

# MRP20 LCD RESETABLE COUNTER FLOWMETER

**\*\*SERVICE GUIDE ONLY\*\***

**NOTE: Aluminium hose barb style flowtube dis-continued.**

- Custom designed and built primarily for use on Concrete Transit Mixers.
- Unaffected by water hammer, compressed air, mild frozen or light recycle water.
- Robust Aluminium or Gun-metal housing for the harshest environments.
- Durable alloy paddlewheel rotor.
- Sealed IP65 digital display compartment.
- Hinged cover protects LCD from sunlight.
- Access for re-calibration.
- No damage to meter if run outside its flow range.
- No filters needed prior to meter.
- ± 2% accuracy flow curve, with calibration certificate issued



270 L x 110 H x 85 W (mm)  
19mm ID bore

The MRP20 resetable counter flowmeter is designed and manufactured by Manu Electronics for use on mobile concrete transit truck mixers (agitators). Constructed of the toughest materials, the MRP20 can withstand the abuses experienced in the premix concrete industry.

The aluminium or gun-metal pipe (flow-tube) connection ends are available in either 20mm (3/4") BSP male threaded ends, or push-on 1" hose barb ends.

The MRP20 flowmeter is suitable for general medium to high flow range water flow measurement applications. With the MRP20 being internally Lithium battery powered, it is ideal in situations where no external power supply is accessible, making it a totally portable flowmeter. A pulse output is optionally available for logging totalising applications.

The only moving part is an alloy rotor which turns as liquid flows past it, and the self-contained LCD counter registers flow in total Litres. The main body components are the flow tube casing and the electronic display head. The electronic counter board, mounted inside the robust metal housing of the display head, is visible through the tempered glass window and is sealed by a metal locking ring. The high impact ABS lid protects the LCD and glass from prolonged sun exposure, contaminants and breakage.

To operate, lift the hinged lid. This action automatically turns on power, and the LCD is zeroed and ready for measurement. Liquid flow causes counting on the display in Litres. Closing the lid resets the digits and turns off battery power. The internal Lithium battery has a life of 6-10 years.

## **SPECIFICATIONS**

Flow Range	15 to 150 Litres/minute
Accuracy	± 2% accuracy (10:1 flow curve)
Display Readout	4 digit LCD (14mm high) in Litres
Power Source	3.6v Lithium battery (6-10 year life)
Display capsule rating	IP65 water and flame resistant
Max. operating temperature	50 °C
Max. operating pressure	2000 kPa
Dimensions (mm)	270 L x 110 H x 85 W
Weight (max)	1.7 kg



## INSTALLATION

- To maintain the stated  $\pm 2\%$  flow curve, a straight pipe section of 100mm length should be maintained on both the inlet and outlet flow sides, with a Internal Diameter (I.D.) of between 19-22 mm.
- MRP20 flowmeters can be mounted at any angle. **They are factory calibrated to either vertical (upwards) or horizontal mounts (this must be specified when ordering).** If mounting contrary to factory set calibration, you may need to access the internal electronic circuit board to change calibration setting (via 3 internally located decade rotary switches). See 'Re-Calibration'.
- Body flow tube ends are available in 20mm ( $\frac{3}{4}$ " bsp(m) thread or 1" hose barb ends. (See "Ordering Information" below). On each side of the flow tube housing are wing mounts with  $\frac{1}{4}$ " drill holes for mounting to a bracket.
- The flowmeter must measure in a full line of liquid. Valves can be fitted before or after the flowmeter.
- Close lid after use, to prevent the LCD possibly fading due to prolonged exposure from direct sunlight, and to conserve power.

## MAINTENANCE

- If flowmeter ceases to count, the rotor may be blocked, so:
  - remove from flow line and insert a long implement to free up rotor; or
  - grasp the readout head and turn anti-clock wise, until it clears the threaded stem section. Examine, and if required clear debris from rotor. Spin the rotor and the display should count. Re-insert head and screw in clock wise to original position. If used with reclaimed water, over time a calcium buildup may deposit on the rotor, in which case flush in acid to clear. To access the rotor, remove the shaft. A full complement of spare parts is available.
- To access the electronic display board to change calibration or replace battery: with a pair of multi-grips, grasp the metal locking ring, turn it anti-clock wise until the four underside lock tabs align with grooves. Lift up the lock ring, then with a screwdriver lift off glass window (do not lose the seal gaskets).
  - Three calibration pots are now in view for re-calibration.
  - To access the battery (on underside), unscrew the two screws that secure the PCB, then remove the PCB. When finished, re-secure the PCB, re-insert glass, secure the lock ring, then as a precaution, seal under the lock ring with silicon.

## RE-CALIBRATION

Access the 3 calibration pots (see 'Maintenance') marked H,T,U (Hundreds,Tens, Units). Record the set value for example H=1,T=0, U=0 (100). Now run liquid through the MRP20 (>20 L/min), into a calibrated vessel or load cell, until 50 Litres is displayed on MRP20. If the amount displayed matches the measured value within  $\pm 2\%$ , then no adjustment to calibration is necessary. If the amount collected is say only 45 Litres, yet the display shows 50 litres, this is 5 litres under or 10%. So, add 10% to the set calibration value e.g. if set to 100, new value is  $100 + 10\% = 100 + 10 = 110$ . With a fine screw driver, turn each pot to the new desired calibration value i.e. H=1,T=1, U=0 (110). If the amount collected is more than on LCD, then the inverse applies i.e. decrease the set calibration value by the same percentage difference i.e.  $100 - 10\% = 100 - 10 = 90$ .

## MATERIALS

Meter flow tube	Cast Aluminium or Gunmetal
Meter display capsule	Cast gunmetal
Sealing lock ring	Cast gunmetal
Gasket	Nylon
Window	Tempered glass
Under glass Oring	Neoprene
Paddlewheel / Rotor	Marine alloy with Delron bushes
Axle	Tungsten Carbide
Lid, pin & magnet	ABS, Stainless Steel and Ferrite

Pulse Output cabling:  
BLACK = pulse (Collector),  
BLUE = 0v (Emitter)



Shown with optional IP67 Pulse Output plug set

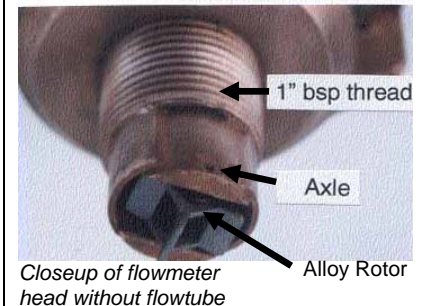


Internal view of calibration HTU switches

## ORDERING INFORMATION

Order Code	Description	
MRP20-H	1" Hose Barb connections,	Aluminium flowtube
MRP20-T2	$\frac{3}{4}$ " bsp(m) Threaded both ends,	Gunmetal flowtube
-V1	Vertical pipe run, calibrated for upward flow.	
-V2	Vertical pipe run, calibrated for downward flow.	
-H	Horizontal pipe run calibrated.	
-P	Pulse output (1 pulse/1 Litre) via IP67 plugset.	

For calibration purposes, please state installation position as part of order code.  
Order code example: Hose Barb, vertical flow up, and pulse output = MRP20-H-V1-P



Closeup of flowmeter head without flowtube

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## 1.1.5 SPARE PARTS for MRP20 Flowmeters

<b>Product Code</b>	<b>Description</b>	
<b>LB</b>	Lithium Battery 1/2AA radial mount 3.6v 600milli-amp/hrs+ (6-10 year life)	
<b>LM</b>	Lid with magnet and pin	
<b>MRP-MAG</b>	Magnet	
<b>MRP-GLASS</b>	Glass window (specify whether "Litres" or "Litres/min")	
<b>MRPU5-PCB</b>	MRPU5 circuit board (will directly replace the older MRPU4 board)	
<b>PC-MRPUP</b>	Spare M12 IP67 5-metre plug-in cable for MRPU5-P flowmeter.	
<b>PW-N</b>	Paddlewheel with bushes	
<b>PWAH</b>	Tungsten carbide axle	
<b>SPC</b>	Sealer plug cap, screwed 1" BSP(m)	