



MACNAUGHT[®]

M SERIES POSITIVE DISPLACEMENT FLOWMETERS



Meter calibration



Meter assembly



Macnaught Pty Ltd was established in 1948 and is an independent 100% Australian-owned manufacturing company based at Turrella in Sydney, Australia.

Macnaught's M-Series is a comprehensive range of quality positive displacement flowmeters, designed and manufactured in our factory.

Macnaught's continuing success depends on its commitment to deliver premium quality products to customers throughout the world.

By closely monitoring the needs and knowledge of its international user base, Macnaught strives to continually improve its products and customer service levels to set new standards.

With strong market leadership in Australia, Macnaught products are sold successfully through a distributor network in more than 60 countries.

In recognition of the company's achievements, Macnaught has won three Australian National Export Awards and two Australian Design Council Awards.



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METER NUMBERING SYSTEM

For M1 and M2:

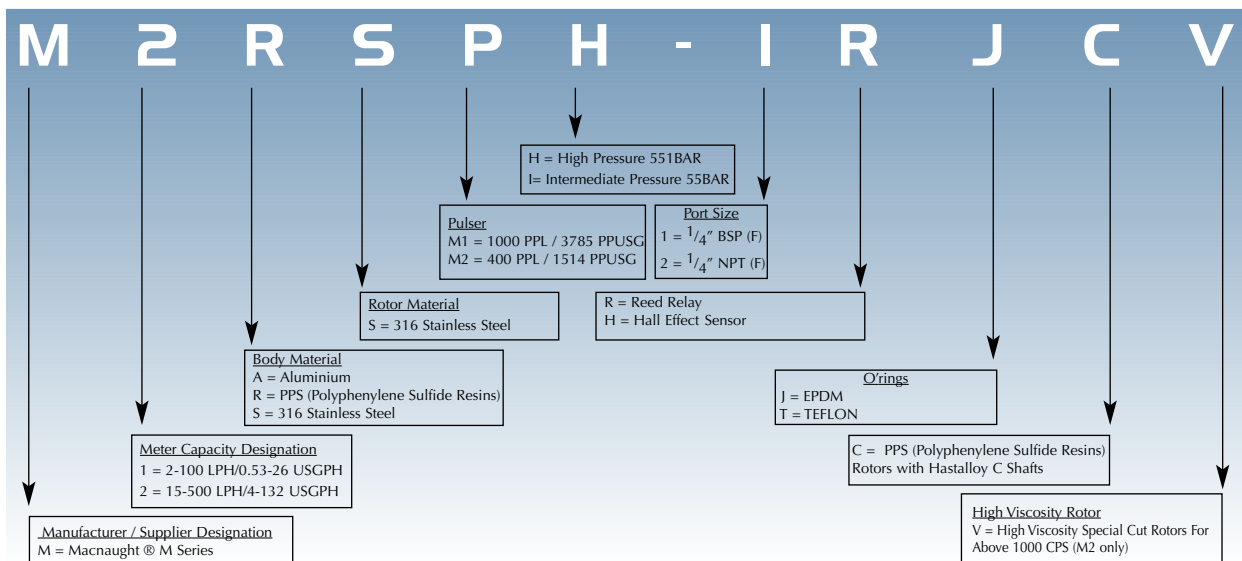


MIRSP-IH



M2RSP-IH

MODEL	M1	M2
METER TYPE	PULSE	PULSE
METER BODY MATERIAL	PPS OR STAINLESS STEEL OR ALUMINIUM	PPS OR STAINLESS STEEL OR ALUMINIUM
WETTED COMPONENTS:	STAINLESS STEEL / CERAMIC / BRONZE	STAINLESS STEEL / CERAMIC / BRONZE
SHAFTS	316 STAINLESS STEEL	316 STAINLESS STEEL
O'RING	VITON (STANDARD MODEL)	VITON (STANDARD MODEL)
FLOW RATE RANGES (LITRES PER HOUR/US GALLONS PER HOUR)		
ABOVE 5 CPS	2 TO 100 / 0.53 TO 26.4	15 TO 500 / 0.4 TO 132
BELOW 5 CPS	5 TO 100 / 1.32 TO 26.4	25 TO 500 / 6.6 TO 132
ACCURACY- WITHIN (OF READING)	± 1%	± 1%
MAXIMUM VISCOSITY	1000 CENTIPOISE	1000 CENTIPOISE
MAXIMUM OPERATING PRESSURE PPS / STST / AWM	STST 500/1000 kPa/75/150 PSI/PPS ALUM 5/10 BAR	STST 500/1000 kPa/ 75/150 PSI/PPS ALUM 5/10 BAR
PULSER TYPE	HALL EFFECT SENSOR OR REED SWITCH	HALL EFFECT SENSOR OR REED SWITCH
PULSES PER LITRE/US GALLON	1000 / 3785.4	400 / 1514.2
DIMENSIONS METER BODY	50X50MM / 1.97"X1.97"	50X50MM / 1.97"X1.97"
PORT FACE TO FACE	65MM / 2.58"	65MM / 2.58"
WEIGHT	PPS 240G / 8.5OZ St St 600G / 21.2OZ	PPS 240G / 8.5OZ St St 600G / 21.2OZ
MAX. OPERATING TEMPERATURE	PPS/AI 80°C / 176°F St St 120°C / 248°F	PPS/AI 80°C / 176°F St St 120°C / 248°F
RECOMMENDED MESH STRAINER SIZE	200 MESH	200 MESH





METER NUMBERING SYSTEM

For M4, M7, MIO, M40, M50 and M80:



M4ARP-1

M7RRP-1

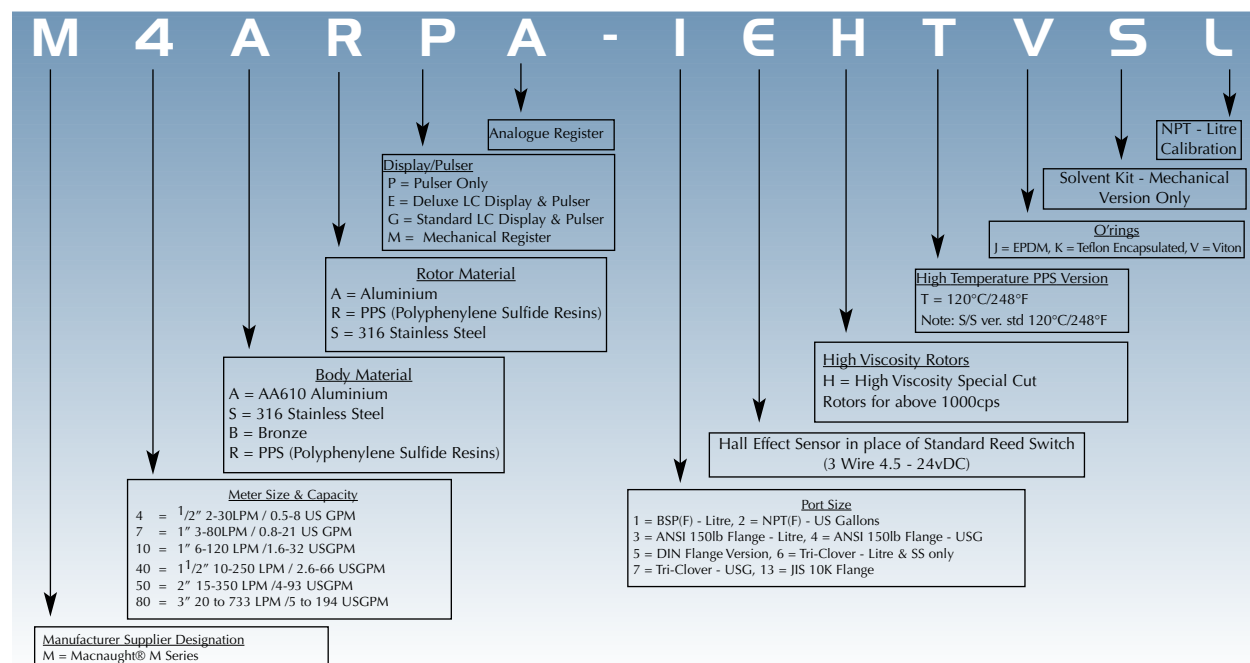
MIOARG-3

M40SRM-1

M50ARE-3

M80AAG-3

MODEL	M4	M7	MIO	M40	M50	M80
METER TYPE	PULSE (REFER TO METER NUMBERING SYSTEM FOR LCD OR MECHANICAL OPTIONS)					
METER BODY MATERIAL	ALUMINIUM, STAINLESS STEEL, BRONZE, PPS					
WETTED COMPONENTS:						
ROTOR MATERIAL	PPS OR STAINLESS STEEL	PPS	PPS OR STAINLESS STEEL	PPS OR STAINLESS STEEL	PPS OR STAINLESS STEEL	ALUMINIUM
SHAFTS	STAINLESS STEEL	STAINLESS STEEL OR HASTALLOY	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL
O'RING	NBR NITRILE (FOR OPTIONS REFER NUMBERING SYSTEM)					
FLOW RATE RANGES (litres per minute/US gallons per minute)						
ABOVE 5 CPS	2 to 30 / 0.5 to 8	3 to 80 / 0.8 to 21	6 to 120 / 1.6 to 32	10 to 250 / 2.6 to 66	15 to 350 / 4 to 93	20 to 733 / 5 to 194
BELOW 5 CPS	3 to 25 / 0.8 to 6.6	8 to 70 / 2 to 18.5	10 to 100 / 2.6 to 26	15 to 235 / 4 to 62	33 to 300 / 9 to 79.25	66 to 616 / 17 to 163
ACCURACY - WITHIN (OF READING)	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%
	NOTE: MECHANICAL OPTION IS DIGITAL ± 1% ANALOGUE ± 0.5%					
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 CENTIPOISE (> 1,000,000 WITH HV ROTORS)					
MAXIMUM OPERATING PRESSURE	SEE RELEVANT INDIVIDUAL MODEL SPECIFICATIONS					
PULSER TYPE	DUAL REED SWITCH (FOR OPTIONS REFER TO NUMBERING SYSTEM)					
PULSES PER LITRE/US GALLON	112 / 424	52 / 196.8	36 / 136.3	14.5 / 54.9	6.68 / 25.29	2.59 / 9.81
MAX. OPERATING TEMPERATURE	80°C / 176°F (FOR HIGH TEMPERATURE ROTORS REFER TO METER NUMBERING SYSTEM)					
STRAINER SIZE RECOMMENDED MESH	60 MESH	60 MESH	60 MESH	60 MESH	60 MESH	40 MESH



MI - 1/4" PULSE METERS

The MI is a small capacity meter in the M Series range and is differentiated by its flow rate capabilities. It has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



MIRSP-XH



MISSPH-X

Product Benefits

- Very compact size.
- Low flow capability with high resolution output.
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Solid state Hall Effect Sensor or Reed Switch options.
- Low pressure drop allows for economical pump selection or gravity flow applications.
- Meter design minimises the number of wearable and replaceable parts and extends product life.
- Has IP54/NEMA13 protection. MISSPH-XY IP65-NEMA 9
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).

			H.P. MODEL	
MODEL	MIRSP-XY	MISSP-XY	MISSPH-XY	MIASP-XY
METER TYPE	PULSE	PULSE	PULSE	PULSE
METER BODY MATERIAL	PPS	316 STAINLESS STEEL	316 STAINLESS STEEL	ALUMINIUM / PPS
WETTED COMPONENTS: ROTOR MATERIAL SHAFTS O'RING	316 STAINLESS STEEL / CERAMIC 316 STAINLESS STEEL VITON	316 STAINLESS STEEL / CERAMIC 316 STAINLESS STEEL VITON	316 STAINLESS STEEL / CERAMIC 316 STAINLESS STEEL VITON	316 STAINLESS STEEL / BRONZE 316 STAINLESS STEEL VITON
FLOW RATE RANGES (litres per hour/US gallons per hour) ABOVE 5 CPS BELOW 5 CPS	2 to 100 / 0.53 to 26.4 5 to 100 / 1.32 to 26.4	2 to 100 / 0.53 to 26.4 5 to 100 / 1.32 to 26.4	2 to 100 / 0.53 to 26.4 5 to 100 / 1.32 to 26.4	2 to 100 / 0.53 to 26.4 5 to 100 / 1.32 to 26.4
ACCURACY- WITHIN (OF READING)	+/- 1%	+/- 1%	+/- 1%	+/- 1%
REPEATABILITY	0.03%	0.03%	0.03%	0.03%
MAXIMUM VISCOSITY	1000 Centipoise	1000 Centipoise	1000 Centipoise	1000 Centipoise
MAXIMUM OPERATING PRESSURE	500kPa/ 75 PSI/ 5 BAR	1000kPa/ 150PSI/ 10BAR	55160kPa/ 8000PSI/ 551BAR	500kPa/ 75PSI/ 5BAR
PULSER TYPE	HALL EFFECT SENSOR OR REED SWITCH	HALL EFFECT SENSOR OR REED SWITCH	HALL EFFECT SENSOR OR REED SWITCH	HALL EFFECT SENSOR OR REED SWITCH
PULSES PER LITRE/US GALLON	1000 / 3785.4	1000 / 3785.4	1000 / 3785.4	1000 / 3785.4
MODEL DIMENSIONS METER BODY PORT FACE TO FACE	50x50mm / 1.97"x1.97" 65mm / 2.58"	50x50mm / 1.97"x1.97" 65mm / 2.58"	86mm dia x 110mm h / 3.4" dia x 4.33" h 83mm / 3.26"	50mm x 50mm / 1.97" x 1.97" 60mm / 2.36"
WEIGHT	240g / 8.5oz	600g / 21.2oz	3.3kg / 116.5oz	310g / 11oz
MAX. OPERATING TEMPERATURE	80°C / 176°F	120°C / 248°F	120°C / 248°F	80°C / 176°F
RECOMMENDED MESH STRAINER SIZE	200 MESH	200 MESH	200 MESH	200 MESH

X-Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:
Y-Switch Operation (ie: Specify 'H' for Hall Effect or 'R' for Reed Switch)

Port Size:

1 = 1/4" BSP (F) ports
 2 = 1/4" NPT (F) ports
 1 = 1/4" BSP (F) ports
 2 = 1/4" NPT (F) ports] HP only with
 pulser cap

Calibrated In:

litres
 US gallons
 litres
 US gallons

Electrical Connections

1m/39" pulser fly lead
 1m/39" pulser fly lead
 20mm (F) Conduit Thread
 1/2" NPT (F)

PPS = Polyphenylene Sulfide Resins



MI - 1/4" PULSE METERS

TYPE MI - 1/4" PULSE METERS

Options & Accessories

	VITON O-RING	PERFLUORO ELASTOMER	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	PPS ROTORS WITH HASTALLOY C SHAFTS	REMOTE MOUNTED LC DISPLAY	4-20mA MODULE (REMOTE)
MI - 1/4" METER											
M1RSP-XY	S	O	O	X	X	O	S	X	O	A	A
M1SSP-XY	S	O	O	X	X	O	S	X	X	A	A
M1SSPH-XY	S	O	O	X	X	O	S	X	X	A	A
M1ASP-XY	S	O	O	X	X	O	S	X	X	A	A

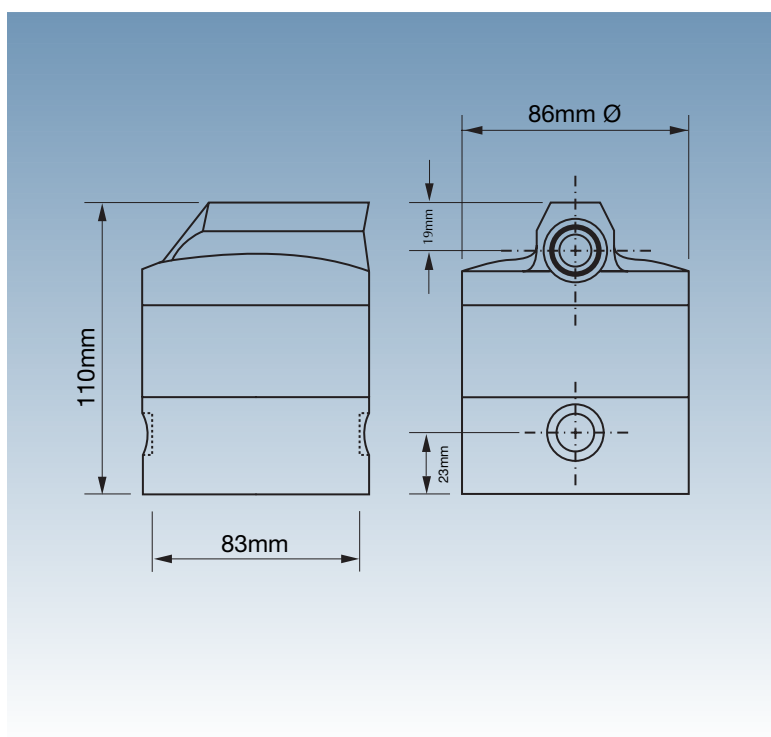
S = Standard

O = Optional

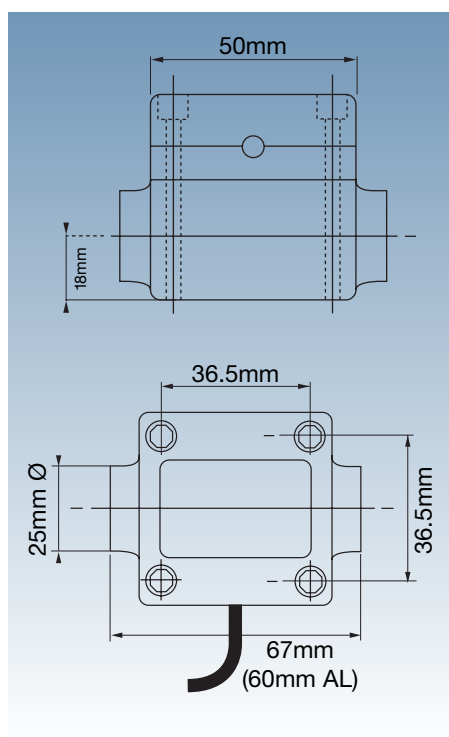
X = Not Available

A = Accessory

Dimensions of High Pressure Meter



Standard Meter



M2 - 1/4" PULSE METERS

The M2 is one of the small capacity meters in the M Series range and is differentiated by its flow rate capabilities. It has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



M2RSP-XH



M2SSPH-XY

Product Benefits

- Very compact size.
- Low flow capability with high resolution output.
- Solid state Hall Effect Sensor or Reed Switch options.
- Has IP54/NEMA13 protection. (M2SSPH-XY IP65/NEMA9)
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Low pressure drop allows for economical pump selection or gravity flow applications.
- Meter design minimises the number of wearable and replaceable parts and extends product life.

			H.P. MODEL	
MODEL	M2RSP-XY	M2SSP-XY	M2SSPH-XY	M2ASP-XY
METER TYPE	PULSE	PULSE	PULSE	PULSE
METER BODY MATERIAL	PPS	316 STAINLESS STEEL	316 STAINLESS STEEL	ALUMINIUM / PPS
WETTED COMPONENTS: ROTOR MATERIALS SHAFTS O'RING	316 STAINLESS STEEL / CERAMIC 316 STAINLESS STEEL VITON	316 STAINLESS STEEL / CERAMIC 316 STAINLESS STEEL VITON	316 STAINLESS STEEL / CERAMIC 316 STAINLESS STEEL VITON	316 STAINLESS STEEL / BRONZE 316 STAINLESS STEEL VITON
FLOW RATE RANGES (litres per hour/ US gallons per hour) ABOVE 5 CPS BELOW 5 CPS	15 to 500 / 4 to 132 25 to 500 / 7 to 132	15 to 500 / 4 to 132 25 to 500 / 7 to 132	15 to 500 / 4 to 132 25 to 500 / 7 to 132	15 to 500 / 4 to 132 25 to 500 / 7 to 132
ACCURACY: WITHIN (OF READING)	+/- 1%	+/- 1%	+/- 1%	+/- 1%
REPEATABILITY	0.03%	0.03%	0.03%	0.03%
MAXIMUM VISCOSITY	1000 Centipoise (> 1000 option)	1000 Centipoise (> 1000 option)	1000 Centipoise (> 1000 option)	1000 Centipoise (> 1000 option)
MAXIMUM OPERATING PRESSURE	500kPa/ 75 PSI/ 5 BAR	1000kPa/ 150PSI/ 10BAR	(INTERMEDIATE 5500kPa/ 800PSI/ 551BAR)	500kPa/ 75PSI/ 5BAR
PULSER TYPE	HALL EFFECT SENSOR OR REED SWITCH	HALL EFFECT SENSOR OR REED SWITCH	HALL EFFECT SENSOR OR REED SWITCH	HALL EFFECT SENSOR OR REED SWITCH
PULSES PER LITRE/ US GALLON	400 / 1514.2	400 / 1514.2	400 / 1514.2	400 / 1514.2
MODEL DIMENSIONS METER BODY PORT FACE TO FACE	50x50mm / 1.97"x1.97" 65mm / 2.58"	50x50mm / 1.97"x1.97" 65mm / 2.58"	86mm dia x 110mm h / 3.4" dia x 4.33" h 83mm / 3.26"	50mm x 50mm / 1.97" x 1.97" 60mm / 2.36"
WEIGHT	240g / 8.5oz	600g / 21.2oz	3.3kg / 116.5oz	320g / 12g
MAX. OPERATING TEMPERATURE	80°C / 176°F	120°C / 248°F	120°C / 248°F	80°C / 176°F
RECOMMENDED MESH STRAINER SIZE	200 MESH	200 MESH	200 MESH	200 MESH

X-Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:
Y-Switch Operation (ie: Specify 'H' for Hall Effect or 'R' for Reed Switch)

Port Size:

- 1 = 1/4" BSP (F) ports
 2 = 1/4" NPT (F) ports
 1 = 1/4" BSP (F) ports
 2 = 1/4" NPT (F) ports] HP only with pulser cap

Calibrated In:

- litres
 US gallons
 litres
 US gallons

Electrical Connections

- 1m/39" pulser fly lead
 1m/39" pulser fly lead
 20mm (F) Conduit Thread
 1/2" NPT (F)

PPS = Polyphenylene Sulphide Resins



M2 - 1/4" PULSE METERS

Options & Accessories

	VITON O-RING	PERFLUORO ELASTOMER	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	PPS ROTORS WITH HASTALLOY C SHAFTS	REMOTE MOUNTED LC DISPLAY	4-20mA MODULE (REMOTE)
MI - 1/4" METER											
M2RSP-XY	S	O	O	X	O	O	S	X	O	A	A
M2SSP-XY	S	O	O	X	O	O	S	X	X	A	A
M2SSPH-XY	S	O	O	X	O	O	S	X	X	A	A
M2ASP-XY	S	O	O	X	O	O	S	X	X	A	A

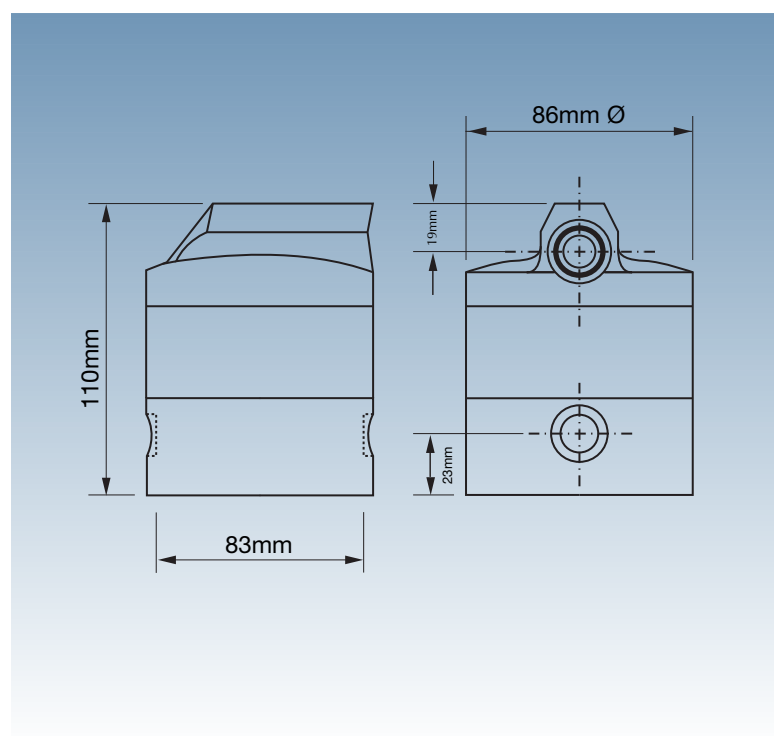
S = Standard

O = Optional

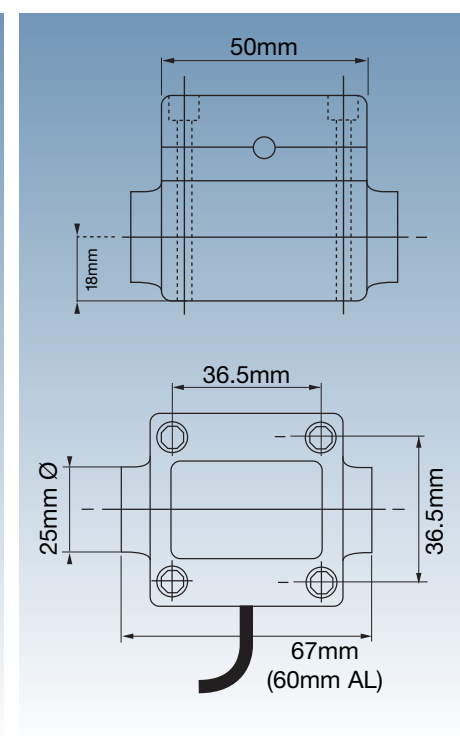
X = Not Available

A = Accessory

Dimensions of High Pressure Meter



Standard Meter



M4 - 1/2" PULSE & LC DISPLAY METERS

The M4 is a low to medium flow range model. It is a compact meter that has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



M4ARP-X

Product Benefits

- Compact size.
- Two independent pulse units.
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Low pressure drop allows for economical pump selection or gravity flow applications.
- Meter construction enables fast and easy on-site servicing without removal from application.
- Meter design minimises the number of wearable and replaceable parts and extends product life.
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Both LC Displays meet European CE directive for EMC.
- Deluxe Display Pulse Version has IP65/NEMA9 protection.
- Intrinsically safe LC Deluxe & Standard Displays. Certificate of conformity number PTB Nr. Ex-93.C.4033x & KEMA Ex-01.E1127x

MODEL	M4
METER TYPE	PULSE / STANDARD LC DISPLAY / DELUXE LC DISPLAY
METER BODY MATERIAL	ALUMINIUM / 316 STAINLESS STEEL
WETTED COMPONENTS:	
ROTOR MATERIAL	PPS / 316 STAINLESS STEEL
SHAFTS	316 STAINLESS STEEL
O'RING	NBR (NITRILE)
FLOW RATE RANGES (litres per minute/US gallons per minute)	
ABOVE 5 CPS	2 to 30 / 0.5 to 8
BELOW 5 CPS	3 to 25 / 0.8 to 6.60
ACCURACY- WITHIN (OF READING)	+/- 0.5%
REPEATABILITY	0.03%
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 Centipoise
MAXIMUM OPERATING PRESSURE	5500kPa/ 800 PSI/ 55 BAR
PULSER TYPE	HALL EFFECT OR REED SWITCH OR COMBINATION HE / RS
PULSES PER LITRE/US GALLON	112/424
MAX. OPERATING TEMPERATURE	80°C / 176°F, High temp option 120°C / 248°F
RECOMMENDED MESH STRAINER SIZE	60 MESH



Standard LC Display



Deluxe LC Display

Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:

Port Size:

1 = 1/2" BSP (F) ports
2 = 1/2" NPT (F) ports

Calibrated In:

Litres
US Gallons

Electrical Conduit Connection

20mm (F) Conduit Thread
1/2" NPT

PPS = Polyphenylene Sulfide Resins



M4 - 1/2" PULSE & LC DISPLAY METERS

TYPE M4 - 1/2" PULSE & LC DISPLAY METERS

Options & Accessories

	VITON O-RING	TEFLON O-RING	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	HASTALLOY C SHAFTS	PROTECTIVE BOOT DELUXE LCD	EXTENDED LIFE BATTERY DELUXE LCD	REMOTE MOUNTED LC DISPLAY	HEATING JACKET	4-20mA MODULE
M4 - 1/2" METER														
M4ARX-X	O	O	O	O	O	O	S	X	X	A	A	A	X	A
M4ASX-X	O	O	O	S	O	O	S	X	X	A	A	A	X	A
M4SRX-X	O	O	O	O	O	O	S	X	X	A	A	A	X	A
M4SSX-X	O	O	O	S	O	O	S	X	X	A	A	A	X	A

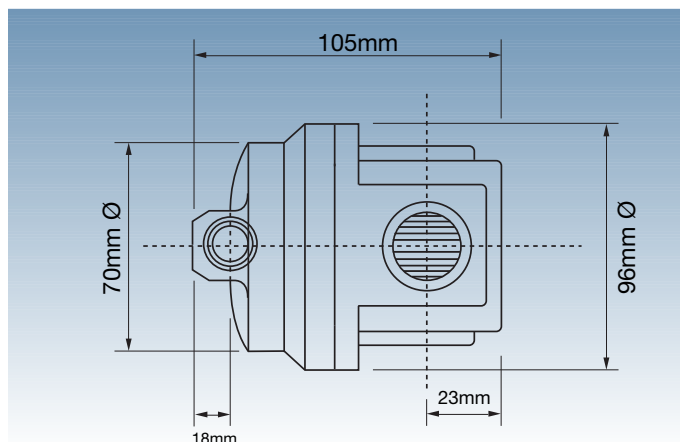
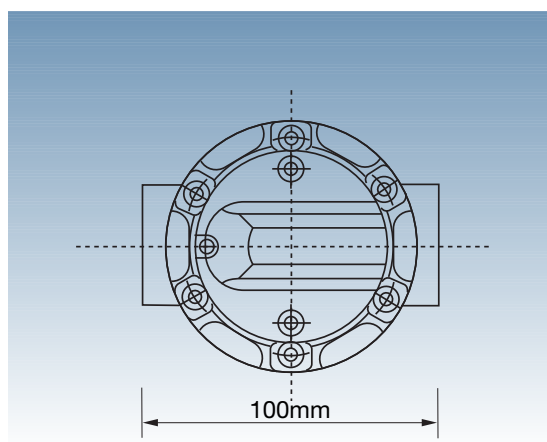
S = Standard

O = Optional

X = Not Available

A = Accessory

Dimensions



Standard Display H 122mm x W 137mm
Deluxe Display H 122mm x W 137mm

M4 - 1/2" WITH MECHANICAL DISPLAY

The M4 is a low to medium flow range model. It is a compact meter that has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



M4ARM-X

Product Benefits

- Compact size.
- Easy to read and operate mechanical display.
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Low pressure drop allows for economical pump selection or gravity flow applications.
- Meter construction enables fast and easy on-site servicing without removal from application.
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Meter design minimises the number of wearable and replaceable parts and extends product life.

MODEL	M4
METER TYPE	METER WITH MECHANICAL DISPLAY
METER BODY MATERIAL	ALUMINIUM OR 316 STAINLESS STEEL
WETTED COMPONENTS:	
ROTOR MATERIAL	PPS
SHAFTS	316 STAINLESS STEEL
O-RING	NBR (NITRILE)
FLOW RATE RANGES (litres per minute/US gallons per minute)	
ABOVE 5 CPS	2 to 30 / 0.5 to 8
BELOW 5 CPS	3 to 25 / 0.8 to 6.60
ACCURACY- WITHIN (OF READING)	+/- 1%
REPEATABILITY	0.03%
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 Centipoise
MAXIMUM OPERATING PRESSURE	3400kPa/ 34 Bar / 500 PSI
MAX. OPERATING TEMPERATURE	80°C / 176°F, High Temp Option 120°C / 248°F
RECOMMENDED MESH STRAINER SIZE	60 MESH



Mechanical Display

Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:

- Port Size:**

 - 1 = 1/2" BSP (F) ports
 - 2 = 1/2" NPT (F) ports
- Calibrated In:**

 - Litres
 - US Gallons

PPS = Polyphenylene Sulfide Resins



M4 - 1/2" WITH MECHANICAL DISPLAY

Options & Accessories

M4 - 1/2" METER	VITON O-RING	TEFLON O-RING	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	HASTALLOY C SHAFTS	PROTECTIVE BOOT	EXTENDED LIFE BATTERY	REMOTE MOUNTED LC DISPLAY	HEATING JACKET	4-20mA MODULE
M4ARM-X	O	O	O	O	O	X	X	O	X	X	X	X	X	X
M4SRM-X	O	O	O	O	O	X	X	O	X	X	X	X	X	X

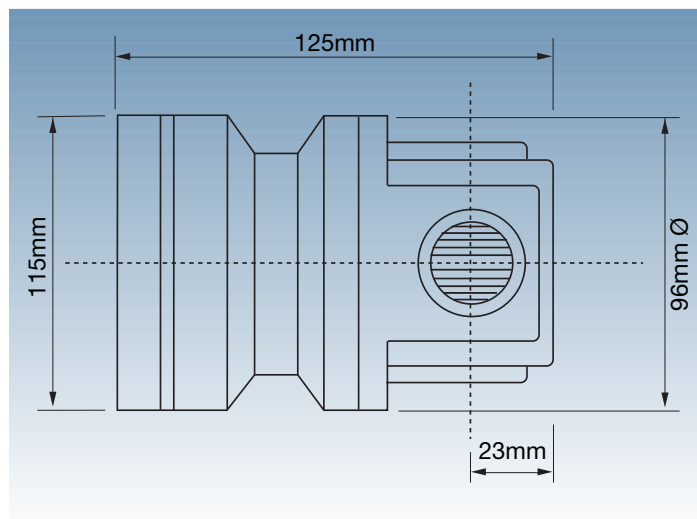
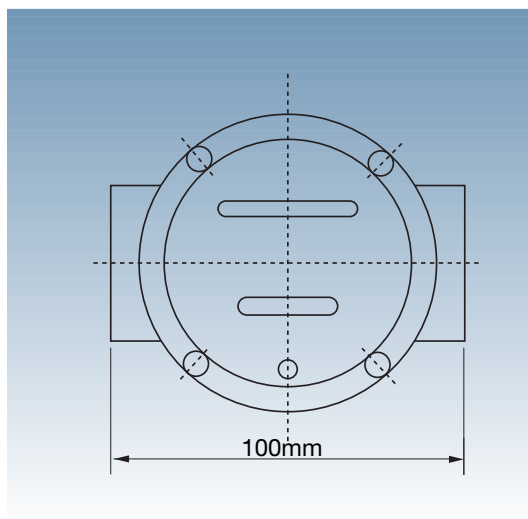
S = Standard

O = Optional

X = Not Available

A = Accessory

Dimensions



M7 - 1" PULSE & LC DISPLAY METERS

The M7 is a specialised meter for aggressive chemicals and water based products. It has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



M7RRP-X

Product Benefits

- Compact size.
- Two independent pulse units.
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Low pressure drop allows for economical pump selection or gravity flow applications.
- Meter construction enables fast and easy on-site servicing without removal from application.
- Meter design minimises the number of wearable and replaceable parts and extends product life.
- Meter accuracy is verified by factory calibration check after which an individual metrology report is issued.
- Pulse Version has IP65/NEMA9 protection.

MODEL	M7
METER TYPE	PULSE / STANDARD LC DISPLAY / DELUXE LC DISPLAY
METER BODY MATERIAL	PPS
WETTED COMPONENTS: ROTOR MATERIAL SHAFTS O-RING	PPS 316 St St or Hastalloy C (Optional Meter Model Designation C) NBR (NITRILE)
FLOW RATE RANGES (litres per minute/US gallons per minute) ABOVE 5 CPS BELOW 5 CPS	3 to 80 / 0.8 to 21 8 to 70 / 2 to 18.5
ACCURACY- WITHIN (OF READING)	+/- 0.5%
REPEATABILITY	0.03%
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 Centipoise
MAXIMUM OPERATING PRESSURE	1000kPa / 150PSI / 10BAR
PULSER TYPE	HALL EFFECT OR REED SWITCH OR COMBINATION HE / RS
PULSES PER LITRE/US GALLON	52/196.8
MAX. OPERATING TEMPERATURE	80°C / 176°F
RECOMMENDED MESH STRAINER SIZE	60 MESH



Standard LC Display



Deluxe LC Display

Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:

Port Size:

1 = 1" BSP (F) ports
2 = 1" NPT (F) ports

Calibrated In:

Litres
US Gallons

Electrical Conduit Connection:

20mm (F)
1/2" NPT (F)

PPS = Polyphenylene Sulfide Resins



M7 - 1" PULSE & LC DISPLAY METERS

Options & Accessories

M7 - 1" METER	VITON O-RING	TEFLON O-RING	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	HASTALLOY C SHAFTS	PROTECTIVE BOOT DELUXE LCD	EXTENDED LIFE BATTERY DELUXE LCD	REMOTE MOUNTED LC DISPLAY	HEATING JACKET	4-20mA MODULE
M7RRP-X	O	O	O	X	X	O	S	X	O	X	X	A	X	A
M7RRG-X	O	O	O	X	X	O	S	X	O	X	X	A	X	A
M7RRE-X	O	O	O	X	X	O	S	X	O	A	A	A	X	A

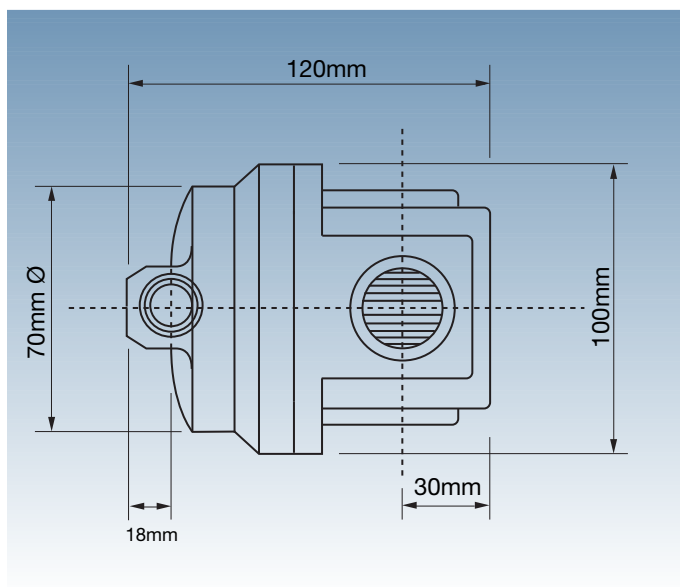
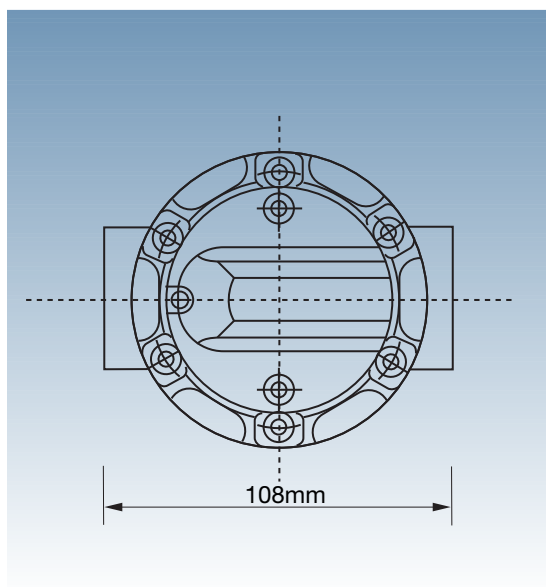
S = Standard

O = Optional

X = Not Available

A = Accessory

Dimensions



Standard Display H 137mm x W 137mm

Deluxe Display H 137mm x W 137mm

TYPE M7 - 1" PULSE & LC DISPLAY METERS

MIO - 1" PULSE & LCD DISPLAY METERS

The MIO is the medium capacity meter in the M Series range. It has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



MIOARP-X

Product Benefits

- Compact size.
- Two independent pulse units which can be linked to allow doubling of the pulse output.
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Low pressure drop allows for economical pump selection or gravity

flow applications.

- Meter construction enables fast and easy on-site servicing without removal from application.
- Meter design minimises the number of wearable and replaceable parts and extends product life.
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Both LC Display meets European CE directive for EMC.

- Deluxe/Standard Displays Pulse Version have IP65/NEMA9 protection.
- Intrinsically safe LC Deluxe & Standard Displays. Certificate of conformity numbers PTB Nr. Ex-93.C.4033x & Kema Ex-00.E.1127x
- Pulse version have Flameproof Certification AUS Ex2377x

STANDARDS AUSTRALIA
Flameproof Approval

MODEL	MIO
METER TYPE	PULSE / STANDARD LC DISPLAY / DELUXE LC DISPLAY
METER TYPE	PULSE / LCD
METER BODY MATERIAL	AA601 ALUMINIUM / 316 STAINLESS STEEL / BRONZE
WETTED COMPONENTS: ROTOR MATERIAL SHAFTS O'RING	PPS / 316 STAINLESS STEEL 316 STAINLESS STEEL NBR (NITRILE)
FLOW RATE RANGES (litres per minute/ US gallons per minute) ABOVE 5 CPS BELOW 5 CPS	6 to 120 / 1.6 to 32 10 to 100 / 2.6 to 26
ACCURACY- WITHIN (OF READING)	+/- 0.5%
REPEATABILITY	0.03%
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 Centipoise
MAXIMUM OPERATING PRESSURE	5500kPa/ 800 PSI/ 55 BAR OR FLANGE RULE WHERE FITTED
PULSER TYPE	HALL EFFECT OR REED SWITCH OR COMBINATION HE / RS
PULSES PER LITRE/ US GALLON	36 /136.3 With Dual Pulse Output 72 / 272.6
MAX. OPERATING TEMPERATURE	80°C / 176°F / High Temp Option 120°C / 248°F
RECOMMENDED MESH STRAINER SIZE	60 MESH



Standard LC Display



Deluxe LC Display

Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:

Port Size:

- 1 = 1" BSP (F) ports
- 2 = 1" NPT (F) ports
- 3 = 1" ANSI 150lb Flange
- 4 = 1" ANSI 150lb Flange
- 5 = 25mm DIN 16 Flange
- 6 = 1" Triclover Flange
- 7 = 1" Triclover Flange
- 13=25mm JIS 10K Flange

Calibrated and Display In:

- Litres
- US Gallons
- Litres
- US Gallons
- Litres
- Litres
- US Gallons
- Litres

Electrical Conduit Connection:

- 20mm (F)
- 1/2" NPT (F)
- 20mm (F)
- 1/2" NPT (F)
- 20mm (F)
- 20mm (F)
- 1/2" NPT (F)
- 20mm (F)

PPS = Polyphenylene Sulfide Resins

Bronze = Available in 1 or 2 port configuration only



MIO - 1" PULSE METERS & LCD DISPLAY METERS

Options & Accessories

MIO - 1" METER	VITON O-RING	TEFLON O-RING	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	HASTALLOY C SHAFTS	PROTECTIVE BOOT DELUXE LCD	EXTENDED LIFE BATTERY DELUXE LCD	REMOTE MOUNTED LC DISPLAY	HEATING JACKET	4-20mA MODULE
M10ARX-X	O	O	O	O	O	O	S	X	X	A	A	A	A	A
M10ASX-X	O	O	O	S	O	O	S	X	X	A	A	A	A	A
M10SRX-X	O	O	O	O	O	O	S	X	X	A	A	A	A	A
M10SSX-X	O	O	O	S	O	O	S	X	X	A	A	A	A	A
M10BRX-X	O	O	O	O	O	O	S	X	X	A	A	A	A	A

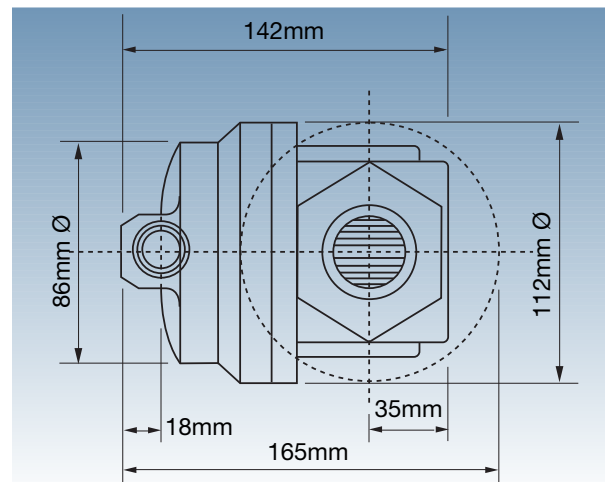
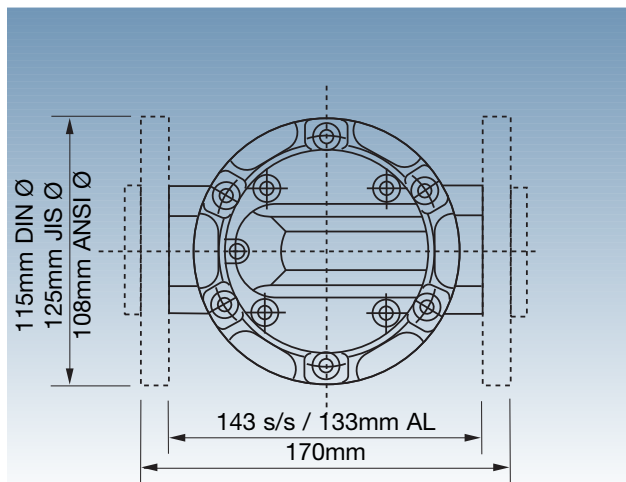
S = Standard

O = Optional

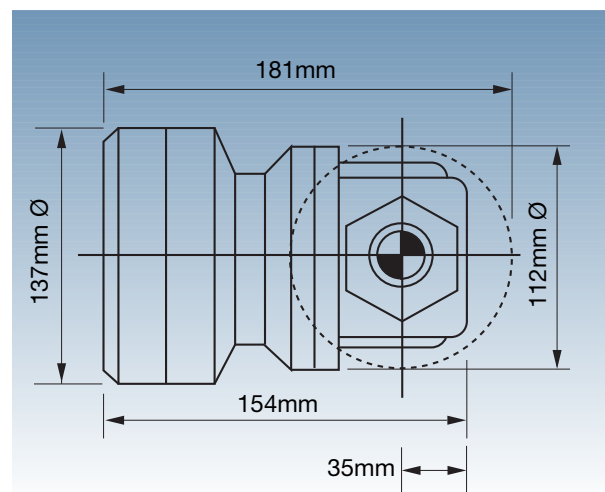
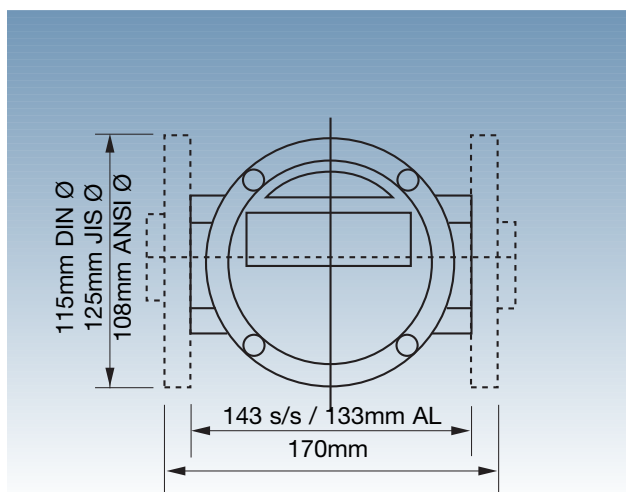
X = Not Available

A = Accessory

Dimensions



Pulse Version



Standard/Deluxe Display

Macnaught Pty Ltd reserves the right to modify or alter product materials, dimensions, design and construction, when necessary, to improve the performance of our products. Please check with your local distributor or Macnaught to confirm current specifications of our products

TYPE MIO - 1" PULSE & LCD DISPLAY METERS

MIO - 1" METERS WITH MECHANICAL DISPLAY

The MIO is the medium capacity meter in the M Series range. It has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



MIOARM-X

Product Benefits

- Compact size.
- Easy to read and operate mechanical display.
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Low pressure drop allows for economical pump selection or gravity flow applications.
- Meter construction enables fast and easy on-site servicing without removal from application.
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Meter design minimises the number of wearable and replaceable parts and extends product life.
- An Option of 100 Pulse per unit of measure output is available for the Analogue version.

MODEL	MIO
METER TYPE	METER WITH MECHANICAL DISPLAY
METER BODY MATERIAL	AA601 ALUMINIUM / 316 STAINLESS STEEL / BRONZE
WETTED COMPONENTS:	
ROTOR MATERIAL	PPS / 316 STAINLESS STEEL
SHAFTS	316 STAINLESS STEEL
O-RING	NBR (NITRILE)
FLOW RATE RANGES (litres per minute/US gallons per minute)	
ABOVE 5 CPS	6 to 120 / 1.6 to 32
BELOW 5 CPS	10 to 100 / 2.6 to 26
ACCURACY- WITHIN (OF READING)	+/- 1% / ANALOGUE REGISTER +/- .05%
REPEATABILITY	0.03%
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 Centipoise
MAXIMUM OPERATING PRESSURE	3450kPa/ 500 PSI/ 34.5 BAR OR FLANGE RUL WHERE FITTED
MAX. OPERATING TEMPERATURE	80°C / 176°F, High Temp Option 120°C / 248°F
RECOMMENDED MESH STRAINER SIZE	60 MESH



Mechanical Display



Analogue Mechanical Register

Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:

Port Size:

- 1 = 1" BSP (F) ports
- 2 = 1" NPT (F) ports
- 3 = 1" ANSI 150lb Flange
- 4 = 1" ANSI 150lb Flange
- 5 = 25mm DIN 16 Flange
- 13=25mm JIS 10K Flange

Calibrated and Display In:

- Litres
- US Gallons
- Litres
- US Gallons
- Litres
- Litres

PPS = Polyphenylene Sulfide Resins



MIO - 1" METERS WITH MECHANICAL DISPLAY

Options & Accessories

MIO - 1" METER MECHANICAL DISPLAY	VITON O-RING	TEFLON O-RING	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	HASTALLOY C SHAFTS	ANALOGUE REGISTER	PULSE KIT P500	REMOTE MOUNTED LC DISPLAY	HEATING JACKET	4-20mA MODULE
M10ARM-X	O	O	O	O	O	X	X	O	X	O	A	X	A	X
M10ASM-X	O	O	O	S	O	X	X	S	X	O	A	X	A	X
M10SRM-X	O	O	O	O	O	X	X	S	X	O	A	X	A	X
M10SSM-X	O	O	O	S	O	X	X	S	X	O	A	X	A	X
M10BRM-X	O	O	O	O	O	X	X	O	X	O	A	X	A	X

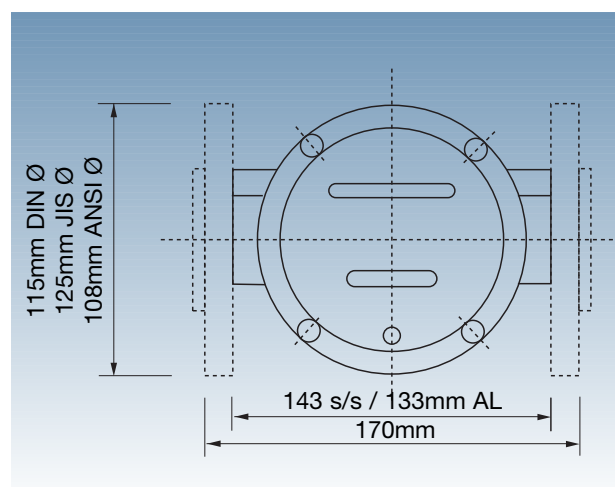
S = Standard

O = Optional

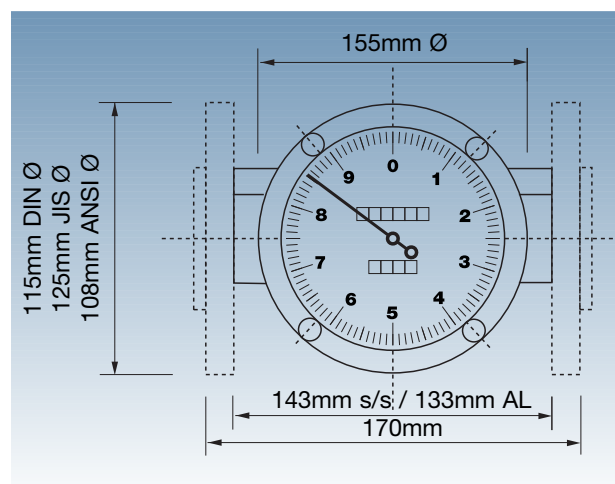
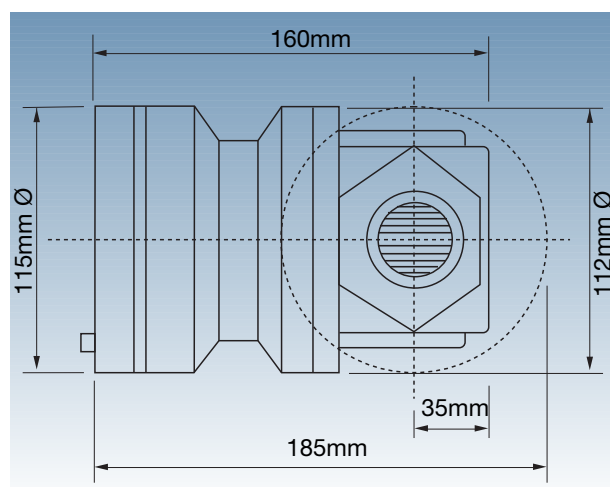
X = Not Available

A = Accessory

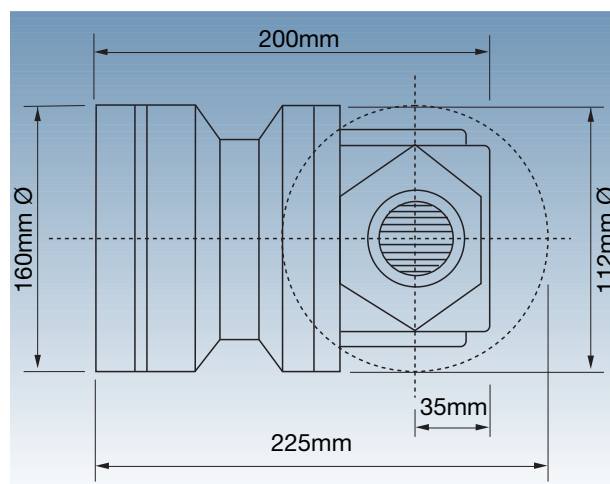
Dimensions



Mechanical Display



Analogue Mechanical Display



M40 - 1 1/2" PULSE & LCD DISPLAY METRES

The M40 is the medium to large capacity meter in the M Series range. It has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



M40ARP-X

Product Benefits

- Compact size.
- Two independent pulse units which can be linked to allow doubling of the pulse output.
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Low pressure drop allows for economical pump selection or gravity flow applications.

- Meter construction enables fast and easy on-site servicing without removal from application.
- Meter design minimises the number of wearable and replaceable parts and extends product life.
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Both LC Displays meets European CE directive for EMC.
- Standard/Deluxe Displays and Pulse Version has IP65/NEMA9 protection.

- Intrinsically safe LC Deluxe & Standard Displays. Certificate of conformity number PTB Nr. Ex-93.C.4033x & Kema Ex-00.E.1127x
- Pulse Versions have Flameproof Certification. AUS Ex2377x

STANDARDS AUSTRALIA
Flameproof Approval

MODEL	M40
METER TYPE	PULSE / STANDARD LC DISPLAY / DELUXE LC DISPLAY
METER BODY MATERIAL	ALUMINIUM / 316 STAINLESS STEEL / BRONZE
WETTED COMPONENTS: ROTOR MATERIAL SHAFTS O-RING	PPS / 316 STAINLESS STEEL 316 STAINLESS STEEL NBR (NITRILE)
FLOW RATE RANGES (litres per minute/US gallons per minute) ABOVE 5 CPS BELOW 5 CPS	10 to 250 / 2.6 to 66 15 to 235 / 4 to 62
ACCURACY- WITHIN (OF READING)	+/- 0.5%
REPEATABILITY	0.03%
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 Centipoise
MAXIMUM OPERATING PRESSURE	1800kPa/260PSI/18BAR
PULSER TYPE	HALL EFFECT OR REED SWITCH OR COMBINATION HE /RS
PULSES PER LITRE/US GALLON	14.5 / 54.9
MAX. OPERATING TEMPERATURE	80°C / 176°F, High Temp Option 120°C / 248°F
RECOMMENDED MESH STRAINER SIZE	60 MESH



Standard LC Display



Deluxe LC Display

Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:

Port Size:

- 1 = 1 1/2" BSP (F) ports
- 2 = 1 1/2" NPT (F) ports
- 3 = 1 1/2" ANSI 150lb Flange
- 4 = 1 1/2" ANSI 150lb Flange
- 5 = 40mm DIN 16 Flange
- 6 = 1 1/2" Triclover Flange
- 7 = 1 1/2" Triclover Flange
- 13=40mm JIS 10K flange

Calibrated and Display In:

- Litres
- US Gallons
- Litres
- US Gallons
- Litres
- Litres
- US Gallons
- Litres

Electrical Conduit Connection:

- 20mm (F)
- 1/2" NPT (F)
- 20mm (F)
- 1/2" NPT (F)
- 20mm (F)
- 20mm(F)
- 1/2" NPT (F)
- 20mm(F)

PPS = Polyphenylene Sulfide Resins



M40 - 1 1/2" PULSE & LCD DISPLAY METRES

Options & Accessories

M40 - 1 1/2" METER	VITON O-RING	TEFLON O-RING	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	HASTALLOY C SHAFTS	PROTECTIVE BOOT DELUXE LCD	EXTENDED LIFE BATTERY DELUXE LCD	REMOTE MOUNTED LC DISPLAY	HEATING JACKET	4-20mA MODULE
M40ARX-X	O	O	O	O	O	O	S	X	X	A	A	A	A	A
M40ASX-X	O	O	O	S	O	O	S	X	X	A	A	A	A	A
M40BRX-X	O	O	O	O	O	O	S	X	X	A	A	A	A	A
M40SRX-X	O	O	O	O	O	O	S	X	X	A	A	A	A	A
M40SSX-X	O	O	O	S	O	O	S	X	X	A	A	A	A	A

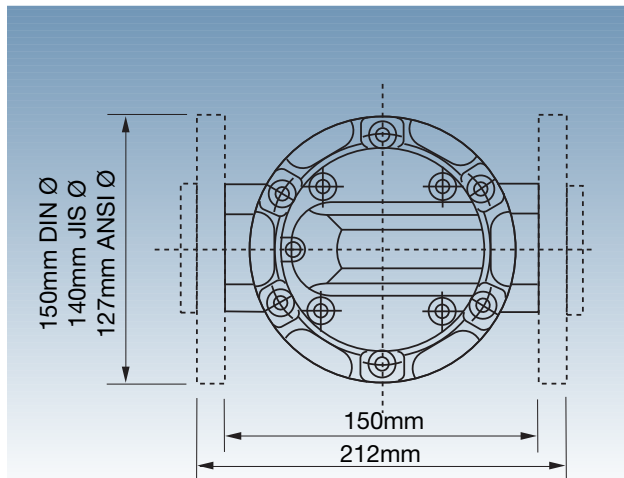
S = Standard

O = Optional

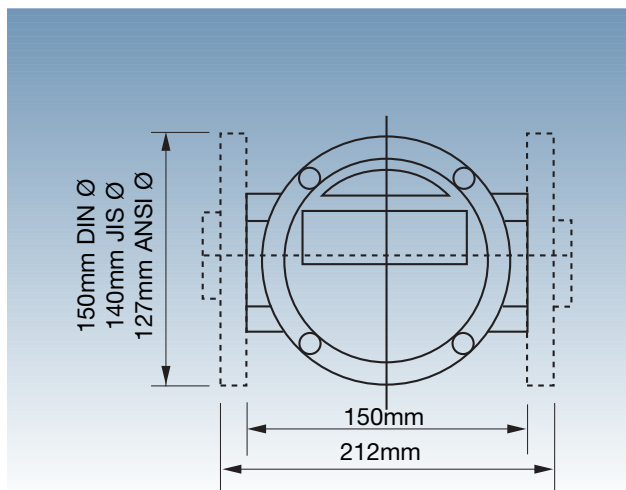
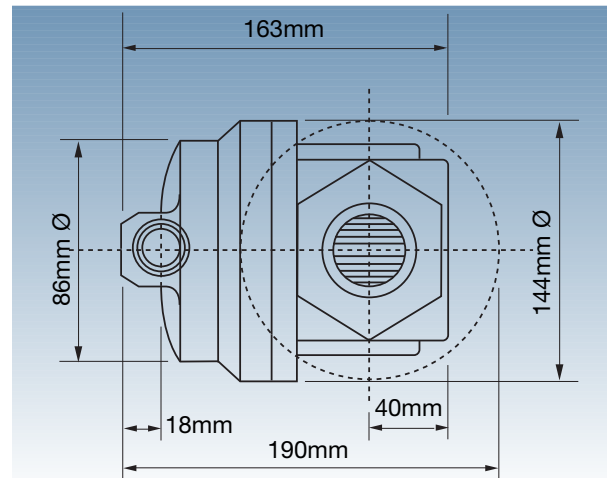
X = Not Available

A = Accessory

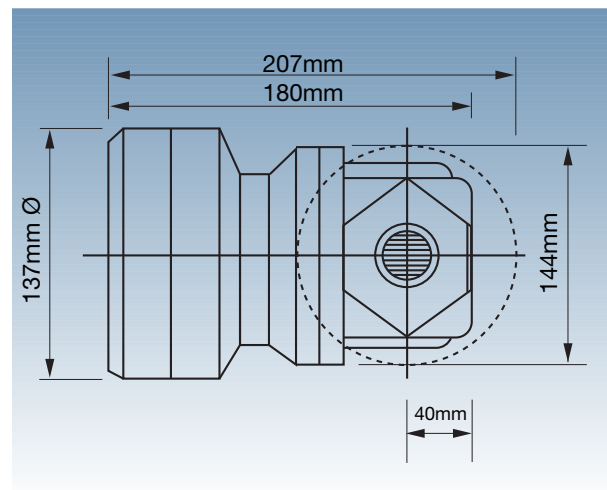
Dimensions



Pulse Version



Standard/Deluxe Display



M40 - 1 1/2" METERS WITH MECHANICAL DISPLAY

The M40 is the medium to large capacity meter in the M Series range. It has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



M40SRM-X

Product Benefits

- Compact size.
- Easy to read and operate mechanical display.
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Low pressure drop allows for economical pump selection or gravity flow applications.
- Meter construction enables fast and easy on-site servicing without removal from application.
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Meter design minimises the number of wearable and replaceable parts and extends product life.
- An Option of 100 Pulse per unit of measure output is available for the Analogue version.

MODEL	M40
METER TYPE	METER WITH MECHANICAL DISPLAY
METER BODY MATERIAL	ALUMINIUM / 316 STAINLESS STEEL/ BRONZE
WETTED COMPONENTS: ROTOR MATERIAL SHAFTS O'RING	PPS / 316 STAINLESS STEEL 316 STAINLESS STEEL NBR (NITRILE)
FLOW RATE RANGES (litres per minute/US gallons per minute) ABOVE 5 CPS BELOW 5 CPS	10 to 250 / 2.6 to 66 15 to 235 / 4 to 62
ACCURACY- WITHIN (OF READING)	+/- 1% / ANALOGUE REGISTER +/- 0.5%
REPEATABILITY	0.03%
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 Centipoise
MAXIMUM OPERATING PRESSURE	1800kPa/ 260 PSI/ 18 BAR
MAX. OPERATING TEMPERATURE	80°C / 176°F, High Temp Option 120°C / 248°F
RECOMMENDED MESH STRAINER SIZE	60 MESH



Mechanical Display



Analogue Mechanical Register

Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:

Port Size:	Calibrated and Display In:
1 = 1 1/2" BSP (F) ports	Litres
2 = 1 1/2" NPT (F) ports	US Gallons
3 = 1 1/2" ANSI 150lb Flange	Litres
4 = 1 1/2" ANSI 150lb Flange	US Gallons
5 = 40mm DIN 16 Flange	Litres
13=40mm JIS 10K flange	Litres

PPS = Polyphenylene Sulfide Resins



M40 - 1 1/2" METERS WITH MECHANICAL DISPLAY

Options & Accessories

M40 - 1 1/2" MECHANICAL DISPLAY	VITON O-RING	TEFLON O-RING	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	HASTALLOY C SHAFTS	ANALOGUE REGISTER	PULSER KIT P500	REMOTE MOUNTED LC DISPLAY	HEATING JACKET	4-20mA MODULE
M40ARM-X	O	O	O	O	O	X	X	O	X	O	A	X	A	X
M40ASM-X	O	O	O	S	O	X	X	S	X	O	A	X	A	X
M40SRM-X	O	O	O	O	O	X	X	S	X	O	A	X	A	X
M40SSM-X	O	O	O	S	O	X	X	S	X	O	A	X	A	X

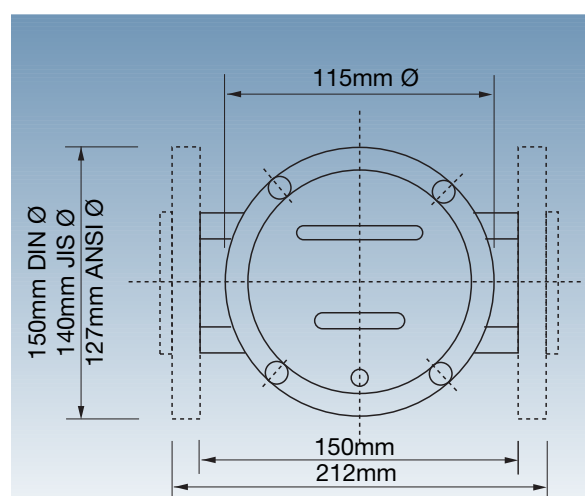
S = Standard

O = Optional

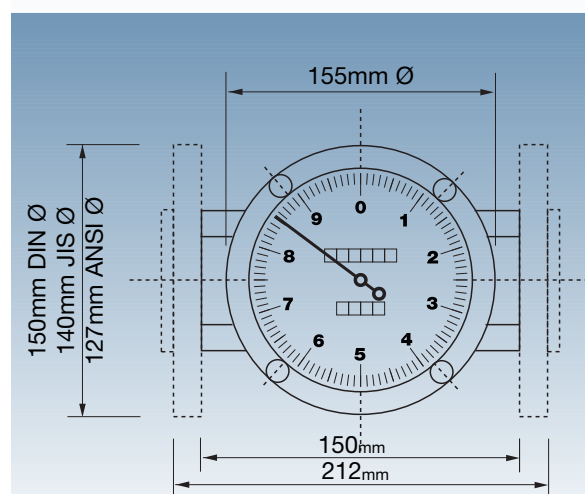
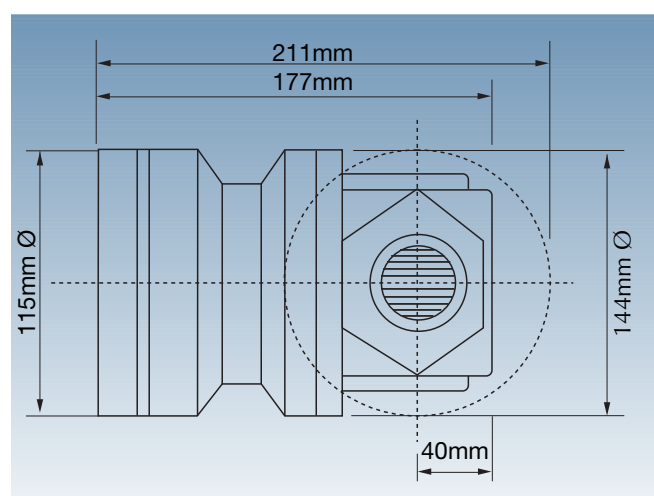
X = Not Available

A = Accessory

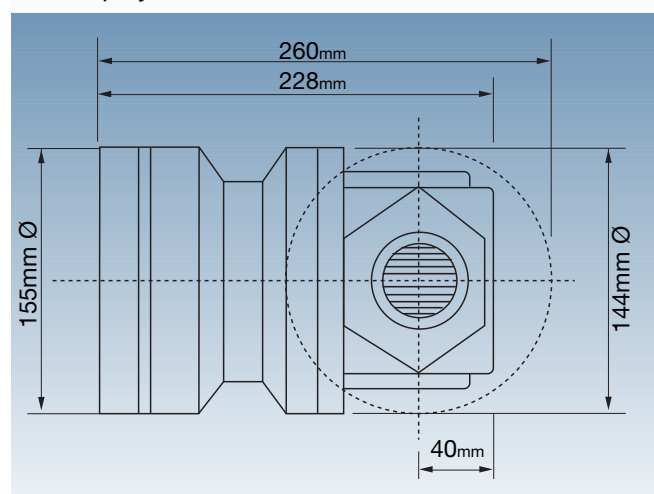
Dimensions



Mechanical Display



Analogue Mechanical Display



Macnaught Pty Ltd reserves the right to modify or alter product materials, dimensions, design and construction, when necessary, to improve the performance of our products. Please check with your local distributor or Macnaught to confirm current specifications of our products

TYPE M40 - 1 1/2" MECHANICAL METERS

M50 - 2" PULSE & LCD DISPLAY METERS

The M50 is a large capacity meter in the M Series range. It has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



M50ARP-X

Product Benefits

- Compact size.
- Two independent pulse units.
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Low pressure drop allows for economical pump selection or gravity flow applications.

- Meter construction enables fast and easy on-site servicing without removal from application.
- Meter design minimises the number of wearable and replaceable parts and extends product life.
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Both LC Displays meets European CE directive for EMC.

- Standard/Deluxe Displays and Pulse Version have IP65/NEMA9 protection.
- Intrinsically safe LC Deluxe and Standard Displays. Certificate of conformity number PTB Nr. Ex-93.C.4033x & Kema Ex-00.E.1127x
- Pulse Versions have Flameproof Certification. AUS Ex2377x

STANDARDS AUSTRALIA
Flameproof Approval

MODEL	M50
METER TYPE	PULSE / STANDARD LC DISPLAY / DELUXE LC DISPLAY
METER BODY MATERIAL	ALUMINIUM / 316 STAINLESS STEEL/BRONZE
WETTED COMPONENTS:	
ROTOR MATERIAL	PPS / 316 STAINLESS STEEL
SHAFTS	316 STAINLESS STEEL
O'RING	NBR (NITRILE)
FLOW RATE RANGES (litres per minute/US gallons per minute)	
ABOVE 5 CPS	15 to 350 / 4 to 93
BELOW 5 CPS	30 to 300 / 8 to 79
ACCURACY- WITHIN (OF READING)	+/- 0.5%
REPEATABILITY	0.03%
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 Centipoise
MAXIMUM OPERATING PRESSURE	1800KPA/260PSI/18BAR
PULSER TYPE	HALL EFFECT OR REED SWITCH OR COMBINATION HE / RS
PULSES PER LITRE/US GALLONS	6.68 / 25.29
MAX. OPERATING TEMPERATURE	80°C / 176°F, High Temp Option 120°C / 240°F
RECOMMENDED MESH STRAINER SIZE	60 MESH



Standard LC Display



Deluxe LC Display

Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:

Port Size:

- 1 = 2" BSP (F) Ports
- 2 = 2" NPT (F) Ports
- 3 = 2" ANSI 150lb Flange
- 4 = 2" ANSI 150lb Flange
- 6 = 2" Tri Clover Flange
- 7 = 2" Tri Clover Flange
- 5 = 50mm DIN 16 Flange
- 13 = 50mm JIS 10k flange

Calibrated and Display In:

- Litres
- US Gallons
- Litres
- US Gallons
- Litres
- US Gallons
- Litres
- Litres

Electrical Conduit Connection:

- 20mm (F)
- 1/2" NPT (F)
- 20mm (F)
- 1/2" NPT (F)
- 20mm (F)
- 1/2" NPT (F)
- 20mm (F)
- 20mm (F)

PPS = Polyphenylene Sulfide Resins



M50 - 2" PULSE & LCD DISPLAY METERS

Options & Accessories

M50 - 2" METER	VITON O-RING	TEFLON O-RING	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	HASTALLOY C SHAFTS	PROTECTIVE BOOT DELUXE LCD	EXTENDED LIFE BATTERY DELUXE LCD	REMOTE MOUNTED LC DISPLAY	HEATING JACKET	4-20mA MODULE
M50ARX-X	O	O	O	O	O	O	S	X	X	A	A	A	A	A
M50SRX-X	O	O	O	O	O	O	S	X	X	A	A	A	A	A
M5055X-X	O	O	O	S	O	O	S	X	X	A	A	A	A	A
M50ASX-X	O	O	O	S	O	O	S	X	X	A	A	A	A	A

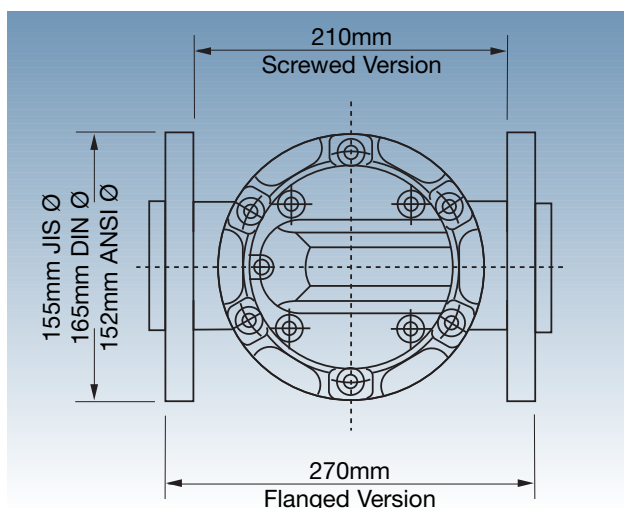
S = Standard

O = Optional

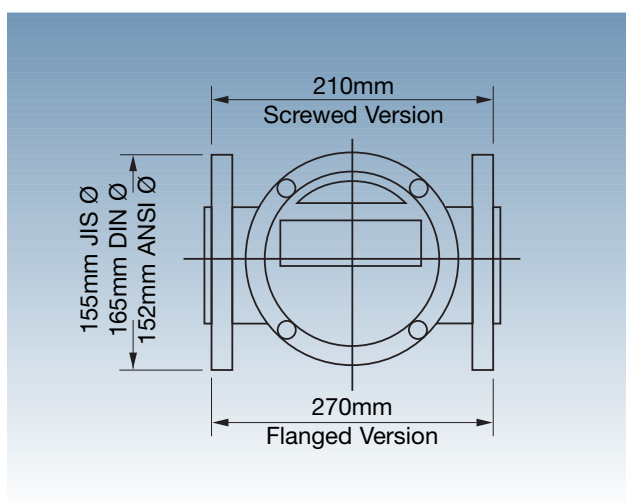
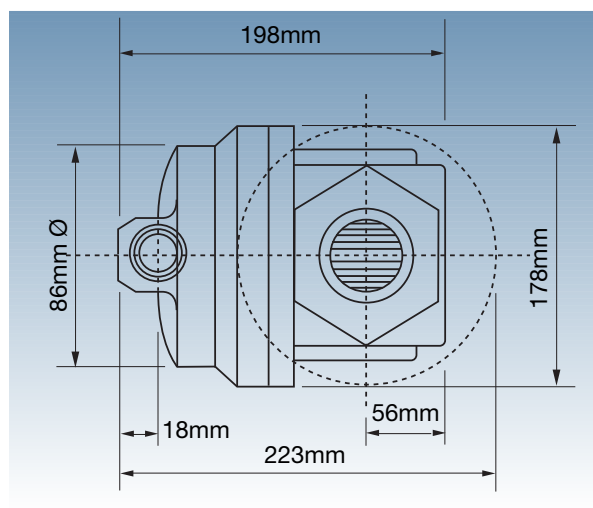
X = Not Available

A = Accessory

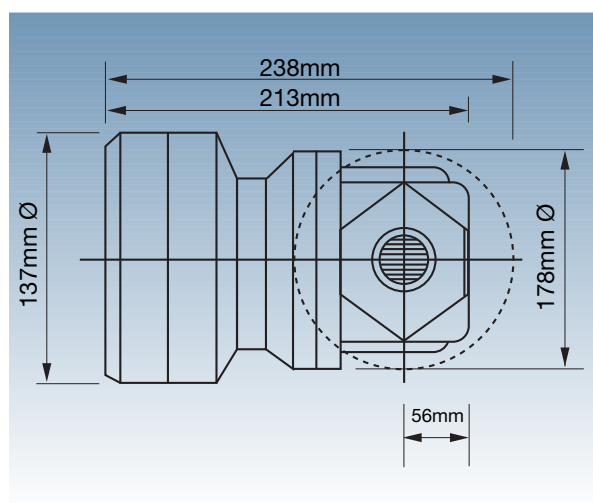
Dimensions



Pulse Version



Standard/Deluxe Display



M50 - 2" METERS WITH MECHANICAL DISPLAY

The M50 is the medium to large capacity meter in the M Series range. It has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



M50ARM-X

Product Benefits

- Compact size.
- Easy to read and operate mechanical display.
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Low pressure drop allows for economical pump selection or gravity flow applications.
- Meter construction enables fast and easy on-site servicing without removal from application.
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Meter design minimises the number of wearable and replaceable parts and extends product life.
- An Option of 100 Pulses per unit of measure output is available for the Analogue version.

MODEL	M50
METER TYPE	METER WITH MECHANICAL DISPLAY
METER BODY MATERIAL	ALUMINIUM / 316 STAINLESS STEEL/ BRONZE
WETTED COMPONENTS: ROTOR MATERIAL SHAFTS O-RING	PPS / 316 STAINLESS STEEL 316 STAINLESS STEEL NBR (NITRILE)
FLOW RATE RANGES (litres per minute/US gallons per minute) ABOVE 5 CPS BELOW 5 CPS	15 to 350 / 4 to 93 30 to 300 / 8 to 79
ACCURACY- WITHIN (OF READING) REPEATABILITY	+/- 1% ANALOGUE REGISTER +/- 0.5% 0.03%
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 Centipoise
MAXIMUM OPERATING PRESSURE	1800KPA/260PSI/18BAR
MAX. OPERATING TEMPERATURE	80°C / 176°F, High Temp Option 120°C / 240°F
RECOMMENDED MESH STRAINER SIZE	60 MESH



Mechanical Display



Analogue Mechanical Register

Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:

Port Size:

- 1 = 2" BSP (F) Ports
- 2 = 2" NPT (F) Ports
- 3 = 2" ANSI 150lb Flange
- 4 = 2" ANSI 150lb Flange
- 5 = 50mm DIN 16 Flange
- 13=50mm JIS 10k flange

Calibrated and Display In:

- Litres
- US Gallons
- Litres
- US Gallons
- Litres
- Litres

PPS = Polyphenylene Sulfide Resins



M50 - 2" METERS WITH MECHANICAL DISPLAY

Options & Accessories

M50 - 2" MECHANICAL DISPLAY	VITON O-RING	TEFLON O-RING	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	HASTALLOY C SHAFTS	ANALOGUE REGISTER	PULSER KIT P500	REMOTE MOUNTED LC DISPLAY	HEATING JACKET	4-20mA MODULE
M50ARM-X	O	O	O	O	O	X	X	O	X	O	A	X	A	X
M50SRM-X	O	O	O	O	O	X	X	S	X	O	A	X	A	X
M50SSM-X	O	O	O	S	O	X	X	S	X	O	A	X	A	X
M50ASM-X	O	O	O	S	O	X	X	S	X	O	A	X	A	X

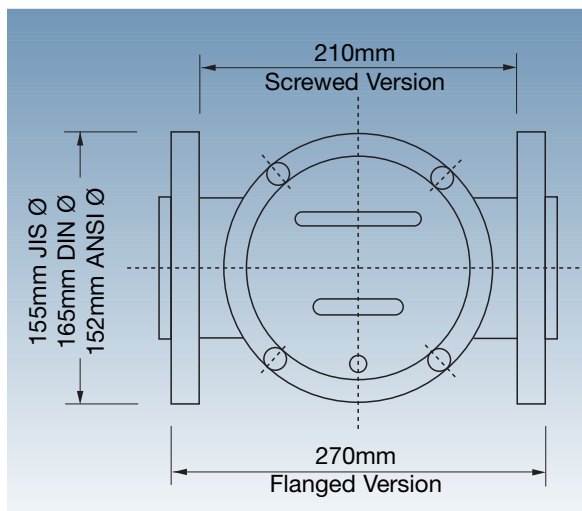
S = Standard

O = Optional

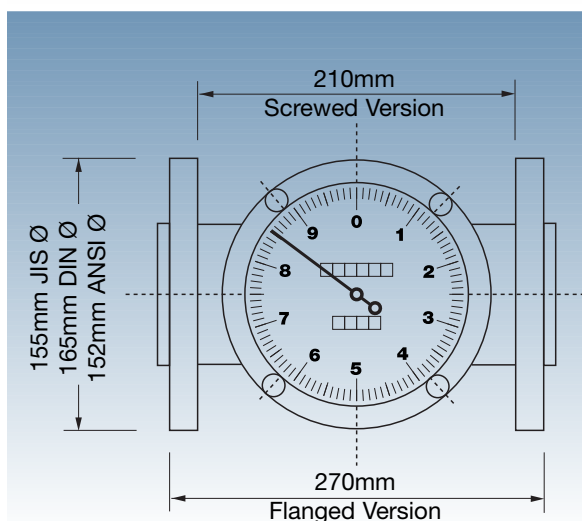
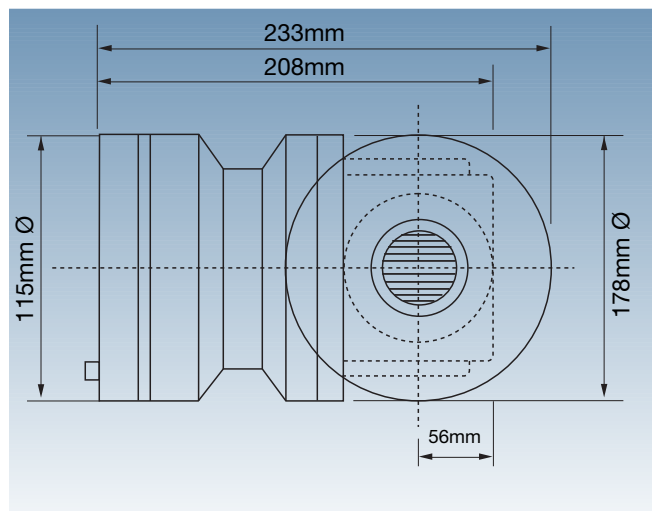
X = Not Available

A = Accessory

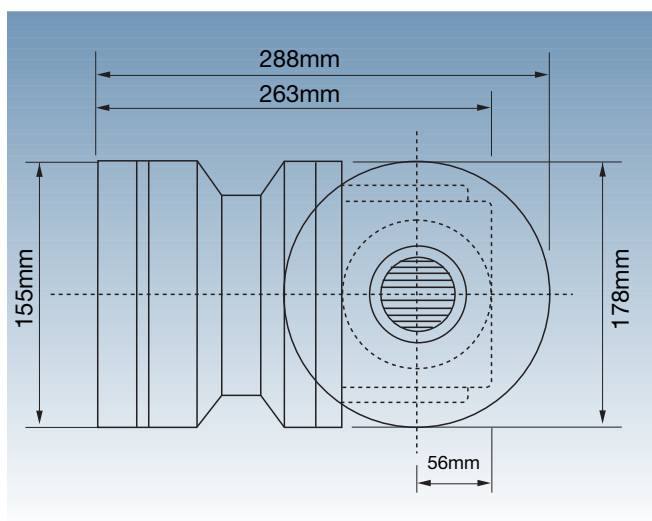
Dimensions



Mechanical Display



Analogue Mechanical Display



M80 - 3" PULSE & LCD DISPLAY METERS

The M80 is a large capacity meter in the M Series range. It has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



M80AAG-X

Product Benefits

- Compact size.
- Two independent pulse units.
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Low pressure drop allows for economical pump selection or gravity flow applications.
- Meter construction enables fast and easy on-site servicing without removal from application.
- Meter design minimises the number of wearable and replaceable parts and extends product life.
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Both LC Displays meets European CE directive for EMC.
- Standard/Deluxe Displays and Pulse Version have IP65/NEMA9 protection.
- Intrinsically safe LC Deluxe and Standard Displays. Certificate of conformity number PTB Nr. Ex-93.C.4033x & Kema Ex-00.E.1127x

MODEL	M80
METER TYPE	PULSE / STANDARD LC DISPLAY / DELUXE LC DISPLAY
METER BODY MATERIAL	ALUMINIUM
WETTED COMPONENTS:	
ROTOR MATERIAL	ALUMINIUM
SHAFTS	316 STAINLESS STEEL
O'RING	NBR (NITRILE)
FLOW RATE RANGES (litres per minute/US gallons per minute)	
ABOVE 5 CPS	20 to 733 / 5 to 194
BELOW 5 CPS	66 to 616 / 17 to 163
ACCURACY- WITHIN (OF READING)	+/- 0.5%
REPEATABILITY	0.03%
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 Centipoise
MAXIMUM OPERATING PRESSURE	1200KPA/175PSI/12BAR
PULSER TYPE	HALL EFFECT OR REED SWITCH OR COMBINATION HE / RS
PULSES PER LITRE/US GALLONS	2.59 / 9.8
MAX. OPERATING TEMPERATURE	80°C / 176°F
RECOMMENDED MESH STRAINER SIZE	40 MESH



Standard LC Display



Deluxe LC Display

Port Size To order flowmeter you must replace 'X' with the relevant number. This number will determine the following specifications:

Port Size:

- 1 = 3" BSP (F) Ports
- 2 = 3" NPT (F) Ports
- 3 = 3" ANSI 150lb Flange
- 4 = 3" ANSI 150lb Flange
- 5 = 80mm DIN 16 Flange
- 13 = 80mm JIS 10K Flange

PPS = Polyphenylene Sulfide Resins

Calibrated and Display In:

- Litres
- US Gallons
- Litres
- US Gallons
- Litres
- Litres

Electrical Conduit Connection:

- 20mm (F)
- 1/2" NPT (F)
- 20mm (F)
- 1/2" NPT (F)
- 20mm (F)
- 20mm (F)



M80 - 3" PULSE & LCD DISPLAY METERS

Options & Accessories

M80 - 3" METER	VITON O-RING	TEFLON O-RING	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	HASTALLOY C SHAFTS	PROTECTIVE BOOT DELUXE LCD	EXTENDED LIFE BATTERY DELUXE LCD	REMOTE MOUNTED LC DISPLAY	HEATING JACKET	4-20mA MODULE
M80AAX-X	O	O	O	X	X	O	S	X	X	A	A	A	X	A

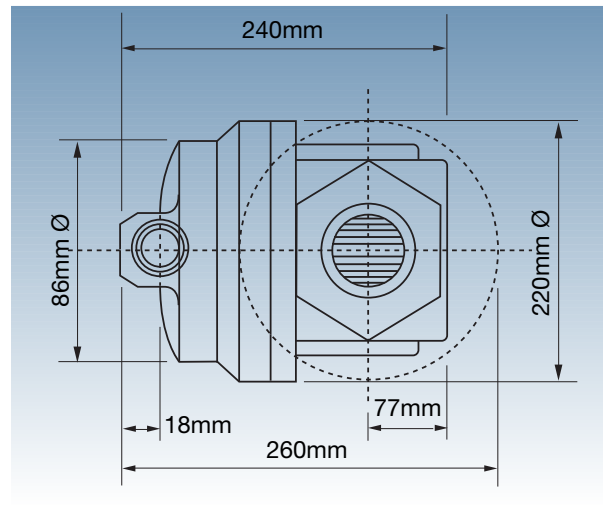
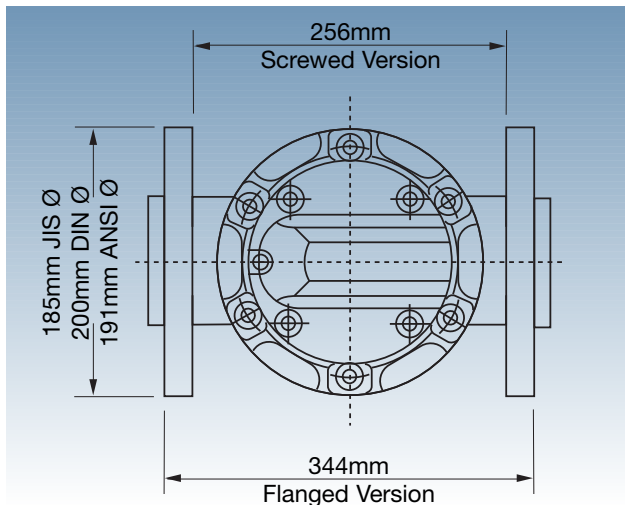
S = Standard

O = Optional

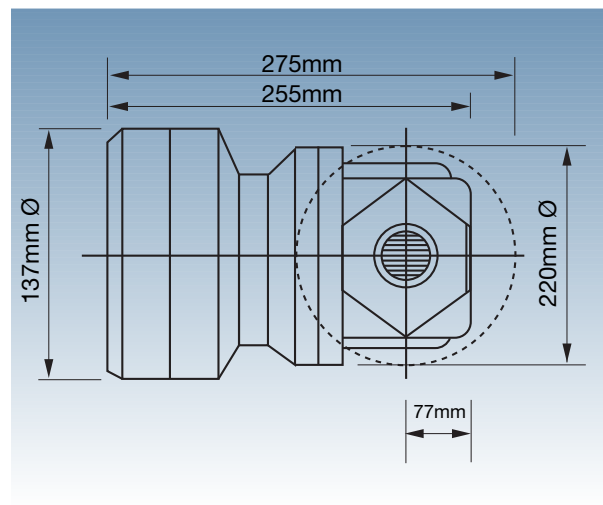
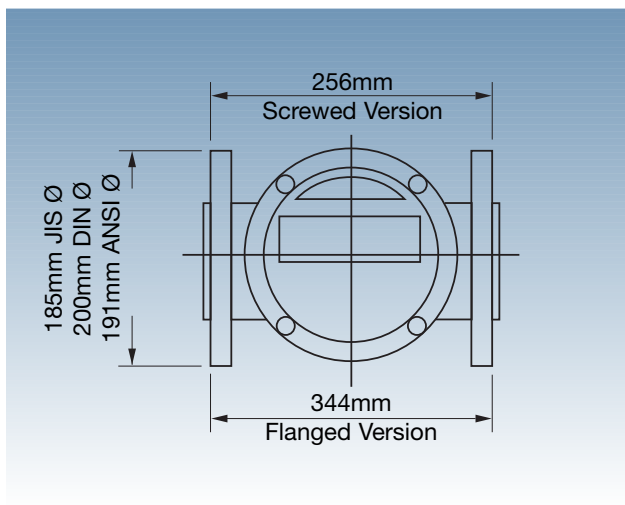
X = Not Available

A = Accessory

Dimensions



Pulse Version



Standard/Deluxe Display

M80 - 3" METERS WITH MECHANICAL DISPLAY

The M80 is the large capacity meter in the M Series range. It has the ability to handle a wide range of fluid viscosities with exceptional levels of repeatability and durability.



M80ARM-X

Product Benefits

- Compact size.
- Easy to read and operate mechanical display.
- Flexibility of installation options (e.g. can be mounted horizontally or vertically; no flow conditioning required).
- Low pressure drop allows for economical pump selection or gravity flow applications.
- Meter construction enables fast and easy on-site servicing without removal from application.
- Meter accuracy is verified by a factory calibration check after which an individual metrology report is issued.
- Meter design minimises the number of wearable and replaceable parts and extends product life.
- An Option of 10/100 Pulse per unit of measure output is available.

MODEL	M80
METER TYPE	METER WITH MECHANICAL DISPLAY
METER BODY MATERIAL	ALUMINIUM
WETTED COMPONENTS: ROTOR MATERIAL SHAFTS O-RING	ALUMINIUM 316 STAINLESS STEEL NBR (NITRILE)
FLOW RATE RANGES (litres per minute/US gallons per minute) ABOVE 5 CPS BELOW 5 CPS	20 to 733 / 5 to 194 66 to 616 / 17 to 163
ACCURACY- WITHIN (OF READING) REPEATABILITY	+/- 0.5% 0.03%
MAXIMUM VISCOSITY (OF STANDARD MODEL)	1000 Centipoise
MAXIMUM OPERATING PRESSURE	1200KPA/175PSI/12BAR
MAX. OPERATING TEMPERATURE	80°C / 176°F
RECOMMENDED MESH STRAINER SIZE	40 MESH



Analogue Mechanical Register

Port Size To order flowmeter you must replace ‘X’ with the relevant number. This number will determine the following specifications:

Port Size:	Calibrated and Display In:
1 = 3" BSP (F) Ports	Litres
2 = 3" NPT (F) Ports	US Gallons
3 = 3" ANSI 150lb Flange	Litres
4 = 3" ANSI 150lb Flange	US Gallons
5 = 80mm DIN 16 Flange	Litres
13 = 80mm JIS 10K Flange	Litres

PPS = Polyphenylene Sulfide Resins



M80 - 3" METERS WITH MECHANICAL DISPLAY

Options & Accessories

	VITON O-RING	TEFLON O-RING	EPDM O-RING	HIGH TEMP ROTORS	HIGH VISCOSITY ROTORS	HALL EFFECT SENSOR	REED SWITCH	SOLVENT KIT	HASTALLOY C SHAFTS	ANALOGUE REGISTER	PULSER KIT P500	REMOTE MOUNTED LC DISPLAY	P500 PULSER	4-20mA MODULE
M80 - 3" MECHANICAL DISPLAY														
M80AMA-X	O	O	O	X	X	X	X	O	X	S	A	X	A	X

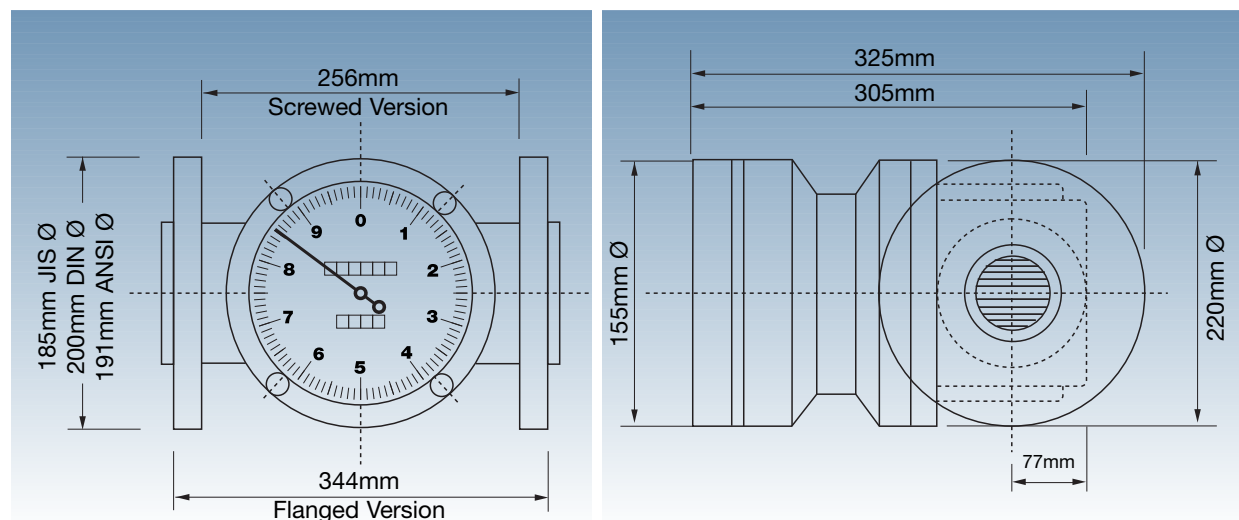
S = Standard

O = Optional

X = Not Available

A = Accessory

Dimensions



Analogue Mechanical Display

OPTIONS & ACCESSORIES



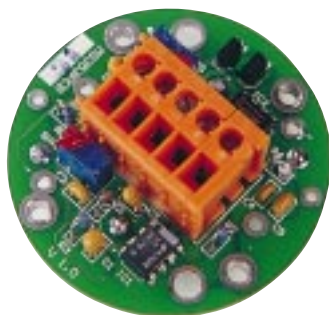
O'Rings



Protective Boot



Rotors



A500

Optional - O'Rings

Various optional O'Rings are available for the M Series range to allow the flowmeters to have maximum flexibility in most applications. For the M1 and M2, both EPDM and Perfluoro Elastomer O'Rings are available. The M4, M7, M10, M40, M50 and M80 are available with Viton, EPDM and Teflon O'Rings.

Optional - High Temperature Rotors

For fluid temperatures above 80°C/176°F and up to 120°C/248°F, select 'high temperature' rotors. This option only applies for PPS rotor models of the M4, M10, M40 and M50 Meters fitted with Stainless Steel rotors are capable of handling temperatures up to 120°C/248°F.

Optional - High Viscosity Rotors

For fluids above 1000cps viscosity, optional high viscosity PPS or stainless steel rotors can be specified for M2, M4, M10, M40 and M50 models. If necessary consult your local distributor for additional technical assistance as the flow rate will vary in accordance with fluid viscosity (See page 35).

Optional - Hall Effect Sensor

The M4, M7, M10, M40, M50 and M80 pulse models can be optionally fitted with two digital output Hall Effect Switches to eliminate oscillation (pulse bounce) that can be experienced with standard reed switches.

The HE Switches are 3-wire solid state open collector devices with 4.5 - 24-volt DC supply voltage ratings. A common power supply must be used.

Optional - Hastalloy C Shafts

Special Hastalloy C Shafts are available for the M1, M2 and M7 PPS body meters for use with extremely aggressive chemicals.

Optional - Solvent Kit

MECHANICAL DISPLAY METERS ONLY

Mechanical versions of the M4, M10, M40, M50 and M80 aluminium models can be fitted with a special seal kit for use with most common solvents. This kit is standard on all stainless steel mechanical models or mechanical models with SS Rotors.

Accessory - Extended Life Battery

DELUXE LC DISPLAY ONLY

The service life of the battery supplied in the deluxe display is approximately one year.

This replacement Lithium 3-volt extended life battery will approximately double the service period but the "intrinsically safe" feature will be lost. Accessory part number is L500.

Silicone Protection Boot

A silicone protection boot is available for when the Deluxe Display is used in an aggressive atmosphere. Accessory part number is B500.

Accessory - Remote Mounted LC Displays

Supplied with mounting brackets, these displays are for remote mounting and connection to M Series pulse meters originally supplied without a display. They can be connected also to the auxiliary pulse output of a local display meter for use as a second remote display. Accessory part numbers are F500 (deluxe version) and G500 (standard version)

Optional A500 4-20mA loop powered module

A500 ANALOGUE BOARD

This is a loop powered 4-20mA pulse to analogue converter and is available as a direct replacement for 50mm and 38mm pulse PCB's or in remote mount configuration.

P500 Pulser Kit Suit Analogue Register

10/100 pulses per unit of measure (Litre or US Gallon). 3 wire device, open collector, 5-12 VDC Power Requirements.



Standard LC Display

The standard LC Display is available on specific M4, M7, M10, M40, M50 and M80 series models. It is also available as an accessory so it can be used as a remote mounted display for any M Series meter model supplied without a display e.g. M1, M2, M10ARP.

FEATURES

- 7 Digit x17mm/ 0.67" and 11 Digit x8mm/ 0.31" Liquid Crystal Display.

- Display can be rotated in 90° steps.
- Flow rate display in litres or US gallons (according to model selected).
- 2 total displays - resettable and non-resettable, up to 999999999.9 litres or US gallons (according to model selected).
- Fully programmable.
- Long life 3.2 volt (7 year) Lithium battery.
- Approved for hazardous locations EEx ia IIB/IIC T6 (Kema Ex-00.E.1127x)



Standard LC Display

Deluxe LC Display

The Deluxe LC Display is available on specific M4, M7, M10, M40, M50 and M80 series models. It is also available as an accessory so it can be used as a remote mounted display for any M Series meter model supplied without a display e.g. M1, M2, M10ARP.

FEATURES

- 7 Digit x 12.7mm (1/2") Liquid Crystal Display.
- Display can be rotated in 90° steps.
- Selectable flow rate display in litres or US gallons.
- 2 total displays.
- Up to 999999.9 litres or US gallons (resettable).

- Pre-settable batch control function up to 9999 units (99.99, 999.9 or 9999 optional settings).
- 10 preset batch quantity storage capacity.
- 3 digit cycle counter for batch dispensed.
- Single or dual valve actuation output to be used with appropriate trip amplifier.
- Factory set calibration constant (K Factor).
- Additional 9 calibration constants (K Factors) available for "in-the-field" settings.
- Up to 9999999 litres or US gallons (non-resettable).
- Switch output for trip amplifier.
- Long Life 3-volt Lithium battery.
- Approved for hazardous locations (standard battery only) EEx ia IIC T6 (PTB nr. Ex-93.C 4033X).



Deluxe LC Display

Mechanical Display - Digital

The Mechanical Display is available on specific M4, M10, M40 and M50 Series meter models.

FEATURES

- Litre or US gallon display (according to model selected).

- Two Totals;
Non Reset
Litre 9,999,990
USG 999,999
Reset
Litre 9,999
USG 999.9
- Push button reset.
- Display can be rotated in 90° steps.



Mechanical Display

Analogue Mechanical Register

The Analogue Mechanical Register is the latest addition to our range of mechanical meters with sweep hand to indicate fluid quantity.

FEATURES

- 156mm Diameter Face - 10/100 Litre or US Gallon Per Needle Revolution.
- Non Reset Register - 9,999,999.9 minimum resolution 0.1

- Reset Register - 9,999
- Optional Pulse Module - 100/1,000 pulses per revolution (10/100 pulses per unit of measure)
- Allows +/- 0.5% or better (of reading) accuracy.
- Rugged construction with toughened glass facia.
- Suitable for M10, M40, M50 and M80 mechanical models.
- See model numbering system for part number identification



Analogue Mechanical Register

METER DISPLAY SPECIFICATIONS

High Pulse Resolution Meters

The following models are available with a high resolution pulse output. Each pulse unit offers two pulse streams and directional signal

M2 -	2,000 or 10,000 pulses per litre
M4 -	1,000 pulses per litre.
M10, M40, M50, M80	100 or 1,000 pulses per litre.
Power:	5 - 12VDC
Output:	Open Collector



High Pulse Resolution Meter

C500 Display

The C500 display is an addition to the M1 and M2 meter model and is fitted directly to the meter on an integral mounting bracket. The LCD uses a long life battery and gives both Total (reset or non reset) and Flow Rate. *There is no pulse output once this option is fitted.

* The unit can be programed for units/minute or hour

Maximum Temperature 55°C / 131°F.



C500 Display

Plug n Play

The total package for those requiring a batching solution.

- Easy installation, requiring just the fitting into the line and connection to a suitable power source.
- Unit comes complete with Meter, Deluxe Display, FSV100 Amplifier, Solenoid Valve, and Strainer all connected ready to use.
- Aluminium, Bronze or Stainless Steel construction.
- Port connections from 1/2" through to 2"
- Power source in 110VAC or 240VAC

Note: Not for use in Hazardous areas.



Plug n Play

NEW MODELS

M05

This meter joins the range of low flow meters with a anticipated flow range of 0.5 to 50 LPH for liquids above 5cps and 1 to 50 LPH for liquids below

5cps. The meter will be available in aluminium or Stainless Steel construction with Stainless Steel rotors.



M80

The M80 flowmeters constructed in aluminium are designed to be used in the fuel industry for diesel, petrol, kerosene and lubricants to a viscosity of 1000cps. Flow range is 33 to 733cpm for fluids above 5cps and 66 - 616 for

liquids below 5 cps. Available with 3" BSP(F), 3" NPT(F), ANSI 150lb and JIS 10K, DIN 16 Flange Rules (Modular Construction) The unit is available with the analogue mechanical display, pulse only or with any of the LCD units.



M100

The M100 4" Flowmeter is currently under development, details will be provided on release.

CERTIFICATIONS

DIRECTIVE 97/23/EC PRESSURE EQUIPMENT DIRECTIVE

Overview

The PED came into force on the 29th May 2002, the directive relates to how pressure equipment is designed and tested and from there sold into the member states of the European Economic Area (EEA). For simplicity the changes detailed below will be introduced to all local and overseas markets. The changes will become effective 1st of May 2002.

To comply with this directive we needed to ensure that all our flow meters are manufactured in accordance with the directive and where applicable have CE labels attached before sale. The directive classifies pressure equipment into

various categories based on several factors such as nominal size, temperature, rated pressure, internal volume and the type of fluid being transmitted. Pressure equipment is then given a category rating of either SEP (Sound Engineering Practice), Cat1, Cat2 or Cat3. Equipment rated at Cat2 or above requires an external body to have surveillance over all facets of design, production and assessment procedures.

We have de-rated several meter models to reduce the classification category. By reducing the classification we can use our existing in house quality process, along with the Essential Health and Safety Requirements (ESHR) of the directive to self certify our meters.

DIRECTIVE
89/336/EEC 

Both the standard and deluxe displays have CE marking for the above directive.

SAA FLAME PROOF APPROVAL

M10, M40, and M50 Stainless Steel and Aluminium pulse version have SAA flame proof approvals for Exd IIB T6 1P66 Class 1 Zone 1

STANDARDS AUSTRALIA

Flameproof Approval

INTRINSICALLY SAFE APPROVAL

Standard Display EEx ia 11B/11C T4 (KEMA NR.EX-OO.E.1127X)
Deluxe Display EEx ia 11C T6 (PTB NR.EX-93.C4033X)

APPLICATIONS & FLUID VISCOSITIES

APPLICATIONS

Following are examples of the many applications for which the Macnaught M Series flowmeter range can be used

INDUSTRY	USAGE
Aviation	Fuel Management - Water & Chemical Loading/Unloading
Beverages	Alcoholic Spirits - Fruit Juice - Milk
Cement/Ceramic/Glass	Additives - Water
Chemical	Ammonia - Caustic Soda - Methyl Chloride - Butane - Acetones - Keytones
Cleaning Agents	Detergents - Soaps - Polish
Construction	Fuel - Oils
Cosmetics	Perfume - Foundation Creams - Alcohol - Shampoo
Energy	Fuel - Water - LPG - Freon
Food Industry	Sauces - Pastes - Glucose - Chocolate - Yeast - Mayonnaise
Gas & Oil	Mecaptans - LPG - Additives - Oils
Lubrication	Oils - Coolants - Hydraulic Fluids
Marine	Fuel Monitoring - Loading/Unloading

INDUSTRY	EXAMPLES
Metal Manufacturing	Release Agents - Acids - Water - Oils
Oils & Fats	Vegetable Oils - Cooking Oils - Lards - Tallow
Paints / Inks	Automotive Paints - Commercial Paints - Solvents - Printing Inks
Petrochemical	Ethylene Oxide - Propylene - Vinyl Chloride Monomers - Styrene
Petroleum	Heavy Oil - Gasoline - Bitumen - Kerosene - Naphtha
Pharmaceuticals	Alcohol - Water - Syrups - Glycerine - Liquid Sugar
Pulp & Paper	Dyes - Acids - Additives
Semi-conductors	Acids - Solvents - Chemicals
Textiles	Dyes - Bleach - Chemicals
Toiletries	Shampoo - Conditioner - Mouth Wash - Alcohol - Tooth Paste - Gels
Transport	Fuel Monitoring - Tanker Loading/Unloading
Water Treatment	Fluoride - Acid Addition - Chemical Additives

FLUID VISCOSITIES Above 1000cps

To achieve the lowest possible pressure drop, a range of special cut high viscosity optional rotors is available for the M2, M4, M10, M40, & M50 meter models.

The M Series range of oval gear type Positive Displacement meters has a distinct advantage in measuring extremely viscous materials with the pressure drop being the only limiting factor.

With fluids above 1000cps, meter sizing and required flow rate become important decisions.

For example:

- With SAE90 gear oil @ 20°C/68°F with a viscosity of 1000cps, the maximum pressure drop of an M10 at its maximum flow rate (120lpm/32USGM) would be 100kPa/14.5psi/1BAR.

However, the pressure drop with the M40 or M50 meters, at the same flow rate would be:

M40: Max 50kPa/7.2psi/0.5BAR

M50: Max 35kPa/5.0psi/0.35BAR

- To approximately determine the expected maximum flow rate for different high fluid viscosities for each M Series model at a 100kPa/14.5psi/1BAR pressure drop using high viscosity rotors, the following coefficient factors are applied and Macnaught has created the table at the bottom of this page as a guide:

Coefficient Viscosity Factor	M2		M4		M10		M40		M50	
	Litres/Hr	USG/Hr	Litres/Min	USG/Min	Litres/Min	USG/Min	Litres/Hr	USG/Min	Litres/Min	USG/Min
1 <2500cps	500	132.09	30	7.93	120	31.70	250	66.04	350	92.5
0.9 <3000cps	450	118.88	27	7.13	108	28.53	225	59.44	324	86
0.8 <4000cps	400	105.67	24	6.34	96	25.36	200	52.83	280	74
0.7 <5000cps	350	92.46	21	5.55	84	22.19	175	46.23	245	65
0.6 <8000cps	300	79.25	18	4.76	72	19.02	150	39.63	210	56
0.5 <12000cps	250	66.04	15	3.96	60	15.85	125	33.02	175	46
0.4 <25000cps	200	52.83	12	3.17	48	12.68	100	26.42	140	37
0.3 <40000cps	150	39.63	9	2.38	36	9.51	75	19.81	105	28
0.2 <95000cps	100	26.42	6	1.59	24	6.34	50	13.21	70	18.5
0.1 <450000cps	50	13.21	3	0.79	12	3.17	25	6.60	35	9.25
0.05 <1000000cps	25	6.60	1.5	0.40	6	1.59	12.5	3.30	17.5	4.6

CALIBRATION CERTIFICATE

CALIBRATION

885-PPL-0104-1

Flow Meter Calibration Report

Relazione della Metrologia di Calibrazione Rapport Métrologique d'Étalonnage Bericht der Kalibrierungs-Maßnahme
Rapporto Metrologico de Calibração Raporiti de Metrologia de Calibração

Report No.	Relazione No.	Rapport No.	Informe No.	Bericht Nr.	Relatório Nº	22189 - D
Model	Modello	Modèle	Modelo	Modell	Modelo	M402ARP-1V
Serial No.	N. de Serie	Nos. de Série	Nos. de Serie	Series Nr.	Nº de Série	C 22189
Version	Versione	Versión	Versão			Pulse Impulso Impulsion Pulso Impuls
Test Method	Método de Calibração	Méthode de Test	Método de Prova	Testmethode	Método de Prova	
Master Meter Serial No						A155-41529W
Nos. de Série de Compar. Principal	Nos. de Série del Medidor de Etalonamiento Principal					
Série Nr. des Mesureurs/Étalons	Nos. de Série del Medidor Maestro					Nº de Série do Medidor Padrão
Test Media	Calibration Fluid 6 cps meets ISO 4113 requirements					
Métro de Calibração	Calibração Líquido 6 cps conforme aos requisitos ISO 4113					
Méthode de Prova	Fluide d'Étalonnage 6 cps conforme aux exigences ISO 4113					
Métro para la Prova	Fluido de calibración 6 cps reúne los requisitos del ISO 4113					
Testmedium	Kalibrierungsflüssigkeit entspricht den 6 cps ISO 4113 Anforderungen					
Métro de Prova	Fluido de Calibração 6 cps conforme aos requisitos da ISO 4113					
Pulse Version	Version al Impulso	Versión del Pulso	Puls-Version			Pulses / Litre
Versione Generatore al Impulso	Versione de Impulso					
Calibration Results	Résultat Calibração Résultat d'Étalonnage Kalibrierungsergebnisse Resultado de Calibração Resultado da Calibração					LPM
Test No.	1					Calibração Prova Prova
Flow Rate	125.0					Velocidade do Fluxo Pico de Débito Velocidad de Flujo Durchflußmenge Débit de Fluxo
K Factor	14.5					Facteur K Coefficient Factor K B-
Kpa	10					gP (Delta P)
Actual Volume	205.87					Volumen Effektiv Volume Real Faktisch gemessene Menge Tatsächlich
Registered Volume	205.80					Volumen Registered Volume Registered Volumen Registered Angezeigte Menge Volumen Registered
% Accuracy at rating	0.08%					±% Precision ±% Précision ±% Exactitud ±% Genauigkeit ±% de Exactitud
Calibration Fluid °C	21.0°C					Fluide Liquide Fluide d'Étalonnage Fluido de calibración Kalibrierungsflüssigkeit Fluido de Calibração °C
Measurement Uncertainty	Incerteza Mensura Incertitude de Mesure Maßunsicherheit Incertidumbre de la Medición Variável da Medição					0.20%
Calibrated By: D. McLean	Signature: Les Dickinson					
Signature: <i>[Signature]</i>	Date: 2 MAY 2002	Signature: <i>[Signature]</i>			Date: 2 MAY 2002	
The tests, calibrations or measurements covered by this document have been performed by Macquay Industries Pty Ltd - Sydney Australia, in accordance with NATA (Accreditation Pending) requirements which include the requirements of ISO/IEC Guide 25:1998 and are traceable to National Standards of measurement Macquay Industries Pty Ltd, 41-49 Henderson Street, Taree, NSW 2261 Australia						

Each M Series meter is checked for accuracy after being manufactured, the process is to enter the specific "K Factor" for that meter and to verify using a one point calibration at the mid range of flow rate of the meter against an approved master meter.

As an example, the M10 with a K Factor of 36 PPL (136.27 PPUSG)

would be tested at 60 LPM (15.85 USGPM) and approximately 200 litres (53 USG) would be passed through the meter during the test.

Although our standard test is at one point, additional points can be done on request and would incur additional costs.

A certificate as illustrated above is included in the documentation package with the meter.

Master meters have their accuracy checked and proving certificates are issued by the National Standards Commission of Australia, on regular basis.

Weights

MODEL	WEIGHT
MIRSP-XY	240g / 8.5oz
MISSP-XY	600g / 21.2oz
MISSPH-XY	3.3kg / 116.5oz
M2RSP-XY	240g / 8.5oz
M2SSP-XY	600g / 21.2oz
M2SSPH-XY	3.3kg / 116.5oz
M4ARP-X	1kg / 2.2lbs
M4SRP-X	2.5kg / 5.5lbs
M4ARG-X	1.2kg / 2.64lbs
M4SRE-X	2.7kg / 5.95lbs
M7RRP-X(C)	0.9kg / 1.98lbs
M7RRG-X(C)	1.0kg / 2.2lbs
M7RRE-X(C)	1.0kg / 2.2lbs
MIOARP-1	2.1kg/4.62lbs
MIOARP-2	2.1kg/4.62lbs
MIOARP-3	3kg/6.6lbs
MIOARP-4	3kg/6.6lbs
MIOARP-5	3kg/6.6lbs
MIOSRP-1	3.9kg/8.58lbs
MIOSRP-2	3.9kg/8.58lbs
MIOSRP-3	4.9kg/10.78lbs
MIOSRP-4	4.9kg/10.78lbs
MIOSRP-5	4.9kg/10.78lbs
MIOSRP-6	4.9kg/10.78lbs
MIOSRP-7	4.9kg/10.78lbs
MIOSSP-1	4kg/8.8lbs
MIOSSP-2	4kg/8.8lbs
MIOSSP-3	5kg/11lbs
MIOSSP-4	5kg/11lbs
MIOSSP-5	5kg/11lbs
MIOSSP-6	4.2kg/9.24lbs
MIOSSP-7	4.2kg/9.24lbs
MIOBRP-1	4.9kg/10.78lbs
MIOBRP-2	4.9kg/10.78lbs
MIOASP-1	2.2kg/4.85lbs
MIOASP-2	2.2kg/4.85lbs
MIOARG-1	2.1kg/4.63lbs
MIOARG-2	2.1kg/4.63lbs
MIOARG-3	2.3kg/5.07lbs
MIOARG-4	2.3kg/5.07lbs
MIOARG-5	2.3kg/5.07lbs
MIOASG-1	2.2kg/4.65lbs
MIOASG-2	2.2kg/4.65lbs
MIOSRG-1	4.5kg/9.9lbs
MIOSRG-2	4.5kg/9.9lbs
MIOSRG-3	5.3kg/11.66lbs
MIOSRG-4	5.3kg/11.66lbs
MIOSRG-5	5.3kg/11.66lbs
MIOSRG-6	4.5kg/9.9lbs
MIOSRG-7	4.5kg/9.9lbs
MIOSSG-1	4.7kg/10.34lbs
MIOSSG-2	4.7kg/10.34lbs
MIOSSG-3	5.5kg/12.10lbs
MIOSSG-4	5.5kg/12.10lbs
MIOSSG-5	5.5kg/12.10lbs
MIOSSG-6	4.7kg/10.34lbs
MIOSSG-7	4.7kg/10.34lbs
MIOBRG-1	4.9kg/10.78lbs
MIOBRG-2	4.9kg/10.78lbs
MIOARE-1	2.1kg/4.63lbs
MIOARE-2	2.1kg/4.63lbs
MIOARE-3	2.8kg/6.17lbs
MIOARE-4	2.8kg/6.17lbs
MIOARE-5	2.8kg/6.17lbs
MIOASE-1	2.2kg/4.85lbs
MIOASE-2	2.2kg/4.85lbs
MIOSRE-1	4.7kg/10.34lbs
MIOSRE-2	4.7kg/10.34lbs

MODEL	WEIGHT
MIOSRE-3	6.7kg/13.4lbs
MIOSRE-4	6.7kg/13.4lbs
MIOSRE-5	6.7kg/13.4lbs
MIOSRE-6	4.8kg/10.56lbs
MIOSRE-7	4.8kg/10.56lbs
MIOSS-1	4.9kg/10.78lbs
MIOSS-2	4.9kg/10.78lbs
MIOSS-3	6.9kg/15.18lbs
MIOSS-4	6.9kg/15.18lbs
MIOSS-5	6.9kg/15.18lbs
MIOSS-6	5kg/11lbs
MIOSS-7	5kg/11lbs
MIOBRE-1	4.9kg/10.78lbs
MIOBRE-2	4.9kg/10.78lbs
MIOARM-1	1.8kg/3.97lbs
MIOARM-2	1.8kg/3.97lbs
MIOARM-3	2.6kg/5.72lbs
MIOARM-4	2.6kg/5.72lbs
MIOARM-5	2.6kg/5.72lbs
MIOASM-1	2.2kg/4.85lbs
MIOASM-2	2.2kg/4.85lbs
MIOSRM-1	4.2kg/9.24lbs
MIOSRM-2	4.2kg/9.24lbs
MIOSRM-3	6.2kg/13.64lbs
MIOSRM-4	6.2kg/13.64lbs
MIOSRM-5	6.2kg/13.64lbs
MIOSSM-1	4.4kg/9.68lbs
MIOSSM-2	4.4kg/9.68lbs
MIOSSM-3	6.4kg/14.08lbs
MIOSSM-4	6.4kg/14.08lbs
MIOSSM-5	6.4kg/14.08lbs
MIOBRM-1	4.9kg/10.78lbs
MIOBRM-2	4.9kg/10.78lbs
M4OARP-1	4.5kg/9.9lbs
M4OARP-2	4.5kg/9.9lbs
M4OARP-3	4.5kg/9.9lbs
M4OARP-4	4.5kg/9.9lbs
M4OARP-5	4.5kg/9.9lbs
M4OASP-1	4.9kg/10.8lbs
M4OASP-2	4.9kg/10.8lbs
M4OBRP-1	8.7kg/19.2lbs
M4OBRP-2	8.7kg/19.2lbs
M4OSRP-1	8.5kg/18.7lbs
M4OSRP-2	8.5kg/18.7lbs
M4OSRP-3	8.5kg/18.7lbs
M4OSRP-4	8.5kg/18.7lbs
M4OSRP-5	8.5kg/18.7lbs
M4OSSP-1	9.5kg/20.9lbs
M4OSSP-2	9.5kg/20.9lbs
M4OSSP-3	9.5kg/20.9lbs
M4OSSP-4	9.5kg/20.9lbs
M4OSSP-5	9.5kg/20.9lbs
M4OASG-1	4.9kg/10.8lbs
M4OASG-2	4.9kg/10.8lbs
M4OBRG-1	8.7kg/19.2lbs
M4OBRG-2	8.7kg/19.2lbs
M4OSRG-1	8.5kg/18.7lbs
M4OSRG-2	8.5kg/18.7lbs
M4OSRG-3	8.5kg/18.7lbs
M4OSRG-4	8.5kg/18.7lbs
M4OSRG-5	8.5kg/18.7lbs
M4OSSG-1	9.5kg/20.9lbs
M4OSSG-2	9.5kg/20.9lbs
M4OSSG-3	9.5kg/20.9lbs
M4OSSG-4	9.5kg/20.9lbs
M4OSSG-5	9.5kg/20.9lbs
M4OARE-1	4.5kg/9.9lbs
M4OARE-2	4.5kg/9.9lbs

MODEL	WEIGHT
M4OARE-3	4.5kg/9.9lbs
M4OARE-4	4.5kg/9.9lbs
M4OARE-5	4.5kg/9.9lbs
M4OASE-1	4.9kg/10.8lbs
M4OASE-2	4.9kg/10.8lbs
M4OBRE-1	8.7kg/19.2lbs
MXOBRE-2	8.7kg/19.2lbs
M4OSRE-1	8.5kg/18.7lbs
M4OSRE-2	8.5kg/18.7lbs
M4OSRE-3	8.5kg/18.7lbs
M4OSRE-4	8.5kg/18.7lbs
M4OSRE-5	8.5kg/18.7lbs
M4OSS-1	9.5kg/20.9lbs
M4OSS-2	9.5kg/20.9lbs
M4OSS-3	9.5kg/20.9lbs
M4OSS-4	9.5kg/20.9lbs
M4OSS-5	9.5kg/20.9lbs
M4OARM-1	4.5kg/9.9lbs
M4OARM-2	4.5kg/9.9lbs
M4OARM-3	4.5kg/9.9lbs
M4OARM-4	4.5kg/9.9lbs
M4OARM-5	4.5kg/9.9lbs
M4OASM-1	4.9kg/10.8lbs
M4OASM-2	4.9kg/10.8lbs
M4OSRM-1	8.5kg/18.7lbs
M4OSRM-2	8.5kg/18.7lbs
M4OSRM-3	8.5kg/18.7lbs
M4OSRM-4	8.5kg/18.7lbs
M4OSRM-5	8.5kg/18.7lbs
M4OSSM-1	9.5kg/20.9lbs
M4OSSM-2	9.5kg/20.9lbs
M4OSSM-3	9.5kg/20.9lbs
M4OSSM-4	9.5kg/20.9lbs
M4OSSM-5	9.5kg/20.9lbs
M5OARP-3	10kg / 22lbs
M5OARP-4	10kg / 22lbs
M5OARP-5	10kg / 22lbs
M5OSRP-3	23kg / 50.60lbs
M5OSRP-4	23kg / 50.60lbs
M5OSRP-5	23kg / 50.60lbs
M5OARG-3	10kg / 22lbs
M5OARG-4	10kg / 22lbs
M5OARG-5	10kg / 22lbs
M5OSRG-3	23kg / 50.60lbs
M5OSRG-4	23kg / 50.60lbs
M5OSRG-5	23kg / 50.60lbs
M5OARE-3	10kg / 22lbs
M5OARE-4	10kg / 22lbs
M5OARE-5	10kg / 22lbs
M5OSRE-3	23kg / 50.60lbs
M5OSRE-4	23kg / 50.60lbs
M5OSRE-5	23kg / 50.60lbs
M5OARM-3	7.28kg / 16lbs
M5OARM-4	7.28kg / 16lbs
M5OARM-5	7.28kg / 16lbs
M5OSRM-3	18.38kg / 41.50lbs
M5OSRM-4	18.38kg / 41.50lbs
M5OSRM-5	18.38kg / 41.50lbs
M8O AAP-1	13kg / 25.7lbs
M8O AAP-2	13kg / 25.7lbs
M8O AAG-1	13kg / 25.7lbs
M8O AAG-2	13kg / 25.7lbs
M8O AAM-3	16kg / 35.3lbs
M8O AAM-4	16kg / 35.3lbs
M8O AAM-13	16kg / 35.3lbs

Allow 1.6kg for M50 version fitted with stainless steel rotors



Macnaught After Sales Support

Macnaught M Series Flowmeters are designed to be durable and completely serviceable on site.

All meters have a 12 month warranty period from their date of purchase.

Each meter is supplied with a detailed instruction sheet covering installation and operating procedures. An exploded parts diagram is also provided for easy identification of spare parts available.

We also guarantee to support our customers with on-going technical assistance to help with flowmeter selection or any servicing problems that may arise.





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Issued June 2002