138 Helpsheet

GDS INSTRUMENTS LIMITED

World Leaders in Computer Controlled Testing Systems for Geotechnical Engineers and Geologists

Hardware: Advanced Controllers 200 & 1000cc (to 4MPa)

Piston/Cylinder O-ring replacement

1. Method

Before disconnecting the controller from the mains supply first of all totally drain using the EMPTY command and also ensure that the controller leadscrew is positioned so that it is 75% out of the cylinder. Remove the two screws holding the bellows retaining ring from gear box which will allow the bellows to be pulled forward to expose the dowel pin. This joins the gear box to the lead screw. To remove this pin it may be necessary to use Fill/Empty so that the pin is aligned horizontal.

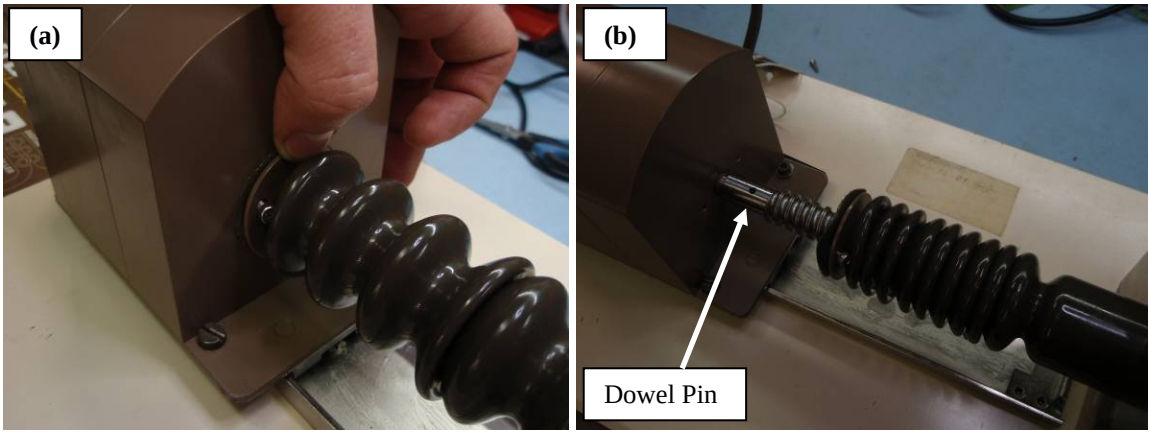

Figure 1 – (a) Location of bellow screws; (b) Dowel pin exposed by pulling bellows forward

Now the controller should be disconnected from the mains supply.

With a small punch and light engineering hammer drive out the hardened dowel pin from the lead screw/gearbox junction. With care slide the gearbox/motor assembly backwards ensuring that it does not run off of the back end of the guide rail as the ball bearings will probably fall out, then secure in this position (i.e. tie or tape down).

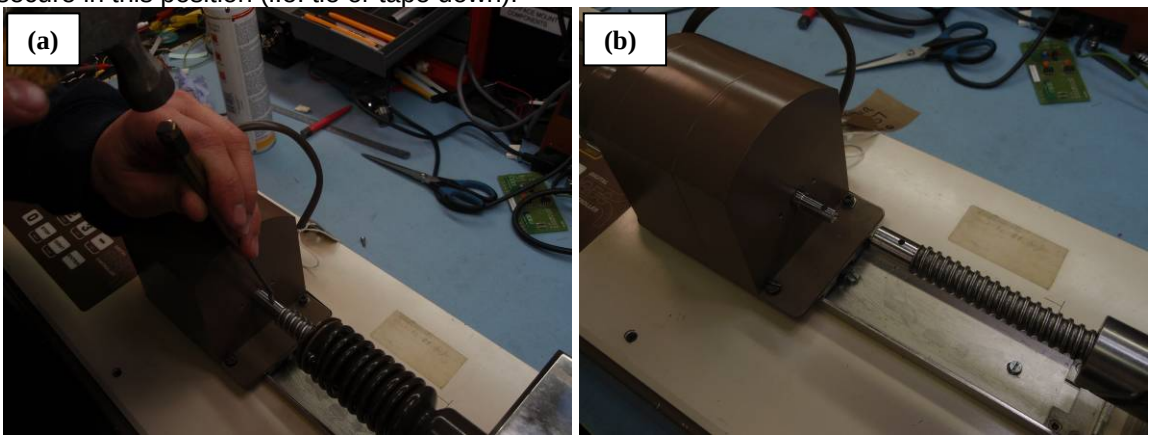

Figure 2 – (a) Removing dowel pin with hammer and punch; (b) Gearbox/motor moved backwards

Remove the eight top plate fixing screws and with additional help remove the various plugs and wires connecting the top plate to the main control base. Now they are separated turn the top plate upside down and remove the four fixing screws which are holding the cylinder assembly to the top plate. Now separate by gently prying between the cylinder and plate. A wedge shaped piece of wood may be required for this job as on some units the locating dowels con be a very tight fit.

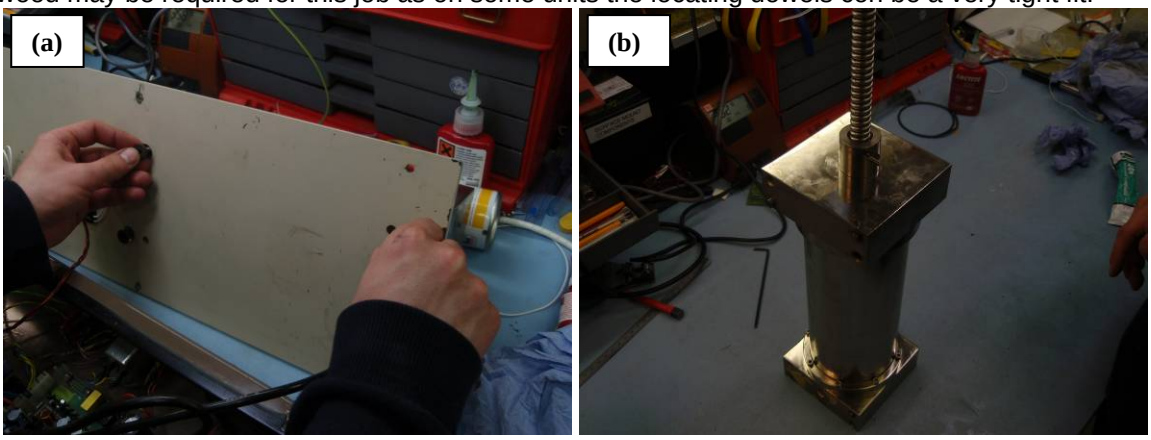

Figure 3 – (a) Removing four fixing screws from top plate underside; (b) Cylinder assembly removed

Now remove the sixteen fixing screws holding the cylinder to the end blocks, taping off with soft hammer to expose the bear cylinder. At this stage the piston can now be removed from the cylinder. NOTE: DO NOT ALLOW THE BALLNUT TO UNSCREW ITSELF FROM THE BALLSCREW.

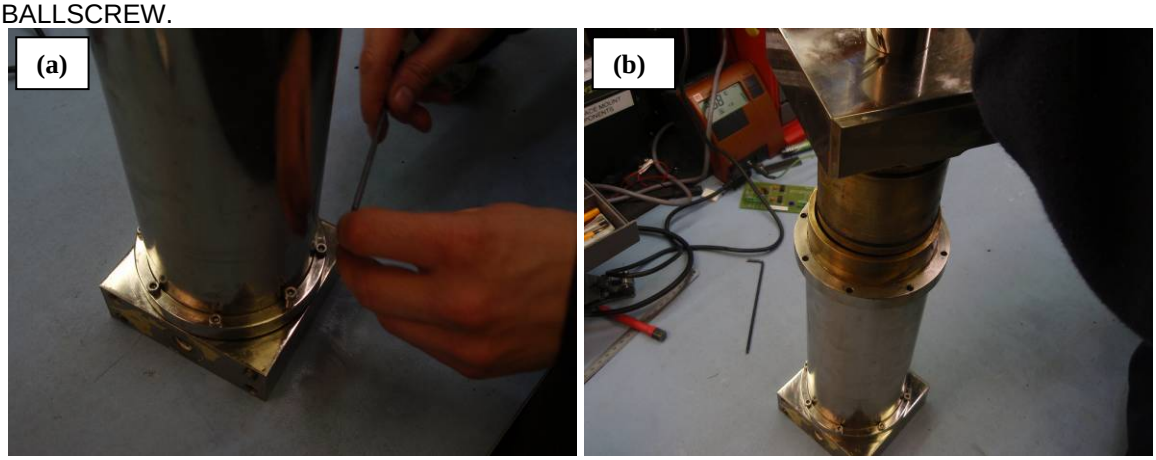

Figure 4 – (a) Removing end block fixing screws; (b) Removing piston from cylinder

With 'O'Rings removed from piston and end block, clean all parts thoroughly checking that there is no internal damage to the cylinder bore. Standard grease SHELL L-EP2 or equivalent may be used for the thread of the lead screw but when fitting the new 'O' Rings only Silicone should be used. DOW CORNING DC4 or equivalent.

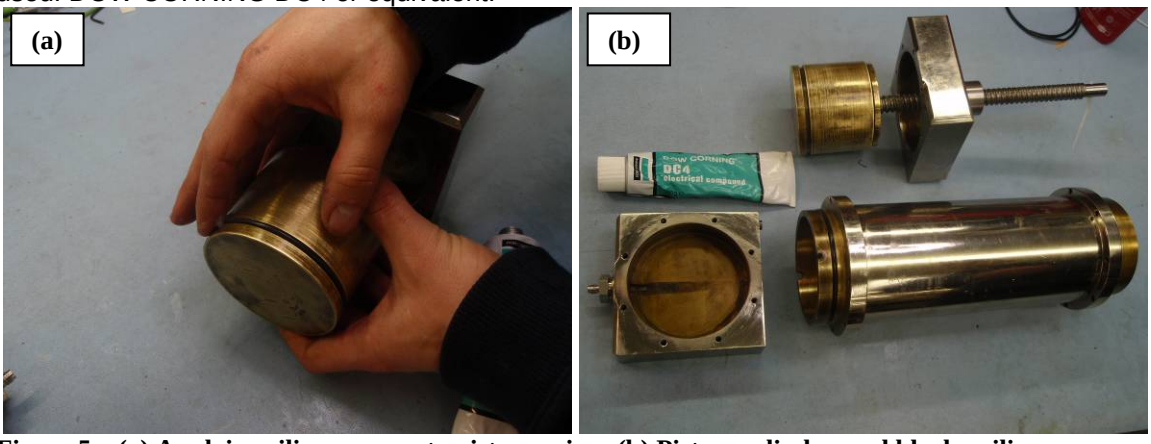

Figure 5 – (a) Applying silicon grease to piston o-ring; (b) Piston, cylinder, end blocks, silicon grease

Re-assemble in reverse order, making sure that all connectors are in the correct orientation.

O-ring sizes:

200cc advanced controller
Piston o-ring = 31.5x3, Vyton 70
Cylinder o-ring = 39.5x3, Vyton 70

1000cc advanced controller
Piston o-ring = 74.5x3, Vyton 70
Cylinder o-ring = 84.5x3, Vyton 70