

# 57 GDS Helpsheet



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Systems for Geotechnical Engineers and Geologists

## Hardware

### Motorised Cell

### Removing Axial Displacement Transducer

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## 1. Introduction

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To start with, have the cell facing towards you with the valves directly in front of you.

- Remove the two front covers by taking out the two screws right at the front, and the three screws either side of the cover. This will allow you to remove the two parts of the front cover. You now have access to the Axial Displacement Transducer.
- The Axial Displacement Transducer consists of an aluminium 'u' beam which is bolted to the black vertical support at the front of the cell. The Displacement Transducer is bolted to the back of this black beam.
- Ensure that the Displacement Transducer is positioned at the mid-part of its stroke, by running the Axial Controller in either the fill or empty mode so as to achieve the correct positioning.
- You can now gain access to the left hand side of the Transducer, where there is an aluminium block with a small grub screw in the side. Undo the grub screw and allow the aluminium block to slide down the slide until it rests on the foam rubber block at the bottom of the slide.

*Note: that you should ensure that the foam block is in place before you release the aluminium block.*

- On the right hand side of the black vertical post, remove the two brass screws holding the lower limit switch in position. This will allow that limit switch to come free of the black vertical post. (This is necessary to allow the post to be rotated without stressing the cables).
- You will note that there is a piece of 4mm studding protruding from the main carriage of the machine which is used as an actuator for the upper and lower limit switches. This needs to be removed to allow the vertical post to rotate, so undo the M4 screws which lock the piece of studding in place and then unscrew the studding.
- Underneath the base of the machine at the front, there is a 19mm nut which locks the whole of the front strut in place. This needs to be loosened. To achieve this you can slide the cell forward until this part overlaps the bench.
- When the 19mm nut has been loosened the black vertical strut can now be rotated so that the Transducer is facing towards the right hand side.
- The Transducer can now be released by unscrewing the screws at the top and bottom of the Transducer. The top screw is covered by a foam block which can be slid down slightly to make the screw accessible.

- You now have the Transducer laying on the base-plate of the cell in front of you.
- You can now plug in the axial displacement Lemo connector into the bottom of the cell and power on the cell pressure controller. By gently sliding the transducer slider slowly up and down, you can check if the output varies consistently, and without discontinuities. If there are errors in the output from the transducer it may be possible to note the point and clean the track, if necessary. Alternatively, by looking along the length of the track so that you can see underneath the block to where the connectors touch the track - you may see that the two contacts are not making proper contact. They may have been damaged during assembly.
- If it appears that the contacts with the slider are damaged, then you can remove the slider as follows:

First, remove the top piece of plastic foam, and then the slider can be gently slid to one end and off the track completely. You can then examine the contacts to ensure that they are in good condition. The contacts should look in good condition, and be at an angle of approximately 30 degrees to the carriage.

To re-assemble the slider onto the carriage, you need to be careful because the contacts are angled against the direction which they need to be slid back onto the carriage. To make this easier, you need to cut a piece of thin but strong plastic sufficiently wide to lay over the slide. You can then put the contacts against this piece of plastic and then slide the slider into position without damaging the contacts. The piece of plastic can then be slid out from underneath the slider.

The cell can be re-assembled in the reverse sequence to disassembly.

*Points to notice are:*

When choosing the position for the slider to be re-connected with the grub screw that locks the connection arm in place, you should make sure that the RFM zero offset is removed and the slider is adjusted to the position that gives zero output on the RFM.