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Screw-Bolt+™ Anchors in Concrete Reused in the Same Holes

ACI 318-14, Chapter 17 and ACI 318-11 Appendix D (and by reference to the 2015 IBC and 2012 IBC, respectively) requires that mechanical anchors for concrete be tested and qualified with drill hole specifications for each anchor diameter. This is because the influence of the size of the drilled hole in concrete can have a significant effect on the strength and reliability of installed mechanical anchors.

DEWALT publishes strengths for the Screw-Bolt+ anchors that are based on standard drill hole specifications from qualification testing (table below provided for baseline reference):

Screw-Bolt+	Nominal anchor size				
	1/4"	3/8”	1/2"	5/8”	3/4"
Anchor outside diameter (in.)	0.250	0.375	0.500	0.625	0.750
Nominal ANSI drill bit size (in.)	1/4	3/8	1/2	5/8	3/4

In addition, there are cases where removing and reinstalling screw anchors into the same hole is desirable during service (e.g. shimming, making adjustments, temporary attachments, servicing).

DEWALT has investigated and conducted supplemental laboratory testing on Screw-Bolt+ anchors reinstalled in existing holes in concrete. The same screw was reinstalled up to 2 times after the original installation into the same hole using either a powered impact wrench or manual installation with socket wrench. The anchors were then tested to failure and compared against baseline controls which provided the following results:

Screw-Bolt+ anchor diameter	Capacity compared to reference value in concrete after two reinstallations (% of ultimate load)	Design guidance
1/4"	90%	10% reduction in tension capacity
3/8”	90%	10% reduction in tension capacity
1/2"	85%	15% reduction in tension capacity
5/8”	85%	15% reduction in tension capacity
3/4"	80%	20% reduction in tension capacity

Additional notes:

1. Reinstallations into the same hole were conducted with some care to minimize/limit any damage to the threads formed into the concrete both during removal and reinstallation (see reinstallation procedure details below).
2. It is possible that if a new Screw-Bolt+ is used in the reinstallation in the same hole, any reduction could be minimized since a new screw anchor would not have any thread wear from tapping into the concrete.
3. Please be advised that currently we do not recommend a Screw-Bolt+ be reinstalled into **new** holes, i.e. removing an installed screw and using it to tap threads into a new hole in a different location.

Reinstallation procedure details:

For consideration in cases where it is deemed necessary to remove an installed screw anchor in an existing location and re-install it in the same hole (it is also possible to replace the existing screw anchor with a new unused screw anchor of the same type, size and length):

- Loosen the installed anchor manually using a socket wrench or carefully using a powered impact wrench that does not exceed the maximum torque for the selected anchor diameter. After loosening, remove the anchor from the hole by hand.
- Reinstall a Screw-Bolt+ anchor into the existing hole. Turn the screw anchor into the hole as far as possible by hand taking care to mate the screw anchor threads with the existing threads in the hole. Tighten the anchor manually using a torque wrench or using a powered impact wrench that does not exceed the maximum torque for the selected anchor diameter. Anchors should be snug tight.

See published literature for additional design and installation information which is available at anchors.dewalt.com