

Apollo Flow Measurement Ltd
Peltflo Manual
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Installation & Operation of the Peltflo Flowmeter

Note

Read this manual prior to installation

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1 INTRODUCTION

The Peltflo is a mechanical inferential flowmeter with precision sapphire and tungsten carbide bearings. Being a fine precision instrument, it should be handled with care.

Do not attempt to install or dismantle the meter before reading this manual.

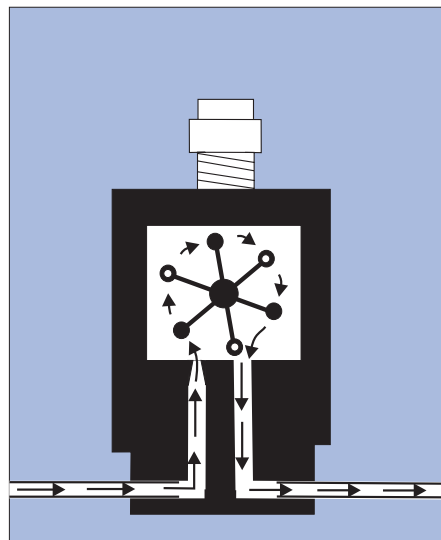


The meter consists of two main parts, the body and the top cap assembly. The two parts are fitted together with four screws as shown in the component identification section and a small 'O' ring clamped between them forms the seal.

The unit is designed so that removal of the top cap also withdraws the small pelton wheel measuring assembly from the body. The rotor, made from PVDF or PFA has small ferrites in the vane tips and tungsten carbide balls in the sides. It is supported by a sapphire cup assembly at each side.

Liquid enters the body, pushes the vanes and turns the rotor at a rate proportional to the flow. A variable reluctance pickoff, mounted in the top cap but isolated from the line fluid, senses the passage of the ferrites in the tips of the rotor vanes. The pulse train generated by the pickoff can be used for control purposes; the frequency being proportional to the flow rate and the pulse total being proportional to the volume passed.

In the by-pass versions not all of the fluid passes through the measuring chamber. An orifice is located in the lower portion of the body and the diameter of this orifice determines the flow range of the instrument. The proportion of liquid entering the measuring chamber is determined by the pressure difference generated across the orifice. Thus the same rotor can be used to measure differing flow ranges merely by the use of different body geometry.



2 INSTALLATION

2.1 Orientation

The direction of the flow is marked on the body. The meter should be installed with the arrow pointing in the direction of the flow. (The meter has been calibrated in this direction but will measure flow in either direction).

THE PELTFLO MUST BE MOUNTED IN A HORIZONTAL LINE.

THE AXIS OF THE METER AND PICKOFF MUST BE HORIZONTAL (thus ensuring the shaft of the rotor is vertical). This gives single point loading on the bearing.

2.2 Installation Requirements

Due to the 90° turn before flow enters the measuring chamber, it is not essential to have straight lengths of ½" pipe upstream and downstream of the meter.

However, where space permits we recommend that a length of 130mm be used on the upstream side and 60mm on the downstream side.

The use of multiple bends close to the meter on the inlet side should be avoided as they generate bulk swirl which affects the accuracy of measurement.

Any proportional or control valves must be positioned on the downstream side of the meter.

If an upstream isolating valve is used, this should be a ball-type valve and must be fully open during flowmetering.

Before installation, the flow lines should be properly flushed through to purge the system of any foreign matter.

Following installation, flow should be gradually increased to purge the line of air. Full flow should only be attained once the meter is filled with liquid.

2.3 Installation Guidelines

DO NOT OVERSPEED THE ROTOR. BEARING FAILURE WILL ULTIMATELY RESULT.

Full bore flow into an empty line following installation must be avoided.

Partially filled lines and two phase flow conditions give considerable errors in flow measurement and may cause damage.

Flow surges and waterhammer effects (due to rapid valve closure) affect both accuracy and the working life of the meter.

Do not locate the meter close to high voltage equipment (e.g. pumps, motors, transformers etc). Random interference can be detected by the pickoff.

Do not run the cable to the preamplifier near to cables carrying power. Spurious signals may be induced in the cable.

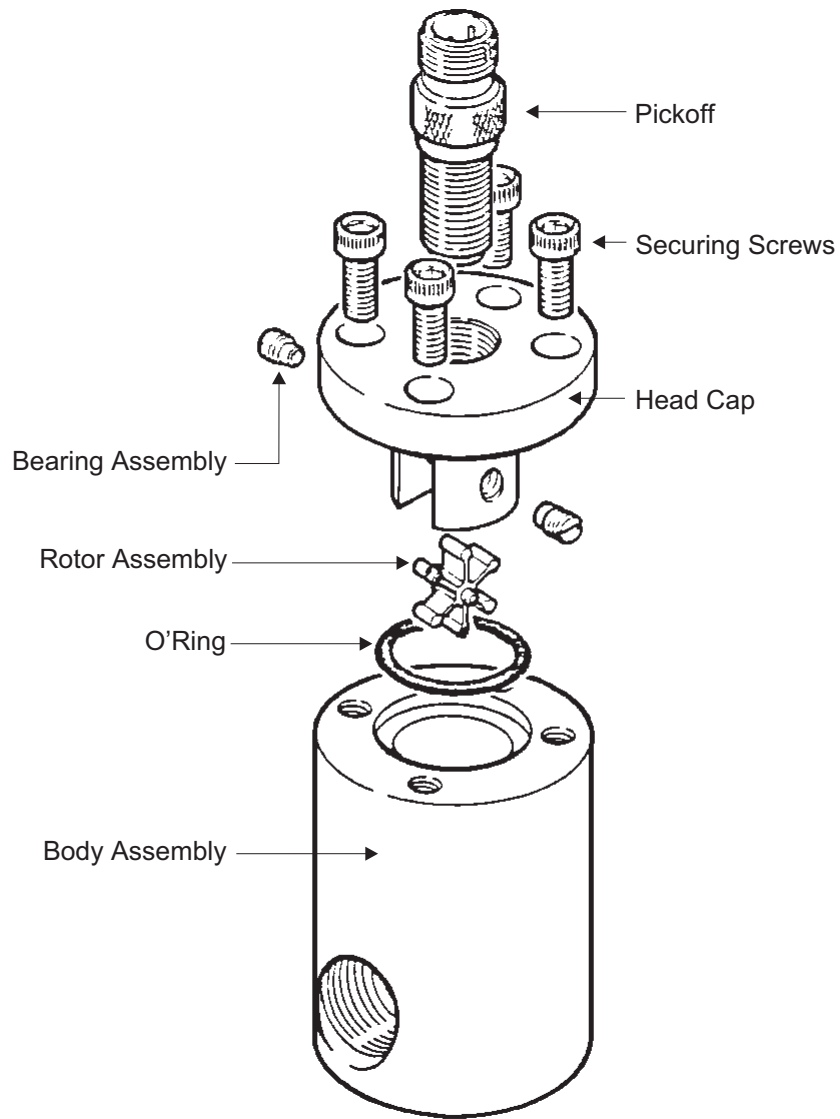
Lines must be drained before dismantling the flowmeter from the pipework. Exercise care when handling a flowmeter which has been measuring hazardous liquids.

3 DISMANTLING AND MAINTENANCE

The rotor assembly should not be removed unless damage has occurred or the bearings require changing. If removal is required the following procedure should be followed.

- a) Close all upstream and downstream valves.
- b) Using an Allen key slowly release the four securing screws to relieve any pressure (take care if aggressive liquids are being metered).
- c) Remove the headcap.
- d) The head cap and rotor assembly is a factory assembled unit available as a spare.
- e) Replace headcap assembly in body ensuring that the 'O' seal is in position.
- f) Tighten securing screws and screw pickoff into the head cap.
- g) Meter ready for service.

4 COMPONENT IDENTIFICATION



5 SPECIFICATIONS

Flow ranges:	No orifice	1-10 litre/min		
	6mm orifice	2.5-25 litre/min		
	9mm orifice	5.5-50 litre/min		
Linearity:	+/- 1% of reading (No orifice)			
	+/- 2% of reading (6mm or 9mm orifice)			
Repeatability:	+/- 0.1% of indicated flow			
Pressure rating:	Operating	Operating pressure		
	Temp	PVC	PVDF	S/S
	-30°C	-	12	69
	-10°C	8	12	69
	20°C	8	12	69
	60°C	3	9	69
	100°C	-	6	69
	110°C	-	5	69
	130°C	-	3	69
Frequency output:	150 Hz (approx at max. flow)			
Weight:	PVC	PVDF	S/S	
	0.6kg	0.7kg	1.3kg	
Temperature range:	PVC	-10 to +60°C		
	PVDF	-30 to +110°C		
	S/S	-30 to 130°C		
	Above 110°C the high temperature pickoff coil is required			
Process connections:	½" BSP female			

6 MATERIALS OF CONSTRUCTION

Head cap:	316 stainless steel
Body:	PVC, PVDF or stainless steel
Seals:	Viton (standard) or PTFE
Bearing:	Sapphire cup in stainless steel housing
Pelton wheel:	PVDF or PFA Tungsten carbide or sapphire balls mounted in the rotor Ferrites embedded in the tips

7 OUTLINE DIMENSIONS

