

Torqueing fasteners with rattle guns

This Alert highlights the safety issues with using rattle guns to tighten fasteners and provides advice to ensure fasteners are correctly torqued

July 2014

Background

On construction sites there have been numerous incidents of structural fasteners failing, due to incorrect torqueing (tightening) of the fastener.

These failures are not restricted to a single type of fastener but have occurred with cast-in and drilled concrete anchors as well as structural bolts in steel work and on mechanical plant.

Fastener failure has resulted in structural collapse, plant malfunctions, and objects falling from heights; any of which can result in death or injury.

A contributing factor in fastener failure is often the incorrect use of rattle guns, also called torque guns or impact wrenches, to tighten the fastener.

Construction industry practice is to tighten fasteners with a rattle gun and periodically test that the tightening torque specified by the designer or fastener manufacturer has been achieved using a manual torque wrench.

Safety issues

Rattle guns (including battery powered) may have torque ratings that can greatly exceed the maximum allowable torque specifications of fasteners.

Most rattle guns are not torque calibrated and if fitted with adjustable settings may have a limited range of adjustment (eg low, high).

Torque can also be reduced if an incorrect or worn socket is used or the battery is old or its charge is low.

Fasteners that are not tightened to the fastener manufacturer's specified torque have the potential to vibrate loose or break.

Most manual torque wrenches, if set to a specific torque setting, will only indicate if the fastener is under torqued or has achieved the specified torque; not that the fastener has been over tightened.

Control measures

Fasteners required to be tightened to a specified

torque should be tightened to that torque setting using a calibrated manual torque wrench, not a rattle gun.

Ensure the installer is instructed or trained in a safe system of work for fastener installation, including:

- the inspection and use of tools (eg rattle gun, sockets, spanners, and manual torque wrench)
- specified torque requirements for fasteners
- acceptable methods of pre-tensioning fasteners; if a rattle gun is used its output torque should be lower than the final torque
- the method to use for final torqueing of the fastener.

Ensure the installer has tools appropriate for the fastener installation (eg appropriate calibrated manual torque wrench and correct size sockets).

If a rattle gun can be adjusted and calibrated to deliver the required torque it can be used to tighten the fastener instead of a manual torque wrench. If a rattle gun is used, fasteners should be periodically tested to verify that the tightening torque specified by the designer or fastener manufacturer has been achieved.

Further information

Further information on fastener torque specifications or the torque ratings of rattle guns can be obtained from their respective manufacturers.

Contact Details

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For more information on occupational health and safety, go to WorkSafe's website: worksafe.vic.gov.au