

### FEATURES

- Nutating (wobbling) disc measuring chamber.
- Small impurities can pass chamber without jamming.
- Low hydraulic thrust minimises wear.
- High pulse output rate for precision flowrate & batching applications.
- $\pm 1.5\%$  flow range accuracy curve.
- $\pm 0.2\%$  repeatability.
- Conforms to AS3565-1988, Designed to meet AS3901.



The MES20, MES25, MES32 and MES4050 nutating disc magnetically coupled positive displacement pulse output flowmeters are suitable for a wide range of precision batching and flowrate monitoring applications, operating from low to high flow ranges.

Unlike rotary piston and oval rotor principle meters, the nutating disc flow chamber can pass small impurities without jamming, whilst maintaining exceptional measurement accuracy with only minimal headlosses. Measurement of concrete admixtures and water-based chemicals with varying specific gravities up to 1.4 is achieved with only slight calibration variations.

The pulsehead transmitter is a self-contained unit which couples to the meter body with a bayonet lock and turn fitting connection, while being fully isolated from the fluid measuring chamber. Pulse outputs are available as NPN Transistor or contact-closure Reed Switch. The pulsehead unit is rated to IP54 protection.

Model Number	MES20	MES25	MES32	MES4050
<b>Size</b>	20mm (3/4")	25mm (1")	32mm (1 1/4")	40mm (1 1/2")
<b>Transistor NPN pulse output rate</b>	1000 per Litre	550 per Litre	261 per Litre	116 per Litre
<b>Reed Switch pulse output rate</b>	61 per Litre	34 per Litre	16 per Litre	7.1 per Litre
<b>Start flow @ 5%</b>	0.6 LPM	1.1 LPM	1.5 LPM	3.0 LPM
<b>Minimum accurate flow @ <math>\pm 1.5\%</math></b>	1.5 LPM	2.7 LPM	3.8 LPM	7.5 LPM
<b>Nominal flow</b>	45 LPM	65 LPM	125 LPM	200 LPM
<b>Maximum flow</b>				
Admixture (Specific Gravity 1.4)	54 LPM	80 LPM	130 LPM	245 LPM
Admixture (Specific Gravity 1.1)	68 LPM	100 LPM	165 LPM	310 LPM
Water (Specific Gravity 1.0)	75 LPM	110 LPM	180 LPM	340 LPM
<b>Accuracy (Repeatability)</b>	$\pm 1.5\%$ ( $\pm 0.2\%$ )			
<b>Voltage Supply</b>	+ 5 to 25 VDC			
<b>Supply Current</b> (proportional to supply voltage)	5mA to 25mA	5mA to 25mA	5mA to 25mA	5mA to 25mA
<b>Weight</b>	1.8 kg	2.6 kg	6.0 kg	12.1 kg
<b>Connection type</b>	3/4" male BSP	1" male BSP	1 1/4" male BSP	1 1/2" female BSP Flanges
<b>Max. working pressure</b>	1160 kPa	1160 kPa	1160 kPa	1160 kPa
<b>Headloss at nominal flow</b>	25 kPa (3m)	25 kPa (3m)	25 kPa (3m)	25 kPa (3m)
<b>Max. liquid temperature</b>	50°C	50°C	50°C	50°C

**DIMENSIONS**

Meter Size	mm	20 mm	25 mm	32 mm	40 mm
Length of threaded end meter	L	191	229	273	330
Overall Height of meter	H1	158	178	200	252
Height –underface to centreline	H2	41	48	54	65
Overall Width	W	92	111	165	205

**PULSE OUTPUT SPECIFICATIONS & CONNECTION**

The pulsehead unit (Transistor or Reed Switch) are of the same specification for all sizes - the flowmeter sizing determines the pulse output value.

The transistor pulse unit (round junction housing) can sink up to 250mA load, up to 1000 metres transmission distance.

The Reed Switch pulse unit (square junction housing) with current limiting resistor and anti-bounce capacitor can switch up to 24VDC (100mA).

For scaling pulse output values, use UIC/D Universal Interface Card.

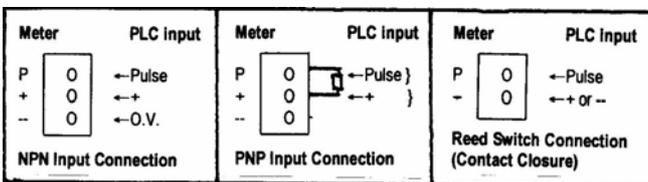
For additional 24-240VAC Triac pulse switching, use UIC/A interface card.

**To connect, remove the blue housing cover, followed by the housing lid.**

**Pass the cable through the gland entry and connect to the terminal connector strip.**

**Screw down on wire, tighten gland and reseal housing.**

**For best results, use shielded cable only.**

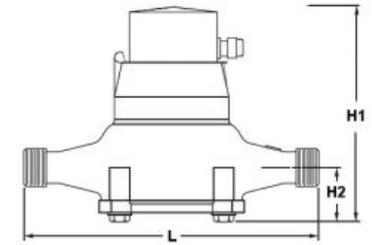
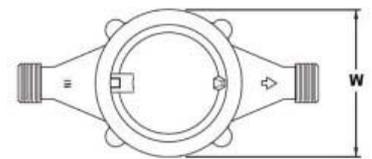
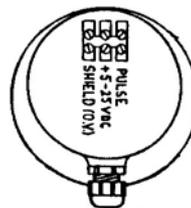


**Standard NPN/PNP transistor switching 5-25VDC.**

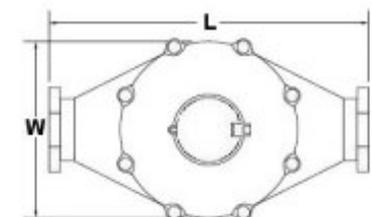
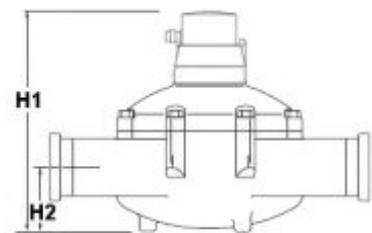
**The internal transistor will drive upto 250mA.**

**For PNP input (12-24VDC) fit a 1.5 to 1.8K resistor (value depends on input impedance) between + and P.**

Internal Junction View



dimensions for 20, 25, 32mm



dimensions for 40mm

**INSTALLATION**

1. Install the meter undercover, since the pulsehead is rated IP54 splashproof only.
2. Consider an accessible area for any future service. Flush out pipes thoroughly before connecting flowmeter in pipework.
3. Flowmeters may be installed in any position without affecting accuracy (but not upside down if particles are present).
4. **Ensure arrow on meter body coincides with forward flow direction.**
5. Although chamber can pass small impurities, if the fluid contains large impurities, a 1000 micron filter should be fitted prior to meter.
6. Any flow restriction or regulation valve should be fitted preferably before the flowmeter. Quick-closing valves should be fitted before the meter if used for higher-end flowrates (thus avoiding sudden pressures on the flowmeter chamber) provided that the plumbing configuration allows the pipe to remain full where the flowmeter is located.
7. Never exceed the rated maximum flow of the meter, as this could cause damage to the measuring chamber components and/or cause severe overdosing of liquid. Once installed, the flowmeter must measure a full pipe of liquid at all times.
8. Avoid installing the transistor pulse unit in high vibration areas, as this may cause false pulses (if excessive vibration is a problem, then use the Reed Switch version).
9. **IMPORTANT: AS THE LAST STEP OF INSTALLATION, A CALIBRATION CHECK OF THE FLOWMETER MUST BE PERFORMED.**

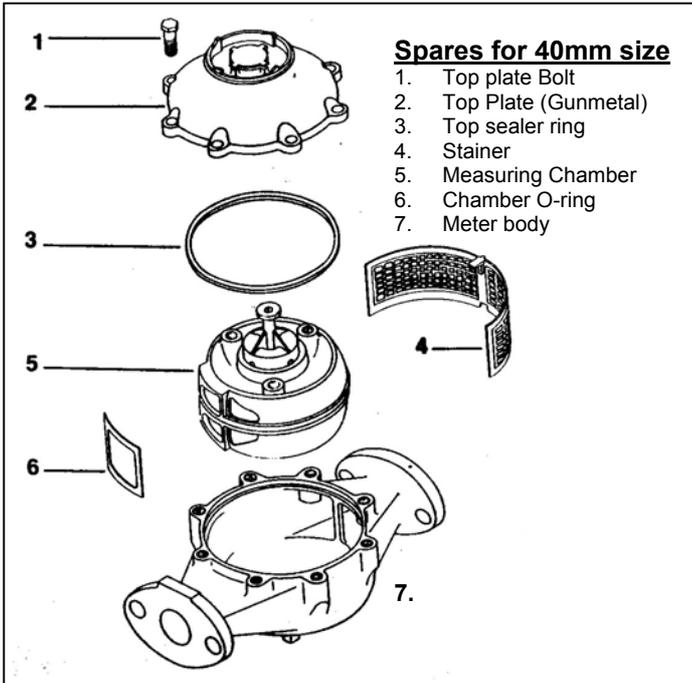
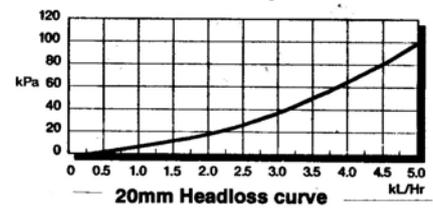
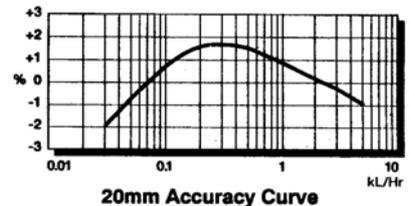
**MAINTENANCE**

If flow becomes excessively restricted, or meter is out of calibration, or output pulses cease, then:

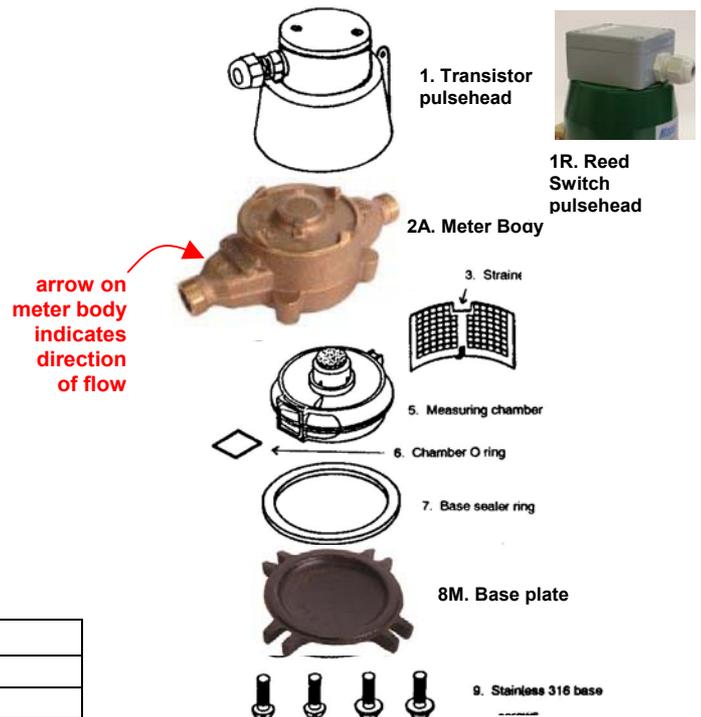
1. Where fitted, push in the pulsehead locking pin; hold pulsehead and turn it anti-clockwise, then pull up and remove pulsehead from the meter body. **CAUTION: Do not press on, or impact, the copper base of the pulsehead.** For the transistor pulse unit, shake it in a left-right motion - this should generate output pulses. If not, check voltage supply, connections and cable. If all are OK, then proceed to step 2.
2. To access measuring chamber (Meter sizes 20, 25 and 32mm) rotate or remove meter body. Remove the base screws, base plate and base sealing ring. Using pliers, pry and pull out the white strainer to free the measuring chamber unit for removal and inspection.
3. If required, clean chamber parts in warm water or dilute acid (4:1 Water:Hydrochloric-acid). Remove any solids which may be impeding rotation. Make sure internal nutating disc roller pin is in place and that shutter plate is refitted. Test to see that the chamber works freely. Reassemble meter by reinserting measuring chamber and reposition it with strainer. Re-fit other components and test the meter.
4. If the MES meter runs dry after measuring chemicals, make sure to flush out the meter chamber with water.
5. To avoid moisture ingress to electronics, ensure cable entry gland is secure, cables are looped downwards and the meter is under cover. **IMPORTANT: AFTER ANY SERVICE, MUST PERFORM A CALIBRATION CHECK OF THE FLOWMETER.**

**MATERIAL SPECIFICATIONS**

- 1. Pulsehead - Polyacetal & PVC
- 2A. Meter body - Cast gun metal
- 3. Strainer - Polyacetal
- 4. (not used)
- 5. Measuring chamber - Nepton (synthetic polymer), SS316, Polymer barium ferrite magnet
- 6. Chamber O-ring - NBR rubber
- 7. Base sealer ring - NBR rubber
- 8M. Base plate - Cast Iron, powder coated
- 9. Base body screws - 20/25mm: Stainless steel; 32/40mm: Brass
- 11. (not used)
- 12. (not used)



**Spares for 20, 25, 32mm Sizes**



**FLOWMETER ORDER CODES**

Code	Description
MES20	20mm Transistor pulse o/p
MES20R	20mm Reed Switch pulse o/p
MES20-S	20mm Transistor pulse o/p with Ryton <sup>#</sup> chamber
MES20R-S	20mm Reed Switch pulse o/p with Ryton <sup>#</sup> chamber
<b>option for any MES20 Ryton<sup>#</sup> chamber meter</b>	
-T	with Teflon-lined body and couplings
<b>options for any MES20 20mm flowmeter</b>	
-PCB10	/10 = 100 pulses/Litre
-PCB20	/20 = 50 pulses/Litre
-PCB50	/50 = 20 pulses/Litre
-PCB100	/100 = 10 pulses/Litre

Code	Description
MES25	25mm Transistor pulse o/p
MES25R	25mm Reed Switch pulse o/p
MES32	32mm Transistor pulse o/p
MES32R	32mm Reed Switch pulse o/p
MES4050	40mm Transistor pulse o/p
MES4050R	40mm Reed Switch pulse o/p

# special chemical/petroleum-resistant Ryton-MTL measuring chamber and seals.

Due to continuous product improvement, specifications are subject to change without notice.