



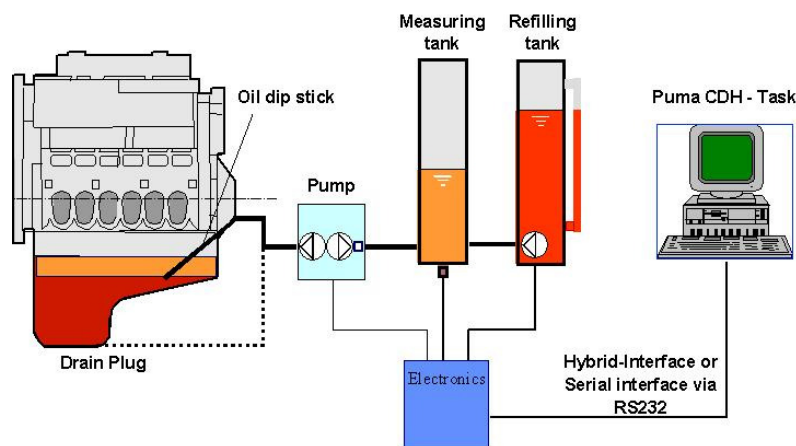
OIL LEVEL MEASUREMENT

AVL OIL CONSUMPTION METER

Main Item Description

The determination of lubricating oil consumption in a modern combustion engine is extremely important, as strict regulations call for reduction of exhaust emissions. The method for measuring oil consumption must be as quick as possible in order to reduce time and cost on the engine test bed.

The AVL Oil Consumption Meter is a compact and mobile measurement system which serves for measuring oil consumption of combustion engines by using a modified oil dip stick or an oil drain plug. The measurement procedure is an automated drain and weigh method with the advantage that, depending on the engine, the measuring can also be done while engine is running.



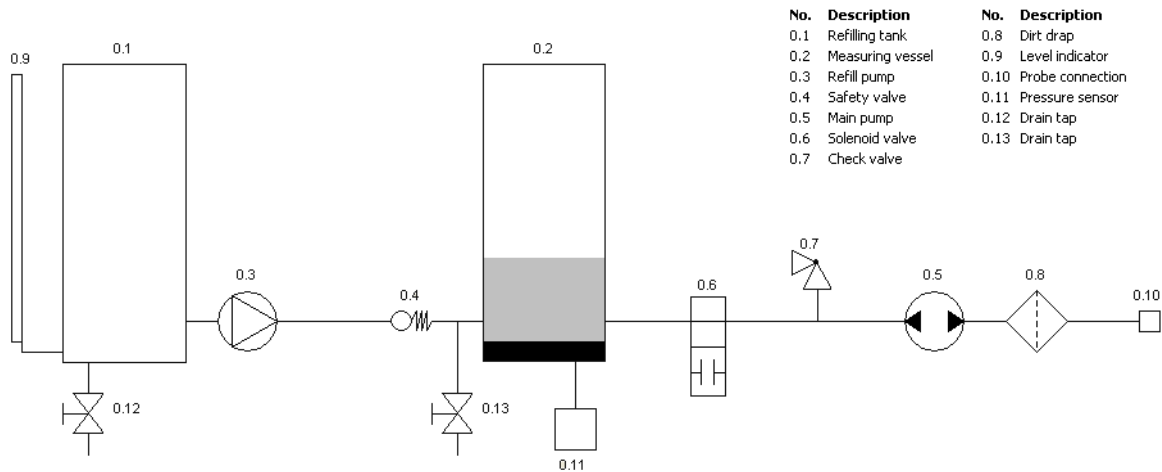
View: Application diagram of the AVL Oil Consumption Meter

Function Summary

The oil is always pumped off either completely or to a defined level through a modified oil dip stick or the oil drain plug. This oil is stored in a special oil tank of the AVL measurement system and the weight is determined through a high precise pressure sensor.

The measuring can also be done while engine is running (depends on the engine) whereby a significant reduction of measurement time compared to the conventional drain and weigh method is achieved. After the measurement has taken place the oil is pumped back into the engine.

The engine oil is pumped off through a dirt trap to prevent soiling. A small amount of residual oil protects the sensor from excessively high temperatures.



View: Block diagram hydraulic setup AVL Oil Consumption Meter

Measurement Sequence:

A measurement cycle consists of pumping off the lubricating oil by a gear pump, weighing it in the measurement vessel and pumping it back into the sump. The oil consumption is determined from the difference between consecutive measurement cycles. If necessary, the oil can be topped up with fresh oil from the refill tank.

The sequence control and communication with the test bed automation system is handled by the control electronics.

The device can either be operated from its user-friendly control panel, from the higher-level automation system or by PC software.



Application

- Engine test beds for development
- Oil testing
- Endurance testing
- Quality testing

Benefits

- Time savings of at least 50 % at each weighing compared with the conventional drain and weigh method
- Minimum downtimes due to easy integration in the automation system
- Minimal parameterization due to PUMA Open CDH integration
- Stand-alone operation possible thanks to integrated operating panel on the device
- Full automation means no handling of oil and clean test bed operations

Technical Insight

| | |
|--------------------------|--|
| Measurement media | Mineral oils, vegetable oils, synthetic oils including Additives (new and used oils) |
| Oil volumes | Measurement volume: 10 l max. Residual volume: 0.5 l Refill volume: 9 l max. |
| Total measuring accuracy | 1 % of the measurement value \pm 5 g * (at an oil surface in the oil pan of 600 cm ²) 1 % of the measurement value \pm 10 g * (at an oil surface in the oil pan of 4000 cm ²) |
| Cycle time | Approx. 5 min. (depends on engine) |
| Interfaces | Digital inputs: Start, Mode, External Digital outputs: Ready, Oil Low, Pump, Filling Analog output: Oil mass RS232 conforming to AK generic communication protocol |
| Oil temperature | 130 °C max. |
| Ambient temperature | 0 ... 40 °C |
| Dimensions | 104 x 60 x 60 cm (h x w x d) |
| Weight: | approx. 60 kg |
| Power supply | 230 V, 50 ... 60 Hz, approx. 0.8 A, optional 110 V, 50 ... 60 Hz |

* a probe diameter of 8 mm and a hose length of 3 m



Scope of Supply

Each consisting of:

- 1 Oil Consumption Meter
- 1 Manual
- 1 RS232 Cable
- 1 Analog Cable
- 1 Digital I/O Cable
- 3 Meter connecting hose with connection coupling
- 1 Calibration certificate

Options/Extensions

- PC – Software