

47 GDS Helpsheet

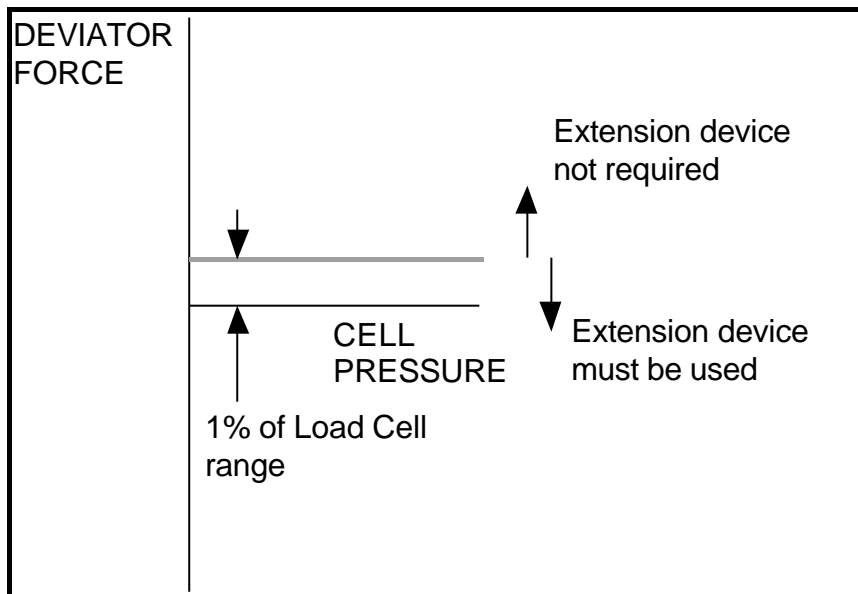
Hardware

Triaxial Testing Systems

Using the Extension Top Caps

1. Introduction

For any stress path where the deviator force approaches zero to within 1% of the load cell range the extension device must be in place.

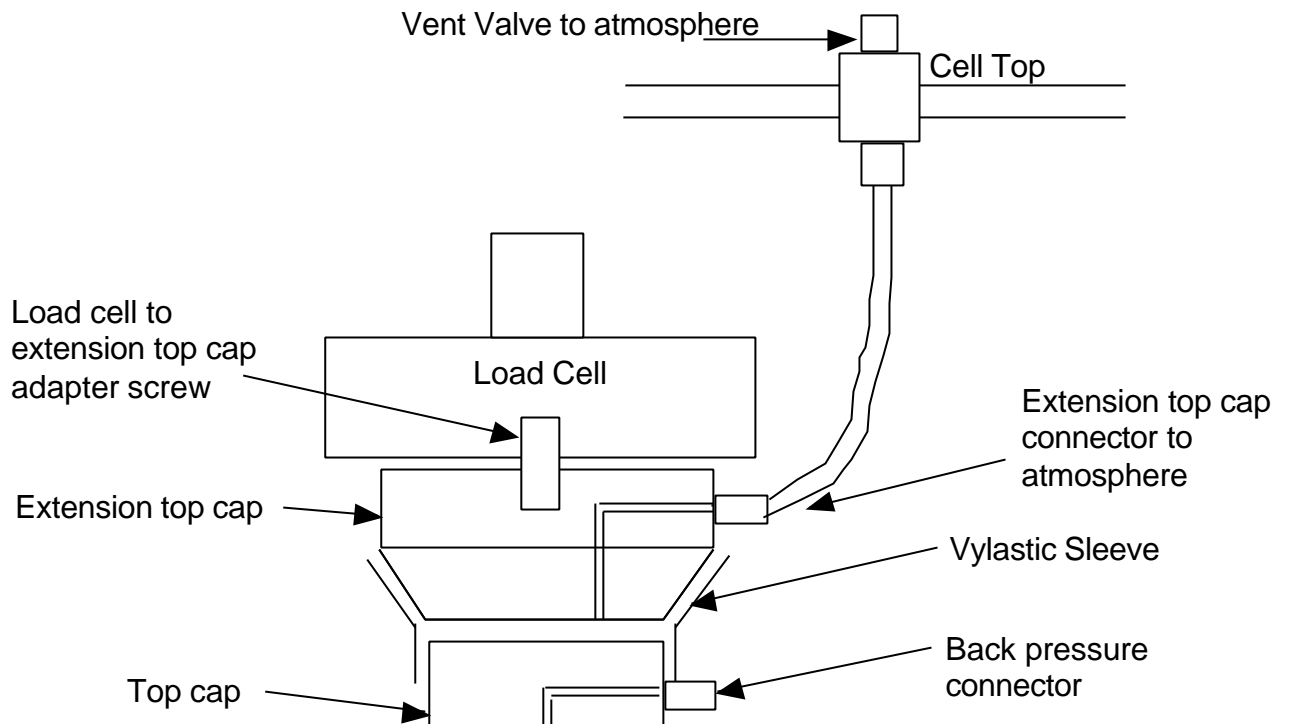


2. Using the Triaxial Extension Device

The GDS triaxial extension device enables triaxial extension to be carried out as routinely as triaxial compression. The device prevents cell pressure from acting vertically on the top cap resting on the test specimen. This allows axial stress to be reduced below cell pressure.

The setting up, docking and undocking procedure is as follows:

- Set up the test specimen in the usual way, using the top cap with plain ends (i.e. without a metal hemispherical seating).
- Fit the bell-mouthed flexible sleeve onto the top cap with the bell-mouth uppermost.
- Lightly apply a thin coating of silicone grease to the inside of the bell-mouthed sleeve.
- Fill and de-air the cell in the usual way. When water runs out of the top vent tube, **close it off** with a straight connector and plug.
- Carry out isotropic consolidations, B checks and saturation stages as required.



To dock the top cap and sleeve to the vented reaction head, the following procedures should be used:

- Shut the back-pressure valve on the cell. Any change in cell pressure during docking can be reduced by shutting the back-pressure valve to "lock in" the current state of isotropic effective stress for fully saturated soils.
- Lower the load ram by turning the large knurled nut on the reaction head. It is a good idea to set the cell pressure to maintain the correct target pressure so that the increase in pressure due to the ram volume will be accounted for.
- Continue to lower the reaction head until it locates in the flexible sleeve.
- Now carefully open the extension top cap vent tube valve. A small amount of water may run out, but then the top caps should be drawn together. If water continues to leak, shut the vent valve and try to re-align the caps. If water stops flowing, leave the vent open for the rest of the testing - you have successfully docked.
- Tighten the lock nut on the reaction head.
- Open the valve to back pressure. Testing may now proceed.

To undock at the end of the test, the following procedures should be used:

- Turn off all valves to the cell and vent the cell pressure to atmospheric pressure using the bleed valve in the top of the cell.
- Raise the open end of the water filled vent tube above the cell and secure in position. This applies a small positive pressure to the interface between the top cap and the reaction head.
- Release the lock nut on the reaction head and slowly raise the reaction head by turning the large knurled nut.
- Set the cell pressure to zero pressure. When zero pressure is reached, disconnect the cell pressure line from the cell and empty the cell of water. Dismantle the cell in the usual way.