

# MES-M / MES-MR Mechanical register totaliser flowmeter

with optional contact closure high rate pulse output

## Sizes 20, 25, 32, 40 & 50 mm

- Nutating disc measurement.
- High rate of pulses for precision data logging.
- Mechanical totaliser register.
- Low head pressure loss.
- Passes impurities without jamming.
- Accuracy +/-1.5%, with 0.1% repeatability.



The MESM series nutating disc positive displacement flowmeters are fitted with a non-resettable mechanical totaliser sealed counter and with a Contact Closure output (the flowmeters are also available with the mechanical counter only and no pulse output). The pulse output delivers a high rate of pulses per volume, making these meters ideal for precision data logging and batching applications. The volt-free contact allows use in remote areas where no power source is available.

The nutating disc design allows the meter to be used in applications where the water is not pure, and the meter can pass small impurities without blockage. These meters are ideal for economical totalising applications e.g. for measurement of water consumption. A range of water-based chemical liquids can be measured.

The body and measurement chambers of the 20, 25, 32, 40mm and 50mm size meters are common to the entire MES range of flowmeters (MES, MESLCD5, MESM and MESR series). Therefore, the MES20M mechanical totaliser meter for example can be upgraded to a digital LCD resettable unit (MES20LCD) or to a transistor pulse output unit (MES20) by simply changing the capsule head.

### SPECIFICATIONS

Size mm	20	25	32	40	50
Start flow @ ±5% accuracy	0.6	1.1	1.5	3.0	4.0
Minimum flow Litres/min @ ±1.5%	1.5	2.7	3.8	7.5	9.5
Nominal flow Litres/min	45	65	125	200	360
Maximum flow Litres/min	75	112	185	375	600
Minimum register reading	1 Litre	1 Litre	1 Litre	1 Litre	1 Litre
Maximum register reading	99999 M <sup>3</sup>	99999 M <sup>3</sup>	99999 M <sup>3</sup>	99999 M <sup>3</sup>	99999 M <sup>3</sup>
Contact Closure Pulse Output (pulses / Litre)	60.6	34.2	16	7.2	3.9
Connection Type	¾" BSP(m)	1" BSP(m)	1 ¼" BSP(m)	1 ½" oval flange kit BSP(f)	2" oval flange kit BSP(f)
Weight (kg) (# including connectors)	1.5	2.3	6.0	17 #	21 #

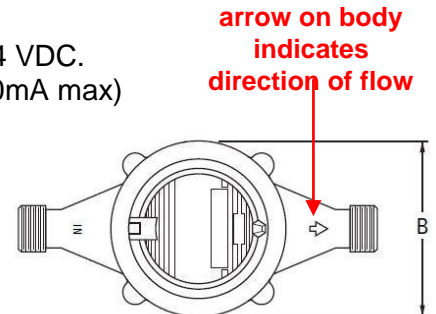
**Other Data**

Accuracy minimum to maximum flowrange curve	± 1.5 %
Repeatability of set flowrate	± 0.1 %
Headloss at maximum continuous flow	25 kPa (3 metres)
Maximum continuous working pressure	<= 32mm 1160 kPa; 40 & 50mm: 1034 kPa
Maximum temperature	50 °C

**Pulse Output Data**

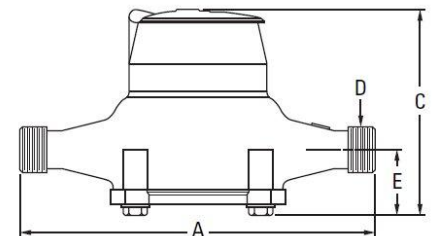
2-wire connection (shielded) with 270 Ω internal current limiting resistor. 0 - 24 VDC.  
 Max. current switching: 5VDC = 18mA, 12VDC = 44mA, 24VDC = 88mA (100mA max)

Dimensions in mm	size mm	20	25	32	40	50
Length of threaded end	A	191	229	273	330	432
Overall height	C	158	178	200	252	283
Height to centreline	E	41	48	54	65	79
Overall width	B	092	111	165	205	240



**MATERIAL SPECIFICATIONS (MESM / MESMR)**

Register window	Tempered Glass.
Register body & lid	Synthetic polymer.
Register internals	Hermetically sealed (mechanical only).
Dry gearing	Plastic.
Magnet	Polymer Barium Ferrite.
Meter body	Gunmetal AS 1565 C83810.
Filter	Polyolefin.
Measuring chamber & disc	Nepton (synthetic polymer)
Nutating disc peg	Stainless steel AS1444-316.
Roller pin & drive shaft	Nylon 11, glass fibre, graphite.
Chamber O ring & Base seal	Ethylene propylene & Neoprene.
Base plate	20mm: ABS Plastic. 25, 32mm: Cast Iron with Nylon cup. 40, 50mm: Gunmetal.
Upper casing	40, 50mm: Gunmetal.
Base bolts	Stainless Steel 304.

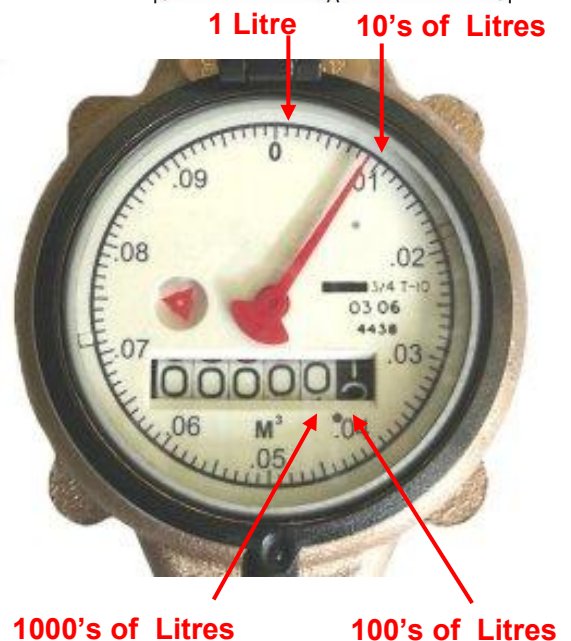


**ORDERING CODES**

Order Code	Size	Display/Output
MES20-MR	20mm (3/4")	Mechanical + Pulse
MES20-M	20mm (3/4")	Mechanical
MES25-MR	25mm (1")	Mechanical + Pulse
MES25-M	25mm (1")	Mechanical
MES32-MR	32mm (1 1/4")	Mechanical + Pulse
MES32-M	32mm (1 1/4")	Mechanical
MES40-MR	40mm (1 1/2")	Mechanical + Pulse
MES40-M	40mm (1 1/2")	Mechanical
MES50-MR	50mm (2")	Mechanical + Pulse
MES50-M	50mm (2")	Mechanical

**Options for 20mm size:**

- S Ryton chamber for petroleum based products.
- S-T Ryton chamber and teflon coated body for corrosive chemicals.
- CSM Ceramic magnet for higher resistance to chemicals



Reading shown above is 109 L

Note: 1 M<sup>3</sup> = 1,000Litres

## INSTALLATION

1. **Arrow on meter body indicates direction of flow.**
2. The MES-M version's display is hermetically sealed. With the MES-MR pulse version, loop the pulse cable downwards to prevent water ingress.
3. Consider an accessible area for any future service. Flowmeters may generally be installed in any plane without affecting accuracy (but not upside down if particles are present, as mag-drive assembly in the measuring chamber may become obstructed).
4. Flush out pipes thoroughly before connecting flowmeter. Ensure arrow on meter body coincides with forward direction of flow.
5. Although meter passes small impurities, a filter box or strainer (800 micron cartridge filter recommended) may be fitted prior to flowmeter if fluid contains granules or many impurities.
6. Any flow restriction or regulation valve should be fitted preferably before (upstream of) 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. Once installed, flowmeter must be full of liquid at all times.
8. Display capsule can be repositioned in 90° angles to the preferred viewing position.
9. **IMPORTANT: AS LAST STEP OF INSTALLATION, A CALIBRATION CHECK OF FLOWMETER MUST BE PERFORMED.**

## MAINTENANCE

1. If flow becomes excessively restricted, or meter is out of calibration, or flowmeter stops counting/pulsing, then the measuring chamber may be blocked/broken.
2. To access the measuring chamber, first rotate meter body in the pipe, or remove meter body from the pipe, to access the flowmeter's base screws. Unscrew the 4 x hex bolts in the base, remove base plate and base seal ring. Using long nose pliers, pry and pull out the white strainer screen thus unlocking the measuring chamber assembly. Remove chamber and inspect.
3. If required, clean chamber parts in warm soapy water. Make sure internal chamber wobble disc roller pin is in place and shutter plate is refitted. Re-assemble meter by reinserting measuring chamber; secure in position with strainer. Refit other components and test meter.

Alternatively, a new measuring chamber can be ordered from ManuFlo:

For the standard measuring chamber, the Order Code format is "size-5"  
e.g. "20-5" is the measuring chamber for 20mm MES20-M / MES20-MR flowmeter.

For the measuring chamber with ceramic magnet for higher resistance to chemicals, the Order Code format is "size-5-CSM"  
e.g. "20-5-CSM" is the chamber for 20mm MES20-M / MES20-MR flowmeter.

4. After use with chemicals, if the flowmeter is removed from the pipeline, be sure to flush out the flowmeter measuring chamber with water.

**IMPORTANT: AFTER ANY SERVICE, A CALIBRATION CHECK OF THE FLOWMETER MUST BE PERFORMED.**

Due to continuous product improvement, specifications may change without notice.