

Spectrum 130D

The Spectrum Single-Jet Meter is the widest range, single measuring element meter available to U.S. utilities. They have been designed to replace limited range displacement meters. The Spectrum meters can accurately measure 8 to 10 times lower flow rates than modern displacement meters of comparable size. The combination of design simplicity, superior grade materials, high quality manufacturing standards and now a top-loading design allows for years of virtually new meter performance with simple maintenance.

Spectrum features include:

- High accuracy down to $\frac{1}{4}$ gpm
- Wide range – 1000:1 turndown
- Superior low flow registration
- No maintenance
- Excellent performance in adverse conditions
- Unaffected by sand or small debris in line
- No straight pipe requirements upstream or downstream of meter
- No strainer requirement
- 5-year flange-to-flange warranty
- 5-year register warranty
- Compatible with OER absolute encoder and innov8 electronic registers
- Universal AMR compatibility

Physical Specifications

Model – D

Body – Low lead Brass: ASTM C875

Impeller – Polypropylene

Register – OER or innov8

Impeller Bearings – Nylon with Carbon-Fiber

Impeller Shaft – AISI 303 with Tungsten Carbide tip

Dimensions – See Table 2

Weight – See Table 2



Functional Specifications

Fluids measured – Potable cold and reclaim water

Flow Range – See Table 1

Accuracy – $\pm 1.5\%$ See Table 1

Pressure Loss – See Table 1

Repeatability – 0.5 % of flowrate

Maximum Operating Pressure – 230 PSI (15.9 bar)

Maximum Operating Temperature –

140° F (60°C)

194° F (90° C) optional

End Connections – See Table 2

Registration – See Figure 5.

100,000,000 Gallons

0.02 Gallon dial resolution

10,000,000 Cubic Feet

.002 Cubic Ft. dial resolution

100,000 Cubic Meters

.0002 Cubic Meter dial resolution

Warranty – 5 Yr. – Materials & Workmanship

5 Yr. – OER Register

Standards

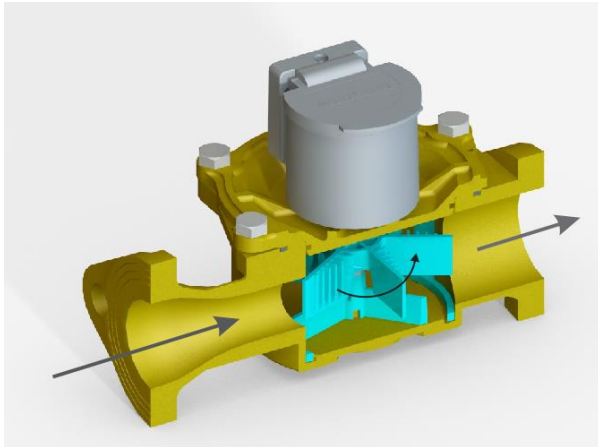
AWWA C712-15

NSF-61/372



Operation

Incoming water rotates a suspended impeller that is magnetically linked to the register. A low friction tungsten carbide bearing supports the impeller at low flow rates while a carbon-fiber reinforced Nylon thrust bearing provides the support at high flow rates. This patented “dual bearing” design provides unparalleled accuracy and durability at both high and low flows.



The D models are top-loading, chamber designs which allow for field maintenance and repairs.

All D models have integral flanges and offer multiple brass spool/adaptor options for standard AWWA lay lengths.

AMR/AMI Interfaces

All Metron Model-D water meters utilize the OER or innov8 register and thus can be utilized within virtually any AMR/AMI system. Both the OER and innov8 employ defacto communications standards for 2-wire (touchpad) and 3-wire (radio) interfaces which can be configured for typical utility billing systems. SCADA options such as scaleable pulse and 4-20mA are also available.

Reference the OER and innov8 technical specifications and AMR application notes for more information.

Registers

All Metron Model D water meters utilize the OER (optically-encoded register) or innov8 electronic register. Both models are field replaceable with configurable outputs.

The OER utilizes a light transmitter and light-pipe to detect the various



positions of the encoder wheels. This non-mechanical sensing technology offers many advantages, including extremely low drag on the measuring element and minimal chance of

mechanical wear/failure. The HFO (High Frequency Output) is an attachment device for a high frequency pulse for SCADA and datalogging applications

Reference the OER technical specifications for more information.

The innov8 is a fully electronic register which utilizes a highly sensitive magnetic field sensor to measure the magnet within the measuring element of the Spectrum meter. This sensing method exerts virtually no drag on the measuring element. The innov8 offers high resolution datalogging which detects down to individual magnet rotations.



The innov8 has an 8-digit display, flow-rate display and configurable AMR outputs. The innov8 also offers multiple SCADA outputs and an embedded T2 900 MHz radio for datalogging

and AMR.

Reference the innov8 technical specifications for more information.

Tamper-Proof Features

A factory installed tamper detection seal prevents unauthorized access to the meter. Tamper proof chamber bolts can be provided upon request.

The OER register is fixed to the meter body with an ABS plastic snap ring. This snap ring must be removed with a special tool. Unauthorized removal will break the snap ring and indicate tampering. The innov8 register is fixed to the meter body with an ABS plastic housing which utilizes a tamper-proof screw attachment.

Installation

The Spectrum 130D comes in a lay length shorter than the standard AWWA lengths. Brass spools and adapters are available to accommodate common flanged and threaded lay lengths.

To maintain accuracy, the meter is to be installed horizontally ($\pm 10^\circ$) in the direction of water flow, with the register face up. In most applications, no straight pipe length, upstream or downstream is necessary. Under normal usage conditions the Spectrum is not affected by sand or suspended particles and does not require a strainer.

Detailed reference sheets for meter installation can be provided by Metron-Farnier upon request.

Accuracy Testing

For optimal performance during meter accuracy tests observe the following:

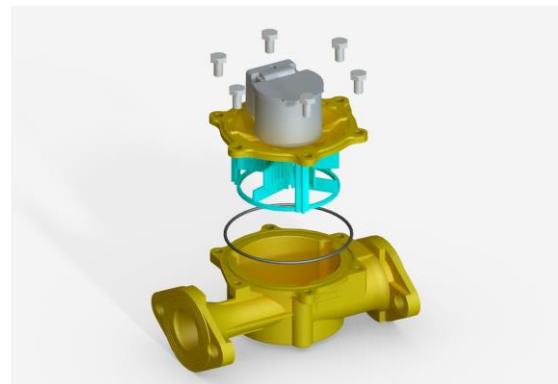
1. Register is level to the horizontal
2. Upstream pipe should be the same diameter or larger than meter connection
3. Upstream valve should be fully opened during test, use downstream valve to regulate flow rates
4. Inspected for leaks between the Spectrum and downstream volumetric tank or reference meter
5. Time low flow test to confirm accuracy of flowrate indicator

Refer to AWWA M6 manual for more information on bench and field testing.

Maintenance

The measuring chamber of the Spectrum meter can be removed without requiring the meter being removed from service.

Once the meter is isolated with no water pressure, the six bolts can be removed to allow the chamber to be lifted from the primary meter body.



Consult Metron for procedures on cleaning and replacement parts.

Flow Specifications– Table 1

| Spectrum S130D | | | | | | | | |
|----------------|------|-----------------------------------|--|-------|--------------------------------------|------------------------------------|-----------------------------|---------------------------------|
| Model | Size | Minimum Test Flow (95%-101.5%) | Normal Operating Range (98.5%-101.5%) | | Maximum Continuous Duty ² | Max Intermittent Flow ² | Peak Test Flow ⁴ | Head Loss @ Max Continuous Flow |
| | | | gpm | gpm | | | | |
| | | | m3/hr | m3/hr | | | | |
| AWWA C712 | 2" | 0.5 | 2 | 160 | 80 | 160 | | 15 |
| | 50 | 0.11 | 0.45 | 36 | 18 | 36 | | 103 |
| Spectrum 130 | 2" | 0.25 | 0.75 | 165 | 130 | 165 | 185 | 7.25 |
| | 50 | 0.057 | 0.17 | 37.5 | 29.5 | 37.5 | 42 | 50 |

All flow specifications assume typical, consistent system pressure conditions. Adverse pressure conditions will effect the performance of the meters.

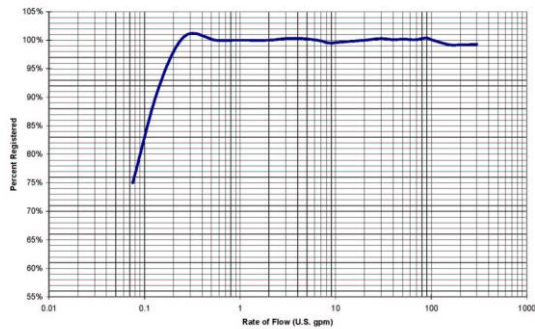
¹ Max Continuous Flow: This is defined as the flow rate which can be maintained 24 hrs/day for 7 days/week

² Max Intermittent Flow: This is defined as the flow rate which can be sustained for approximately 1 hr per day average.

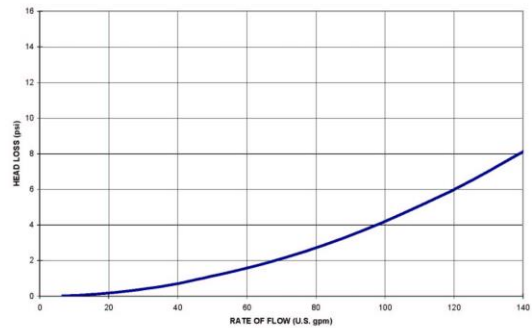
³ Peak Test Flow: This is defined as the absolute maximum test flow rate which can be sustained for very brief periods under controlled conditions.
A downstream pressure of >20 psi should be maintained to prevent cavitation

Spectrum 130 (2")

Accuracy Curves

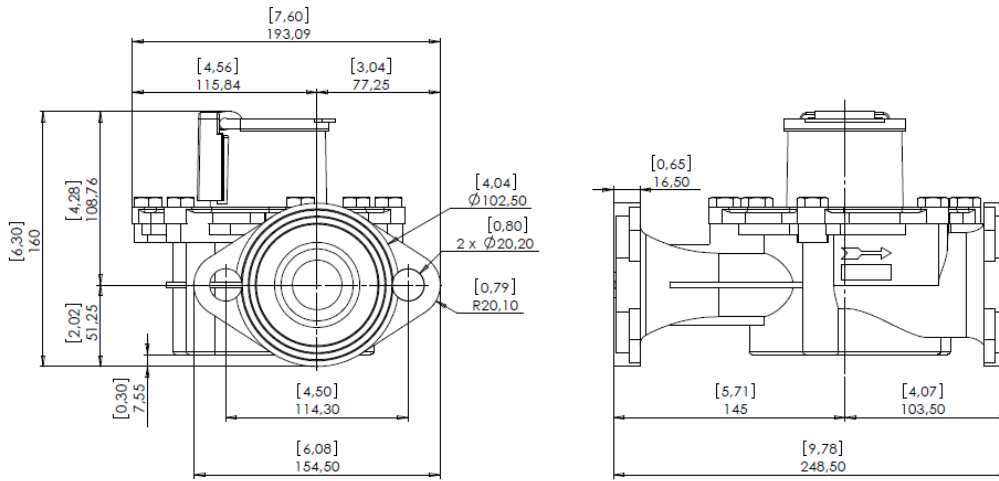


Pressure Loss Curves



Meter Dimensions – Table 2

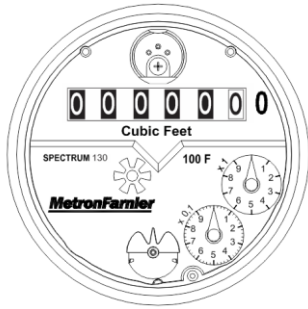
Spectrum 130D - 2"



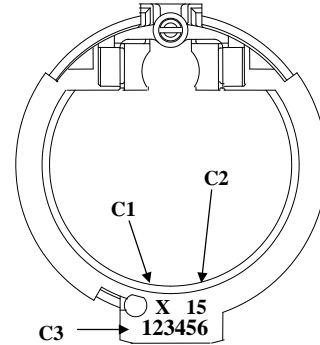
*2" Meters
Optional brass
spool pieces
can provide
15.25" and 17"
lay lengths.*

Register Information

OER - Ft3 Register



| | |
|---------------|-------------------------|
| Resolution: | 0.02 Ft ³ |
| Registration: | 0.1 Ft ³ |
| Capacity: | 10M Ft ³ |
| Sample: | 462,030 Ft ³ |
| Billing: | 4620 100's Ft3 |



- C1: Units (G, F, M)
- C2: Model Identifier
13 – Spectrum 130D
- C3: Register ID

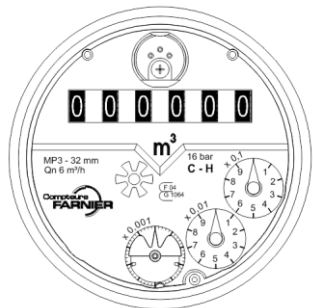
OER - USG Register



| | |
|---------------|-----------------|
| Resolution: | 0.2 G |
| Registration: | 1 G |
| Capacity: | 100M G |
| Sample: | 13,729,300 G |
| Billing: | 13,729 1000's G |

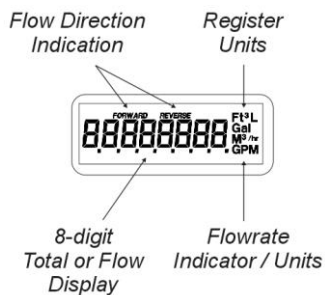
Consult the OER Datasheet for additional information.

OER - USG Register



| | |
|---------------|-----------------|
| Resolution: | 0.2 G |
| Registration: | 1 G |
| Capacity: | 100M G |
| Sample: | 13,729,300 G |
| Billing: | 13,729 1000's G |

Innov8 Register



Consult the innov8 Datasheet for additional information.