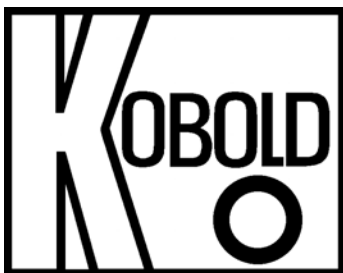


DPT Torsion Paddle Flow Meter / Monitor

User Instructions



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1. General

CAUTION! For safety reasons, please read the cautionary information located at the end of the manual before attempting installation. Additionally, please read these operating instructions before unpacking and placing the unit into operation. Follow the instructions precisely as described.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

Any use of the DPT that exceeds the manufacturers specifications may invalidate the warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

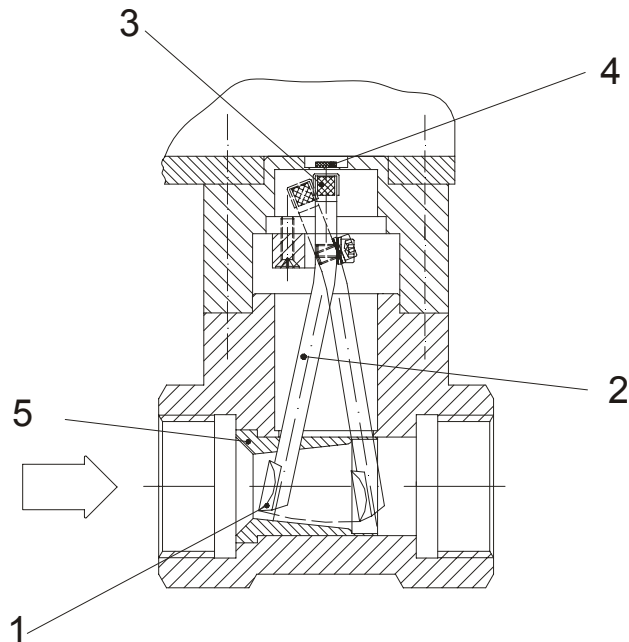
2. Need help with your DPT?

Call one of our friendly engineers at (412) 788-2830.

3. Operating Principle

The patented KOBOLD DPT Torsion Paddle Flow Meter operates according to the diaphragm plate principle. For the first time, a flat torsion spring acts simultaneously as a mount for the paddle and as an elastic force. The device thus operates with almost no wear.

The paddle comprises two items, a diaphragm plate (1) and a lever arm (2).



When the media moves the diaphragm plate, the resulting force deflects the lever arm against the leaf spring. This angular motion is transferred through the housing wall by a magnet (3) to a Hall-effect sensor (4) with no losses. The various measuring ranges and instrument sizes are achieved with the geometry of the lever arm, the diameter and shape of the diaphragm plate as well as the height and thickness of the leaf spring. Additionally, calibration nozzles (5) are permanently press fitted into the meter body. The signal from the Hall-effect sensor is displayed by electronic means and serves to monitor the volume flow.

4. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition. Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for any damages occurring during shipment.

Scope of delivery:

The standard delivery includes:

- Torsion Paddle Flow Meter, model: DPT
- Operating Instructions

5. Mechanical Installation

5.1. Check service conditions:

- Flow Rate
- Maximum Operating Pressure
- Maximum Operating Temperature
- Medium
- Mounting position

5.2. Installation

- Remove all packing materials and transport retainers and ensure that no such materials remain in the device.
- Make sure that the permitted maximum working pressure and temperature limits for the unit are not exceeded.
- The sealing of the connection threads should be accomplished by using Teflon tape or similar material.
- Ensure that the media flow is in the direction of arrow
- During installation of the unit, it must be observed that no excessive torsional or tensile stress is applied to the connection threads. We recommend that the inlet and outlet piping should be mechanically supported with clamps at a distance of about 2 inches from the connection fittings.
- Hold the inlet and outlet fittings securely when tightening any connections. Do not use the electronics as a lever or damage to the device will result.
- Avoid pressure surges, such as those arising from fast start-up or shut-off of flow, or pulsating flow.
- If possible, after the mechanical installation is complete and checked, it should be tested for leaks in the piping and connection threads.

6. Electrical Connection

Attention! Make sure that the supply voltage of your system is within the voltage requirements for the device.

6.1. Compact Electronics: (C30R, C30M, C34P, C34N)

See the operating instructions supplement for Compact Electronics.

6.2. ADI Electronics

See the operating instructions supplement for ADI Electronics.

7. Technical Information

7.1. Sensor data

Measuring accuracy:	3% F.S.
Mounting position:	As Specified
Medial Temperature:	-10 to 176°F
Maximum Pressure:	580 PSIG @ 70°F
Protection type:	NEMA 4X

Wetted Materials:

Housing:	Brass or 316-Ti Stainless Steel
Paddle, Leaf Spring:	316-Ti Stainless Steel
Calibration Nozzle:	316-Ti Stainless Steel

Seals:	Brass Models: Buna-N Stainless Steel Models: Viton
Magnet:	Ceramic

7.2. Electronics

See the operating instructions supplement for the Compact Electronics or ADI Electronics.

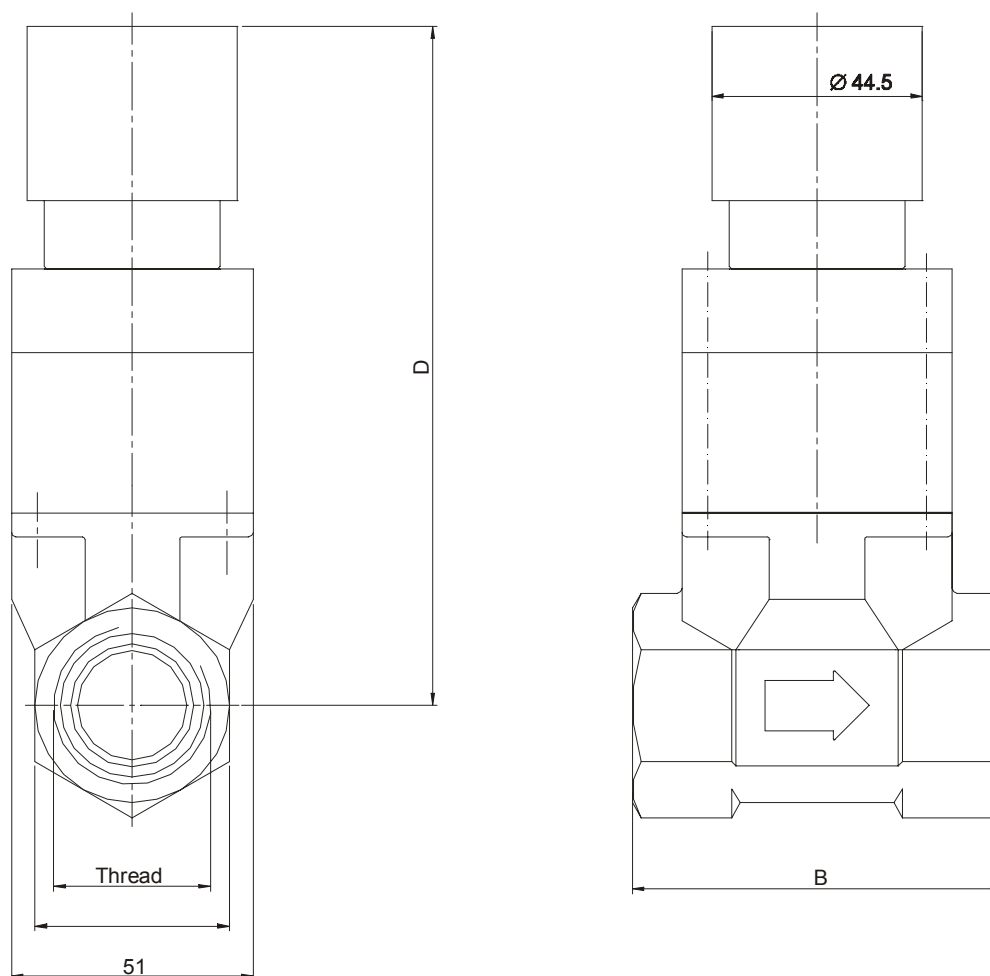
8. Maintenance

The measuring instrument requires no maintenance if the measured media is not contaminated. In order to avoid potential problems, we recommend that a suitable filter is installed, for example, a magnetic filter such as the model MFR.

There are no user serviceable parts contained within the sensor and electronics. Service and calibration must only be carried out by the factory, tampering with the internal electronics and/or calibration settings will void any guarantees.

9. Dimensions

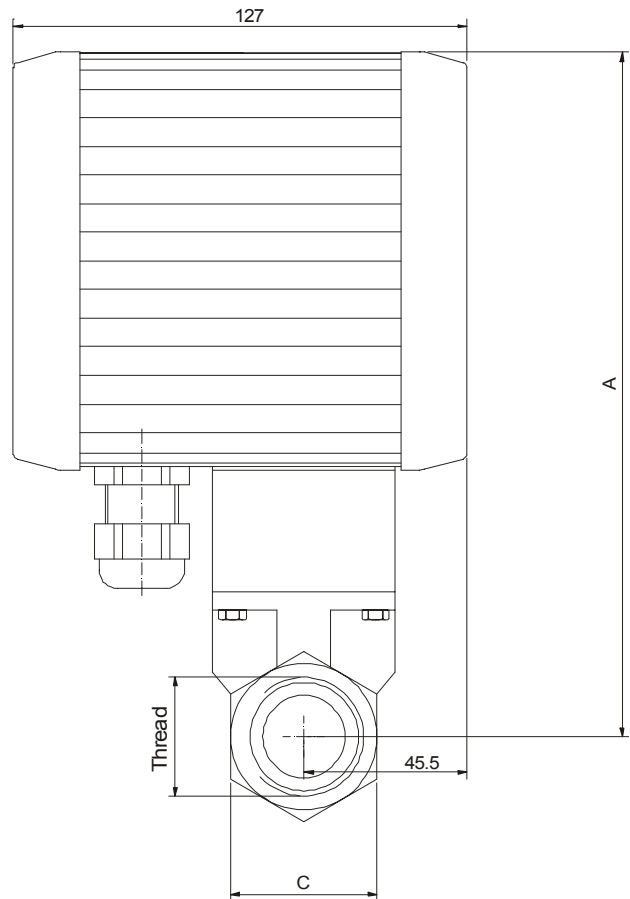
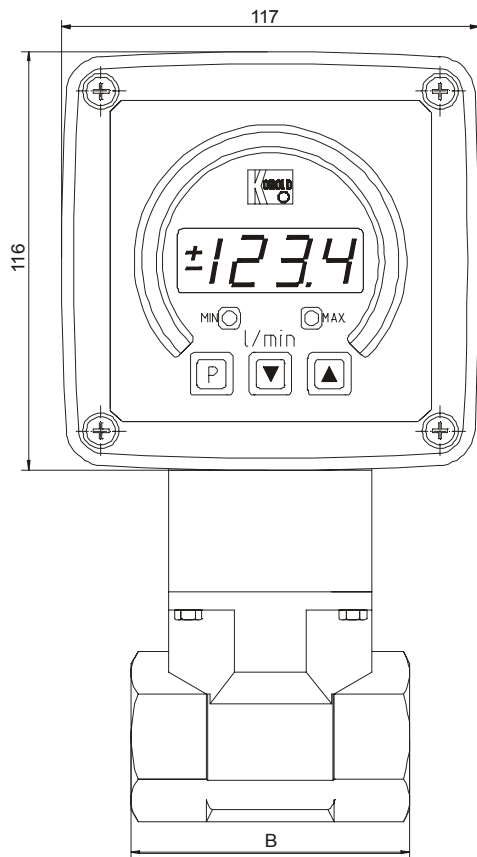
DPT-C with compact electronics



DPT

Fitting Size	A	B	C	D
3/8" NPT	186	78	Wrench size 27	138
1/2" NPT	186	78	Wrench size 27	138
3/4" NPT	187	78	Wrench size 41	139
1" NPT	187	78	Wrench size 41	139
1 1/2" NPT	203	78	Wrench size 55	155
2" NPT	205	81	Wrench size 70	157
3" NPT	222	106	Wrench size 100	174

DPT-K with ADI electronics



10. Cautionary Information

PLEASE READ THE FOLLOWING GENERAL FLOW METER/MONITOR WARNINGS BEFORE ATTEMPTING INSTALLATION OF YOUR NEW DEVICE. FAILURE TO HEED THE FOLLOWING INFORMATION MAY RESULT IN EQUIPMENT FAILURE AND POSSIBLE SUBSEQUENT PERSONAL INJURY.

- Inspect the instrument for damage upon arrival. Cracked, fractured, or otherwise damaged instruments must not be put into use, since the device is weakened to an unknown extent.
- Under NO circumstances must the maximum tolerances of flow, pressure, temperature, or supply voltage be exceeded.
- The maximum tolerances of the device have been determined using water, air, and/or oil. If using other media, especially corrosive media, it is critically important that the user determine chemical compatibility with our instruments. KOBOLD Instruments Inc. cannot accept responsibility for failure and consequences resulting from the use of media other than water, air, mineral oil or nitrogen.
- The sudden cessation of fluid flow causes what is typically called water hammer. Water hammer is a transient force caused by the transfer of momentum of a flowing fluid to the piping system when the flow of fluid is suddenly stopped (i.e. pump trip or valve closure).
- Water hammer can cause fluid pressure surges, which could cause the flow measuring device's pressure limit to be exceeded, resulting in equipment failure and possible personal injury. These pressure surges can be particularly harmful if the flow instrument is empty since there would be no backpressure in the device. To avoid these pressure surges, the fluid lines should remain full and flow should be introduced and isolated from the system slowly.

Freezing of fluid in the instrument must be avoided since the resultant expansion will damage the flowmeter and make it unsafe for use.