

## Spool Leakage

### Part I

- Connect the hydraulic circuit as shown
- Start the pump and shift the directional control valve to the various positions
- Note the pressures on the gauges when the valve is shifted to the various positions

Students should recognize that when left in the centre condition spool leakage will cause the pressure to rise at pA and pB.

This may take longer than 2-3 minutes due to the low working pressure and the volume of the hoses

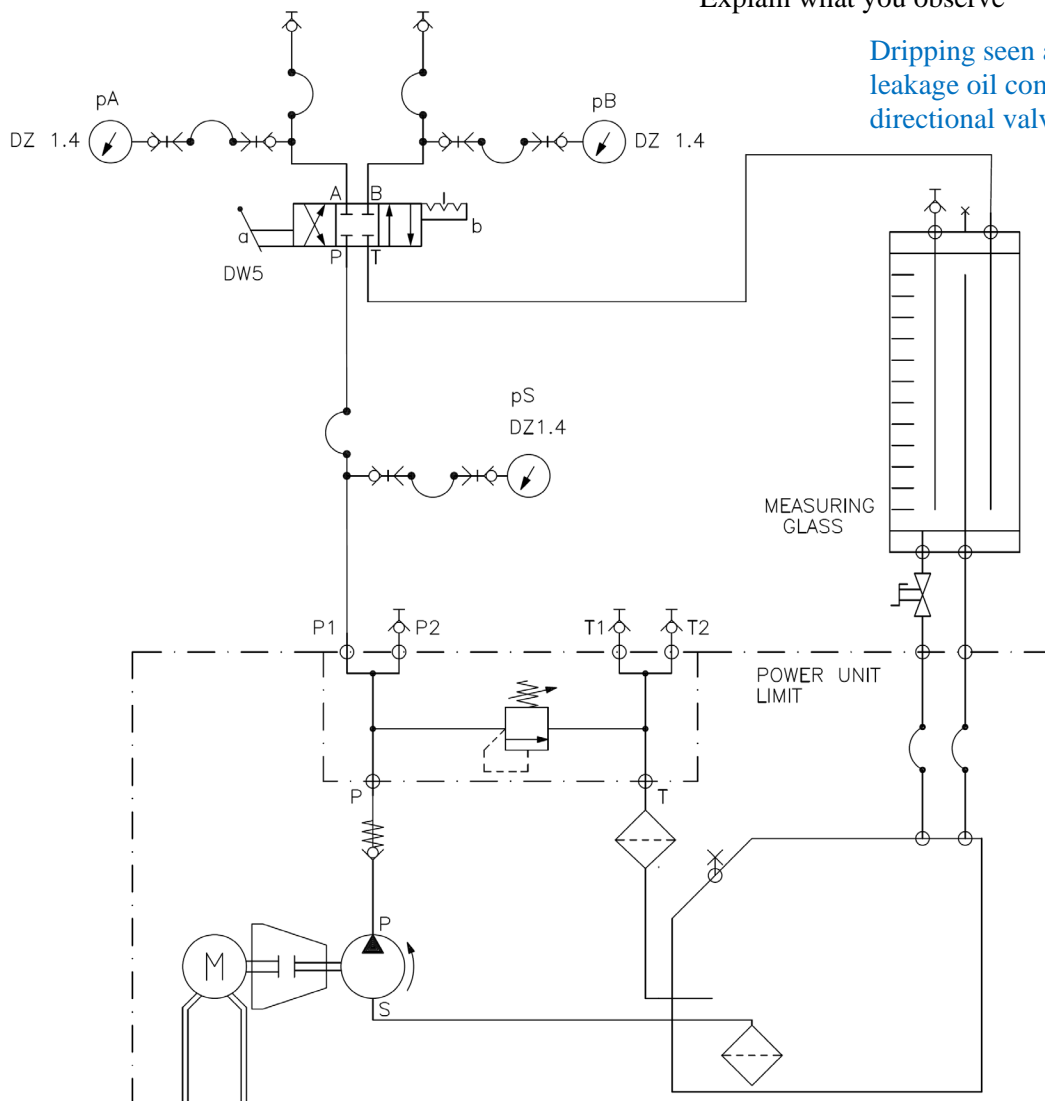
Theoretically  $p_A = p_B = p_S/2$

### Part II

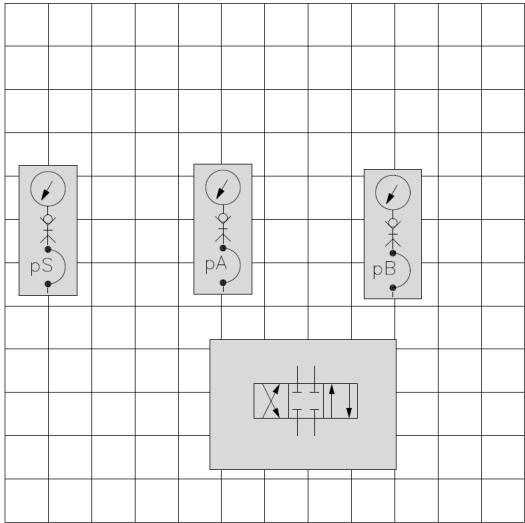
- Shut off the pump and shift the directional valve to release all hydraulic pressure
- Return the directional control valve to the centre position
- Start the pump and **without shifting the directional control valve** note the pressures on the three gauges
- Leave the pump running for 2-3 minutes and note the following:
  - Pressures at ports P, A, B
  - Flow at the measuring glass

Explain what you observe

Dripping seen at the measuring glass is leakage oil coming from port 'T' of the directional valve



Component layout



## Supplemental

A cylinder can be connected to the A and B ports and the unit left to run while the observations are discussed.  
 For best results try to choose a valve that had nearly equal pressures in pA and pB

Typical observation is that the cylinder slowly extends (drifts) over time. A movement of 5 mm in 5-10 minutes can be expected.

