

The Spectrum Single-Jet Meter is the widest ranged, single measuring element meter available to U.S. utilities. They have been designed to replace limited range displacement and multi-jet meters. The Spectrum meters can accurately measure much lower flow rates than modern displacement meters of comparable size. The **Spectrum 30 model-D** is a single-element, composite (reinforced plastic) meter which utilizes the **innov8** electronic register. This combination of design simplicity, superior grade materials, and high quality manufacturing standards allows for years of virtually new meter performance with no maintenance.

Spectrum features include:

- High accuracy – exceeding high and low range of AWWA residential standards
- Starting flow below 1/16 gpm
- Single moving element – No maintenance
- Excellent performance in adverse water conditions
- Unaffected by sand or small debris in line
- No straight pipe requirements upstream or downstream of meter
- High resistance to freezing
- Lightweight, compact design for simple installation
- No strainer requirement
- Utilizes the **innov8** electronic register
- 10-year materials and workmanship warranty
- 10-year AWWA New Meter Accuracy Guarantee

Functional Specifications

Fluids measured – Potable cold water

Flow Range – See Table 1

Accuracy – $\pm 1.5\%$ See Figure 1

Repeatability – 0.5 % of flowrate

Pressure Loss – See Figure 2

Maximum Operating Pressure – 230 PSI

Maximum Operating Temperature –
140° F (60°C)

Spectrum 30D



Physical Specifications

Model – MP-5

Body – Nylon Composite (Polyamide 12)

Impeller – Polypropylene

Impeller Shaft – Tungsten Carbide

Impeller Bearing – Nivaflex

Impeller Pivots – Sapphire

End Connections – NPSM Threads

Dimensions – Compliant with AWWA residential standards - See Table 1

Weight – 1.0 lb (0.45kg)

Available Outputs

M2w 900 MHz Radio

3W Standard AMR

2W AMR

2W Standard Touchpad

Scaleable Pulse

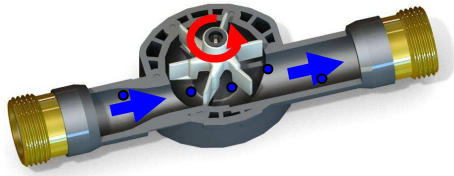
Applicable Standards

AWWA C712 Single-Jet Meters

NSF-61G - Pending

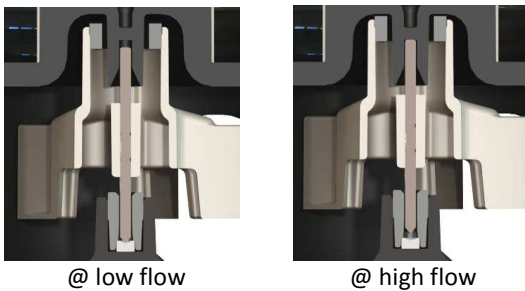
Operation

Incoming water rotates a suspended impeller with an embedded magnet on the top.



The offset impeller allows the meter to pass sand and other particulates through the measuring chamber with no effect.

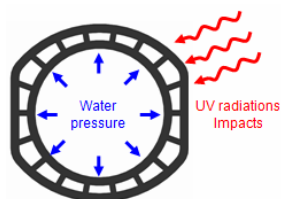
A low friction sapphire pivot bearing supports the floating impeller at low flow rates while a thrust bearing provides the support at high flow rates. This patented “dual bearing” design provides unparalleled accuracy and durability at both high and low flows.



Design & Materials

The body is made of a composite material with additives chosen for high strength, toughness, dimensional stability, and full compliance with no lead standards (NSF 61 / annex G).

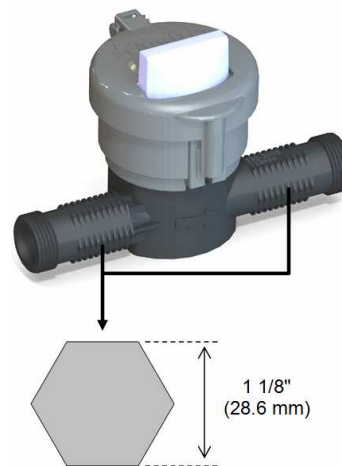
Thanks to a unique double shell design, the meter withstands higher water pressures (over 1000 PSI) than many brass meters, can withstand freezing, and the measuring chamber is protected from impacts, UV radiations and other external disturbances.



Installation

To maintain accuracy, the **Spectrum 30D** meter should 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 30D** is not affected by sand or suspended particles and does not require a strainer.

The **Spectrum 30D** body has a hexagonal shape for a wrench to be used during installation.



Threads

The NPSM threads of the **Spectrum 30D** have been tested in comparison to typical brass meter threads. The reinforced composite material is comparable in tensile strength and has improved hardness over common leaded and unleaded brass alloys.



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:

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

The *innov8* register has a test mode for accuracy tests. This mode automatically sets the LCD display for higher display resolution and isolates the test volumes from the customer total.

Detailed reference sheets for meter testing can be provided by Metron-Farnier upon request. The next revision of the AWWA M6 manual will include testing methods and recommendations for single-jet meters.

Register

The **Spectrum 30D** water meter uses the *innov8* electronic register. The *innov8* register utilizes a magnetic sensor to track the impeller rotation and exerts no drag on the measurement. This ensures optimum meter accuracy.



The *innov8* register is a replaceable register with tamper proof features.

Consult Metron for *innov8* technical and installation information.

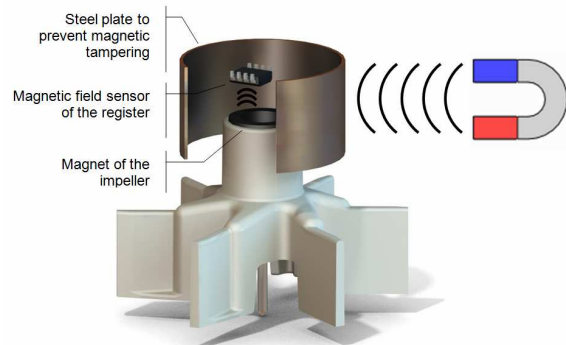
Tamper-Proof Features

The **Spectrum 30D** employs a tamper-resistant and tamper-evident register housing.



The *innov8* register is fixed to the meter body with a plastic housing and a tamper-proof screw. Installers can obtain the special tamperproof bits from their Metron representative. Unauthorized removal will break the snap ring and indicate tampering.

The **Spectrum 30D** has an interference ring to protect the sensor from external magnetic fields.



Available Outputs

The *innov8* electronic register can be utilized within virtually any AMR/AMI system. The *innov8* employs defacto communication standards for 2-wire (touchpad), 3-wire (radio) interfaces and a scaleable pulse. The *innov8* also has options for embedded M2w 900 MHz datalogging radios with either integral or remote antennas.

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

Flow Specifications



Table 1

Model - MP5	Size in mm	Min Test Flow (95%-101.5%) gpm m3/hr	Normal Operating Range (98.5%-101.5%) gpm m3/hr		Safe Maximum Operating Capacity ¹ gpm m3/hr	Max Cont. Duty ² gpm m3/hr	Deluge Flow Rate ³ gpm m3/hr	Head Loss @ SMOC psi m3/hr
			gpm m3/hr	gpm m3/hr				
AWWA C712	5/8 x 3/4	0.25	1.0	20	20	10	-	15
	15x20	0.06	0.20	4.5	4.5	2.3	-	103
Spectrum 30D	5/8 x 3/4	0.06	0.10	30	30	24	40	8.0
	15x20	0.014	0.022	6.8	6.8	5.5	9.1	60
AWWA C712	3/4	0.50	2.0	30	30	15	-	15
	20	0.11	0.50	6.8	6.8	3.4	-	103
Spectrum 30D	3/4	0.06	0.10	30	30	24	40	8.0
	20	0.014	0.022	6.8	6.8	5.5	9.1	60

1 Safe Maximum Operating Capacity (SMOC): As defined by AWWA, this is the flow sustained for 10% (or 2-hr) per 24 hrs
 2 Max Continuous Flow: This is defined as the flow rate which can be maintained 12 hrs/day for 7 days/week
 3 Deluge Flow: This is defined as the flow rate which can be sustained for approximately 1 hr per day average.

Figure 1: Accuracy Curve

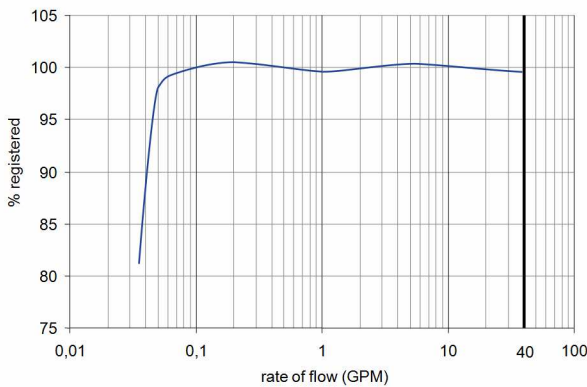
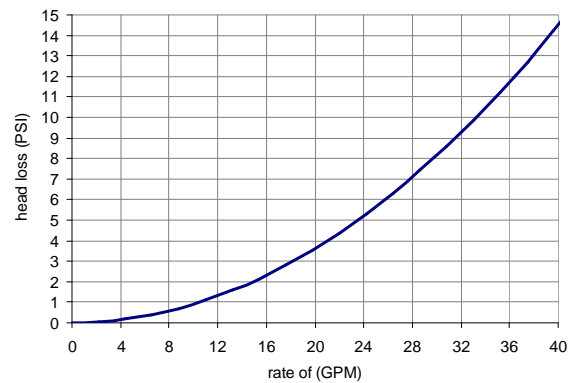


Figure 2: Pressure Loss Curve

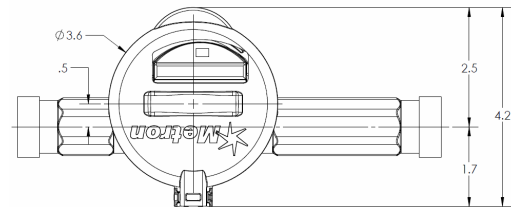
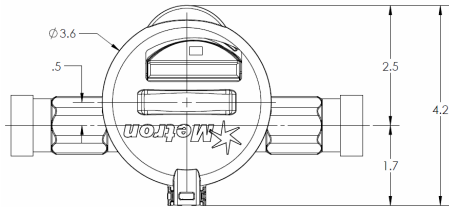


Meter Dimensions

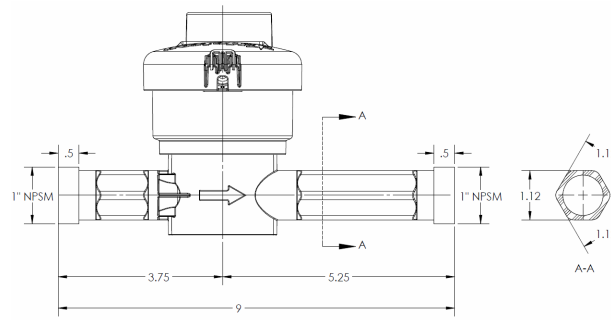
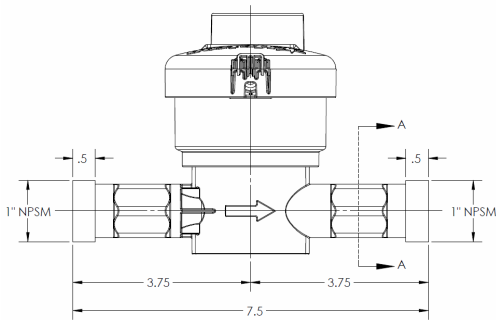
S30D - 5/8" x 3/4"

S30D - 3/4"

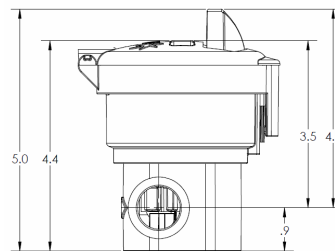
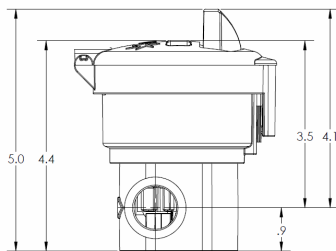
Top View



Side View



Inline View



Contact your Metron representative for complete drawings.

Register Information

Innov8 Default Residential Configuration

Large 8-digit Display with Configurable Decimal Pt.

Forward and Reverse Flow Indication



GPM or m3/hr Flowrate Units

Configurable Measuring Units

USG

Total: 8 Digits - 0.1 G resolution

Flowrate: 0.01 GPM

Ft3

Total: 8 Digits - 0.01 Ft3 resolution

Flowrate: 0.01 GPM

m3

Total: 8 Digits - 0.001 m3 resolution

Flowrate: 0.001 m3/hr

Meter Identification

Each **Spectrum 30D** has a unique serial number laser-etched into the meter body.

Attached **innov8** registers also have an identification number engraved into the top lid.

Consult your Metron representative for more information.

