



winding bar safety alert for sectional overhead garage doors

The purpose of AGDA Safety Alerts is to share safety related information and raise awareness of potential increased risk situations or activities. It is not intended as a replacement for systematic hazard identification and control. Find us at <http://www.agda.org.au>

THE PROBLEM

Recently there have been a number of Incidents reported involving winding bars used during the installation or adjustment of torsion spring systems for garage doors, resulting in broken bones and soft tissue trauma. Industry operatives would be well advised to re-assess their equipment and procedures in relation to this part of installation / maintenance practice for workers and contractors.

THE OBJECTIVE

To have a Zero harm work environment for garage door installer organisation's workers and to aim for ongoing safe operation of the equipment by the end user.

SAFETY PROCEDURES

Assessment of the risk

- The risk of serious injury arises from the uncontrolled release of potential energy stored in tension within the springs on garage door systems at the time of installation of the garage door system or its maintenance, in conjunction with an unsafe act during adjustment of the spring system.
- The most common injuries result from
 - The winding bar being improperly engaged to control the required spring tension adjustment and the winding bar disengages permitting uncontrolled action by the spring which separately or in conjunction with the winding bar imparts a damaging force to the face or body of anyone in the vicinity of the counterbalance spring system and winding bar.
 - Incorrect Tools being used allowing slipping of equipment.
 - Incorrect SOP/Installation instructions particularly the sequence of tightening or loosening of fixings, allowing axles or other parts of the door to release spring tension in an uncontrolled manner.

Management of the risk

- Always use winding bars that fit the holes in the winding cone properly and that are long enough to provide control over spring tension.
- Do NOT use screwdrivers, reinforcing bar pieces, or any other object/tool not specifically designed as a winding bar for the winding cone in the counterbalance system.
- Do not stand with your face or body in line with or underneath the tensioning or winding bar.
- A system that uses a 25mmx25mm x 3mm RHS bar with 4140 pre heat treated high tensile steel which has a 55 Tonne cross section turned down to suit different sized winding plug holes, welded all round, offers additional safety through a reduction in risk of slipping due to a better grip in the winding cone hole is recommended as an option for consideration.
- Check that the fittings and fixtures of the spring counter balance system to the garage substrate and to the garage door are in accordance with the manufacturer's specifications / recommendations at the time of installation or at the time of any maintenance as any variance may contribute to failure during installation, maintenance or future operation posing a safety hazard should any of the fixings fail in each circumstance.

[Manufacturer specifications / recommendations regarding fastener connections to common substrates are generally available direct from manufacturers in hard copy form or downloadable from their web sites]

- Use of readily available and economical ratchet torsion spring tightening equipment for tightening, winding or unwinding torsion springs to reduce injury risk is highly recommended as an investment in safety.

[One source of such a tool found to be reliable and economical is E-Z Ratch from Safe Ratch Inc. Contact Albert Zuccolotto, e-mail: info@saferatch.com, Phone and Fax 001818142882050 (from Australia), 110 Wiltshire Boulevard P.A. 15905 USA, website - www.saferatch.com]

WARNINGS

Installers or consumers should be aware that garage door springs, cables, brackets, and other hardware attached to the springs, are under very high tension and contain stored energy and, if handled improperly, can cause serious injury, that is why only a qualified professional carefully following the manufacturer's instructions should adjust them. Consumers should not attempt to repair or adjust the torsion springs, as in addition to possible harm the warranty can be voided.

DEFINITIONS

Extension spring: A spring designed to operate in a counterbalance system to provide a lifting force by the stretching or pulling of the spring developing tension to counterbalance a load applied to it.

Torsion Spring: A helical wound spring designed to operate in a counterbalance system to provide a lifting force through the twisting of one end of the spring about a longitudinal axis while the other end is held or turned in the opposite direction developing torque to counterbalance a load applied to it.

Torsion Shaft or Tube: is a solid shaft of uniform circular cross-section or hollow circular tube with constant wall thickness which transfers an applied torque, from the twisting of a spring, to the load.

OPERATIONAL MODES

An extension spring counterbalance system consists of a pair of stretched springs running parallel to the horizontal tracks. The springs lift the door through a system of pulleys and counterbalance cables running from the bottom corner brackets through the pulleys. When the door is raised, the springs contract, thus lifting the door as the tension is released.

A torsion spring counterbalance system consists of one or two tightly wound up springs on a steel shaft with cable drums at both ends. The entire apparatus mounts on the header wall above the garage door and has three supports: a center bearing plate with a steel or nylon bearing and two end bearing plates at both ends. The springs themselves consist of the steel wire with a stationary cone at one end and a winding cone at the other end. The stationary cone is attached to the center bearing plate. The winding cone consists of holes every 90 degrees for winding the springs and two set screws to secure the springs to the shaft. Steel counterbalance cables run from the roller brackets at the bottom corners of the door to a notch in the cable drums. When the door is raised, the springs unwind and the stored tension lifts the door by turning the shaft, thus turning the cable drums, wrapping the cables around the grooves on the cable drums. When the door is lowered, the cables unwrap from the drums and the springs are rewound to full tension.

OPERATION OVER TIME

It is natural for springs to lose tension and the door become hard to operate or become completely inoperative requiring adjustment and it is recommended by AGDA that any adjustments or repairs to the door, opener or fittings which should only be carried out by a professional garage door technician.

