

**Title: SPRING REMOVAL/REPLACEMENT INSTRUCTIONS  
FOR 180/189 SPRING RETURN ACTUATORS**

**1. Removal of Spring Pack**

Warning: The wound-up springs store a large amount of energy which, if suddenly released, can be dangerous.

- 1.1 Securely support actuator/spring unit in a vertical position by use of a bracket which is connected to the actuator mounting flange. This bracket will either need to be fixed to the floor or have a large stable base.
- 1.2 A keeper plate strong enough to take the full torque must be fitted in order to remove S/R pack without spring tension (Kinetrol keeper plate 67-051 is recommended).
- 1.3 Connect airline via a pressure regulating valve to actuator air inlet.
- 1.4 Place the keeper plate over square shaft protruding from S/R pack
- 1.5 Increase air pressure slowly until actuator vane turns to mid-travel position. Keeper plate holes will then line up with threaded holes in the spring housing
- 1.6 Insert four bolts through keeper plate holes and tighten to lock keeper plate in position and disconnect air supply.
- 1.7 Fit two lifting eyes to keeper plate and connect to suitable lifting equipment to later lift the spring pack from the actuator.
- 1.8 Remove four lower retaining screws which retain the spring pack to the spring pack base.
- 1.9 Slowly lift the spring pack vertically from the actuator ensuring that the actuator does not lift as well and that the lower spring coupling moves with the spring pack.
- 1.10 Lower the spring pack on its side and fit a baseplate to the underside of the spring pack to protect the springs during storage/shipment
- 1.11 When spring is removed, check for visible evidence of any water / dust ingress or mechanical wear between spring coils and static parts. If either of these has occurred it is advisable to replace the spring with a new spring unit.
- 1.12 In the unlikely event that the spring pack is thought to be faulty, it is recommended that the pack is returned to Kinetrol for refurbishment.

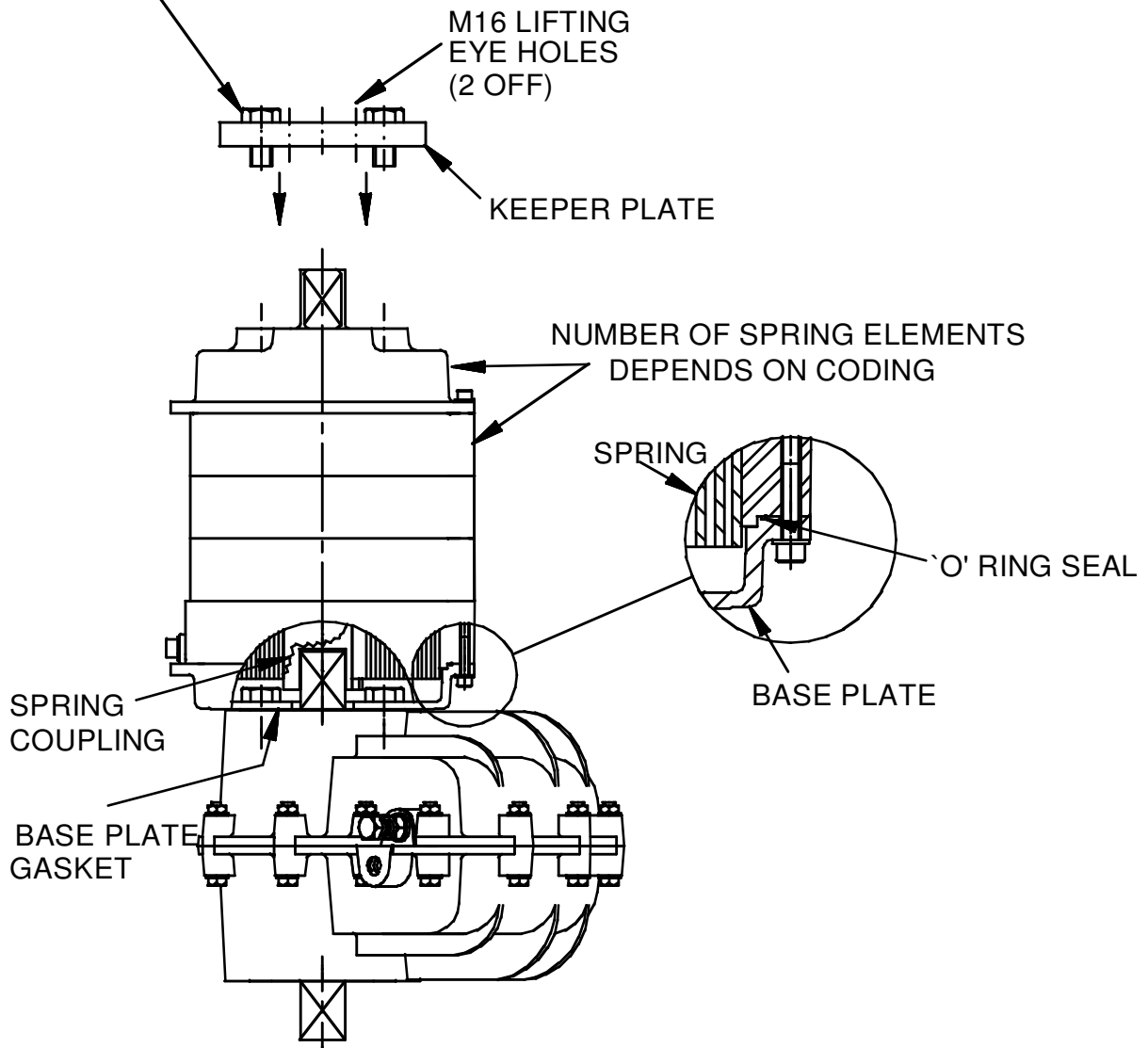
**2. Re-Assembly of the Spring Return Pack**

- 2.1 Support the actuator as in 1.1.
- 2.2 If necessary replace spring base plate gasket.
- 2.3 Apply air pressure to the actuator to move it to mid-travel position.
- 2.4 Fit new O-ring seal onto baseplate register.
- 2.5 Lift spring pack using crane attached to lifting eyes in keeper plate.
- 2.6 Lower spring pack and locate on actuator square end and then onto baseplate register.
- 2.7 Rotate actuator vane by using air pressure to allow bolts to be fitted which retain the spring pack to baseplate and tighten screws.
- 2.8 Adjust air pressure until the actuator balances the spring tension.
- 2.9 Loosen keeper plate screws. If the air pressure balances spring tension correctly the screws can be removed easily.
- 2.10 Remove keeper plate.
- 2.11 Disconnect air supply.

Issue B	Signed C.S.	Date 18/10/16	<b>KINETROL</b> Trading Estate Farnham Surrey England	Doc.No. TD 145 Page 1 of 2
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4 OFF KEEPER PLATE SCREWS  
180 - M30 x 50 HEX. HEAD  
189 - 1.1/8"UNC x 2.25 HEX. HEAD



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