# 66 GDS Helpsheet

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

Hardware

STD & ADV Controller

Pressure Control Zero Offsets

## 1. Introduction

The following extracts from the pressure controller handbook and helpsheet #15 need to be read and understood before trying to manipulate controller zero offsets. The reading on a GDS pressure controller can be altered in one of three ways:-

- Calibrating the controller as described in helpsheet # 15. This procedure is carried out in the GDS works and does not normally need to be carried out more frequently than once every two or three years.
- Applying a soft zero offset (see 2.2.10 below)
- Removing the soft zero offset (see 2.3.3 below)

Whenever you have a problem with a GDS controller the first step is to open the controller to atmosphere (preferably using a tube dipped below the surface of a vessel containing de-aired water) and remove the soft zero offset with the key sequence RESET, 0, 8. The controller should now be measuring atmospheric pressure and the pressure indication should be close to zero (within +/- 10 kPa). If you now use the key sequence RESET, 8 this will apply a new soft zero offset and the controller will now read 0000 kPa.

If when the controller is open to atmosphere, and the soft zero has been removed, it shows a pressure outside of +/- 10 kPa you need to adjust the hard zero offset as described in Helpsheet #15.

**Note:** If when you open the controller to atmosphere it reads a very low pressure (say -300 kPa) it probably means that someone has accidentally applied a soft zero to the controller when it was at pressure. When you remove the soft zero offset by pressing RESET, 0, 8 the pressure should return close to zero as described above.

## 2. Function Key 8, ZERO PRESSURE

The default zero pressure is set in the factory such that the controller will read zero pressure when the end of the flexible pressure outlet is held level with the pressure outlet on the bright end block of the controller. The ZERO PRESSURE function allows you to set a new pressure datum for the controller; for example when the test specimen in a triaxial cell is at a different level to the pressure outlet of the controller.

The information message 'PRESSURE ZEROED' will appear and the current pressure reading will be stored to be used as an offset for all future pressure readings, and the pressure display will show 00000.

The system function 8 (remove zero pressure offset) is described in section 2.3.3 and should be read in conjunction with the current section. The 'soft' zero offset is removed by the keystroke sequence - RESET, 0,8. - which resets the pressure datum to the factory set value.
To select a new function the RESET key must be pressed.

# 3. SYSFUN 8 – Remove Pressure Zero Offset

Pressing the '8' key while the 'SYSFUN = ?' prompt is being displayed invokes the remove pressure zero offset system function. The effect of this is to set to zero any pressure offset currently being used as a result of invoking FUNCTION 8 - ZERO PRESSURE.

The keystroke sequence is: RESET, 0, 8. The prompt immediately returns to the 'SYSFUN = ?' message, and the pressure display will be amended by the amount of zero offset which has now been removed.

To return to the main menu the RESET key must be pressed.

# 4. Setting Gain of Pressure Measurement

**Introduction**

Sometimes the range of pressure measurement may change owing to movement of the gain setting potentiometer caused by thermal effects or vibration during transportation, or by ageing of the electronic components. This effect is rare but when it occurs it is necessary to reset the gain against a standard pressure i.e. to recalibrate.

**Recalibration**

To set the gain on a MKIII controller the following procedure should be followed:

1 Ensure that the controller has been on continuously for a period of 24 hours.

2 Remove the soft zero offset by using the keystroke sequence RESET, ZERO, EIGHT

3 Remove the eight screws holding on the top-plate and with the assistance of a colleague gently lift the front edge of the top-plate by about 150mm so that access can be gained to R62, R600, R68 and CON9, on the main board directly beneath the control panel.

**WARNING: Do NOT touch the POWER SUPPLY to the right of the main PCB.**

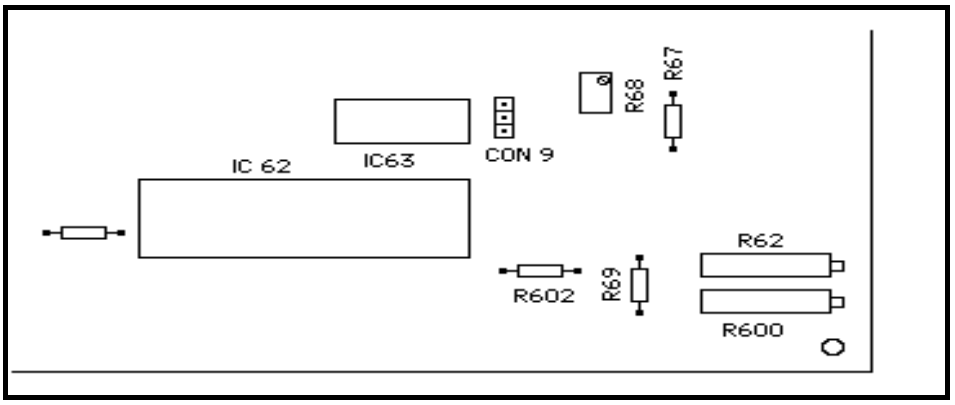
4 Using a calibrated voltmeter check that the reference voltage across the two pins, toward the top of the PCB, shown hashed on CON9 is exactly 10.000 volts. If it is not it can be adjusted with potentiometer R68.

5 Connect the pressure outlet to a zero reference pressure* and use the potentiometer R600 to set the pressure reading to zero.

6 Connect the pressure outlet to a reference pressure* of 2000 kPa and use the potentiometer R62 to adjust the pressure reading to 2000 kPa.

7 Replace the top plate.

* ***The pressure reference could be a GDS digital controller that has also been powered on for at least 24 hours.***




***Layout of components at bottom right of MKIII circuit board***