

## INSTALLATION INSTRUCTIONS (SOLID BASE MATERIALS)

### PERMISSIBLE INSTALLATION CONDITIONS

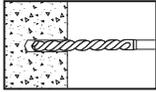
**Dry Concrete:** cured concrete that, at the time of adhesive anchor installation, has not been exposed to water for the preceding 14 days.

**Water-Saturated Concrete (wet):** cured concrete that, at the time of adhesive anchor installation, has been exposed to water over a sufficient length of time to have the maximum possible amount of absorbed water into the concrete pore structure to a depth equal to the anchor embedment depth.

**Water-Filled Holes (flooded):** cured concrete that is water-saturated and where the drilled hole contains standing water at the time of anchor installation.

### HAMMER DRILLING

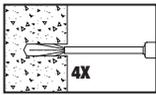
#### DRILLING



**1-** Drill a hole into the base material with a rotary hammer drill tool to the size and embedment required by the selected steel hardware element (reference installation specifications for threaded rod and reinforcing bar). The tolerances of the carbide drill bit must meet ANSI Standard B212.15.

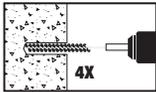
- Precaution: Use suitable eye and skin protection. Avoid inhalation of dust during drilling and/or removal.
- **Note!** In case of standing water in the drilled hole (flooded hole condition), all the water has to be removed from the hole (e.g. vacuum, compressed air, etc.) prior to cleaning.

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



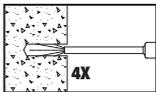
**2a-** Starting from the bottom or back of the drilled anchor hole, blow the hole clean using a compressed air nozzle (min. 90 psi) or a hand pump (supplied by Powers Fasteners) a minimum of four times (4x).

- 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 (reference hole cleaning equipment selection table) 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 four times (4x). A brush extension (supplied by Powers Fasteners, Cat. #08282) should be used for holes drilled deeper than the listed brush length.

- The wire brush diameter must be checked periodically during use. The brush must be replaced if it becomes worn (less than  $D_{min}$ , reference hole cleaning equipment selection table) or 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).

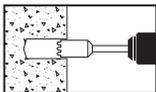
- Use a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl. oz.) for anchor rod 3/8" to 3/4" diameter or reinforcing bar (rebar) sizes #3 to #6.
- Use a compressed air nozzle (min. 90 psi) for anchor rod 7/8" to 1-1/4" diameter and rebar sizes #7 to #10. A hand pump shall not be used with these anchor sizes.

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

**NEXT GO TO STEP 3.**

### CORE DRILLING

#### DRILLING

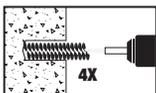


**1-** Drill a hole into the base material with a core drill tool to the size and embedment required by the selected steel hardware element (reference installation table). The tolerances of the carbide drill bit must meet ANSI Standard B212.15.

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

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

##### RINSE



**2a-** Starting from the bottom or back of the drilled anchor hole, rinse/flush the hole clean with water (water line pressure) until clear water comes out.

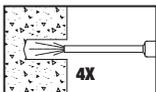
**2b-** Determine brush diameter (see installation table) for drilled hole and attach the brush with adaptor to a rotary drill tool or battery screw gun. Brush the hole with the selected wire brush a minimum of four times (4x).

- A brush extension (supplied by Powers Fasteners) must be used for holes drilled deeper than the listed brush length. The wire brush diameter must be checked periodically during use ( $\phi_{brush} > D_{min}$ , see hole cleaning equipment table). The brush should resist insertion into the drilled hole, if not the brush is small and must be replaced with the proper brush diameter.

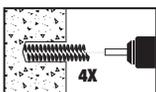
**2c-** Repeat Step 2a again by rinse/flush the hole clean with water.

Following this remove all standing water completely (e.g. vacuum, compressed air, etc.) prior to further cleaning. To attain a dried borehole a Powers compressed air nozzle is recommended.

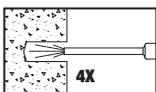
##### RINSE



**2d-** Starting from the bottom or back of the drilled anchor hole, blow the hole clean (free of noticeable dust) a minimum if four times (4x). Use a compressed air nozzle (min. 90 psi) for all sizes of anchor rod and reinforcing bar (rebar)



**2e-** Repeat Step 2b again by brushing the hole with a wire brush a minimum of four times (4x).



**2f-** Repeat Step 2d again by blowing the hole clean a minimum of four times (4x).

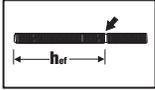
When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.

**NEXT GO TO STEP 3.**

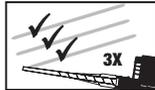
**PREPARING**



- 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 41°F - 95°F (5°C - 35°C) when in use; 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.
  - A new mixing nozzle must be used for every working interruption longer than the published working times (reference gel time and curing time table) as well as for new cartridges.
  - Note: Always use a new mixing nozzle with new cartridge of adhesive and also for all work interruptions exceeding the published gel (working) time of the adhesive.

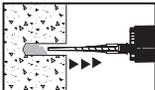


- 4- Prior to inserting the anchor rod or rebar into the filled bore hole, the position of the embedment depth has to be marked on the anchor. Verify anchor element is straight and free of surface damage.



- 5- For new cartridges and nozzles: prior to dispensing into the anchor hole, squeeze out separately a minimum three full strokes of the mixed adhesive. Discard non-uniform adhesives until the adhesive is a consistent **RED** color.
  - Review and note the published working and cure times (reference gel time and curing time table) prior to injection of the mixed adhesive into the cleaned anchor hole.

**INSTALLATION**



- 6- Fill the cleaned hole approximately 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 8 inches an extension nozzle (3/8" dia.) must be used with the mixing nozzle.

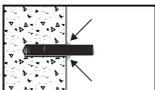
WITH PISTON PLUG:



- Piston plugs (see adhesive piston plug table) must be used with and attached to the mixing nozzle and extension tube for horizontal and overhead installations with anchor rod from 3/4" to 1-1/4" diameter and rebar size #6 to #10. 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 the Powers Fasteners. Contact Powers for details prior to use.

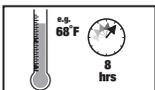


- 7- The anchor should be free of dirt, grease, oil or other foreign material. Push clean threaded rod or reinforcing bar into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. Air pockets are present when the threaded rod or rebar springs or air pockets burst during installation. In case of air pockets: remove rod or rebar, let the adhesive harden, re-drill the hole and repeat the complete installation.



- 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. For overhead applications the anchor must be secured from moving/falling during the cure time (e.g. wedges). Minor adjustments to the anchor may be performed during the gel time but the anchor shall not be moved after the final 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.