SPARLING INSTRUMENTS, INC.

PRODUCT DATA SHEET

SERIES 100 METERS AND ACCESSORIES

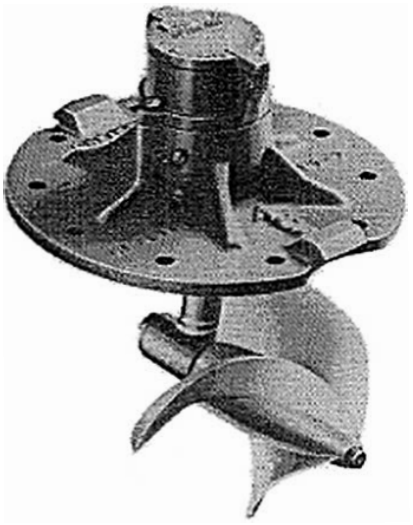
SERIES 102 DIRECT DRIVE METERS
150 and 250 psi Max. Working Pressure
2" through 14" (See PDS-182 for sizes 16"-72")

PDS-102
Issue Date: February 1996
Supersedes: November 1995

The Series 102 Direct Drive Meters are designed to provide accurate and reliable flow measurements where mainline service is required in the municipal and industrial areas. These meters have been used for over 70 years and have proven their reputation for rugged, continuous duty with minimum maintenance.

This meter can be easily maintained or repaired with standard tools. The mechanical worm and gear drive is positive and prevents the possibility of slippage and low readings.

The meter is available as a meterhead only or a meterhead complete with saddle or tube. See PDS-110.



APPLICATIONS

The Series 102 Meter is ideally suited for all water flow applications where the temperature of the water does not exceed 100°F and the suspended solids do not exceed 0.5%. (Consider Sparling's magnetic flowmeters, Models FM621, 625 or 655 for monitoring corrosive or heavy solids-bearing liquids. Consult our applications engineering department.)

ACCURACY

Accuracy of all Series 102 Meters is within ±2% of actual flow for the specified meter range. This accuracy is guaranteed by certified wet calibration at three test points in Sparling's hydraulic laboratory which is traceable to the National Institute of Standards Technology. Each meter is tested at low flow, mid range and high flow. A test certificate is provided with each meter.

FLOW

These meters measure accurately over a wide flow range of 10:1 or greater. The maximum flow ranges can be safely exceeded by 50% when used ***intermittently***. For example – a 2" meter with a maximum standard flow of 80 GPM could be operated at 120 GPM. Registration of flow is shown on a 6-digit direct-reading register which can be furnished in any standard units (i.e. gallons, cubic feet, etc.). Flow rates are provided in the table under specifications for each of the sizes.

TEMPERATURE LIMITS

Liquid working temperature should not exceed 100°F. Propellers may be stored in air temperatures up to 175°F.

INSTALLATION

The meter must be installed in a full flowing suction or discharge line. Avoid valves, fittings or obstructions immediately upstream of the meter. These tend to cause jetting or uneven flow profiles. It is recommended that a minimum of five straight pipe diameters be maintained upstream and one diameter downstream of the meter.

OPTIONS

High Velocity Flows - If the minimum ***actual*** flow rate exceeds two times the minimum ***published*** flow rate in Table 1, high velocity construction is required.

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Specially configured propellers and rubber bearings are used.

For example, if a 2"meter were to operated ***continuously*** at 70 gallons per minute, the meter would require high velocity construction. If that same meter were to operate ***intermittently*** between 30-80 GPM, standard bearings of stainless steel would be used.

Anticipated flow ranges and minimum and normal flow rates expected should ***always*** be specified on application sheets accompanying your order. This information is required for proper evaluation of meter construction.

Transmitters - Electronic transmitters are available for installation on these meters. See PDS-190.

Rate-of-Flow Indicators - When continuous rate of flow indication is required, an optional rate-of-flow indicator and totalizer is available. See PDS-190.

SAMPLE SPECIFICATIONS - FM 102
DIRECT DRIVE PROPELLER METERS
2" – 14"

General

1.0.0 The flow meter shall be designed to operate continously at any flow rate within the rated range.

1.1.1 The meter accuracy shall be ±2% of rate at any flow from the minimum rating to 150% of maximum rating.

1.1.2 The meter shall be wet flow calibrated against a primary standard accurate to ±0.25% or better traceable to the National Institute of Standards and Technology (formerly NBS).

1.1.3 Two certified copies of the calibrations taken at or near minimum flow rating, at mid-range and at the highest flow rate within the range attainable by the test facility shall be furnished to the engineer.

Meterhead

2.0.0 The meterhead shall be mounted on a flanged connection for ease of removal from the pipe for inspection or service.

2.1.0 The meterhead shall consist of a cast iron or steel cover plate, bronze or cast iron gear box, stainless steel, delrin or hard rubber wetted working parts and polyethylene propeller.

2.1.1 The drive mechanism shall consist of stainless steel gears and shafting.

2.1.2 The meterheads which utilize flexible cable drives between the propeller and the readout device shall not be accepted.

2.1.3 The meterhead shall be equipped with a six-digit straight-reading totalizer protected by an all metal register box and cover with locking hasp or with a totalizer/indicator/transmitter specified elsewhere within.

Flanged Tube or Saddle

3.0.1 2" to 3" meterheads will be furnished with cast iron tubes lined with stainless steel at the metering section and AWWA flanges. 4" meterheads will be furnished with fabricated steel tubes.

3.1.0 6" to 14" meterheads shall be furnished with either saddles or flanged tubes with straightening vanes. These shall be protected by the manufacturer's standard protective coating or lined and coated with a seven mil thick coating of polyamide hi-build epoxy.

3.1.3 4" to 14" tubes shall be fabricated of carbon steel with AWWA flanges.

4.0.0 The meters shall be as manufactured by Sparling Instruments Company, Model 102.

HOW TO ORDER

Table 1 - FM 102 Direct Drive Meterhead

Table 2 - Size	Pipe Size	Wt., lbs	Std. Flow Range*	High Range
02	2"	20	30 - 80	60 - 150
03	3"	20	35 - 200	70 - 360
04	4"	20	60 - 400	120 - 600
06	6"	25	100 - 900	200 - 1,600
08	8"	29	120 - 1,200	240 - 2,300
10	10"	34	160 - 1,600	320 - 3,000
12	12"	36	200 - 2,200	400 - 4,000
14	14"	37	260 - 3,000	520 - 5,000

Table 3 - Pressure Rating
1 150 PSI MWP
2 250 PSI MWP

Table 4 - "M" Dimension
1 Standard

Table 5 - Flow Range
1 Standard Range
2 High Range (Rubber Bearings Used)*

Table 6 - Readouts
0 None - Totalizers, Indicators and Transmitters must be listed and priced separately - See PDS-190.

Table 7 - Accessories
0 None

FM102- _ _ _ _ _ _ _

*If the minimum ***actual*** flow rate exceeds two times the minimum published flow rate, high velocity construction is required.

The following information is required:

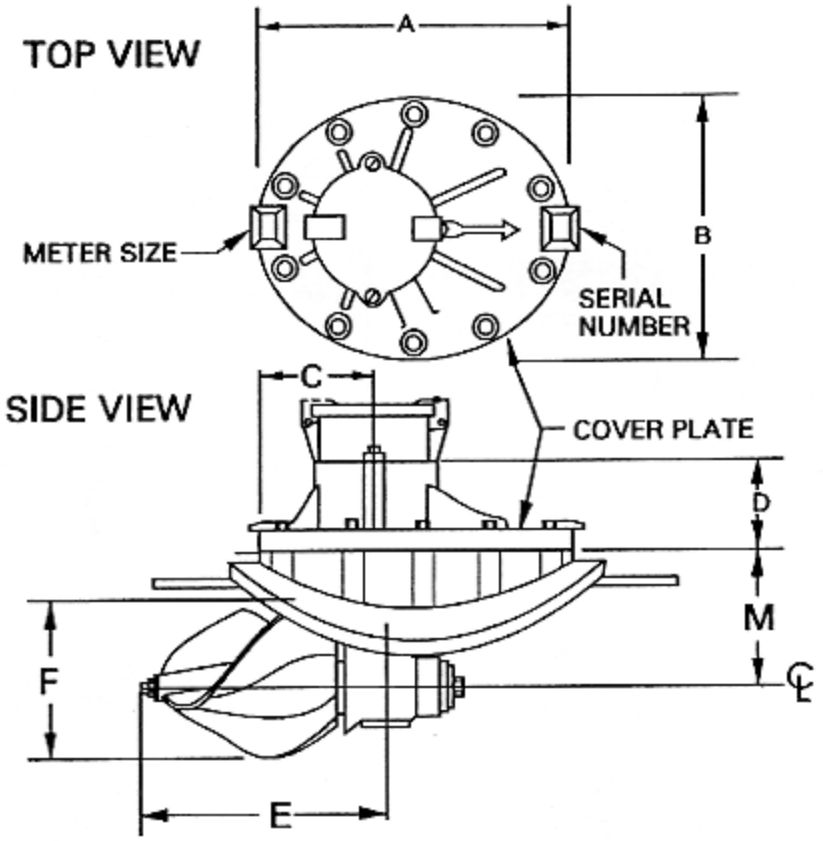
Actual maximum flow
Actual minimum flow
Normal flow
Units of registration
Rate indicator range and units (if applicable)
Pipe I.D. if not Sparling meter tube

Order also:

Readout — See PDS-190
Tube or Saddle — See PDS-110
Register Extension — See PDS-146

MATERIALS OF CONSTRUCTION

Coverplate ..... Cast Iron
Propeller ..... Molded Polyurethane
Gear Box..... Brass
Mechanical Parts..... Stainless Steel – Standard
Bearings..... Rubber – High Velocity Range
Stainless Steel – Standard Range



METER SIZES AND CORRESPONDING FLOWS

	Six-bladed propeller		Three-bladed propeller					
Meter and Pipe Size	2"	3"	4"	6"	8"	10"	12"	14"
Standard Min. Flow--U.S. GPM	30	35	60	100	120	160	200	260
Standard Max. Flow--U.S. GPM	80	200	400	900	1,200	1,600	2,200	3,000
Hi-Velocity Min. Flow--U.S. GPM	60	70	120	200	240	320	400	520
Hi-Velocity Max. Flow--U.S. GPM	150	360	600	1,600	2,300	3,000	4,000	5,000
Approx. Gross Shipping Wt.--Lbs.*	20	20	20	25	29	34	36	37
A	8.13	8.25	9.50	10.38	11.00	11.00	11.00	11.00
B	5.13	6.25	6.75	7.31	10.63	10.63	10.63	10.63
C	3.13	3.18	4.13	3.69	5.81	5.81	5.81	5.81
Min D	SPARLING STANDARD							
E	4.00	4.00	6.94	6.31	6.31	6.31	6.31	6.31
F	2.38	2.75	3.50	4.75	7.00	8.00	10.00	11.00
M	1.75	2.75	3.44	4.25	5.31	6.31	7.31	8.00
Bolt Size	7/16	7/16	3/8	7/16	7/16	7/16	7/16	7/16
Bolt Length	1.00	1.00	1.00	1.00	1.25	1.25	1.25	1.25
Number of Bolts	10	10	8	10	10	10	10	10

*Weight of complete meter less straightening vanes