11 D.5.1.2 and Eq. D-2, as applicable, the nominal steel strength in tension is calculated using a limited value of f_{sa} of 125 ksi.

Mean Axial Stiffness Values, β , for Power-Bolt+ Anchors in Normal-Weight Concrete¹

| Concrete State | Units | Nominal Anchor Diameter | | |
|--------------------|------------------------------------|-------------------------|--------------|-------------|
| | | 1/2 inch | 5/8 inch | 3/4 inch |
| Uncracked concrete | 10 ³ lbf/in. (kN/mm) | 366 (63) | 871 (150) | 256 (44) |
| Cracked concrete | 10 ³ lbf/in. (kN/mm) | 64 (11) | 94 (16) | 27 (5) |

1. Mean values shown; actual stiffness varies considerably depending on concrete strength, loading and geometry of application.

Shear Design information for Power-Bolt+ Anchor in Concrete

CODE LISTED
ICC-ES ESR-3260



| Design Characteristic | Notation | Units | Nominal Anchor Diameter | | |
|---|-------------|---------------------------------------|-------------------------|------------------|------------------|
| | | | 1/2 | 5/8 | 3/4 |
| Anchor category | 1, 2 or 3 | - | 1 | 1 | 1 |
| Nominal embedment depth | h_{nom} | in. (mm) | 3-1/4 (83) | 3-3/4 (95) | 4-3/8 (111) |
| Effective embedment | h_{ef} | in. (mm) | 2.625 (675) | 3.000 (76) | 3.500 (89) |
| STEEL STRENGTH IN SHEAR | | | | | |
| Minimum specified yield strength | f_y | ksi (N/mm ²) | 130 (896) | 130 (896) | 130 (896) |
| Minimum specified ultimate strength | f_{uta} | ksi (N/mm ²) | 150 (1,034) | 150 (1,034) | 150 (1,034) |
| Effective shear stress area | $A_{se,v}$ | in ² (mm ²) | 0.1069 (69.0) | 0.1452 (93.7) | 0.2410 (153) |
| Steel strength in shear ^a | V_{sa} | lb (kN) | 6,005 (26.7) | 13,415 (59.7) | 14,820 (65.9) |
| Reduction factor for steel strength ^a | ϕ | - | 0.65 | | 0.60 |
| STEEL STRENGTH IN SHEAR FOR SEISMIC APPLICATIONS | | | | | |
| Steel strength in shear, seismic ^a | $V_{sa,eq}$ | lb (kN) | 4,565 (20.3) | 7,425 (33.0) | 14,820 (65.9) |
| Reduction factor for steel strength in shear for seismic ^a | ϕ | - | 0.65 | | 0.60 |
| CONCRETE BREAKOUT STRENGTH IN SHEAR^b | | | | | |
| Load bearing length of anchor | ℓ_e | in. (mm) | 1.00 (25) | 1.25 (32) | 1.50 (51) |
| Nominal anchor diameter | d_a | in. (mm) | 0.500 (12.7) | 0.625 (15.9) | 0.750 (19.1) |
| Reduction factor for concrete breakout ^a | ϕ | - | 0.70 (Condition B) | | |
| PRYOUT STRENGTH IN SHEAR^b | | | | | |
| Coefficient for prout strength | k_{cp} | - | 2.0 | 2.0 | 2.0 |
| Reduction factor for prout strength ^a | ϕ | - | 0.70 (Condition B) | | |

For Sl: 1 inch = 25.4 mm; 1 ksi = 6.894 N/mm²; 1 lbf = 0.0044 kN.

- The data in this table is intended to be used with the design provisions of ACI 318 (-19 or -14) Chapter 17 or ACI 318-11 Appendix D, as applicable; for anchors resisting seismic load combinations the additional requirements of ACI 318-19 17.10, ACI 318-14 17.2.3 or ACI 318-11 D.3.3, as applicable, shall apply.
- Installation must comply with the manufacturer's published installation instructions.
- The tabulated value of ϕ for steel strength applies when the load combinations of Section 1605.2 of the IBC, ACI 318 (-19 or -14) Section 5.3 or ACI 318-11 Section 9.2, as applicable, are used. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of ϕ for steel strength must be determined in accordance with ACI 318-11 D.4.3. The anchors are ductile steel elements as defined in ACI 318 (-19 or -14) 2.3 or ACI 318-11 D.1, as applicable, except for the 3/4-inch-diameter which is considered a brittle steel element for the purposes of design.
- The tabulated value of ϕ for concrete breakout strength applies when both the load combinations of Section 1605.2 of the IBC, ACI 318 (-19 or -14) Section 5.3 or ACI 318-11 Section 9.2, as applicable, are used and the requirements of ACI 318-19 17.5.3, ACI 318-14 17.3.3 or ACI 318-11 D.4.3, as applicable, for Condition B are satisfied. If the load combinations of Section 1605.2 of the IBC, ACI 318 (-19 or -14) Section 5.3 or ACI 318-11 Section 9.2, as applicable, are used and the requirements of ACI 318-19 Section 17.5.3, ACI 318-14 17.3.3 or ACI 318-11 D.4.3, as applicable, for Condition A are satisfied, the appropriate value of ϕ for concrete breakout strength must be determined in accordance with ACI 318-19 Section 17.5.3, ACI 318-14 17.3.3 or ACI 318-11 D.4.3, as applicable. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of ϕ for concrete breakout strength must be determined in accordance with ACI 318-11 D.4.4.
- The tabulated value of ϕ for prout strength applies if the load combinations of Section 1605.2 of the IBC, ACI 318 (-19 or -14) Section 5.3 or ACI 318-11 Section 9.2, as applicable, are used. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of ϕ for prout strength must be determined in accordance with ACI 318-11 D.4.4, for condition B.
- Tabulated values for steel strength in shear must be used for design. The tabulated values for the shear stress area are listed conservatively and the results for the steel strength will be more conservative when using ACI 318-19 Section 17.7.1.2 and Eq. 17.7.1.2a, ACI 318-14 Eq. 17.5.1.2b or ACI 318-11 Eq. D-29, as applicable.
- Anchors are permitted to be used in lightweight concrete provided the modification factor λ_a equal to 0.8λ is applied to all values of $\sqrt{f'_c}$ affecting N_n and V_n . λ shall be determined in accordance with the corresponding version of ACI 318.
- Tabulated values for steel strength in shear are for seismic applications and based on test results in accordance with ACI 355.2, Section 9.6.

MECHANICAL ANCHORS

POWER-BOLT®+
Heavy Duty Sleeve Anchor

DESIGN STRENGTH TABLES (SD)

Tension and Shear Design Strengths for Power-Bolt+ in Cracked Concrete^{1,2,3,4,5,6,7}



| Nominal Anchor Diameter (in.) | Nominal Embed. h_{nom} (in.) | Minimum Concrete Compressive Strength | | | | | | | | | |
|-------------------------------|--------------------------------|---------------------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|
| | | $f'c = 2,500$ psi | | $f'c = 3,000$ psi | | $f'c = 4,000$ psi | | $f'c = 6,000$ psi | | $f'c = 8,000$ psi | |
| | | ΦN_n Tension (lbs.) | ΦV_n Shear (lbs.) | ΦN_n Tension (lbs.) | ΦV_n Shear (lbs.) | ΦN_n Tension (lbs.) | ΦV_n Shear (lbs.) | ΦN_n Tension (lbs.) | ΦV_n Shear (lbs.) | ΦN_n Tension (lbs.) | ΦV_n Shear (lbs.) |
| 1/2 | 3-1/4 | 2,350 | 3,905 | 2,575 | 3,905 | 2,970 | 3,905 | 3,640 | 3,905 | 4,205 | 3,905 |
| 5/8 | 3-3/4 | 2,870 | 5,105 | 3,145 | 5,590 | 3,630 | 6,460 | 4,450 | 7,910 | 5,135 | 8,720 |
| 3/4 | 4-3/8 | 3,620 | 7,740 | 3,965 | 8,475 | 4,575 | 8,890 | 5,605 | 8,890 | 6,470 | 8,890 |

■ - Concrete Breakout Strength Controls ■ - Steel Strength Controls

Tension and Shear Design Strengths for Power-Bolt+ in Uncracked Concrete^{1,2,3,4,5,6}

| Nominal Anchor Diameter (in.) | Nominal Embed. h_{nom} (in.) | Minimum Concrete Compressive Strength, $f'c$ (psi) | | | | | | | | | |
|-------------------------------|--------------------------------|--|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|
| | | $f'c = 2,500$ psi | | $f'c = 3,000$ psi | | $f'c = 4,000$ psi | | $f'c = 6,000$ psi | | $f'c = 8,000$ psi | |
| | | ΦN_n Tension (lbs.) | ΦV_n Shear (lbs.) | ΦN_n Tension (lbs.) | ΦV_n Shear (lbs.) | ΦN_n Tension (lbs.) | ΦV_n Shear (lbs.) | ΦN_n Tension (lbs.) | ΦV_n Shear (lbs.) | ΦN_n Tension (lbs.) | ΦV_n Shear (lbs.) |
| 1/2 | 3-1/4 | 3,730 | 3,905 | 4,090 | 3,905 | 4,720 | 3,905 | 5,780 | 3,905 | 6,675 | 3,905 |
| 5/8 | 3-3/4 | 4,560 | 7,145 | 4,995 | 7,830 | 5,770 | 8,720 | 7,065 | 8,720 | 8,155 | 8,720 |
| 3/4 | 4-3/8 | 5,105 | 8,890 | 5,595 | 8,890 | 6,460 | 8,890 | 7,910 | 8,890 | 9,135 | 8,890 |

■ - Concrete Breakout Strength Controls ■ - Steel Strength Controls

- Tabular values are provided for illustration and are applicable for single anchors installed in normal-weight concrete with minimum slab thickness, $h_{sa} = 1.5 \cdot h_{min}$, and with the following conditions:
 - C_{a1} is greater than or equal to 1.5 times the critical edge distance, C_{ac} (table values based on $C_{a1} = 1.5 \cdot C_{ac}$).
 - C_{a2} is greater than or equal to 1.5 times C_{a1} .
- Calculations were performed according to ACI 318 (-19 or -14) Chapter 17. The load level corresponding to the controlling failure mode is listed. (e.g. For tension: steel, concrete breakout and pullout; For shear: steel, concrete breakout and pryout). Furthermore, the capacities for concrete breakout strength in tension and pryout strength in shear are calculated using the effective embedment values, h_{ef} , for the selected anchors as noted in the design information tables. Please also reference the installation specifications for more information.
- Strength reduction factors (ϕ) were based on ACI 318 (-19 or -14) Section 5.3 for load combinations. Condition B is assumed.
- Tabular values are permitted for static loads only, seismic loading is not considered with these tables.
- For designs that include combined tension and shear, the interaction of tension and shear loads must be calculated in accordance with ACI 318 (-19 or -14) Chapter 17.
- Interpolation is not permitted to be used with the tabular values. For intermediate base material compressive strengths please see ACI 318 (-19 or -14) Chapter 17. For other design conditions including seismic considerations please see ACI 318 (-19 or -14) Chapter 17.
- For seismic design in accordance with ACI 318, the tabulated tension design strengths for concrete breakout and pullout must be multiplied by a factor of 0.75.

ORDERING INFORMATION

Power-Bolt+ (Carbon Steel with Finished Hex Head)



| Cat. No. | Anchor Size | Maximum Fixture Thickness | Pack Qty. | Carton Qty. | Suggested ANSI Carbide Drill Bit Cat. No. | | | | |
|------------|---------------|---------------------------|-----------|-------------|---|----------|---------|---------------------|--------------------|
| | | | | | Full Head SDS-Plus | SDS-Plus | SDS-Max | Hollow Bit SDS-Plus | Hollow Bit SDS-Max |
| 6902SD-PWR | 1/4" X 1-3/4" | 1/2" | 100 | 600 | - | - | - | - | - |
| 6906SD-PWR | 1/4" X 3" | 1-3/4" | 100 | 600 | - | - | - | - | - |
| 6911SD-PWR | 3/8" x 1-7/8" | 1/4" | 50 | 300 | DW5527 | DW5427 | - | - | - |
| 6910SD-PWR | 3/8" X 2-1/4" | 1/4" | 50 | 300 | DW5527 | DW5427 | - | - | - |
| 6913SD-PWR | 3/8" X 3" | 1" | 50 | 300 | DW5527 | DW5427 | - | - | - |
| 6914SD-PWR | 3/8" X 3-1/2" | 1-1/2" | 50 | 300 | DW5527 | DW5427 | - | - | - |
| 6916SD-PWR | 3/8" X 4" | 2" | 50 | 300 | DW5527 | DW5427 | - | - | - |
| 6930SD-PWR | 1/2" x 2-3/4" | 1/4" | 50 | 200 | DW5537 | DW5429 | DW5803 | DWA54012 | - |
| 6932SD-PWR | 1/2" x 3-1/2" | 1/4" | 50 | 200 | DW5537 | DW5429 | DW5803 | DWA54012 | - |
| 6934SD-PWR | 1/2" x 4-3/4" | 1-1/2" | 25 | 150 | DW5537 | DW5429 | DW5803 | DWA54012 | - |
| 6936SD-PWR | 1/2" x 5-3/4" | 2-1/2" | 25 | 150 | DW5537 | DW5429 | DW5803 | DWA54012 | - |
| 6940SD-PWR | 5/8" x 3" | 1/4" | 20 | 120 | - | DW5446 | DW5806 | DWA54058 | DWA54058 |
| 6942SD-PWR | 5/8" x 4" | 1/4" | 15 | 90 | - | DW5446 | DW5806 | DWA54058 | DWA54058 |
| 6944SD-PWR | 5/8" x 5" | 1-1/4" | 15 | 90 | - | DW5446 | DW5806 | DWA54058 | DWA58058 |
| 6945SD-PWR | 5/8" x 6" | 2-1/4" | 15 | 90 | - | DW5446 | DW5806 | DWA54058 | DWA58058 |
| 6947SD-PWR | 5/8" x 8-1/2" | 4-3/4" | 10 | 40 | - | DW5447 | DW5809 | DWA54058 | DWA58058 |
| 6950SD-PWR | 3/4" x 3-1/4" | 1/4" | 15 | 90 | - | DW5453 | DW5809 | DWA54034 | DWA54034 |
| 6952SD-PWR | 3/4" x 4-1/2" | 1-1/2" | 10 | 60 | - | DW5453 | DW5809 | DWA54034 | DWA54034 |
| 6954SD-PWR | 3/4" x 5-1/4" | 7/8" | 10 | 60 | - | DW5453 | DW5809 | DWA54034 | DWA54034 |
| 6956SD-PWR | 3/4" x 7-1/4" | 2-7/8" | 10 | 40 | - | DW5453 | DW5809 | DWA54034 | DWA54034 |
| 6957SD-PWR | 3/4" x 8-1/4" | 3-7/8" | 10 | 40 | - | DW5455 | DW5809 | DWA54034 | DWA54034 |

Shaded catalog numbers denote sizes which are too small or lengths less than the minimum standard anchor length for strength design.
 The published size includes the diameter and the length. The length is measured from below the washer to the end of the anchor.
 The tabulated maximum fixture thickness is provided for reference. The actual maximum fixture thickness for the anchor is determined by subtracting the required nominal embedment depth for the application from the published length.
 Hollow drill bits must be used with a dust extraction vacuum (e.g. Cat. No. DW012).

MECHANICAL ANCHORS

POWER-BOLT®+
Heavy Duty Sleeve Anchor