

67 GDS Helpsheet



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

Hardware

STD & ADV Controller

Pressure Variation in Controllers with a Stopped End

1. Introduction

A pressure controller filled with deaired water and connected to a closed valve (or with a stopped pressure outlet) is a very stiff hydraulic system. Very small volume changes cause very large pressure changes. For example one step of the stepper motor in a 2MPa controller causes a volume change of 0.5 cubic millimetres which in turn can generate as much as 3 kPa pressure change.

If the controller is under pressure control the pressure will be maintained at the target pressure.

If the controller is not under pressure control (e.g. if you press the RESET key and the controller is showing the FUNCTION ? Prompt) then the pressure reading will vary according to changes in room temperature. These changes with room temperature can be as much as +/- 100 kPa. If the controller is connected into a triaxial cell these large changes in pressure will not occur because the cell itself plus the water it contains is a much larger volume and represents a much softer system. The variations in pressure are time dependant as well - the type of change described above can occur over a period of one or two hours or even over one day with diurnal temperature changes in non air-conditioned offices.