


C-Flow FO oil flow meters



Part of  C-Lube product line

In General

C-Flow FO oil flowmeters solution is based on FO-OilFlow™ technology. Circulation lubrication meter's comprises unique self-cleaning feature that ensures the flow tube indicator remains clean. The measuring technique is spring loaded and based on pressure difference. Thanks to spring loading the flow is constant and accurate. Flow levels are adjusted directly according to the flow tube scale removing the need for a conversion scale. In normal operation, floats are always on the same level regardless the flow rate. This makes it easier to monitor flow meters visually, i.e. just a look is enough to check the operation. Optional lower limit alarm ensures that circulation oil reaches all lubrication points.

Benefits

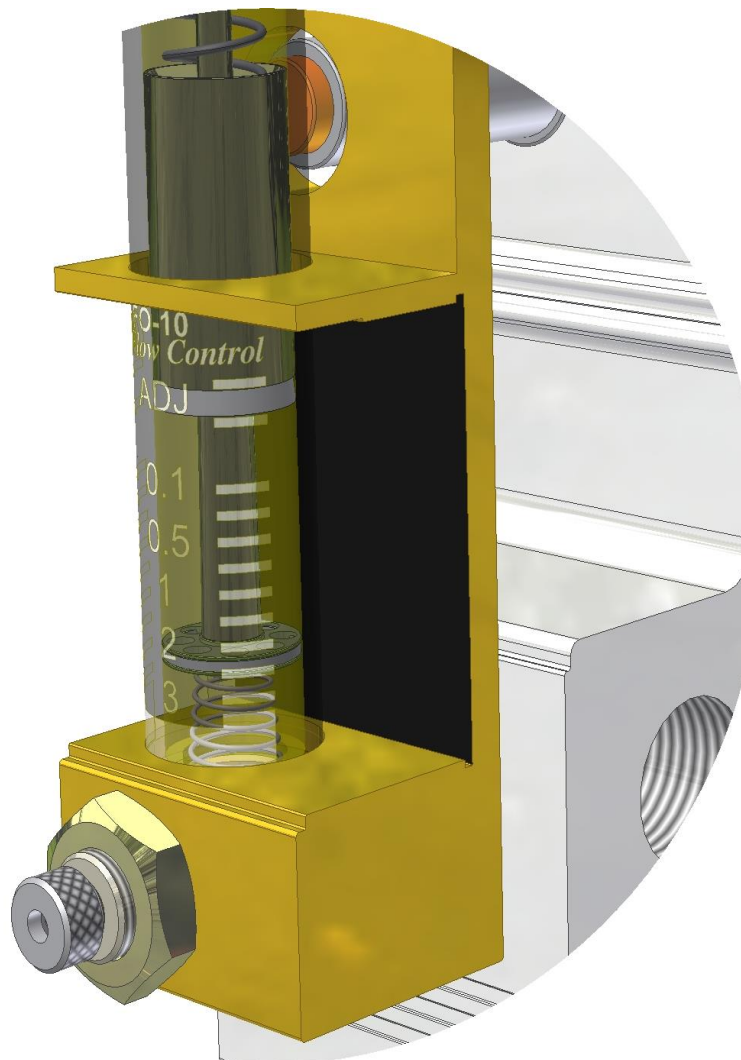
- ✓ Direct flow capacity display l/min or US pints/min with no graduation.
- ✓ 3 different flow ranges in the same module (0.1-16 l/min / 0.2-34 pints/min)
- ✓ Built in modular form (1-12 pcs/base plates).
- ✓ No requirement for a flow curve. Almost non-dependent on viscosity 150-220 cSt / 700-1000 SUS.
- ✓ Floats are always on the same level regardless of different flow rates.
- ✓ Spring loaded to ensure stable operation.
- ✓ Quick and easy to adjust.

Technical information	
Flow rate ranges (220 cSt / 1000 SSU):	Scale in l/min or US pints/min
FO-10	0.1-3 LPM (0.2-6 PPM)
FO-20	2-8 LPM (4-17 PPM)
FO-30	6-16 LPM (12-34 PPM)
FO-30/2	15-30 LPM (32-64 PPM)
FO-40/2	15-40 LPM (42-84 PPM)
(a single meter, dual flow tube)	(ISO VG 220 cSt at 40°C)
FO-50	30-70 LPM (63-148 PPM) (a single meter)
FO-05	(Optional flow range: 0.05-1 LPM (0.1-2 PPM))
Max. pressure:	15 bar / 1,5 MPa / 217 psi
Max. fluid temperature:	85°C / 185°F (110°C / 230°F with PSU)
Max. Ambient temperature with alarm sensor and without alarm sensor	70°C (158°F) 85°C (185°F)
Typical accuracy:	± 5-10% o.F.S.. Requirement for a flow curve if the viscosity of oil is different than 150-220 cSt / 700-1000 SUS
Pressure loss (dP):	FO-10 max. 1.3 bar/19 psi, FO-20 max. 2.2 bar/32 psi FO-30 max 3.4 bar/50 psi. For the other models on request. ISO VG 220 cSt at 40°C.
Base plate and module material:	Aluminium (EN-AW 6063)
Other metal parts:	EN 1.4401/1.4301 (AISI316/304, aluminium and brass.
Flow tube:	Grilamid TR 55 (optional PSU and glass)
O-rings:	FPM (Viton)
Connections:	
- Inlet	G3/4" (ISO 228, BSP) or G1" (NPT)
- Outlet	G3/8" or G1/2" (ISO 228, BSP) (G3/4") (NPT)
Mounting case material:	Aluminium (optional EN 1.4301/AISI 304)

Operating Principle

A spring-loaded float and a flange of the cone act as an indicator of the flow rate. Together, with an in-built fixed cone, they form accurate and stable volume flow into the flow meter. The changes in the cross-sectional areas between the float and the cone form together a pressure difference representing the real flow rate.

The flow value can be read in the flow tube or on the scale in the module. The real flow rate will be adjusted only with the control valve, after the flange of the cone has been adjusted to the target flow with the regulating wheel.



Cleaning of the Flow Tube

Thanks to the unique cleaning action, the flow tubes of the flow meter stay always clean. When the circulation lubrication stops and re-starts: the circulation lubrication meter removes the impurities and cleans the inner surface of the flow tube by means of the teflon ring of the indicator float. If needed, you can perform the same procedure also by opening/closing the ball valve of the groups.

Set of Flow Diagrams Unnecessary

Each module of the FO-OilFlow circulation lubrication meter can be delivered for all the most common circulation lubrication oil types without needing a separate flow diagram for a flow adjustment. For this reason, the adjustment of the flow rate is always performed on the scale in a flow tube. A set of flow diagrams is needed only if the oil temperature and viscosity are very abnormal.

Modular Construction

The modules of the circular oil flow meters are built modularly on a bottom plate. Thanks to this construction, the modules can easily be replaced by new ones or removed and replaced with a cover module, if needed. The modules are available in three different sizes, the flow values ranging from 0.1 to 16 l/min (0.2-34 PPM).

Mounting Case

A flow meter group is installed in its own mounting case, made of aluminium (optional, EN 1.4301), allowing an easy and fast piping to lubrication points. In addition, the mounting case includes a transparent sliding cover protecting the flow meter against external dirt. By means of the mounting case, the flow meter groups can easily be grouped, e.g., for drive groups of a paper machine drying section.



Monitoring System

Each module of a flow meter can be equipped with a low limit alarm (upper limit as an optional extra). The alarm detectors will be connected to a control unit allowing group-specific alarms to the control room. The control unit can be fitted anywhere next to the flow meter groups on separate installation plate.



Alarm Sensors

A reliable inductive switch is used as a low limit alarm detector. An alarm sensor is delivered as a ready to install package which consist of alarm sensor, adapter and spring. A spring-loaded sensor ensures that sensor will touch always the surface of flow tube.

