October 23, 2017

Subject: Alternate hole preparation for Hilti KWIK Bolt TZ, KWIK Bolt 3, KWIK HUS-EZ, and KWIK HUS anchors

Hilti mechanical anchors are tested and approved for use with the Manufacturer's Printed Installation Instructions (MPII) as indicated on the box of anchors. Typical hole preparation for the KWIK Bolt TZ (KB-TZ), KWIK Bolt 3 (KB3), KWIK HUS-EZ (KH-EZ), and the KWIK HUS (KH) anchors consist of drilling the hole with a ANSI standard carbide drill bit and removing the concrete dust from the hole using a manual air pump.

Hilti has tested the above mechanical anchor systems using two alternate hole preparation methods as outlined below, which eliminates the need, when following OSHA 1926.1153 Table 1, to clean the hole with a HEPA-filtered vacuum. The manufacturer's printed installation instructions (MPII) are being revised and will be incorporated into the relevant International Code Council Evaluation Services Reports (ICC-ESRs) during future updates.

Method 1: Hilti SafeSet™ Method using the TE-CD and TE-YD Hollow Drill Bit

The following anchors shown in Table 1 below have been tested with the Hilti TE-CD and TE-YD hollow carbide drill bits. The load performance with these anchors and the hollow drill bits are equivalent to the current published technical load data with manual pump dust removal. The hollow drill bits should be used with the Hilti VC 20/40, VC 150, or VC 300 vacuum systems.

Table 1: Mechanical anchors using the Hilti SafeSet™ System with TE-CD and TE-YD hollow carbide drill bit

Nominal anchor diameter in.	Drill Bit	KWIK Bolt TZ (KB-TZ)	KWIK Bolt 3 (KB3)	KWIK HUS-EZ (KH-EZ)	KWIK HUS (KH)
1/2"	TE-CD 1/2"	✓	✓	✓	✓
5/8"	TE-CD 5/8" TE-YD 5/8"	✓	✓	✓	✓
3/4"	TE-CD 3/4" TE-YD 3/4"		✓	✓	✓

Method 2: No dust removal or using Hilti TE-DRS dust removal system

Additionally, the following anchors shown in Table 2 below have been tested using standard ANSI carbide drill bits without subsequent hole cleaning (i.e., no manual pump to remove the dust). As with Method 1 above, the load performance with Method 2 was

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equivalent to the current published technical load data with manual pump dust removal. Drilling may be performed with a Hilti dust removal system.

Table 2: Mechanical anchors installed with no dust removal or Hilti dust removal systems (DRS)*

Nominal Anchor Diameter in.	KWIK Bolt TZ (KB-TZ)	KWIK Bolt 3 (KB3)	KWIK HUS-EZ (KH-EZ)	KWIK HUS (KH)
1/4"	n/a	✓	✓	✓
3/8"	✓	✓	✓	✓
1/2"	✓	✓	✓	✓
5/8"	✓	✓	✓	✓
3/4"	✓	✓	✓	✓

* Contact Hilti or go to the Hilti Silica Dust Regulations Page (see link below) for applicable Hilti DRS systems that coincide with Hilti drilling tools

When using Method 2, dust remaining in the hole can reduce the available anchor embedment depth, thus over-drilling of the hole may be required. This over-drilling depth will vary depending on the concrete composition and drilling direction – ensure there is sufficient space to achieve the desired embedment **before** installing the anchor. When over-drilling the hole to allow for dust, the minimum concrete thickness (h_{min}) should be increased proportionally with the additional drilling depth.

For additional information, please refer to the Hilti website or contact the Hilti Engineering Technical Services Department.

Hilti Silica Dust Regulations Page: Hilti OSHA Silica Dust Regulations Page
Hilti Technical Design Center: https://www.hilti.com/engineering

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