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RE: INSTALLATION GUIDANCE FOR DEWALT SELF-DRILLING SCREWS

To Whom it May Concern:

The following information is offered to provide guidance for installing DEWALT self-drilling screws. The guidance includes installation variables that can affect performance as well as information about the use of screwguns and impact drivers to install self-drilling screws into steel base materials.

Installation Variables - applicable for all DEWALT Self-Drilling Screws:

- **Drive Speed**: When using standard twist drill bits to drill holes in metal, the speed of drilling holes can affect the effectiveness and the lifespan of the drill bit. At high speeds, the heat generated between the drill bit and the base material can dull or completely burn up the drill bit. Similarly, this issue is applicable when installing self-drilling screws.

  The optimal drive speed for self-drilling screws depends on characteristics of the screw type selected, such as diameter and drill point type. Characteristics such as base material type, hardness and thickness of the material also influence the optimal drive speed for self-drilling screws. The maximum suggested installation speed (RPM) for DEWALT self-drilling screws is indicated in the chart below. Exceeding these speeds increases the risk of damaging the drill point.

Maximum Recommended Installation RPM

Diameter	RPM
#6	2500
#8	
#10	
#12	
#12**	1800
1/4"	
5/16"	1200

** Applies to #12 diameter screws with point types 4, 4.5 and 5

Note: Burnt up drill points is a common indication that the selected installation speed (RPM) is too high.

- **Tightening Torque:** Like drive speed, the optimal tightening torque is also dependent on various factors. Screw characteristics such as diameter, thread pitch and point type and base material factors such as material type and thickness all have major impact on installation and tightening torque. Oftentimes, installing a screw so that it is snug tight against the base material is ideal and prevents against potential failures due to overtightening, which include:

  Stripping: A major concern in thinner base materials, stripped threads can affect the performance capacity of the screw connection.
  Screw torsional failure: A concern in thicker materials, screw torsional failure happens when the tightening torque applied exceeds the torsional strength of the screw.
  Delayed Failures: Overtightening can also overstress the fastener and cause cracks to develop. These cracks can then allow corrosion to enter that fastener and lead to potential failures later down the line.

Installation Tools – Screwguns and Impact Drivers:

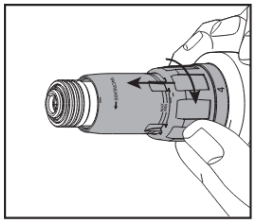
- **Screwguns:** The recommended installation tools for installing all DEWALT self-drilling screws are DEWALT Versa-Clutch™ adjustable torque screwguns. These screwguns are available in several models with different maximum speeds, all having a Versa-Clutch™ adjustable torque nosepiece and variable speed trigger. The adjustability of these screwguns allows for the user to optimize the installation of a specific self-drilling screw for a particular application.

Screwguns

Model	Description	Screw Size
DW268	2,500 RPM VSR VERSA-CLUTCH™ Screwgun	#6 - #10
DW267	2,000 RPM VSR VERSA-CLUTCH™ Screwgun	#12 & 1/4"
DW269	1,000 RPM VSR VERSA-CLUTCH™ Screwgun	5/16"
DCF622M2	20V MAX* XR® VERSA-CLUTCH™ Adjustable Torque Screwgun Kit	#6 - 1/4"

Corded Versa-Clutch™ Screwguns DW267, DW268 & DW269

Cordless Versa-Clutch™ Screwgun DCF622



Versa-Clutch™ nosepiece allows for the adjustment of torque output from the tool – helps prevent damage to material and fasteners.

- **Impact Drivers:** While these popular tools may seem like a clear choice for installing self-drilling screws, impact drivers can compromise the installation and lead to unintended screw failures. Impact drivers have high-torque and high-speed output, both identified above as highly important installation variables for self-drilling screws. The high speeds can lead to burnt drill points and subsequent installation failures. Even if the screws can be drilled through the base material, the high torque output of these impact tools also increases the likelihood of overtightening self-drilling screws, which can lead to immediate or delayed failures.

  1. The use of impact tools to install case-hardened carbon steel self-drilling screws is not recommended.
  (i.e. DEWALT Drilit®, Tap-Fast® and Architectural Roof Clip Fasteners)

  Testing has shown that most case-hardened carbon steel self-drilling screws are susceptible to Hydrogen Assisted Stress Corrosion Cracking (HASCC). As stated previously, the risk of overtightening screws is high when using an impact driver, and the potential for cracks to develop in the screw provides in-service hydrogen and corrosion an easy pathway to attack the screw and lead to sudden failure.

  2. While not formally recommended, based on testing and assessment DEWALT offers the following information and guidance when select DEWALT impact drivers are used to install specific DEWALT Flex Technology® self-drilling screws.
  *(**Flex Technology®** = DEWALT Dril-Flex®, Bi-Flex®, Alumi-Flex®)*

  Based on internal testing and investigation, consideration can be given to using DEWALT impact drivers to install DEWALT Flex Technology® self-drilling screws. Flex Technology® screws have a controlled core hardness and are more ductile than case hardened screws, making them less susceptible to cracking due to overtightening. The special material properties of these Flex Technology® screws also significantly reduces susceptibility to Hydrogen Assisted Stress Corrosion Cracking (HASCC) following installation.

  3. For DEWALT Flex Technology® self-drilling screws, if impact tools are selected use only DEWALT impact drivers that have been tested and qualified with special features to control the maximum speed output of the tools.
  (e.g. DCF860 and DCF888)

  DCF860 Impact Driver: Speeds 1 and 2 are optimized to match the installation speeds of commonly used self-drilling and tapping screws. Refer to the first page of this bulletin for the appropriate screw size the published tool speed aligns with.

SPEED/ SETTING	RPM
SPEED 1	1,800
SPEED 2	2,500

  DCF888 Impact Driver with Tool Connect™: This Tool Connect™ enabled device has 3 different programmable modes to customize speed to align with the recommended speeds for various self-drilling screws.

  Note: these impact drivers do not address the concern of overtightening self-drilling screws. As such, it is best practice to utilize the variable speed trigger of the tool to slow the installation speed down before the head of the fastener is seated, thus decreasing the likelihood of overtightening.

  Using impact drivers to install self-drilling screws may be reasonable for non-structural applications and/or applications where there is a high degree of redundancy. In structural applications, the use of an adjustable torque screwgun is recommended to mitigate the risks of overtightening.

For more information about the selection, installation and design of self-drilling screws, please refer to the DEWALT website and Technical Guide for Metal Construction Screws :https://anchors.dewalt.com/anchors/_documents/uploads/DWMCSTM_SCREWMAN_HR.pdf