

**SERIES 100  
METERS AND  
ACCESSORIES****VERTI-FLO METER — DIRECT DRIVE**  
Up-Flow and Down-Flow**IDS-132**  
**Issue Date: July 1994**  
Supersedes: N/A**1. GENERAL**

Your Sparling Verti-Flo Meter has been carefully manufactured, calibrated, and at the time of shipment, has met all factory-test requirements. Careful attention to the details contained in these instructions will insure years of satisfactory service. Instructions for meters which include additional control features will be furnished, as required.

As a user of Sparling equipment, you can always depend upon the services of your nearest Sparling sales representative if you need any assistance.

**2. DESCRIPTION****2.1 FUNCTION**

Verti-Flo meters provide an economical meter installation for accurately measuring flows from wells equipped with turbine or submersible pumps. Equally ideal applications are installations on the suction side of centrifugal pumps. Space requirements for meter installation are reduced to a minimum because the meter is installed in a standard flanged tee which can be close-connected to the pump intake. In all installations, a minimum of five (5) diameters of straight pipe should precede the meter propeller.

**2.2 ACCURACY**

Accuracy is within 2% of the true flow when the meter is used within the specified range. Maximum flow rate can be safely exceeded by as much as 50% for intermittent use.

**2.3 INSTALLATION**

Verti-Flo meterheads are drilled in accordance with standard 150 lb. flanged-tee requirements and are simply bolted into position. The length of the meter drop pipe is manufactured in accordance with the overall dimensions of the tee as stated on the customer order. Three straightening vanes are recommended to insure accuracy. For down-flow installations, the vanes are supplied integral with the meter and no further work is required. For up-flow installations, the vanes are optional and need to be equally spaced radially, and must be parallel with the longitudinal axis of the pipe with the trailing

end approximately 6 inches from the front end of the propeller (for up-flow installations).

For convenience of vane installation, place each vane in its equivalent position on the outside of the pipe and mark the location for bolt holes. Drill the holes and install vanes in the pipe. Place lead washers and then steel washer on bolts on outside of pipe. Tighten nuts securely. All bolts and washers are provided with the vanes.

**2.4 MATERIALS**

Materials used in manufacture are all highly resistant to normal water corrosion and are recommended for waterworks applications. Special materials are utilized for highly corrosive applications. Liquid temperatures should not exceed 100°F. Special packing, propellers and register clocks are supplied for higher operating temperatures.

**2.5 AUXILIARY EQUIPMENT**

Any Sparling instrument or auto-metered control can be operated from Verti-Flo meters. Contact your Sparling sales representative for further details.

**3. INSPECTION**

It is good practice to take the meter out of the line once a year and check the mechanism, the condition of the pipe, and straightening vanes.

**4. WITHDRAWING METERHEAD**


Withdraw the meterhead as follows:

- a. Remove flange bolts and ease head plate off the flanged opening.
- b. Rock the propeller with the fingers. The propeller should have a little freedom of movement due to the designed play in the bearings so that grit will pass.
- c. It is satisfactory if the rotating assembly has a slight looseness (approx. 1/32"). Check to insure that the propeller blades are smooth and clean.
- d. Examine the pipe for any foreign matter that may have accumulated — including the upstream ends of the

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straightening vanes — and remove accumulated matter. Check to insure that the vanes themselves have not been damaged.

e. Return the meterhead to the line.

## 5. DISASSEMBLY

If the meterhead does not pass the specified tests, it should be disassembled, cleaned, and necessary parts replacement performed. The front bearing (21) is the key of the life of the meter. If the bearing is kept in proper condition, the other parts will last almost indefinitely. If the "play" on the front bearing becomes excessive, there may be unnecessary wear on the other working parts.

For further disassembly of the flowmeter, follow these steps:

### REGISTER ASSEMBLY

Remove register box screws (4) [Qty. 2], register housing assembly (1), register clock assembly (2), and the "A" change drive gear assembly (5).

### DROP PIPE

Remove prop nut (22), prop flat washer (23), prop (24), prop key (28), screws (26) [Qty. 3], lock washers (27) [Qty. 3], gear assembly (15), idler gear assembly (16), retaining ring (20). Tap on the bottom end of the vertical shaft (18) with a mallet to remove the shaft. Remove retaining rings (19) [Qty. 3 for up-flow, Qty. 2 for down-flow], upper bearing (21), and lower bearing (21), from drop pipe assembly (25).

### BEARING HOUSING ASSEMBLY (Down-flow meters only)

Remove bearing housing (36) from drop pipe assembly (25). Remove Clevis (34). Tap on the bottom end of the bearing housing shaft (35) to remove the shaft. Remove the jam nut (22) from inside of the bearing housing, retaining rings (19) [Qty. 2], upper bearing (21) and lower bearing (21) from the bearing housing.

## PARTS LIST

WHEN ORDERING PARTS, INCLUDE THE FOLLOWING INFORMATION: SERIAL NO. OF METER,  
METER SIZE, ITEM NO. OF THE PART, PART DESCRIPTION, MENTION IDS-132

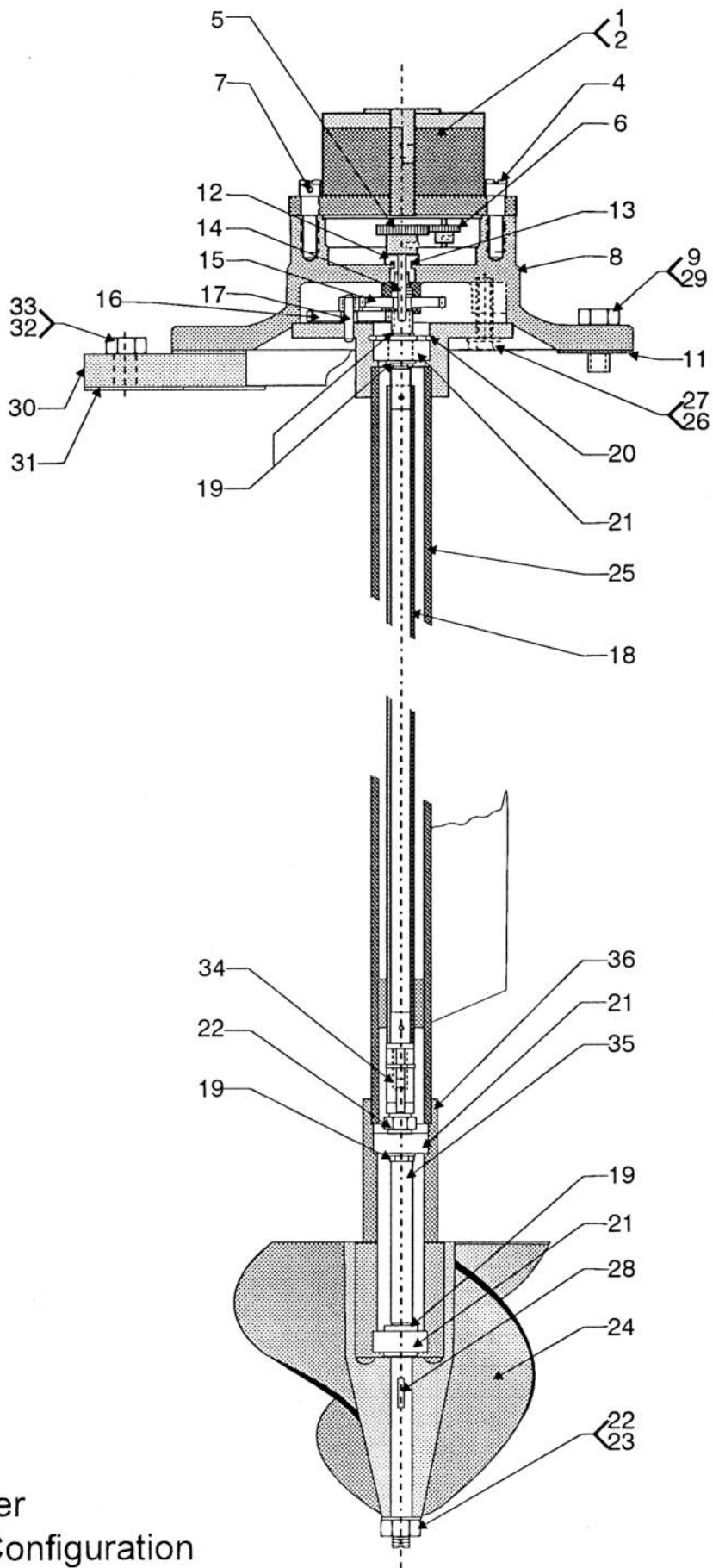
ITEM	DESCRIPTION	COMMENTS
1	HOUSING ASSEMBLY, REGISTER	
2	CLOCK ASSY, REGISTER	
4	SCREW, SPL F1HD 5/16-18X3/4L, 2 REQ'D	
5	GEAR ASSY, DRIVE, A CHANGE	
6	GEAR ASSY, DRIVEN, B CHANGE	
7	SEAL, WIRE & LEAD 1/2-4	
8	COVERPLATE	
9	SCREW, CAP HXHD, 8 REQ'D	
11	GASKET, CP	
12	PACKING GLAND ASSY	
13	O-RING, 7/16X1/16 BUNA-N	
14	SHAFT, GEAR DRIVE	
15	GEAR ASSY, 52T	
16	GEAR ASSY, IDLER 10/52T	
17	SHAFT, IDLER	
18	SHAFT ASSY, VERT	
19	RETAINING RING 3 REQ'D FOR UP-FLOW, 4 REQ'D FOR DOWN-FLOW	
20	RETAINING RING	
21	BEARING, BALL SGL-ROW 2 REQ'D FOR UP-FLOW, 3 REQ'D FOR DOWN-FLOW	
22	NUT, PROP 1 REQ'D FOR UP-FLOW, 2 REQ'D FOR DOWN-FLOW	
23	WASHER, PROP, FLAT	
24	PROP	
25	DROP PIPE ASSY	
26	SCREW, CAP, 3 REQUIRED	
27	WASHER, LOCK SPT, 3 REQUIRED	
28	KEY, PROP	
29†	NUT, HEX, 8 REQUIRED	04, 06
30	ADAPTER, COVER PLATE	(FOR 08 & LARGER ONLY)
31	GASKET	(FOR 08 & LARGER ONLY)
32‡	BOLT	(FOR 08 & LARGER ONLY)
33‡	NUT	(FOR 08 & LARGER ONLY)
34 <sup>f</sup>	CLEVIS	
35 <sup>f</sup>	SHAFT, BEARING HOUSING	
36 <sup>f</sup>	BEARING HOUSING	

† PART NUMBER VARIES WITH SIZE - SEE COMMENTS

‡ SPECIFY QUANTITY REQUIRED.

<sup>f</sup> DOWN-FLOW METERS ONLY





Verti-Flo Meter  
 Down-Flow Configuration

