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RESEARCH REPORT: RR26049  
(CSI #04.05.19.16)

BASED UPON ICC EVALUATION SERVICE  
REPORT NO. ESR-3200

Expires: August 1, 2017  
Issued Date: August 1, 2016  
Code: 2014 LABC

**GENERAL APPROVAL - DEWALT AC100+ Gold Adhesive Anchor System in Masonry**

**DETAILS**

DEWALT AC100+ Gold Adhesive Anchor System in Masonry is approved when in compliance with the use, description, design, installation, conditions of use, and identification of Report No. ESR-3200, issued December 2015, corrected June 2016, of the ICC Evaluation Service, Incorporated. The report in its entirety is attached and made part of this general approval.

The parts of Report No. 3200 marked by the asterisks have been removed by the Los Angeles Building Department from this approval.

**The approval is subject to the following conditions:**

1. The use of the anchors is limited to installation in uncracked masonry.
2. The use of the anchors in unreinforced masonry structures is not approved

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## Powers Fasteners

RE: – DEWALT AC100+ Gold Adhesive Anchor System in Masonry

3. The adhesive anchor system is not approved for installation in hollow concrete masonry for resisting seismic loads.
4. The use of anchors in fire-resistive construction shall be in accordance with Section 5.9 of the ESR-3200 report.
5. The use of the anchors to resist loads from fatigue or shock loading is outside the scope of the approval.
6. Anchors shall be installed in accordance with Section 4.2 of evaluation report ESR-3200.
7. Calculations demonstrating that the applied loads are less than the allowable loads described in this report shall be submitted to the plan check engineer at the time of permit application. The calculations shall be prepared by a Civil or Structural Engineer registered in the State of California.

EXCEPTION: Anchors used for the installation of mechanical, plumbing and electrical equipment shall be designed and detailed on a plan prepared by an engineer licensed by the state of California.

8. The allowable tension and shear loads shall not be increased for wind or seismic loads.
9. Special inspection shall be provided in accordance with Section 1704 of the Los Angeles Building Code and is applicable for installations under the Los Angeles Residential Code.
10. When anchors are located where the internal base material temperature may exceed 70° F, allowable tension and shear loads shown in the attached ICC-ES ESR report 3200 must be adjusted for in-service temperatures in accordance with Figure 1 of the report.
11. The use of DEWALT AC100+ Gold adhesive in base materials having internal temperatures exceeding 180° F during service life is beyond the scope of this report.
12. Anchors shall be installed per the manufacturer's instructions, except as otherwise stated in this report. A copy of this research report and the installation instructions shall be available at each job site.

## DISCUSSION

The report is in compliance with the 2014 Los Angeles City Building Code.

The approval is based on tests in accordance with ICC-ES Acceptance Criteria for Adhesive Anchors in Masonry Elements (AC58), dated January 2013.

This general approval will remain effective provided the Evaluation Report is maintained valid and unrevised with the issuing organization. Any revision to the report must be submitted to this Department for review with appropriate fee to continue the approval of the revised report.

Powers Fasteners

RE: – DEWALT AC100+ Gold Adhesive Anchor System in Masonry

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this Department has determined that all conditions of this Approval have been met in the project in which it is to be used.

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# ICC-ES Evaluation Report

## ESR-3200

Issued December 2015

Corrected June 2016

This report is subject to renewal December 2016.

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**DIVISION: 04 00 00—MASONRY**  
**Section: 04 05 19.16—Masonry Anchors**

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### EVALUATION SUBJECT:

**AC100+ GOLD® ADHESIVE ANCHOR SYSTEM IN  
 MASONRY (DEWALT / POWERS)**

## 1.0 EVALUATION SCOPE

### Compliance with the following codes:

- \* ~~2015~~, 2012, and 2009 *International Building Code*® (IBC)
- \* ~~2015~~, 2012, and 2009 *International Residential Code*® (IRC)

### Property evaluated:

Structural

## 2.0 USES

The AC100+ Gold adhesive anchor system and additional listees described in Section 3.1 of this report are used to anchor building components to hollow (ungrouted) and fully grouted concrete masonry walls to resist static, wind and earthquake loads, as noted in Section 4.0 of this report.

The anchor system is an alternative to Section 8.1.3 (2013 edition), or Section 2.1.4 (2011, 2008 or 2005 editions) of TMS 402/ACI 530/ASCE 5 as referenced in Section 2107.1 of the IBC. The anchor system may also be used where an engineered design is submitted in accordance with Section R301.1.3 of the IRC.

## 3.0 DESCRIPTION

### 3.1 General:

The AC100+ Gold Adhesive Anchor System is comprised of a two-component epoxy adhesive filled in cartridges, static mixing nozzles, dispensing tools, hole cleaning equipment and plastic or stainless steel mesh screen tubes (screen tubes are for use in hollow masonry block).

Product names for the report holder and the additional listee are presented in the following table of this report.

Company Name	Product Name
DEWALT	AC100+ Gold®
	AC100-PRO (outside North America)
Powers Fasteners	AC100+ Gold®
	AC100-PRO (outside North America)

The adhesive is used with continuously threaded steel rods; the adhesive and steel rods are installed in pre-drilled holes into concrete masonry walls.

### 3.2 Materials:

**3.2.1 AC100+ Gold Adhesive:** AC100+ Gold is an injectable two-component adhesive. The two components are separated by means of a labeled dual-cylinder cartridge. The two components combine and react when dispensed through a static mixing nozzle, supplied by DEWALT / Powers, which is attached to the cartridge. The AC100+ Gold adhesive is available in 8-ounce (235 mL), 10-ounce (280 mL), 12-ounce (345 mL) and 28-ounce (825 mL) cartridges. Each cartridge label is marked with the adhesive expiration date. A shelf life of eighteen months, as indicated by the expiration date, applies to an unopened cartridge when stored in accordance with the manufacturer's recommendations.

**3.2.2 Hole Cleaning Equipment:** Hole cleaning equipment is comprised of steel wire brushes supplied by Powers Fasteners, and a compressed air nozzle or hand pump.

**3.2.3 Dispensers:** AC100+ Gold adhesive must be dispensed with manual, pneumatic dispensers, or electric powered dispensers supplied by Powers Fasteners.

**3.2.4 Threaded Steel Rods:** Threaded steel rods must be clean and continuously threaded (all-thread). Carbon steel threaded rods must be in accordance with standard ASTM A36, ASTM F1554 Grade 36, ASTM A307, ISO 898 Class 5.8 or high strength ASTM A193 Grade B7. Stainless steel threaded rods must conform to ASTM F593 (AISI 304 / 316).

Carbon steel threaded rods must be furnished with a minimum of 0.0002-inch-thick (0.005 mm) zinc electroplated coating complying with ASTM B633, SC1; or a minimum 0.0021-inch-thick (0.053 mm) mechanically deposited zinc coating complying with ASTM B695, Class 55; or a hot dip galvanized zinc coating complying with ASTM A153, Class C or D. The stainless steel threaded rods must comply with Table 5 of this report. Steel grades and material types (carbon, stainless) of the washers and nuts must be matched to the threaded rods. Threaded steel rods must be straight and free of indentations or other defects along their length. The embedded end may be either flat cut or cut on the bias to a chisel point. Material types of the nuts and washers must be matched to the threaded rods.

**3.2.5 Screen Tubes:** Plastic and stainless steel mesh screen tubes are used in hollow masonry with the adhesive and threaded steel rods. The screen tubes hold the adhesive in position in the masonry wall face during the installation of the steel threaded rods.

### 3.3 Masonry:

**3.3.1 Grout-filled Concrete Masonry:** The compressive strength of masonry,  $f'_m$ , at 28 days must be a minimum of 1,500 psi (10.3 MPa). Fully grouted masonry walls must comply with Chapter 21 of the IBC and must be constructed from the following materials:

**3.3.1.1 Concrete Masonry Units (CMUs):** Concrete masonry walls must be constructed from minimum light-, medium-, or normal weight closed end, concrete masonry units (CMUs) conforming to ASTM C90. The nominal CMU size is 8 inches unless noted in this report.

**3.3.1.2 Grout (for Grout-filled Concrete Masonry):** Grout-filled concrete masonry units must be fully grouted with grout complying with ~~Section 2103.3 of the 2015 IBC~~, Section 2103.13 of the 2012 IBC, Section 2103.12 of the 2009 IBC, or ~~Section R606 of the 2015 IRC~~; Section R609.1.1 of the 2012, and 2009 IRC, as applicable. Alternatively, the grout must have a minimum compressive strength, when tested in accordance with ASTM C1019, equal to its specified strength, but not less than 2,000 psi (13.8 MPa).

**3.3.1.3 Mortar:** Mortar must be Types M, S or N prepared in accordance with Section 2103 of the IBC or ~~Section R606.2.11 of the 2015 IRC~~, Section R607.1 of the 2012, and 2009 IRC, as applicable.

**3.3.2 Hollow (Ungrouted) concrete masonry:** The compressive strength of masonry,  $f'_m$ , at 28 days must be a minimum of 1,500 psi (10.3 MPa). Fully grouted masonry walls must comply with Chapter 21 of the IBC and must be constructed from the following materials:

**3.3.2.1 Concrete Masonry Units (CMUs):** Concrete masonry walls must be constructed from minimum light-, medium-, or normal weight closed end, concrete masonry units (CMUs) conforming to ASTM C90. The nominal CMU size is 8 inches unless noted in this report.

**3.3.2.2 Mortar:** Mortar must be Types M, S or N prepared in accordance with ~~Section 2103.2.1 of the 2015 IBC~~, Section 2103.9 of the 2012 IBC, Section 2103.8 of the 2009 IBC, or ~~R606.2.7 of the 2015 IRC~~, R607.1 of the 2012, and 2009 IRC, as applicable.

## 4.0 DESIGN AND INSTALLATION

### 4.1 Allowable Stress Design:

**General:** The design load values for anchors described in this report are based on allowable stress design (ASD), as an alternative to Section 8.1.3 (2013 edition), or Section 2.1.4 of TMS 402/ACI 530/ASCE 5 (2011, 2008 or 2005

editions) as referenced in Section 2107.1 of the IBC. For use under the IRC, an engineered design in accordance with R301.1.3 must be submitted to the code official. Allowable tension and shear loads for installation in grout-filled and hollow masonry walls are noted in Tables 5 through 9 of this report. The allowable tension and shear values in this report must be adjusted in accordance with Figure 1 for in-service base material temperatures in excess of 70°F (21°C). Allowable tension and shear loads based on steel strength for threaded rods are described in Table 5.

Allowable stress design tension and shear load values given in Tables 6 and 7 in grout-filled concrete masonry may be used to resist long-term loads, such as gravity loads, and short-term loads, such as wind and seismic. Use of the tension and shear load values in hollow masonry given in Tables 8 and 9 may be used to resist long-term loads, such as gravity loads. The use of anchors for seismic loads in hollow masonry is beyond the scope of this report; the values may be used for short-term loading due to wind forces, however, the allowable loads may not be increased.

Critical and minimum spacing and edge distance values, with appropriate reduction values, where applicable, are given in Tables 6 and 7 for fully grouted concrete masonry and Tables 8 and 9 for hollow concrete masonry.

The allowable loads for anchors installed in fully grout-filled concrete masonry or hollow masonry subjected to combined tension and shear forces must be determined by the following equation:

$$\left(\frac{P_s}{P_t}\right) + \left(\frac{V_s}{V_t}\right) \leq 1$$

where:

$P_s$  = Applied service tension load (lbf or kN).

$P_t$  = Allowable service tension load (lbf or kN).

$V_s$  = Applied service shear load (lbf or kN).

$V_t$  = Allowable service shear load (lbf or kN).

### 4.2 Installation:

Anchors must be installed in accordance with this report and the manufacturer's published installation instructions (MPII) represented in Figures 6 and 7. The anchors must not be installed until the base material has reached its minimum designated compressive strength. The drill bit size, hole diameter, embedment depth, spacing, edge distance and base material must comply with the requirements of this report. Installation procedures and locations must be in accordance with Tables 1, 2, 6, 7, 8 and 9 as well as Figures 2, 3, 4, 5, 6 and 7 of this report, as applicable.

### 4.3 Special Inspection:

Periodic special inspections are required in accordance with IBC Section 1704, and are also applicable for installations under the IRC.

The special inspector must be on the jobsite initially during anchor installation to verify anchor type, anchor dimensions, masonry type, masonry dimensions and compressive strength, drill bit size, anchor spacing, edge distances, embedment, and adherence to the manufacturer's printed installation instructions (MPII).

The special inspector must verify that anchor installation is in compliance with this evaluation report and in accordance with the MPII.

Subsequent installations of the same anchor type and size by the same construction personnel are permitted to be performed in the absence of the special inspector. Any change in the anchor product being installed or the personnel performing the installation requires an initial inspection. For ongoing installations over an extended period, the special inspector must make regular inspections to confirm correct handling and installation of the product.

## 5.0 CONDITIONS OF USE

The AC100+ Gold<sup>®</sup> Adhesive Anchor System described in this report complies with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The anchors must be identified and installed in accordance with this report and the MPII. In the event of a conflict between the instructions in this report and the manufacturer's instructions, this report must govern.
  - 5.2 Anchor sizes, dimensions, and minimum embedment depths are as set forth in this report.
  - 5.3 Anchors resisting static and wind tension and shear loads in concrete masonry must be designed in accordance with Section 4.1 of this report.
  - 5.4 For installations in grouted concrete masonry, anchors are recognized to dead, live, seismic and wind tension and shear load applications. When using the basic load combinations in accordance with IBC Section 1605.3.1.1, allowable loads are not permitted to be increased for wind loading. When using the alternative basic load combinations in 2009 IBC Section 1605.3.2 that include wind loads, the allowable loads for anchors are permitted to be increased in accordance with Table 4, as applicable.
    - \* For the 2015 and 2012 IBC, the allowable loads or load combinations for these anchors must not be adjusted.
  - 5.5 For installations in hollow concrete masonry, anchors are recognized to dead, live, and wind tension and shear load applications. For installations in hollow concrete masonry under the IBC or the IRC, the use of adhesive anchors for resistance to seismic loads is beyond the scope of this report. The allowable loads or load combinations for these anchors must not be adjusted for applications subjected to wind loads.
  - 5.6 Anchors must be installed in holes predrilled in substrates described in this report, using carbide-tipped drill bits complying with ANSI B212.15-1994.
  - 5.7 Prior to installation, calculations demonstrating that the applied loads are less than the allowable loads described in this report must be submitted to the code official for approval. The calculations must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is being constructed.
  - 5.8 Since an ICC-ES acceptance criteria for evaluating data to determine the performance of adhesive anchors subjected to fatigue and shock loading is unavailable at this time, the use of these anchors under these conditions is beyond the scope of this report.
  - 5.9 Where not otherwise prohibited by the code, anchors are permitted for installation in fire-resistance-rated construction provided at least one of the following conditions is fulfilled:
    - Anchors are used to resist wind or seismic forces only.
    - Anchors that support fire-resistance-rated construction or gravity load-bearing structural elements are within a fire-resistance-rated envelope or a fire-resistance-rated membrane, are protected by approved fire-resistance-rated materials, or have been evaluated for resistance to fire exposure in accordance with recognized standards.
    - Anchors are used to support nonstructural elements.
- 5.10 Since an ICC-ES acceptance criteria for evaluating data to determine the performance of adhesive anchors in cracked masonry is unavailable at this time, the use of adhesive anchors is limited to installation in uncracked masonry. Cracking occurs when  $f_t > f_r$  due to service loads or deformations.
  - 5.11 The anchors may be installed in base materials having internal temperatures between 14°F (-10°C) and 104°F (40°C) at the time of installation. Installation of AC100+ Gold adhesive in base materials having temperatures beyond this range is outside the scope of the report.
  - 5.12 When anchors are located where the internal base material temperature may exceed 70°F (21°C), allowable tension and shear loads indicated in this report must be adjusted for in-service temperatures in accordance with Figure 1. The use of AC100+ Gold adhesive in base materials having internal temperatures exceeding 180°F (82°C) during service life is beyond the scope of this report.
  - 5.13 Use of AC100+ Gold in conjunction with uncoated or zinc electroplated carbon steel threaded rods must be limited to interior exposure. Use of stainless steel (AISI 304 or Type 316) anchors or hot-dipped galvanized anchors with zinc coating conforming to ASTM A153, Class C or D, is permitted for exterior or damp environments during service life.
  - 5.14 Steel anchoring elements in contact with preservative-treated wood or fire-retardant-treated wood must be stainless steel, hot-dipped galvanized in accordance with ASTM A153, Class C or D, or mechanically galvanized in accordance with ASTM B633, Class 55.
  - 5.15 Special inspection, when required, must be provided in accordance with Section 4.3 of this report.
  - 5.16 During installation, the pre-drilled holes must be dry.
  - 5.17 The AC100+ Gold adhesive is manufactured under a quality control program with inspections by ICC-ES.

## 6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Adhesive Anchors in Masonry Elements (AC58), dated November 2015, including the following suitability requirements: sustained load (Test Series 17); in-service temperature (Test Series 18); freezing and thawing (Test Series 20); and seismic testing (Test Series 21).
- 6.2 Evidence of compliance with NSF/ANSI Standard 61, Drinking Water System Components—Health Effects, for the AC100+ Gold adhesive.
- 6.3 A quality control manual.

## 7.0 IDENTIFICATION

The AC100+ Gold cartridges and additional listee names described in Section 3.1 of this report are identified by a label displaying the company name, the product name, lot number, expiration date and the evaluation report number (ESR-3200). The plastic and stainless steel screen tubes are identified by packaging label displaying the company name and the product name. Threaded rods and nuts are standard elements and must conform to applicable national or international specifications.



TABLE 1—AC100+ GOLD ADHESIVE ANCHOR INSTALLATION SPECIFICATIONS IN MASONRY<sup>1</sup>

Grout-filled Concrete Masonry Walls									
Anchor Property / Setting Information	Notation	Units	Nominal Anchor Size (inch)						
			<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>2</sub>	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>4</sub>			
Nominal outside anchor diameter	<i>d</i>	in.	0.375	0.500	0.625	0.750			
Nominal drill bit diameter	<i>d<sub>bit</sub></i>	in.	<sup>7</sup> / <sub>16</sub> ANSI	<sup>9</sup> / <sub>16</sub> ANSI	<sup>11</sup> / <sub>16</sub> ANSI	<sup>7</sup> / <sub>8</sub> ANSI			
Nominal steel brush size	-	in.	<sup>1</sup> / <sub>2</sub>	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>4</sub>	<sup>15</sup> / <sub>16</sub>			
Hex head wrench / socket size <sup>2</sup>	in.	in.	<sup>9</sup> / <sub>16</sub>	<sup>3</sup> / <sub>4</sub>	<sup>15</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>8</sub>			
Maximum torque <sup>4</sup>	<i>T<sub>max</sub></i>	ft.-lb.	10	15	15	20			
Hollow Concrete Masonry Walls									
Anchor Property / Setting Information	Notation	Units	Nominal Anchor Size (inch)						
			<sup>1</sup> / <sub>4</sub>	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>2</sub>	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>4</sub>		
Nominal outside anchor diameter	<i>d</i>	in.	0.250	0.375	0.500	0.625	0.750		
Screen tube material type	-	-	Stainless	Stainless	Plastic	Stainless	Plastic	Stainless	
Nominal screen tube diameter <sup>3</sup>	-	in.	<sup>1</sup> / <sub>4</sub>	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>2</sub>	<sup>5</sup> / <sub>8</sub>	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>4</sub>
Nominal drill bit diameter	<i>d<sub>bit</sub></i>	in.	<sup>3</sup> / <sub>8</sub> ANSI	<sup>1</sup> / <sub>2</sub> ANSI	<sup>9</sup> / <sub>16</sub> ANSI	<sup>5</sup> / <sub>8</sub> ANSI	<sup>3</sup> / <sub>4</sub> ANSI	<sup>3</sup> / <sub>4</sub> ANSI	<sup>7</sup> / <sub>8</sub> ANSI
Nominal steel brush size	-	in.	<sup>1</sup> / <sub>2</sub>	<sup>5</sup> / <sub>8</sub>	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>4</sub>	<sup>13</sup> / <sub>16</sub>	<sup>13</sup> / <sub>16</sub>	<sup>15</sup> / <sub>16</sub>
Hex head wrench / socket size <sup>2</sup>	-	in.	<sup>7</sup> / <sub>16</sub>	<sup>9</sup> / <sub>16</sub>	<sup>3</sup> / <sub>4</sub>	<sup>15</sup> / <sub>16</sub>	<sup>15</sup> / <sub>16</sub>	<sup>15</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>8</sub>
Maximum torque <sup>4</sup>	<i>T<sub>max</sub></i>	ft.-lb.	4	6	10	10	10	10	

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

<sup>1</sup>See allowable tension and shear load tables in this report for applicable embedment depths for each nominal anchor size.

<sup>2</sup>Wrench/socket size based on nuts that conform to applicable national or international specifications matched with threaded rods.

<sup>3</sup>Minimum nominal screen tube length is the masonry face shell thickness plus one-half-inch. See Figure 5 for illustration of face shell thickness.

<sup>4</sup>Torque may not be applied to the adhesive anchors until the full cure time has elapsed. See Table 2 for adhesive curing times.

TABLE 2—GEL AND CURING TIMES FOR AC100+ GOLD ADHESIVE<sup>1</sup>

Temperature of base material	Approximate gel (working) time	Full curing time
14°F / -10°C	90 minutes	24 hours
23°F / -5°C	90 minutes	14 hours
32°F / 0°C	45 minutes	7 hours
41°F / 5°C	25 minutes	2 hours
68°F / 20°C	6 minutes	45 minutes
86°F / 30°C	4 minutes	25 minutes
104°F / 40°C	1.5 minutes	15 minutes

<sup>1</sup>Linear interpolation to determine approximate gel and full curing times for intermediate base material temperatures is allowed.

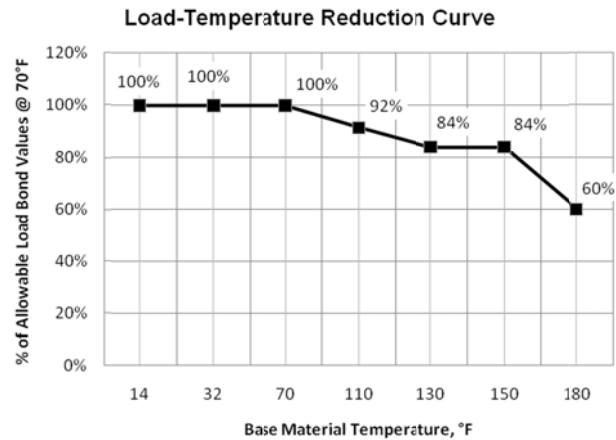


FIGURE 1—INFLUENCE OF BASE MATERIAL TEMPERATURE ON ALLOWABLE ADHESIVE BOND TENSION AND SHEAR LOADS FOR AC100+ GOLD ADHESIVE ANCHORS IN CONCRETE MASONRY

TABLE 3—DESIGN TABLE INDEX<sup>1</sup>

Adhesive	Base Material	Threaded Rod Sizes (inch)	Allowable Load Data (steel strength)	Allowable Load Data (bond strength)
AC100+ Gold	Grout-filled Concrete Masonry	<sup>3</sup> / <sub>8</sub> , <sup>1</sup> / <sub>2</sub> , <sup>5</sup> / <sub>8</sub> , <sup>3</sup> / <sub>4</sub>	Table 5	Tables 6 and 7
	Hollow Concrete Masonry Units	<sup>1</sup> / <sub>4</sub> , <sup>3</sup> / <sub>8</sub> , <sup>1</sup> / <sub>2</sub> , <sup>5</sup> / <sub>8</sub> , <sup>3</sup> / <sub>4</sub>	Table 5	Tables 8 and 9

<sup>1</sup>Design must be in accordance with Section 4.1 of this report and applicable allowable load data for the given conditions, as applicable.

TABLE 4—ALTERNATIVE BASIC LOAD COMBINATION ADJUSTMENT FACTORS<sup>1,2</sup>

Steel Element Type (see Section 3.2.4 of this report for material descriptions and relevant threaded rod type)	Allowable Load Modification Factors for 2009 IBC			
	Reductions for Alternate Basic Load Combinations		Increase Factor for Allowable Loads for Short-term Loading Conditions (i.e. due to wind or seismic loads)	
	Tension	Shear	Tension	Shear
Standard threaded rods	0.75	0.75	1.33	1.33
High-strength threaded rods	0.75	1	1.33	1
Stainless steel rods	0.75	0.87	1.33	1.14

<sup>1</sup>The above modification factors are applicable under the 2009 IBC only; when using the alternative basic load combinations with the 2015 and 2012 IBC, the allowable loads or load combinations must not be adjusted.

<sup>2</sup>When using the basic load combinations in accordance with IBC Section 1605.3.1, allowable loads must not be increased for wind or seismic loading.

**TABLE 5—ALLOWABLE TENSION AND SHEAR LOADS BASED ON STEEL STRENGTH FOR THREADED RODS (pounds)<sup>1,2,3</sup>**

Anchor Diameter (inches)	Tension					Shear				
	ASTM A36, ASTM F1554 Grade 36 F <sub>u</sub> = 58 ksi	ASTM A307 <sup>4</sup> F <sub>u</sub> = 60 ksi	ISO 898 Class 5.8 F <sub>u</sub> = 72.5 ksi	ASTM A193 Grade B7 F <sub>u</sub> = 125 ksi	ASTM F593 CW <sup>5</sup> (316/304) F <sub>u</sub> = 100 ksi	ASTM A36, ASTM F1554 Grade 36 F <sub>u</sub> = 58 ksi	ASTM A307 <sup>4</sup> F <sub>u</sub> = 60 ksi	ISO 898 Class 5.8 F <sub>u</sub> = 72.5 ksi	ASTM A193 Grade B7 F <sub>u</sub> = 125 ksi	ASTM F593 CW <sup>5</sup> (316/304) F <sub>u</sub> = 100 ksi
1/4	940	970	1,175	2,025	1,620	485	500	605	1,040	835
3/8	2,115	2,185	2,640	4,555	3,645	1,090	1,125	1,360	2,345	1,875
1/2	3,755	3,885	4,700	8,100	6,480	1,935	2,000	2,420	4,170	3,335
5/8	5,870	6,075	7,340	12,655	10,125	3,025	3,130	3,780	6,520	5,215
3/4	8,455	8,750	10,570	18,225	12,390	4,355	4,505	5,445	9,390	6,385

For SI: 1 inch = 25.4 mm; 1 lbf = 0.0044 kN, 1 ksi = 6.894 MPa.

<sup>1</sup>Allowable load used in the design must be the lesser of bond values and tabulated steel element values.

<sup>2</sup>Allowable tension and shear loads for threaded rods to resist short-term loads, such as wind or seismic, must be calculated in accordance with Section 4.1 of this report, as applicable.

<sup>3</sup>Allowable loads for steel strength are calculated using allowable tension and shear equal to 0.33 x F<sub>u</sub> x A<sub>nom</sub> and 0.17 x F<sub>u</sub> x A<sub>nom</sub>, respectively.

<sup>4</sup>ASTM A307, Grade C for unheaded anchor bolts has been replaced by ASTM F1554, Grade 36.

<sup>5</sup>For 3/4-inch-diameter rods applicable to ASTM F593 CW, F<sub>u</sub> = 85 ksi.

**TABLE 6—ALLOWABLE AC100+ GOLD ADHESIVE BOND TENSION AND SHEAR LOAD CAPACITIES FOR THREADED RODS INSTALLED INTO GROUT-FILLED CONCRETE MASONRY UNITS<sup>1,2,3,4,5,6,7,8,9,10,11,12,13</sup>**

TENSION LOAD										
Anchor Diameter, d (inches)	Minimum Embedment, h <sub>nom</sub> (inches)	Allowable Load at c <sub>cr</sub> and s <sub>cr</sub> (pounds)	Spacing Distance, s			Edge or End Distance, c <sub>2</sub> or c <sub>1</sub> (see Figure 3)				
			Critical Distance, s <sub>cr</sub> (inches)	Minimum Distance, s <sub>min</sub> (inches)	Allowable Load Factor at s <sub>min</sub>	Critical Distance, c <sub>cr</sub> (inches)	Minimum Distance, c <sub>min</sub> (inches)	Allowable Load Factor at c <sub>min</sub>		
3/8	3	615	6	3	0.70	3	3	1.00		
1/2	4	960	8	4	0.85	12	3	0.75		
5/8	5	1,095	10	5	0.85	12	3	0.65		
3/4	6	1,160	12	6	1.00	12	4	0.65		

SHEAR LOAD										
Anchor Diameter, d (inches)	Minimum Embedment, h <sub>nom</sub> (inches)	Allowable Load at c <sub>cr</sub> and s <sub>cr</sub> , Direction 1 & 2 (pounds) <sup>14</sup>	Allowable Load at c <sub>cr</sub> and s <sub>cr</sub> , Direction 3 & 4 (pounds) <sup>14</sup>	Spacing Distance, s			Edge or End Distance, c <sub>2</sub> or c <sub>1</sub> (see Figure 3)			
				Critical Distance, s <sub>cr</sub> (inches)	Minimum Distance, s <sub>min</sub> (inches)	Allowable Load Factor at s <sub>min</sub>	Critical Distance, c <sub>cr</sub> (inches)	Minimum Distance, c <sub>min</sub> (inches)	Allowable Load Factor at c <sub>min</sub>	
									Load Perpendicular to Edge (ll to end)	Load Parallel to Edge (l to end)
3/8	3	275	340	6	3	0.45	3	3	1.00	1.00
1/2	4	1,430	1,760	8	4	0.45	12	3	0.30	0.75
5/8	5	1,530	1,880	10	5	0.45	12	3	0.30	0.75
3/4	6	1,570	1,930	12	6	0.45	12	4	0.40	0.75

For SI: 1 inch = 25.4 mm; 1 lbs = 0.0044 kN, 1 psi = 0.006894 MPa.

<sup>1</sup>All values are for anchors installed in fully grouted concrete masonry with minimum masonry strength of 1500 psi (10.3 MPa). Concrete masonry units must be light-, medium-, or normal-weight conforming to ASTM C 90. Allowable loads have been calculated using a safety factor of 5.0.

<sup>2</sup>Anchors are recognized to dead, live, seismic and wind tension and shear load applications. See Sections 4.1 and 5.4 and Table 4 of this report for design with load combinations. For combined loading, see Section 4.1 of this report.

<sup>3</sup>Anchors may be installed in any location in the face of the masonry wall (cell, web, bed joint) except within 1 1/2-inch from the vertical mortar joint (head joint) provided the minimum edge and end distances are maintained. Anchors may be placed in the head joint if the vertical joint is mortared full-depth.

<sup>4</sup>A maximum of two anchors may be installed in a single masonry cell in accordance with the spacing and edge or end distance requirements.

Embedment is measured from the outside surface of the concrete masonry unit to the embedded end of the anchor. See Figure 2 of this report.

<sup>5</sup>The critical spacing distance, s<sub>cr</sub>, is the anchor spacing where full load values in the table may be used. The minimum spacing distance, s<sub>min</sub>, is the minimum anchor spacing for which values are available and installation is permitted. Spacing distance is measured from the centerline to centerline between two anchors.

<sup>6</sup>The critical edge or end distance, c<sub>cr</sub>, is the distance where full load values in the table may be used. The minimum edge or end distance, c<sub>min</sub>, is the minimum distance for which values are available and installation is permitted. Edge or end distance is measured from anchor centerline to the closest unrestrained edge. Note: for anchors loaded in tension or shear with more than one edge distance (e.g. corner location), only one edge or end distance load factor need be applied to each anchor, as applicable.

<sup>7</sup>The tabulated values are applicable for anchors in the ends of grout-filled concrete masonry units where minimum edge distances are maintained.

<sup>8</sup>Load values for anchors installed less than s<sub>cr</sub> and c<sub>cr</sub> must be multiplied by the appropriate load reduction factor based on actual spacing (s) or edge distance (c). Load factors are multiplicative; both spacing and edge reduction factors must be considered.

<sup>9</sup>Linear interpolation of load values between minimum spacing (s<sub>min</sub>) and critical spacing (s<sub>cr</sub>) and between minimum edge or end distance (c<sub>min</sub>) and critical edge or end distance (c<sub>cr</sub>) is permitted.

<sup>10</sup>Concrete masonry width (wall thickness) must be equal to or greater than 1.5 times the anchor embedment depth (e.g. 3/8-inch- and 1/2-inch-diameter anchors are permitted in minimum nominally 6-inch-thick concrete masonry). The 5/8- and 3/4-inch-diameter anchors must be installed in minimum nominally 8-inch-thick concrete masonry.

<sup>11</sup>Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel strength values given in Table 5.

<sup>12</sup>Tabulated allowable bond loads must be adjusted for increased in-service base material temperatures in accordance with Figure 1, as applicable.

<sup>13</sup>The tabulated allowable tension and shear load values may be increased by 4 percent (multiplied by 1.04) for installations into fully grouted concrete masonry with minimum masonry strength of 2000 psi (13.8 MPa).

<sup>14</sup>See Figure 5 for illustration of shear load directions.



**TABLE 7—ALLOWABLE AC100+ GOLD ADHESIVE BOND TENSION AND SHEAR LOADS FOR THREADED RODS INSTALLED INTO THE TOPS OF GROUT-FILLED CONCRETE MASONRY UNITS<sup>1,2,3,4,5,6,7,8,9,10</sup>**

Anchor Diameter <i>d</i> (inches)	Minimum Embedment <i>h<sub>nom</sub></i> (inches)	Minimum Spacing Distance	Minimum Edge Distance, (inches)	Minimum End Distance, (inches)	Tension Load (pounds)	Shear Load (pounds)	
						Load Perpendicular to Edge of Masonry Wall (   to end)	Load Parallel to Edge of Masonry Wall (⊥ to end)
1/2	4	1 anchor per cell	1 3/4	3	520	190	300
	10	1 anchor per block <sup>11</sup>	1 3/4	10 1/2	1,670		
5/8	5	1 anchor per cell	1 3/4	3	745	240	300
	12 1/2	1 anchor per block <sup>11</sup>	2 3/4	10 1/2	2,095		
3/4	6	1 anchor per cell	2 3/4	4	1,260	410	490

For SI: 1 inch = 25.4 mm; 1 lbs = 0.0044 kN, 1 psi = 0.006894 MPa.

<sup>1</sup>All values are for anchors installed in fully grouted concrete masonry with minimum masonry strength of 1500 psi (10.3 MPa). Concrete masonry units must be light-, medium-, or normal-weight conforming to ASTM C 90. Allowable loads have been calculated using a safety factor of 5.0.

<sup>2</sup>The tabulated allowable load values may be increased by 4 percent (multiplied by 1.04) for installations into fully grouted concrete masonry with minimum masonry strength of 2000 psi (13.8 MPa).

<sup>3</sup>Embedment is measured from the surface of the concrete masonry unit to the embedded end of the anchor.

<sup>4</sup>The edge and end distance is measured from the anchor centerline to the closest unrestrained edge and end of the CMU block, respectively. See Figure 3 of this report for an illustration of the top of grouted masonry walls.

<sup>5</sup>Spacing distance is measured from the centerline to centerline between two anchors.

<sup>6</sup>Anchors must be installed into the grouted cell; anchors are not permitted to be installed in a head joint, flange or web of the concrete masonry unit.

<sup>7</sup>Allowable shear loads parallel and perpendicular to the edge of a masonry wall may be applied in or out of plane. See Figure 4.

<sup>8</sup>Anchors are recognized to dead, live, seismic and wind tension and shear load applications. See Sections 4.1 and 5.4 and Table 4 of this report for design with load combinations. For combined loading, see Section 4.1 of this report.

<sup>9</sup>Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel strength values given in Table 5.

<sup>10</sup>Tabulated allowable bond loads must be adjusted for increased in-service base material temperatures in accordance with Figure 1, as applicable.

<sup>11</sup>Anchors with minimum spacing distance of one anchor per block may not be installed in adjacent cells (i.e. one cell must separate the anchor locations).

**TABLE 8—ALLOWABLE AC100+ GOLD ADHESIVE BOND TENSION AND SHEAR LOADS FOR THREADED RODS INSTALLED WITH STAINLESS STEEL SCREEN TUBES IN THE FACE OF HOLLOW CONCRETE MASONRY UNITS<sup>1,2,3,4,5,6,7,8,9,10,11,12,13</sup>**

TENSION LOAD								
Anchor Diameter, <i>d</i> (inches)	Minimum Embedment, <i>h<sub>nom</sub></i> (inches)	Allowable Load at <i>c<sub>cr</sub></i> and <i>s<sub>cr</sub></i> (pounds)	Spacing Distance, <i>s</i>			Edge or End Distance, <i>c</i> (see Figure 5)		
			Critical Distance, <i>s<sub>cr</sub></i> (inches)	Minimum Distance, <i>s<sub>min</sub></i> (inches)	Allowable Load Factor at <i>s<sub>min</sub></i>	Critical Distance, <i>c<sub>cr</sub></i> (inches)	Minimum Distance, <i>c<sub>min</sub></i> (inches)	Allowable Load Factor at <i>c<sub>min</sub></i>
1/4	1 1/4	350	4	2	0.60	3	1 1/2	0.80
3/8	1 1/4	400	6	3	0.60	3 3/4	1 7/8	0.80
1/2	1 1/4	400	8	4	0.60	11 1/4	3 3/4	0.95
5/8	1 1/4	400	8	4	0.60	11 1/4	3 3/4	0.95
3/4	1 1/4	400	8	4	0.60	11 1/4	3 3/4	0.95

SHEAR LOAD									
Anchor Diameter, <i>d</i> (inches)	Minimum Embedment, <i>h<sub>nom</sub></i> (inches)	Allowable Load at <i>c<sub>cr</sub></i> and <i>s<sub>cr</sub></i> , Direction 1 & 2 (pounds) <sup>14</sup>	Allowable Load at <i>c<sub>cr</sub></i> and <i>s<sub>cr</sub></i> , Direction 3 & 4 (pounds) <sup>14</sup>	Spacing Distance, <i>s</i>			Edge or End Distance, <i>c</i> (see Figure 5)		Allowable Load Factor at <i>c<sub>min</sub></i> Load Perpendicular or Parallel to Edge (   or ⊥ to end)
				Critical Distance, <i>s<sub>cr</sub></i> (inches)	Minimum Distance, <i>s<sub>min</sub></i> (inches)	Allowable Load Factor at <i>s<sub>min</sub></i>	Critical Distance, <i>c<sub>cr</sub></i> (inches)	Minimum Distance, <i>c<sub>min</sub></i> (inches)	
1/4	1 1/4	275	465	4	2	0.45	3	1 1/2	0.50
3/8	1 1/4	290	490	6	3	0.45	3 3/4	1 7/8	0.50
1/2	1 1/4	430	730	8	4	0.45	11 1/4	3 3/4	0.50
5/8	1 1/4	430	730	8	4	0.45	11 1/4	3 3/4	0.50
3/4	1 1/4	430	730	8	4	0.45	11 1/4	3 3/4	0.50

For SI: 1 inch = 25.4 mm; 1 lbs = 0.0044 kN, 1 psi = 0.006894 MPa.

<sup>1</sup>All values are for anchors installed in hollow concrete masonry with minimum masonry strength of 1500 psi (10.3 MPa). Concrete masonry units must be light-, medium-, or normal-weight conforming to ASTM C 90. Allowable loads have been calculated using a safety factor of 5.0.

<sup>2</sup>Anchors must be installed into the hollow cell; anchors are not permitted to be installed in a mortar joint, flange or web of the concrete masonry unit.

<sup>3</sup>A maximum of two anchors may be installed in a single masonry cell in accordance with the spacing and edge distance requirements, except as noted in the table. Embedment is measured from the outside surface of the concrete masonry to the inside surface of the cell (i.e. face shell thickness).

<sup>4</sup>The edge distance and end distance is measured from the anchor centerline to the unrestrained edge of the CMU block. See Figure 4 of this report.

<sup>5</sup>The critical spacing distance, *s<sub>cr</sub>*, is the anchor spacing where full load values in the table may be used. The minimum spacing distance, *s<sub>min</sub>*, is the minimum anchor spacing for which values are available and installation is permitted. Spacing distance is measured from the centerline to centerline between two anchors.

<sup>6</sup>The critical edge distance, *c<sub>cr</sub>*, is the edge distance where full load values in the table may be used. The minimum edge distance, *c<sub>min</sub>*, is the minimum edge distance for which values are available and installation is permitted. Edge distance is measured from anchor centerline to the closest unrestrained edge.

<sup>7</sup>Load values for anchors installed less than *s<sub>cr</sub>* and *c<sub>cr</sub>* must be multiplied by the appropriate load reduction factor based on actual spacing (*s*) or edge distance (*c*). Load factors are multiplicative; both spacing and edge reduction factors must be considered.

<sup>8</sup>Linear interpolation of load values between minimum spacing (*s<sub>min</sub>*) and critical spacing (*s<sub>cr</sub>*) and between minimum edge distance (*c<sub>min</sub>*) and critical edge distance (*c<sub>cr</sub>*) is permitted.

<sup>9</sup>Concrete masonry width (wall thickness) may be minimum nominal 6-inch-thick provided the minimum embedment (i.e. face shell thickness) is maintained.

<sup>10</sup>The tabulated values are applicable for anchors in the ends of hollow concrete masonry units where minimum face shell thickness, minimum edge and end distances are maintained.

<sup>11</sup>Anchors are recognized to dead, live and wind tension and shear load applications. See Sections 4.1 and 5.5 and Table 4 of this report for design with load combinations.

<sup>12</sup>Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel strength values given in Table 5.

<sup>13</sup>Tabulated allowable bond loads must be adjusted for increased in-service base material temperatures in accordance with Figure 1, as applicable.

<sup>14</sup>See Figure 5 for illustration of shear load directions.

**TABLE 9—ALLOWABLE AC100+ GOLD ADHESIVE BOND TENSION AND SHEAR LOADS FOR THREADED RODS INSTALLED WITH PLASTIC SCREEN TUBES IN THE FACE OF HOLLOW CONCRETE MASONRY UNITS<sup>1,2,3,4,5,6,7,8,9,10</sup>**

Anchor Diameter, <i>d</i> (inches)	Minimum Embedment, <i>h<sub>nom</sub></i> (inches)	Minimum Spacing Distance, <i>s<sub>min</sub></i>	Edge or End Distance, <i>c</i> (see Figure 5)		Tension Load (pounds)	Shear Load (pounds)
			Minimum Edge Distance, <i>c<sub>min</sub></i> (inches)	Minimum End Distance, <i>c<sub>min</sub></i> (inches)		
3/8	1 1/4	1 anchor per cell	3	3	140	235
1/2	1 1/4		3	3	150	215
5/8	1 1/4		3	3	150	215

For SI: 1 inch = 25.4 mm; 1 lbs = 0.0044 kN, 1 psi = 0.006894 MPa.

<sup>1</sup>All values are for anchors installed hollow concrete masonry with minimum masonry strength of 1500 psi (10.3 MPa). Concrete masonry units must be light-, medium, or normal-weight conforming to ASTM C 90. Allowable loads have been calculated using a safety factor of 5.0.

<sup>2</sup>Anchors must be installed into the hollow cell; anchors are not permitted to be installed in a mortar joint, flange or web of the concrete masonry unit.

<sup>3</sup>Embedment is measured from the outside surface of the concrete masonry to the inside surface of the cell (i.e. face shell thickness).

<sup>4</sup>The edge distance is measured from the anchor centerline to the closest unrestrained edge of the CMU block. See Figure 5 of this report.

<sup>5</sup>Spacing distance is measured from the centerline to centerline between two anchors.

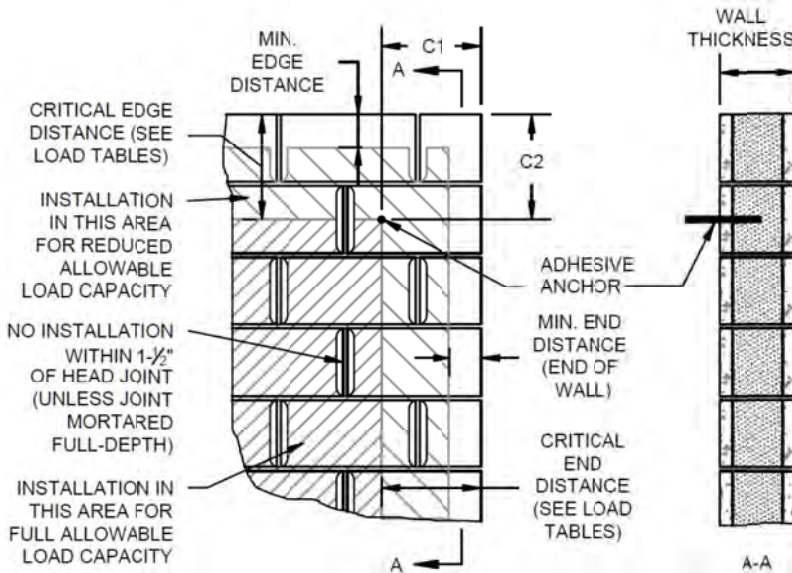
<sup>6</sup>Concrete masonry width (wall thickness) may be minimum nominal 6-inch-thick provided the minimum embedment (i.e. face shell thickness) is maintained.

<sup>7</sup>The tabulated values are applicable for anchors in the ends of hollow concrete masonry units where minimum face shell thickness, minimum edge and end distances are maintained.

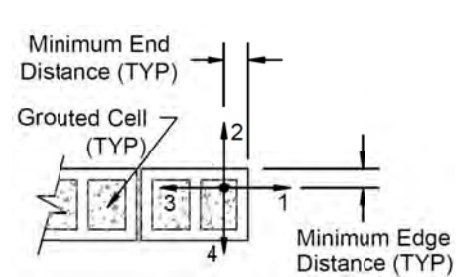
<sup>8</sup>Anchors are recognized to dead, live and wind tension and shear load applications. See Sections 4.1 and 5.5 and Table 4 of this report for design with load combinations. For combined loading, see Section 4.1 of this report.

<sup>9</sup>Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel strength values given in Table 5.

<sup>10</sup>Tabulated allowable bond loads must be adjusted for increased in-service base material temperatures in accordance with Figure 1, as applicable.

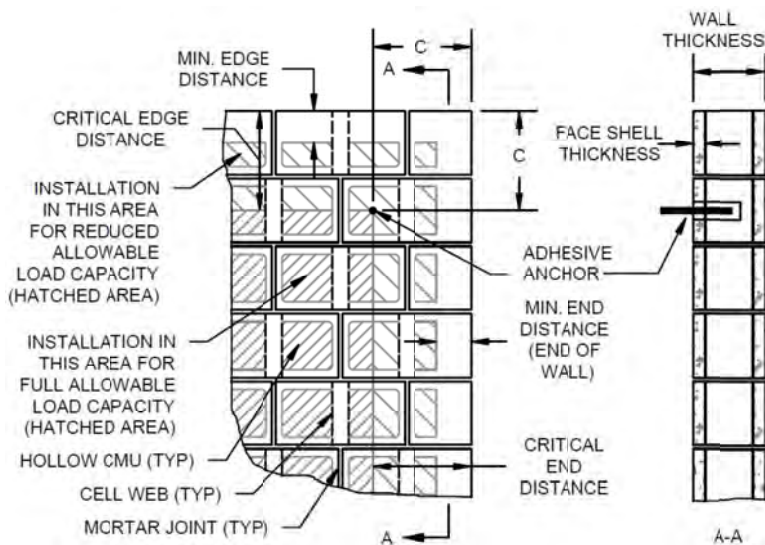


**FIGURE 3—ILLUSTRATION OF AC100+ GOLD ADHESIVE ANCHORS INSTALLED INTO GROUTED CONCRETE MASONRY WALL**

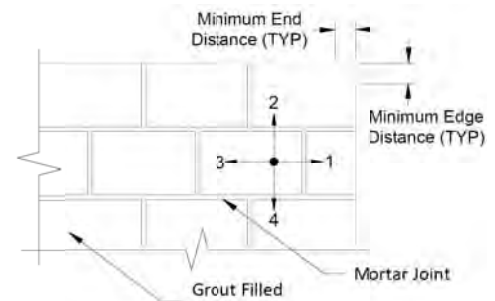


- (1) Shear load parallel to Edge and perpendicular to End
- (2) Shear load parallel to End and perpendicular to Edge
- (3) Shear load parallel to Edge and perpendicular away from End
- (4) Shear load parallel to End and perpendicular to opposite Edge

**FIGURE 2—AC100+ GOLD ADHESIVE ANCHORS INSTALLED INTO THE TOP OF GROUTED CONCRETE MASONRY**



**FIGURE 5—ILLUSTRATION OF AC100+ GOLD ADHESIVE ANCHORS INSTALLED INTO HOLLOW CONCRETE MASONRY WALL (WITH SCREEN TUBES)**



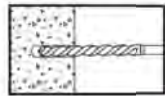
- (1) Shear load parallel to Edge and perpendicular to End
- (2) Shear load parallel to End and perpendicular to Edge
- (3) Shear load parallel to Edge and perpendicular away from End
- (4) Shear load parallel to End and perpendicular away from Edge

**FIGURE 4—DIRECTION OF SHEAR LOADING IN RELATION TO EDGE AND END OF MASONRY WALL**



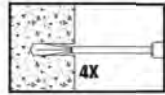
## INSTALLATION INSTRUCTIONS (SOLID BASE MATERIALS)

### DRILLING

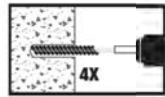


- 1- Drill a hole into the base material with a rotary hammer drill tool to the size and embedment required by the selected steel anchor element (see installation specifications for threaded rod and reinforcing bar). The tolerances of the carbide drill bit must meet ANSI Standard B212.15.
  - Precaution: Use suitable eye and skin protection. Avoid inhalation of dust during drilling and/or removal.
  - **Note!** In case of standing water in the drilled hole (flooded hole condition), all the water has to be removed from the hole (e.g. vacuum, compressed air, etc.) prior to cleaning.

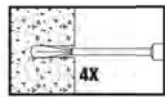
### HOLE CLEANING DRY (BLOW 4X, BRUSH 4X, BLOW 4X)



- 2a- Starting from the bottom or back of the anchor hole, blow the hole clean using a compressed air nozzle (min. 90 psi) or a hand pump (supplied by DeWALT / Powers) a minimum of four times (4x).
  - Use a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl. oz.) for anchor rod 3/8" to 3/4" diameter or reinforcing bar (rebar) sizes #3 to #6.
  - Use a compressed air nozzle (min. 90 psi) for anchor rod 7/8" to 1-1/4" diameter and rebar sizes #7 to #10. A hand pump shall not be used with these anchor sizes.



- 2b- Determine wire brush diameter (see installation specifications) and attach the brush with adaptor to a rotary drill tool or battery screwgun. Brush the hole with the selected wire brush a minimum of four times (4x). A brush extension (supplied by DeWALT / Powers, Cat. #08282) should be used for holes drilled deeper than the listed brush length.
  - The wire brush diameter should be checked periodically during use. The brush must be replaced if it becomes worn and does not come into contact with the sides of the drilled hole.

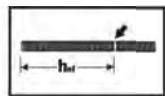


- 2c- Finally, blow the hole clean again a minimum of four times (4x).
  - Use a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl. oz.) for anchor rod 3/8" to 3/4" diameter or reinforcing bar (rebar) sizes #3 to #6.
  - Use a compressed air nozzle (min. 90 psi) for anchor rod 7/8" to 1-1/4" diameter and rebar sizes #7 to #10. A hand pump shall not be used with these anchor sizes.
  - When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.

### PREPARING



- 3- Check adhesive expiration date on cartridge label. Do not use expired product. Review Safety Data Sheet (SDS) before use. Cartridge temperature must be between 23°F - 95°F (-5°C - 35°C) when in use unless otherwise noted. Review gel (working) and cure time table. Consideration should be given to the reduced gel time of the adhesive in warm temperatures.
  - Attach a supplied mixing nozzle to the cartridge. Do not modify the mixer in any way and make sure the mixing element is inside the nozzle. Load the cartridge into the correct dispensing tool.
  - Note: Always use a new mixing nozzle with new cartridges of adhesive and also for all work interruptions exceeding the published working time of the adhesive.



- 4- Prior to inserting the anchor rod or rebar into the filled bore hole, the position of the embedment depth has to be marked on the anchor.
  - Verify anchor element is straight and free of surface damage.



- 5- Adhesive must be properly mixed to achieve published properties. Prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent GRAY color. Do not attach a used nozzle when changing to a new cartridge.
  - Review and note the published working and cure times (see gel time and curing time table) prior to injection of the mixed adhesive into the cleaned anchor hole.

### INSTALLATION



- 6- Fill the cleaned hole half to two-thirds full with mixed adhesive starting from the bottom or back of the anchor hole. Slowly withdraw the mixing nozzle as the hole fills to avoid creating air pockets or voids. For embedment depth greater than 7-1/2" an extension nozzle must be used with the mixing nozzle.
  - Piston plugs (see installation specifications) must be used with and attached to the mixing nozzle and extension tube for horizontal and overhead installations in concrete except with anchor rod 3/8" and rebar size #3. Insert piston plug to the back of the drilled hole and inject as described in the method above. During installation the piston plug will be naturally extruded from the drilled hole by the adhesive pressure.
  - **Attention!** Do not install anchors overhead without proper training and installation hardware provided by DeWALT / Powers. Contact DeWALT / Powers for details prior to use.



- 7- The anchor should be free of dirt, grease, oil or other foreign material. Push clean threaded rod or reinforcing bar into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. Observe the gel (working) time.

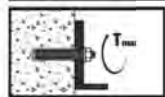


- 8- Be sure that the anchor is fully seated at the bottom of the hole and that some adhesive has flowed from the hole and all around the top of the anchor. If there is not enough adhesive in the hole, the installation must be repeated. The anchor shall not be moved after placement and during cure.

### CURING AND LOADING



- 9- Allow the adhesive anchor to cure to the specified full curing time prior to applying any load (reference gel time and curing time table).
  - Do not disturb, torque or load the anchor until it is fully cured.

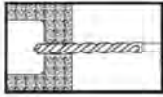


- 10- After full curing of the adhesive anchor, a fixture can be installed to the anchor and tightened up to the maximum torque (reference gel time and curing table) by using a calibrated torque wrench.
  - Take care not to exceed the maximum torque for the selected anchor.

FIGURE 6—AC100+ GOLD ADHESIVE ANCHORS INSTALLED INTO GROUTED CONCRETE MASONRY, MPII FOR SOLID BASE MATERIAL

## INSTALLATION INSTRUCTIONS (HOLLOW BASE MATERIALS)

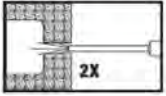
### DRILLING



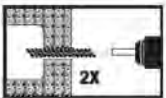
1- Drill a hole into the base material with a rotary drill tool to the size and embedment for the required by the selected screen tube size and steel anchor element (see installation specifications for threaded rod in hollow base material with screen tube supplied by DeWALT / Powers). The tolerances of the drill bit used should meet the requirements of ANSI B212.15.

- Precaution: Wear suitable eye and skin protection. Avoid inhalation of dust during drilling and/or removal.

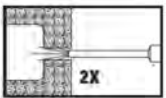
### HOLE CLEANING ( BLOW 2X, BRUSH 2X, BLOW 2X)



2- Starting from the bottom or back of the anchor hole, blow the hole clean with a hand pump (min. volume 25 fl.oz. supplied by DeWALT / Powers) or compressed air nozzle a minimum of two times (2x).



- Determine the wire brush diameter (see installation specifications) and attach the brush with adaptor to a rotary drill tool or battery screw gun. Brush the hole with the selected wire brush a minimum of two times (2x). A brush extension (supplied by DeWALT / Powers, Cat #08282) should be used for holes drilled deeper than the listed brush length.



- The wire brush should be checked periodically during use. The brush must be replaced if it becomes worn and does not come in contact with sides of the drill hole.

- Finally, blow the hole clean again a minimum of two times (2x)

- When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.

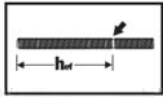
### PREPARING



3- Check adhesive expiration date on cartridge label. Do not use expired product. Review Safety Data Sheet (SDS) before use. Cartridge temperature must be between 23°F - 95°F (-5°C - 35°C) when in use unless otherwise noted. Review gel (working) time and curing time table. Consideration should be given to the reduced gel (working) time of the adhesive in warm temperatures.

- Attach a supplied mixing nozzle to the cartridge. Do not modify the mixer in any way and make sure the mixing element is inside the nozzle. Load the cartridge into the correct dispensing tool.

- Note: Always use a new mixing nozzle with new cartridges of adhesive and also for all work interruptions exceeding the published working time of the adhesive.



4- Prior to inserting the anchor into the filled screen tube, the position of the embedment depth has to be marked on the anchor. Verify anchor element is straight and free of surface damage.



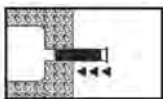
5- Adhesive must be properly mixed to achieve published properties. Prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent GRAY color. Do not attach a used nozzle when changing to a new cartridge.

- Review and note the published working and cure times (see gel time and curing time table) prior to injection of the mixed adhesive into the screen tube.

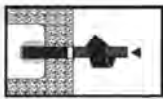
### INSTALLATION



6- Select a screen tube of suitable length (supplied by DeWALT / Powers). Fill the screen tube full with adhesive starting from the bottom or back of the tube. Slowly withdraw the mixing nozzle as the screen fills to avoid creating air pockets or voids. A plastic extension on tube supplied by DeWALT / Powers must be used with the mixing nozzle if the back of the screen tube cannot be reached.



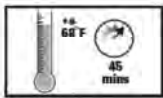
7- Insert the screen tube filled with adhesive into the cleaned anchor hole.



8- Prior to inserting the anchor rod into the screen tube inspect it to ensure that it is free of dirt, grease, oil or other foreign material.

- Push the threaded rod into the screen tube while turning slightly to ensure positive distribution of the adhesive until back of the tube is reached.

### CURING AND FIXTURE



9- Allow the adhesive anchor to cure to the specified full curing time prior to applying any load.

- Do not disturb, torque or load the anchor until it is fully cured (see gel time and curing time table).



10- After full curing of the adhesive anchor, a fixture can be installed to the anchor and tightened up to the maximum torque (see installation specifications for threaded rod in hollow base material) by using a calibrated torque wrench.

- Take care not to exceed the maximum torque for the selected anchor.

FIGURE 7—AC100+ GOLD ADHESIVE ANCHORS INSTALLED INTO HOLLOW CONCRETE MASONRY, MPII FOR HOLLOW BASE MATERIAL