

**SERIES 100
METERS AND
ACCESSORIES**

SERIES 182 DIRECT DRIVE METERS
250 psi Max. Working Pressure
16", 18", 20", 24", 30", 36", 42", 48", 60", 66", 72"
(See PDS-102 for sizes 2" – 14")

PDS-182-2
Issue Date: April 1994
Supersedes: April 1991

The Series 182 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

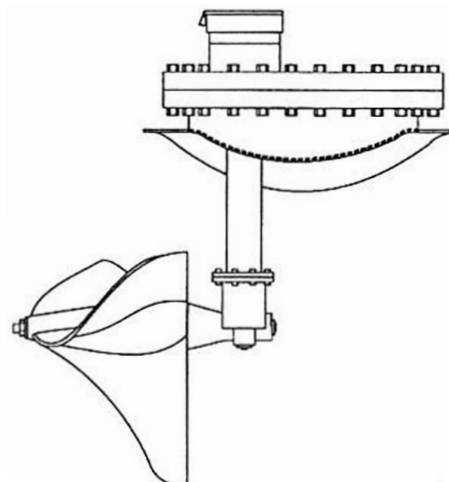
The Series 182 Meter is ideally suited for all water flow applications where the temperature of the water does not exceed 100°F and the suspended solids do not exceed 0.5%. (Consider Sparling's magnetic flowmeters, Model FM621, 625 or 655 for monitoring corrosive or heavy solids-bearing liquids. Consult our applications engineering department.)

ACCURACY

Accuracy of all Series 182 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 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 24" meter with a maximum standard flow of 8000 GPM could be operated at 12,000 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

Fluid 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 downstream of the meter.

OPTIONS

High Velocity Flows - If the minimum actual flow rate exceeds the minimum published flow rate in Table 1, high velocity construction is required. Specially configured propellers and rubber bearings are used.

When continuous flow rates exceed twice the minimum standard flow rate in Table 1, high velocity construction is required.

For example, if a 2" meter were to operate continuously at 70 gallons per minute, the meter would require high

Sparling Instruments, Inc.

4097 N. Temple City Blvd. • El Monte, CA 91731-1089 USA
Phone (626) 444-0571 • Fax (626) 444-2314

velocity construction. If that same meter were to operate intermittently between 3000 and 8000 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.

The meter cover plate has the same drilling as a standard no. 250 ASA flange. This size is indicated by dimension "A".

Rolled steel welding-type saddles are furnished to conform to the O.D. pipe diameter specified by the customer. "M" Drop Pipe can be lengthened for use in

concrete pipe or for special application.

Meters are calibrated to the I.D. pipe diameter specified by customer. Straightening vanes should be installed immediately upstream from the propeller to insure straight flow for accurate metering.

**SAMPLE SPECIFICATIONS - FM 182
DIRECT DRIVE PROPELLER METERS
16" - 72"**

General:

- | | | | |
|-------|---|-------|--|
| 1.0.0 | The flow meter shall be designed to operate continuously at any flow rate within the rated range. | 2.1.1 | The drive mechanism shall consist of stainless steel gears and shafting. |
| 1.1.1 | The meter accuracy shall be $\pm 2\%$ of rate at any flow from the minimum rating to 150% of maximum rating. | 2.1.2 | The meterheads which utilize flexible cable drives between the propeller and the readout device shall not be accepted. |
| 1.1.2 | The meter shall be wet flow calibrated against a primary standard accurate to $\pm 0.25\%$ or better traceable to the National Institute of Standards and Technology (formerly NBS). | 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. |
| 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. | 3.0.1 | The tubes shall be protected by the manufacturer's standard protective coating. |
| 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. | 3.1.0 | 16" to 36" 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 | 42" to 72" meterheads shall be furnished with saddles and straightening vanes |
| | | 4.0.0 | The meters shall be as manufactured by Sparling Instruments Company, Model 182. |

HOW TO ORDER

Table 1 - FM 182 Basic Direct Drive Meter Head

Table 2 - Size	Pipe Size	Flange Size	Std. Flow Range	High Range*
16	16"	16"	350 - 3,800	700 - 6,800
18	18"	16"	450 - 4,500	900 - 8,100
20	20"	16"	550 - 5,500	1,100 - 9,900
24	24"	16"	1,200 - 8,000	2,400 - 15,300
30	30"	16"	1,500 - 12,000	3,000 - 21,600
36	36"	24"	1,500 - 16,000	3,000 - 28,800
42	42"	24"	2,100 - 22,000	4,200 - 40,000
48	48"	30"	2,700 - 28,000	5,400 - 50,000
54	54"	30"	3,400 - 35,000	6,800 - 63,000
60	60"	30"	4,200 - 42,000	8,400 - 76,000
66	66"	30"	5,000 - 50,000	10,000 - 90,000
72	72"	30"	6,000 - 60,000	12,000 - 110,000

Table 3 - Pressure Rating

- 1 150 PSI MWP (see PDS 182-1 for flow ranges)
- 2 250 PSI MWP

Table 4 - "M" Dimension

- 1 Standard
- 6 Special

Table 5 - Flow Range

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

Table 6 - Readouts

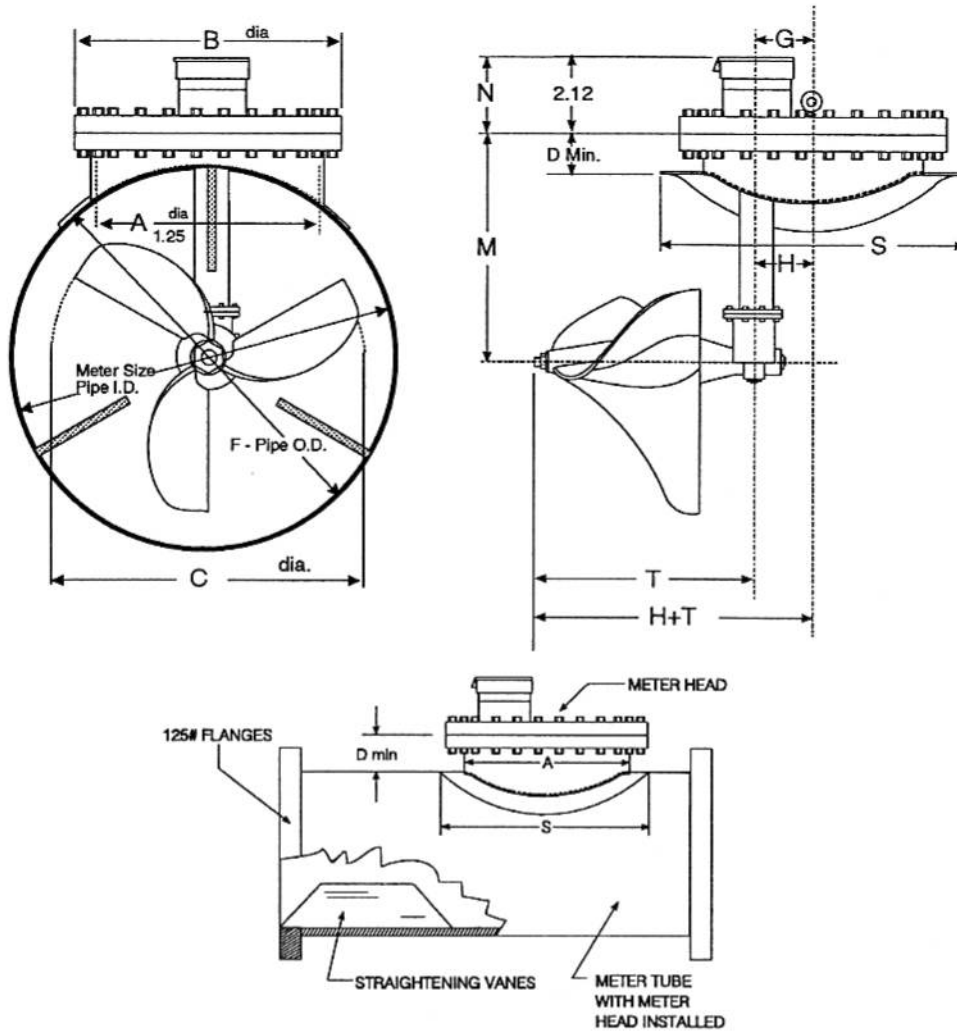
- 0 None - Totalizers, Indicators and Transmitters must be listed and priced separately - See PDS-190.

Table 7 - Accessories

- 0 None
- 1 Register Extension

FM182- _____

*If meter is operated continuously at flows above the mid-point of the standard flow range, rubber bearings are required.



METER SIZES AND CORRESPONDING FLOWS

Meter and Pipe Size	16"	18"	20"	24"	30"	36"	42"	48"	54"	60"	66"	72"
Standard Min. Flow--U.S. GPM	350	450	550	800	1200	1500	2100	2700	3400	4200	5000	6000
Standard Max. Flow--U.S. GPM	3800	4500	5500	8500	12000	16000	22000	28000	35000	42000	50000	60000
Hi-Velocity Min. Flow--U.S. GPM	700	900	1100	2400	3000	3000	4200	5400	6800	8400	10000	12000
Hi-Velocity Max. Flow--U.S. GPM	6800	8100	9900	15300	21600	28800	40000	50000	63000	76000	90000	110000
Approx. Gross Shipping Wt.--Lbs.*	300	300	300	470	470	980	980	1600	1600	1600	1600	1600
A	16.00	16.00	16.00	16.00	16.00	24.00	24.00	30.00	30.00	30.00	30.00	30.00
B	25.50	25.50	25.50	25.50	25.5	36.00	36.00	43.00	43.00	43.00	43.00	43.00
C	14.00	16.00	16.00	16.00	16.00	25.25	25.25	38.38	38.38	38.38	38.38	38.38
Min D	4.50	4.50	4.25	4.50	4.50	6.00	6.00	6.50	6.50	6.50	6.50	6.50
F	16.00	18.00	20.00	24.00	30.00	36.00	42.00	48.00	54.00	60.00	66.00	72.00
G	4.56	4.56	4.56	4.56	4.56	6.81	6.81	9.81	9.81	9.81	9.81	9.81
H	4.25	4.25	4.25	4.25	4.25	6.50	6.50	9.50	9.50	9.50	9.50	9.50
M	12.25	13.50	14.50	16.50	19.50	24.00	27.00	30.50	33.50	36.50	39.50	42.50
N	4.13	4.13	4.13	4.13	4.13	4.63	4.63	5.50	5.50	5.50	5.50	5.50
S	N/A	26.00	26.00	26.00	26.00	36.50	36.50	46.75	46.75	46.75	46.75	46.75
T	12.00	12.00	12.00	12.00	12.00	18.75	18.75	20.00	20.00	20.00	20.00	20.00
Bolt Circle	22.50	22.50	22.50	22.50	22.50	32.00	32.00	39.25	39.25	39.25	39.25	39.25
Size of Bolts	1.25	1.25	1.25	1.25	1.25	1.50	1.50	1.75	1.75	1.75	1.75	1.75
Number of Bolts	20	20	20	20	20	24	24	28	28	28	28	28

*Weight of complete meter less straightening vanes