Impact Tool Usage Guidelines

NOTICE

- **These guidelines are for couplings that require metal-to-metal bolt pad contact without a specified assembly torque.**
- **These guidelines are for non-lubricated, zinc-electroplated carbon steel hardware only.**
- **These guidelines are for products used on metallic piping only.**

Impact tools do not provide the installer with direct "wrench feel" to judge nut torque. Since some impact tools are capable of high output speed and torque, it is important to develop a familiarity with the impact tool to avoid over-shifting and/or over-torquing, which may damage or fracture the bolts or the coupling's bolt pads during installation.

⚠ WARNING

- **DO NOT exceed the "Maximum Allowable Bolt Torque" values specified in the table on this page for the applicable bolt/nut size.**

Failure to follow these instructions could cause joint failure, resulting in property damage, serious personal injury, or death.

Assemble couplings per the applicable Victaulic installation instructions. Scan the QR code provided for a listing of product installation instructions that can be downloaded on victaulic.com.

Continue to tighten the nut(s) until the visual inspection requirements are achieved. Visual inspection of each joint is required for verification of proper assembly. **For angled-bolt-pad couplings:** Equal and positive or neutral offsets shall be present at the angled bolt pads.

During the installation process, the installation torque shall not exceed the "Maximum Allowable Bolt Torque" values specified in the table on this page for the applicable bolt/nut size. Conditions that may result in over-shifting and/or excessive bolt torque include, but are not limited to, the following:

- **Improperly-Sized Impact Tool –** Refer to the "Impact Tool Selection" section on the opposite side of this page.
- **Uneven tightening of hardware –** For couplings containing two or more bolts, the nuts shall be tightened evenly by alternating sides until the visual inspection requirements for the particular coupling are achieved.
- **Over-shifting of the angled bolt pad –** Over-shifting of an angled bolt pad results in an offset that prevents metal-to-metal contact and equal and positive or neutral offset at the opposite angled bolt pad. This occurs when the hardware is not tightened evenly by alternating sides. Attempting to tighten the hardware on one side while the other side is over-shifted is improper installation and will result in bolt torque that exceeds the "Maximum Allowable Bolt Torque" values specified in the table on this page. Continuing to tighten the hardware in an attempt to achieve metal-to-metal bolt pad contact at the other bolt pad will cause joint failure, resulting in property damage, serious personal injury, or death. For over-shifted couplings, the hardware for the angled bolt pads shall be loosened and then re-tightened to achieve equal and positive or neutral offsets at both angled bolt pads.
- **Out-of-specification grooved pipe end dimensions (particularly large and out-of-specification "C" diameters) –** If proper visual assembly is not achieved, remove the coupling and confirm that all grooved pipe end dimensions are within Victaulic specifications. If grooved pipe end dimensions are not within Victaulic specifications, rework the pipe ends by following all instructions in the applicable pipe preparation tool's operating and maintenance manual.
- **Continued tightening of nut(s) after the visual inspection requirements are achieved –** DO NOT continue to tighten the nut(s) after the visual inspection requirements are achieved. Continuing to tighten the hardware after proper visual inspection requirements are achieved will cause joint failure, resulting in property damage, serious personal injury, or death. In addition, continued tightening may cause excessive stresses that compromise the long-term integrity of the bolts and may cause joint failure, resulting in property damage, serious personal injury, or death. Additional bolt torque will not provide a better installation; bolt torque that exceeds the "Maximum Allowable Bolt Torque" values specified in the table on this page could damage or fracture the bolts and/or the coupling's bolt pads during installation.
- **Pinched gasket –** A pinched gasket could result in the inability to achieve proper visual inspection requirements. The coupling shall be disassembled and inspected to verify that the gasket is not pinched. If the gasket is pinched, a new coupling assembly shall be used.
- **Coupling was not assembled per the applicable Victaulic installation instructions –** Adherence to installation instructions will help to avoid the conditions covered in this document.

If you suspect that any hardware has been over-torqued, the entire coupling assembly shall be replaced immediately (as indicated by a bend in the bolt, bulging of the nut at the bolt pad interface, or damage to the bolt pad, etc.).

Maximum Allowable Bolt Torque

Bolt/Nut Size		Maximum Allowable Bolt Torque*
inches	Metric	
5/16	–	15 ft-lbs 20 N•m
3/8	M10	55 ft-lbs 75 N•m
7/16	M11	100 ft-lbs 136 N•m
1/2	M12	135 ft-lbs 183 N•m

Bolt/Nut Size		Maximum Allowable Bolt Torque*
inches	Metric	
5/8	M16	235 ft-lbs 319 N•m
3/4	M20	425 ft-lbs 576 N•m
7/8	M22	675 ft-lbs 915 N•m
1	M24	875 ft-lbs 1186 N•m

*Maximum allowable bolt torque values have been derived from actual test data

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IMPACT TOOL SELECTION

Appropriate selection of an impact tool is required to ensure proper installation in accordance with the applicable coupling installation instructions. Improper impact tool selection could cause coupling mis-assembly and damage, resulting in property damage, serious personal injury, or death.

To determine the suitability of an impact tool, perform trial installation assemblies with a standard socket wrench or a torque wrench. These trial coupling assemblies shall meet the visual installation requirements for the particular coupling. After visual installation requirements are achieved, measure the torque applied to each nut with a torque wrench. Using the torque value measured, select an impact tool with a torque output or torque output setting that conforms to the measured value but does not exceed the "Maximum Allowable Bolt Torque" values specified in the table on the previous page.

Selection of an Impact Tool:

Impact Tools with Single Output Torque – Selection of an impact tool with an output torque considerably higher than the required installation torque could result in hardware and/or coupling damage due to the possibility of hardware over-torque. Under no circumstances shall an impact tool be selected for use that has a torque output setting that exceeds the "Maximum Allowable Bolt Torque" values specified in the table on the previous page.

Impact Tools with Multiple Output Torque Settings – If an impact tool with multiple output torque settings is selected, the impact tool shall have at least one torque setting that satisfies the above requirements for an "Impact Tool with Single Output Torque."

Use of impact tools with excessive output torques creates installation difficulties for the installer due to the tool's unmanageable rotational speed and power. Using the same method above, periodically check nut torque on coupling assemblies throughout the system installation process.

For safe and proper use of impact tools, always refer to the impact tool manufacturer's operating instructions. In addition, verify that proper impact grade sockets are being used for coupling installation.

⚠ WARNING

Failure to follow instructions for tightening hardware could result in:

- **Bolt damage or fracture**
- **Damaged or broken bolt pads or fractures to housings**
- **Joint leakage and property damage**
- **A negative impact on system integrity**
- **Personal injury or death**