MPD - To Calibrate or Not to Calibrate?
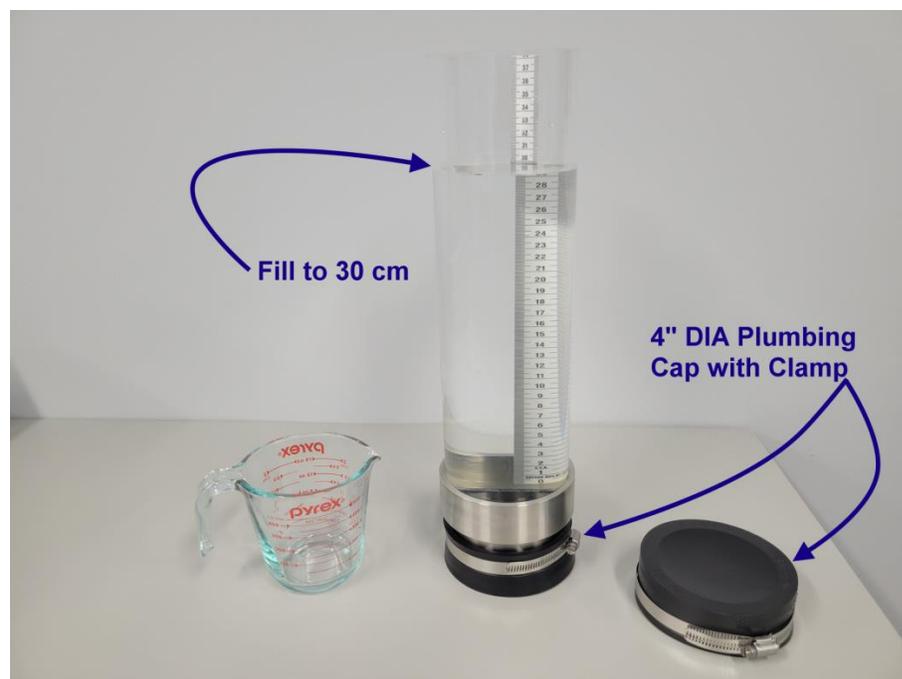
There are several ways to answer this:

- Metrology standards suggest recalibrating measurement equipment annually.
- Some companies have an annual recalibration policy.
- Components on circuit boards tend not to drift or change over time, suggesting that calibration may not be needed that often for the MPD.
- Our experience with testing MPD heads that return for recalibration is that most remain in compliance. But a few need it.

Advantages of recalibration:

- We test the heads, recalibrate, and test again. If we cannot get your head into compliance, we will provide you with a brand-new MPD head that meets the specifications.
- We also replace the battery harness if it shows any corrosion.
- We thoroughly clean the heads and replace anything that looks damaged.
- Peace of mind.

How to test your MPD head:

1. You can test your MPD head to verify calibration before deciding to send it in.

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2. Procure a rubber plumbing cap, 4 inches in diameter, with a hose clamp.
3. Clamp this cap onto the base of the MPD cylinder.
4. Fill the cylinder with water to the 30cm mark.
5. Place the MPD head and pressure tube on the cylinder, just like you would when running a test in the field.
6. Begin an MPD test with the interval set to 5 seconds.
7. Initial and final moisture values are irrelevant. Make these numbers up: 20 and 50%
8. Let the test run until it has collected 20+ readings.
9. Also note: When you put the MPD head and pressure tube on, the tube will raise the water level 1 to 2 mm. While the test is running, take note of the new water level. Be careful not to bump the cylinder while testing.
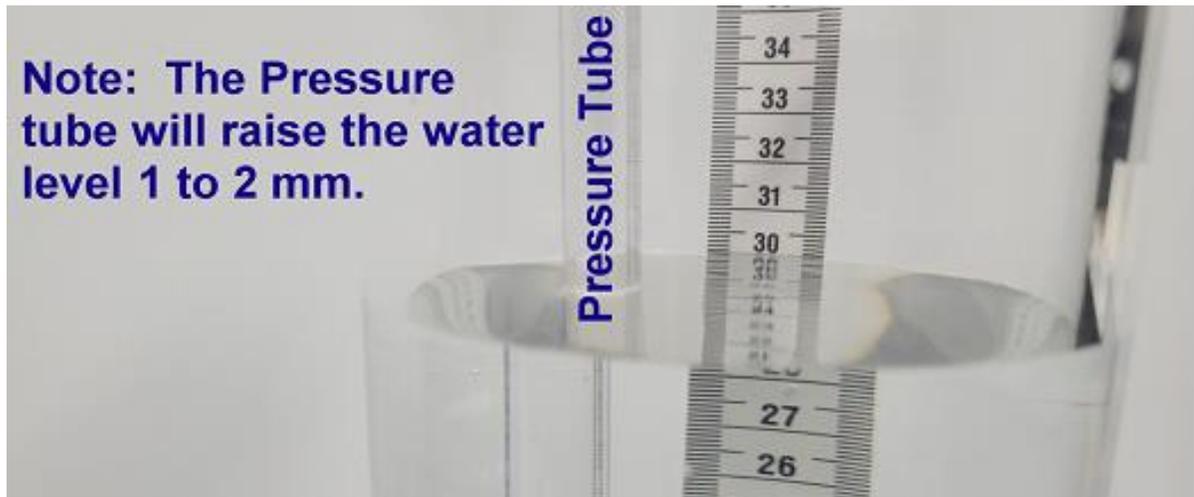

10. Finalize the test and upload it to the MPD server
11. It will produce a NULL Ksat result— there is no charge for this.
12. Go into the details for this test and look at the raw data.
13. Raw data should be within (+ / -) 3 mm of what you observed for the water level.
14. Also, look at the value of each data point. The values should be the same, within 1 to 2 mm (barring any earthquakes or bumping of the cylinder during the test).

Repeat this test at 20 cm, and then again at 10 cm.

If the values are within +/- 3mm of the water level you observed, you don't need to recalibrate. However, if your MPD head shows some 'Wear and Tear' and you need to purchase more upload credits anyway, you may wish to send it in. Free calibration and refurbishment are included with the purchase of 10 test upload credits.

Hints and Tricks (next page):

Meniscus (Water):
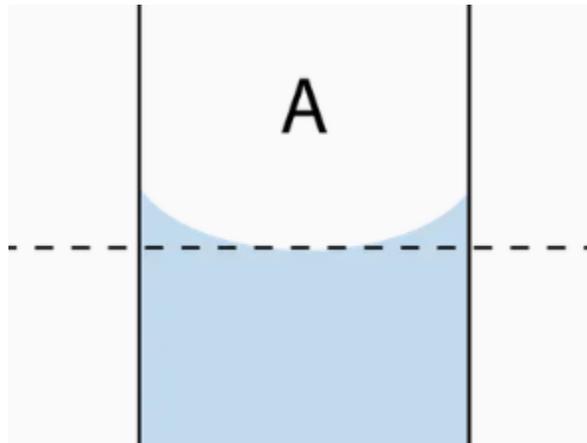
Water will curve up the sides of the cylinder, as shown in the exaggerated image above. When reading the water level in the MPD cylinder, always measure to the bottom of the meniscus (dashed line).
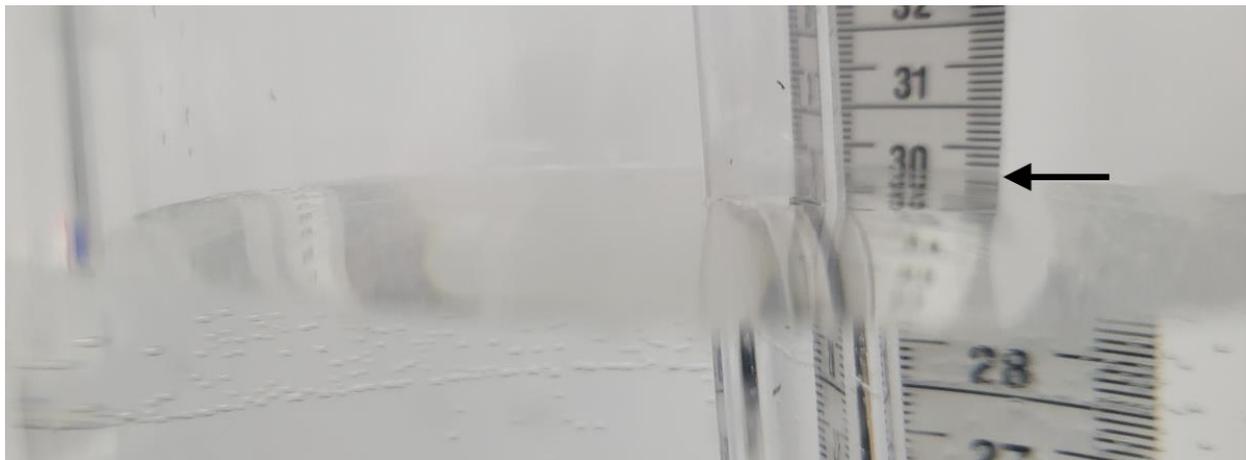
When testing the calibration of an MPD, read the graduated scale at the bottom of the meniscus after you have started the test and the pressure tube is displacing water. (The tube raises the water level.)

In the image above, the water level appears to be 30.2 to 30.3 centimeters.

After the test is completed, upload and review the raw data on the MPD server:

See an example on the next page:

Download CSV

Reading #	Elapsed Time (s)	Head (cm)
1	0	30.3
2	3	30.4
3	8	30.4
4	13	30.4
5	18	30.3
6	23	30.4
7	28	30.3
8	33	30.3
9	38	30.3
10	43	30.3
11	48	30.3
12	53	30.3
13	58	30.3
14	63	30.3
15	68	30.3
16	73	30.3
17	78	30.3
18	83	30.3
19	88	30.3
20	93	30.3

Ignore the first 10 readings

When the MPD head is placed on the cylinder, the water is disrupted and can vibrate for a time. Ignore the first 10 readings to allow the water and the cylinder to settle.

You can see the water level dithered by 1 mm, from 30.3 to 30.4, and then back and forth until it settled at 30.3

In this test, after the 6th reading of 30.4, all remaining 54 datapoints read 30.3

Eyeballing the graduated scale after starting this test, we read the water level to be 30.2 to 30.3

With a resolution of +/- 3mm, this MPD head is within specification. It is best to also test at 20cm and 10cm to verify the range.