SCPR LVDT Operations and Tuning

There are 2 LVDTs to monitor the height of the DWT mass during pressure calibrations.
There are mechanical stops at the lower and upper limits although best not to jam it against the upper limit. The full range between bottom stop and upper stop is 8mm but we don't care above the upper ready limit = 5.5mm. Calibrations are valid between the lower and upper ready limits while the mass is spinning within the designated RPMs.

There are 2 identical LVDT circuits. The procedure is the same to set the offset and gain.

- set dial indicator on top of mass
- set offset = 0.25 V at bottom stop
- set gain = 4.75 at upper ready stop = 5.5 mm (0.216")
    - (check offset, will need to repeat a few times)

LVDT 1: Monitor TP44 with a 4 ½ digit or better voltmeter (need millivolt resolution)

1. Bottom Stop, adjust P1 offset pot to read 0.250 VDC
2. Raise to Upper Ready = 0.216" (5.5 mm)
3. Upper Ready Limit: adjust P2 to read 4.75 VDC
4. Check Bottom Stop, will need to repeat a few times

LVDT 2: Monitor TP47 with a 4 ½ digit or better voltmeter (need millivolt resolution)

5. Bottom Stop, adjust P3 offset pot to read 0.250 VDC
6. Raise to Upper Ready = 0.216" (5.5 mm)
7. Upper Ready Limit: adjust P4 to read 4.75 VDC
8. Check Bottom Stop, will need to repeat a few times

<u>After setting offset & gain for each LVDT</u>

Bottom Stop	Lower Ready	Mid-Stroke	Upper Ready
0 mm	1.5mm (0.060")	4mm (0.160")	5.5mm (0.216")
0.25 V	1.20 V	3.48 V	4.75 V

During a calibration, start at 4.75 V and monitor drift down to 1.20 V.

(There is an alternate procedure using a scope to determine the exact null of the LVDT where we set the offset to 2.5 V and the gain = 4.75 VDC at the Upper Ready Limit. The LVDT null does not match the exact piston mid-stroke so the results will not be exactly the same.)