

# MRPU4 - LCD RESETABLE COUNTER FLOWMETERS

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

(Screwed Insertion Paddlewheel)

## FEATURES

- 
- $\pm 1\%$  accuracy 1-7m/s,  $\pm 2.5\%$  accuracy 0.6-8m/s, with calibration certificate.
- Suitable for measurement of liquids up to 50°C
- Ideal in pipe diameters from 20 to 150 mm with simple installation pipe fitting/adapters.
- Available with either 4 or 8 digit LCD resetable display, with pulse output option.
- Robust housing for harsh environments with durable alloy paddlewheel rotor.
- Sealed glass IP65 digital display compartment and lid protects LCD from sunlight. Easy access for re-calibration.
- Used in Irrigation, Transit mixers, Slumpstands and many other applications.



The MRPU resetable counter flowmeter is designed and manufactured in Australia. The unit can be mounted to pipe sizes from 20 to 150 mm diameters. The MRP's 1" BSP male threaded stem section allows the unit to be fitted to most 1" BSP female entries. Alternatively, MRPs are pre-fitted with the Manu pipe adapter fitting range, available in Class18 Cat19 PVC high pressure tees, Galvanized tees, cast Aluminium or Gunmetal 20mm flowtubes (for agitators), or saddle clamp agricultural poly-pipe fittings.

The MRPU is suitable for a wide range of medium to high flow range liquid flow measurement applications. Being internally battery powered, the unit is ideal in situations where no external power supply is accessible, making them totally portable resetable totaliser flowmeters.

The flowmeters only moving part (an indestructible alloy rotor which turns as liquid flows past it) allows registration in 'Litres' on the 4 or 8 digit Liquid Crystal resetable display counter. The main body component, consisting of the electronic counter board, is housed in a robust Gun-metal housing. The LCD display is visible through the glass window and sealed by a metal locking ring. The MRP withstands abuse in harsh environments. The impact resistant 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 Liquid Crystal display 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 7-10 years.

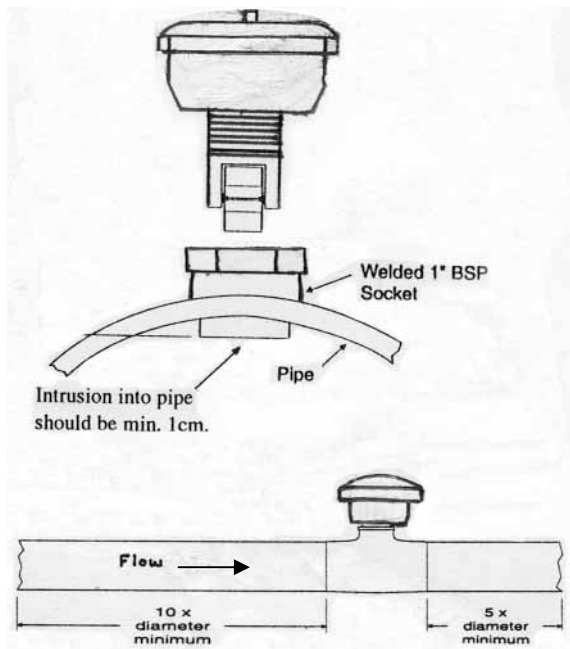
## SPECIFICATIONS

Flowrange	0.6 to 8.0 m/sec velocity				
Accuracy	2% (10:1 flow curve)				
Display readout	4 digit LCD (14mm high) in Litres				
	8 digit LCD ( 8mm high) in Litres or KiloLitres				
Power Source	3.7v lithium battery (7-10 years life)				
Display capsule rating	IP65 rating				
Max. operating temp.	50 degrees C				
Max. pressure	2000 Kpa with galvanised iron & gun-metal pipe fittings				
Pulse Output	Open Collector Transistor 1pulse/1Litre, via plug-set				



## INSTALLATION GUIDE

- To maintain the stated accuracy flow curve, a length of straight pipe section of a minimum 10x pipe diameter must be maintained on the incoming flow entry, and 5x diameter on the exit side of the flowmeter (same diameter size as adapter fitting).
- MRP flowmeters can be mounted at any angle. They are factory calibrated to either vertical or horizontal pipe run positions (this must be specified when ordering).
- If mounting in pipe diameters contrary to factory set calibration, you may need to access the electronic board to change calibration settings (via 3 x decade rotary pots). See 'Re-Calibration' section.
- A range of pipe adapters 20-150mm with 1" BSP female entries are available. Optionally, if mounting into your own fittings, make sure MRP rotor is inline with flow direction. MRP's can also be mounted onto pipes by tapping a 1" BSP(f) thread into the pipe, then simply screw the MRP into position and calibrate accordingly. The MRP paddlewheel should protrude at least one centimetre past the I.D. of the pipe. Usually MRP's are factory fitted to the chosen pipe adapter fitting.
- The flowmeter must measure in a full pipe flow of liquid.
- Close lid after use, to prevent LCD fading from prolonged exposure to direct sunlight.



## PIPE vs FLOW RANGE GUIDE for optimum performance

Pipe Size mm	Flowrange (Litres/sec)	
	Min.	Max.
20	0.25	2.5
25	0.3	3.0
32	0.5	5.0
40	0.8	8.0
50	1.2	12.0
65	2.0	21.0
80	3.0	32.5
100	5.0	50.0
150	11.5	123.0

## MATERIAL SPECIFICATIONS

MRP housing & sealing ring	Cast gun-metal
Window	Tempered glass
Gasket	PVC
O'ring	Neoprene
Rotor	Marine Alloy saf2205 & delron bushes
Axle	Tungsten Carbide
Lid	ABS, ferrite magnet

## MRP - ORDER CODES / PIPE ADAPTER FITTINGS

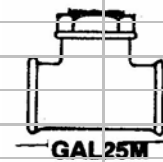
Order Code	Size mm	Adapter Type
MRP20-H	20	Aluminium or Gunmetal, 3/4" Hose barb
MRP20-T2	20	" " Threaded 3/4" BSP(m) both ends (20mm series, 4 digit LCD in Litres)
MRPU4		4 digit LCD counter in Litres
MRPU8		8 digit LCD counter in Litres
<b>MRPU fitted to the following pipe adapter fittings:-</b>		
PVC25M	25	PVC Class 18, Cat.19
PVC32M	32	glue-in (f) socket connections
PVC40M	40	for PVC pipe sections.
PVC50M	50	
PVC80SCM	80	High Pressure saddleclamp adapters
PVC100SCM	100	for PVC pipe sections to 1400Kpa.
PVC150SCM	150	
GAL25M	25	Galvanised iron, threaded entries BSP(f).
GAL32M	32	(Note: 25mm supplied w ith pipe sections fitted)
GAL40M	40	
GAL50M	50	
SC50M	50	Poly-pipe agricultural Saddle Clamps
SC63M	63	
SC75M	75	
SC90M	90	
SC110M	110	

## SPARE PARTS

Order Code	Description
LM	Lid c/w magnet
PW	Paddlewheel (rotor) c/w bushes
PWAH	Axle Tungsten Carbide
LB	3.7v Lithium battery
SCP	Plug 1" sealer

## Other display & function options:-

K	- Kilotres
DR	- Disable Reset
P	- Pulse output plug set (1 pulse per 1 Litre)



## Illustrated examples of adapter options

Available on special request:  
Stainless steel tee adapters 25-50mm

## RE-CALIBRATION

- All MRP series flowmeters up to 63mm diameter are wet test calibrated on our flow test rig, and a certificate issued. When ordering MRPs, where possible specify the intended pipe run: either horizontal, inclined, or vertical position. The calibration (K-factor) characteristics can vary upto 6% from horizontal to vertical runs.
- Recalibration of MRPs is performed via three internal decade switches mounted on the PCB. To access, open the hinged lid cover. With a pair of multi-grips, grasp the metal locking ring, turn anti-clock wise until the four lock tabs align with the four matching slots on the metal PCB housing. Remove the locking ring, and then remove the glass window. The three calibration switches (marked H,T,U for Hundreds, Tens, Units and numbered 0-9) are now accessible. Observe the set value e.g H=1, T=2, U=0 is a calibration setting of 120.
- Now run liquid through the MRP into a calibrated vessel or load cell, until 50 Litres is displayed on the MRP.
- If the amount displayed matches the measured value within 2%, then no adjustment to calibration is necessary.
- If the amount collected is say only 40 litres, yet the display shows 50 litres, this is 10 Litres under or 20%. Therefore, add 20% to the set calibration value of 120 i.e.  $120 + 24 = 144$ . With a fine screwdriver, turn each switch to the new desired calibration value.
- The inverse applies i.e if amount collected is more than shown on the display, then decrease the calibration value by the same % difference. (Note: For larger pipes, the calibration formula is  $36.5 \text{ pulses per linear metre} \div (\pi r^2 \times 1000) = \text{pulses per Litre}$ ).

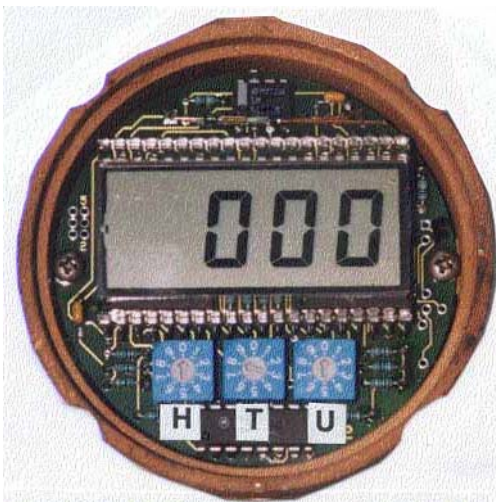
## MAINTENANCE

If the flowmeter ceases to count, the rotor may be blocked; grasp the readout head and turn anti-clockwise, until it clears the threaded section. Examine and, if required, clear debris from rotor. Re-insert head and screw-in clockwise to original position. If used with reclaimed water, then over time a calcium buildup may deposit on the rotor, so immerse in diluted acid to clear.

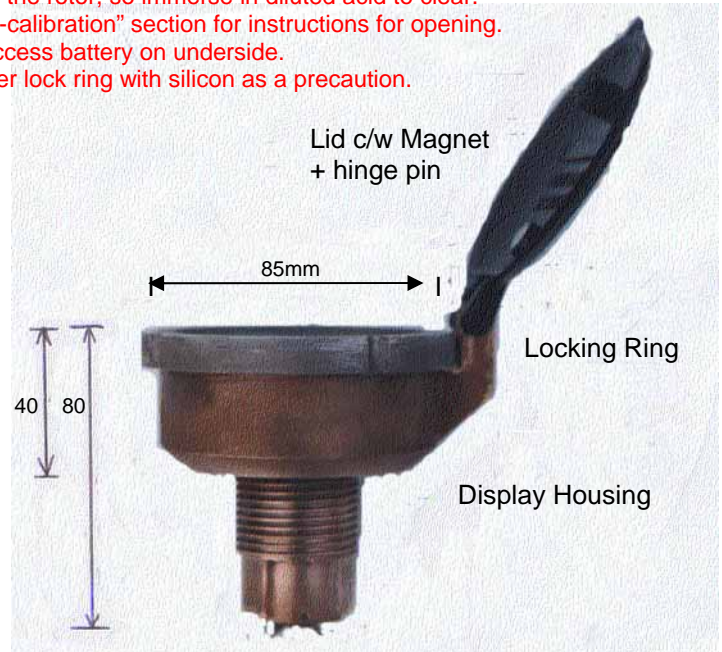
To access electronic display board to replace battery, refer to "Re-calibration" section for instructions for opening.

Two screws secure the PCB - unscrew and remove the PCB to access battery on underside.

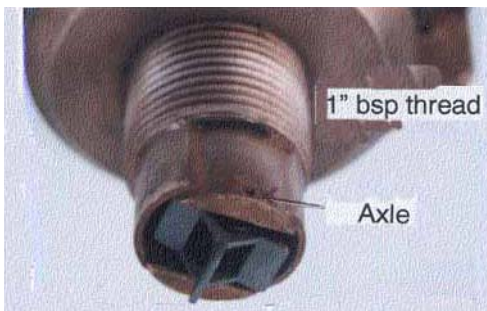
Re-insert the PCB & glass then, after securing lock ring, seal under lock ring with silicon as a precaution.



Internal View of calibration switches



Side view & dimensions



Paddlewheel

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## 1.1.5 SPARE PARTS for MRP20 and MRPU4 Flowmeters

<b>Product Code</b>	<b>Description</b>	
<b>LB</b>	Lithium Battery 3.6v (6-10 year life) 1/2AA radial mount 600milli-amp/hrs +	
<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 previous 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)	