

3" HIGH-FLOW DURA-METER™ QUICK ASSEMBLY INSTRUCTIONS

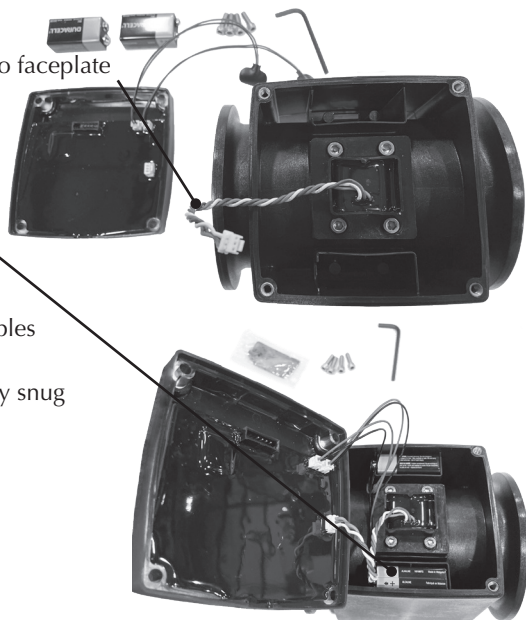
① Connect paddle wheel circuit wire to faceplate

② Connect the (2) 9V batteries

③ Install 9V batteries into meter body

④ Secure face plate to meter body
and ensure you do not pinch any cables

⑤ Install the (4) 10-32 bolts and slightly snug
to tightness



HFM3_Assembly_Installation_120623

3" HIGH-FLOW DURA-METER™ INSTALLATION GUIDELINES

This page details mounting and installation guidelines for the Dura-Meter® High Flow paddle wheel meter. These are location and installation guidelines. This is not a troubleshooting guide for mechanical/electrical issues.

About 95% of the flow metering issues are traceable back to the following 5 simple principles.

① THE FLOW RATE MUST BE WITHIN THE RECOMMENDED RANGE FOR THE PIPE SIZE THE METER IS INSTALLED ON.

All flow meters all have a minimum flow rate they will measure for each pipe size. No flow meter reads down to 0. This lower limit is a result of the flow velocity not containing enough momentum to keep the paddle wheel spinning. At some point the flow velocity drops and the paddle no longer spins linearly with respect to the flow rate. This is the lowest flow rate the meter can accurately measure. The meter may indicate flow rates below this value but will contain a large inaccuracy. At some point the flow velocity becomes too low and the meter will indicate 0, even though there is still flow.

The bottom line – if you don't have an adequate flow rate you need to either reduce the pipe diameter or find a different flow meter. You won't get satisfactory results trying to monitor flows below the recommended minimum value.

② THE PIPE MUST BE FULL OF FLUID AT ALL TIMES

The pipe must be completely full of liquid! This is particularly an issue when the meter is installed on pipes that have a downward flow direction. Vertical pipes with a downward flow are the most prone to this issue. Huge flow variations can be noted on the meter if the pipe isn't full. On horizontal runs with partially filled pipes the results will be either no flow reading if the paddle isn't in the flow path due to the meter paddle wheel being mounted on top of the pipe, or readings that are mysteriously high or erratic. If keeping the pipe fluid full is a challenge, a partially closed valve downstream will restrict the flow and keep the pipe full.

③ THERE MUST BE A SUFFICIENT LENGTH OF STRAIGHT PIPE BEFORE AND AFTER THE METER.

To develop a uniform flow profile in the pipe, a sufficient straight section of pipe must be both upstream and downstream of the meter. The diagram is a general idea of necessary lengths of pipe needed to develop uniform flow and get accurate results from the flow meter.

Pipe diameters needed to develop uniform flow

Fluid Flow Direction →

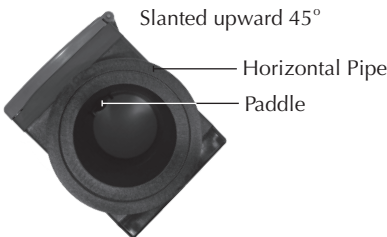


If an adequate run of straight pipe isn't possible, a reduction in accuracy may result. Typically the error is uniform (linear) across the flow range. The flow rate can be determined by meter calibration, the flow meter can be adjusted for repeatability and thus accuracy. The instruction manual illustrates methods for calibration.

④ INSTALLATION OF METER WITH HORIZONTAL OR VERTICAL PIPE

Install flow meter at the location where the pipe is filled with liquid.

A. Horizontal Pipe
optimal option:



B. Vertical pipe
optimal option:



⑤ THE FLUID ENTERING THE METER MUST BE FREE OF DEBRIS.

A filter should be installed before the flow meter to lengthen service life and improve measurement accuracy. The filter should be installed before the flow meter to remove impurities or foreign objects from the fluid that can interfere with the mechanical components.



HIGH-FLOW DURA-METER™

The meter will turn **ON** with any button press or when fluid passes through the meter. It will turn **OFF** when not in use.

Use buttons to navigate the four main menus; **Reset**, **Program**, **Calibration**, **Info**. The buttons correspond to the on screen indicators.

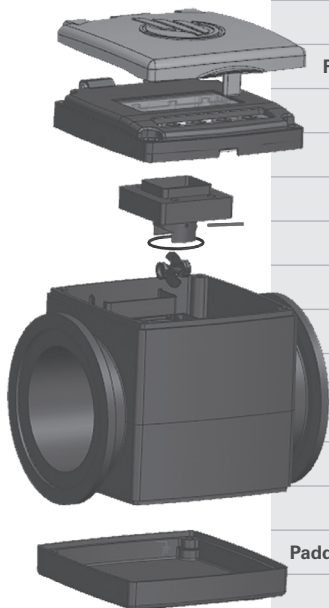
(2) 9 Volt batteries provide about 35 hours of use with the backlight turned **ON**. Battery life is extended with the backlight **OFF**.



TECHNICAL SPECIFICATIONS

	Nominal Size	2"	3"
	Model	DP-HFM2	DP-HFM3
	Connection	M220 flange	M300 flange
	Meter Accuracy	+/- 0.5%	+/- 0.5%
	Non-conductive Fluids	Yes	Yes
	Fluid Flow Initiates Measurement	Yes	Yes
	Battery Size/Voltage	(2) 9 Volt	(2) 9 Volt
	Battery Life Indicator	Yes	Yes
	Backlit Display	Yes	Yes
	Maximum Pressure	150 PSI	150 PSI
	Minimum GPM	15	15
	Maximum GPM	300	700
	Minimum Temp	+ 32 °F	+ 32 °F
	Maximum Temp	+ 140 °F	+ 140 °F
	Meter Type/Style	Paddlewheel	Paddlewheel
	Body Construction Material	GF Polypropylene	GF Polypropylene
	Paddle Bearing Construction Material	Sapphire	Sapphire
	Electrodes Construction Material	No	No
	Minimum Straight Inlet *	7" *	7" *
	Minimum Straight Outlet *	7" *	7" *
	Field Calibration Capability *	Yes *	Yes *
	cP Viscosity Range	0-50 Centipoise	0-50 Centipoise

* Must calibrate to achieve +/- 0.5% Accuracy



CALIBRATION

NOTE: Use a primed system. Verify your calibration. Fluid viscosity changes with temperature.

QUICK CALIBRATION

/ Great for fleet use

Calibration

Select a calibration reference from the "Quick" list or choose "Calibr" for manual calibration.

Home Help Quick Calibr

Thin Product names for reference only!

17 Water 66°F

Thick Reference #17

Cancel Dn ↓ Up ↑ Select

Select a viscosity reference number using water as the baseline.



Check

Dispense approximately 100 gallons and verify accuracy.

Thin Product names for reference only!

17 Water 66°F

Thick Reference #17

Cancel Dn ↓ Up ↑ Select

Adjust

Each viscosity reference number represents 1% change. (i.e.) If the meter reads high, lower the viscosity reference number. Adjust the value **Up** or **Down** Repeat as needed.

PREFERRED METHOD

MANUAL CALIBRATION

/ Most accurate
/ Usually only takes one attempt
/ Adjustable to compensate for different measurement containers

Calibration

Select a calibration reference from the "Quick" list or choose "Calibr" for manual calibration.

Home Help Quick Calibr



Fill a calibrated container

Press "Cont" when done

Cancel Help Reset Cont

Method 1: With a Calibrated Container

Fill a calibrated container.

Method 2: Without a Calibrated Container

Fill a container that can be weighed with approximately 100 gallons. Divide the weight by fluid density to determine gallons dispensed.

Thin Product names for reference only!

17 Water 66°F

Thick Reference #17

Cancel Dn ↓ Up ↑ Select

Adjust

Adjust the default value **Up** or **Down** to match the volume dispensed.

Enter the amount measured

Press SAVE when done

102.3 GALLONS

Cancel Dn ↓ Up ↑ Save

Press **Save** as fluid #1 - #5 and **Verify!**



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