

Single Shield Expansion Anchor

PRODUCT DESCRIPTION

The Single is a machine bolt anchor designed for use in concrete, block, brick, and stone. The Single consists of a pre-assembled set of expansion shields and an expander cone formed from zamac alloy. As the anchor is tightened, the wedge-shaped cone is drawn into the shields, compressing them against the base material. The Single is not recommended for use in overhead applications.

FEATURES AND BENEFITS

- Readily accepts machine bolts
- Internally threaded anchor for easy removability and service work

APPROVALS AND LISTINGS

Federal GSA Specification – Meets the descriptive and proof load requirements of CID A-A 1923A, Type 2

GUIDE SPECIFICATIONS

CSI Divisions: 03151-Concrete Anchoring and 05090-Metal Fastening.
Expansion anchors shall be Single as supplied by Powers Fasteners, Inc., Brewster, NY.

SECTION CONTENTS Page No.

| | |
|-----------------------------------------------|---|
| General Information..... | 1 |
| Installation and Material Specifications..... | 1 |
| Performance Data..... | 2 |
| Design Criteria..... | 2 |
| Ordering Information..... | 2 |



Single

THREAD VERSION

UNC Thread

ANCHOR MATERIALS

Zamac Alloy

ROD/ANCHOR SIZE RANGE (TYP.)

1/4" to 5/8" diameter

SUITABLE BASE MATERIALS

Normal-weight Concrete

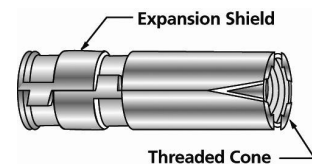
INSTALLATION AND MATERIAL SPECIFICATIONS

Installation Specifications

| Dimension | Rod/Anchor Diameter, <i>d</i> | | | | |
|----------------------------------------------|-------------------------------|---------|--------|--------|--------|
| | 1/4" | 5/16" | 3/8" | 1/2" | 5/8" |
| ANSI Drill Bit Size, d_{bit} (in.) | 1/2 | 5/8 | 5/8 | 7/8 | 1 |
| Max. Tightening Torque, T_{max} (ft.-lbs.) | 5 | 7 | 10 | 20 | 30 |
| Thread Size (UNC) | 1/4-20 | 5/16-18 | 3/8-16 | 1/2-13 | 5/8-11 |
| Thread Length In Cone (in.) | 5/16 | 5/16 | 5/16 | 7/16 | 5/8 |
| Overall Anchor Length (in.) | 1 5/16 | 1 1/2 | 1 1/2 | 2 1/16 | 2 5/8 |

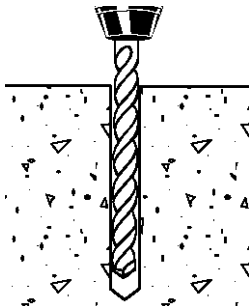
Material Specifications

| Anchor Component | Component Material |
|------------------|--------------------|
| Anchor Shield | Zamac Alloy |
| Cone | Zamac Alloy |

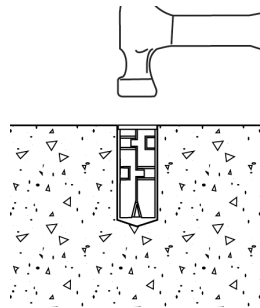


Installation Guidelines

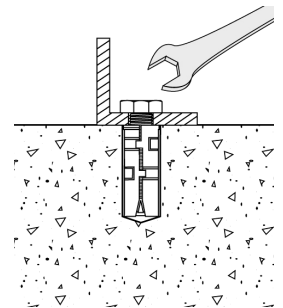
Drill a hole into the base material to the minimum depth required. The tolerances of the drill bit used should meet the requirements of ANSI Standard B212.15. Blow the hole clean of dust and other material.



Do not expand the anchor prior to installation. Insert anchor into the hole, threaded cone end first and tap it flush to the surface.



Position fixture, then insert bolt and tighten. The bolt must engage a minimum of 2/3 of the anchor threads.



PERFORMANCE DATA

Ultimate Load Capacities for Single Expansion Anchor in Normal-Weight Concrete^{1,2,3}

| Rod/Anchor Diameter <i>d</i> in. (mm) | Minimum Embedment Depth <i>h_v</i> in. (mm) | Minimum Concrete Compressive Strength (<i>f'_c</i>) | | | | | |
|----------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------|-------------------------|-----------------------|-------------------------|-----------------------|
| | | 2,000 psi (13.8 MPa) | | 4,000 psi (27.6 MPa) | | 6,000 psi (41.4 MPa) | |
| | | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) |
| 1/4 (6.4) | 1 3/8 (34.9) | 175 (0.8) | 555 (2.5) | 400 (1.8) | 565 (2.5) | 460 (2.1) | 670 (3.0) |
| 5/16 (7.9) | 1 5/8 (41.3) | 830 (3.7) | 1,535 (6.9) | 1,260 (5.7) | 1,780 (8.0) | 1,475 (6.6) | 1,900 (8.6) |
| 3/8 (9.5) | 1 5/8 (41.3) | 1,160 (5.2) | 3,050 (13.7) | 2,030 (9.1) | 3,225 (14.5) | 2,360 (10.6) | 4,570 (20.6) |
| 1/2 (12.7) | 2 1/2 (63.5) | 1,495 (6.7) | 3,475 (15.7) | 2,450 (11.0) | 4,000 (18.0) | 2,550 (11.5) | 6,435 (29.0) |
| 5/8 (15.9) | 2 3/4 (69.9) | 2,230 (10.0) | 6,425 (28.9) | 3,690 (16.6) | 6,845 (30.8) | 3,975 (17.9) | 7,720 (34.8) |

1. Tabulated load values are for anchors installed in concrete. 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. Anchors are not recommended for use overhead or for life safety. Consideration of safety factors of 20 or higher may be necessary depending upon the application such as in sustained tensile loading applications.

Allowable Load Capacities for Single Expansion Anchor in Normal-Weight Concrete^{1,2}

| Rod/Anchor Diameter <i>d</i> in. (mm) | Minimum Embedment Depth <i>h_v</i> in. (mm) | Minimum Concrete Compressive Strength (<i>f'_c</i>) | | | | | |
|----------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------|-------------------------|-----------------------|-------------------------|-----------------------|
| | | 2,000 psi (13.8 MPa) | | 4,000 psi (27.6 MPa) | | 6,000 psi (41.4 MPa) | |
| | | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) | Tension lbs. (kN) | Shear lbs. (kN) |
| 1/4 (6.4) | 1 3/8 (34.9) | 45 (0.2) | 140 (0.6) | 100 (0.5) | 140 (0.6) | 115 (0.5) | 170 (0.8) |
| 5/16 (7.9) | 1 5/8 (41.3) | 210 (0.9) | 385 (1.7) | 315 (1.4) | 445 (2.0) | 370 (1.7) | 475 (2.1) |
| 3/8 (9.5) | 1 5/8 (41.3) | 290 (1.3) | 765 (3.4) | 510 (2.3) | 805 (3.6) | 590 (2.7) | 1,145 (5.1) |
| 1/2 (12.7) | 2 1/2 (63.5) | 375 (1.7) | 870 (3.9) | 615 (2.8) | 1,000 (4.5) | 640 (2.9) | 1,610 (7.2) |
| 5/8 (15.9) | 2 3/4 (69.9) | 560 (2.5) | 1,605 (7.2) | 925 (4.2) | 1,710 (7.7) | 995 (4.5) | 1,930 (8.7) |

1. Allowable load capacities listed are calculated using and applied safety factor of 4.0. Anchors are not recommended for use overhead or for life safety. Consideration of safety factors of 20 or higher may be necessary depending upon the application such as in sustained tensile loading applications.
2. Linear interpolation may be used to determine loads for intermediate compressive strengths.

ORDERING INFORMATION

Single Expansion Anchor

| Cat. No. | Rod/Anchor Dia. | Drill Diameter | Min. Hole Depth | Std. Box | Std. Carton | Wt./100 |
|----------|-----------------|----------------|-----------------|----------|-------------|---------|
| 9650 | 1/4" | 1/2" | 1 3/8" | 50 | 250 | 3 3/4 |
| 9655 | 5/16" | 5/8" | 1 5/8" | 50 | 250 | 5 1/2 |
| 9665 | 3/8" | 5/8" | 1 5/8" | 50 | 250 | 5 1/4 |
| 9675 | 1/2" | 7/8" | 2 1/2" | 25 | 125 | 15 1/4 |
| 9685 | 5/8" | 1" | 2 3/4" | 25 | 125 | 24 |

