

PDQmeter (*Positive Displacement Flowmeter*)
Continuous Flow Measurement System
Model 410DME-3R (3GPM), 410DME-10R (10GPM)



BENEFITS:

- ✓ PDQ/ACE/ITCAN - Aircraft Component Evaluation Instrument.
- ✓ Precision flow measuring cylinder, custom wound velocity transducer with exceptional accuracy to 0.1%.
- ✓ Reads in cc/min or gpm with remote or operation and flow suppression capabilities.



PDQmeter (Positive Displacement Flowmeter) Continuous Flow Measurement System Model 410DME-3R (3GPM), 410DME-10R (10GPM)

Description

The PDQmeter consists of the hydraulic Flow Measuring Unit (FMU), the suitcase type electronic Readout/Control Unit (RCU), and interconnecting oil-resistant cables.

The FMU is a precision metering cylinder designed for pressure of 3300 psig operation. A special four-way flow-reversing valve ensures continuous monitoring and measurement. The fluid path through the unit limits the pressure drop to a near-zero level, even at maximum rated flow. Within the FMU, flow is converted to electric signals by our special linear velocity transducer. The probe of the transducer is coupled directly to the cylinder piston, the sensing coil to the transducer is exposed only at atmospheric pressure and the cylinder has no moving high pressure seals or parts subjected to significant wear.

Our unique four-way flow-reversing valve is controlled from the RCU; the valve reverses the flow path in the

cylinder as the piston approaches the limit of its stroke in either direction. Operating power for the valve is provided by low pressure shop air (40-60 psig). Valve reversal time is approximately 0.1 second and, except for this momentary interval, the valve remains in a dormant condition. The open-center valve design ensures unrestricted flow during valve reversals.

The velocity transducer signal from the FMU is applied to the RCU and converted to a multi-scaled digital display. The RCU includes solid state logic and switching circuits to: 1) operate the FMU four-way flow-reversing valve; 2) process the flow signal inputs from the FMU.

When the four-way valve operates, the piston reverses, the flow signal is held at its existing level, and the velocity transducer signal polarity reverses. The signal flow is directly proportional to instantaneous volumetric flow sensed within the FMU. This signal is also

available in analog form at a convenient front panel connector. This makes it easy to use external instruments... oscilloscope, strip chart recorder, X-Y recorder, or power amplifiers for servo control... or even an on-line computer. High dynamic fidelity means that the flow signal can be used for transient as well as static measurement and for monitoring or feedback control of time varying flow superimposed upon static flow.

The PDQmeter is used in the procedure to determine serviceability status of aircraft hydraulic systems in support of aircraft maintenance. The PDQmeter determines flow rates of a specific system, subsystem, or component. The hydraulic system under test is interrogated by pressurization and internal leakage is measured. This information is then compared to assigned limits providing the aircraft operators with maintenance planning data.

Specifications

Flow for -3 Series

Calibrated range: 0.01 to 4.5 gpm, 40 to 17,000 cc/min

Flow for -10 Series

Calibrated range: 0.015 to 13.2 gpm, 50 to 50,000 cc/min

Accuracy

1/2% of reading

Hydraulic Pressure

Operating 0 to 3300 psig

Pneumatic Pressure

40 to 60 psig. 0.1 scfm max (air to be dry and filtered)

Temperature

Fluid: 0 to 175° F
Ambient: 0 to 150° F

Fluid Media

Skydrol (-3AR and -10AR)
MIL-H5606 (-3R and -10R)
Others available upon request

Electrical Power

Standard
115V, 50/60/400Hz, 1PH
Optional
220V, 380V & 480V

Flow Signal Suppression

0 to 1/2 rated flow.

Model Designation

410DME readout for gpm or cc/min.
-3R cylinder/3 gpm with remote operation capability
-10R cylinder/10 gpm with remote operation capability

Dimensions and Weight (approx)

Readout (410DME)
16"L x 10"W x 15"H, 18 lbs.
Cylinder (-3)
29"L x 6"W x 14"H, 38 lbs.
Cylinder (-10)
30"L x 8"W x 20"H, 115 lbs.

Interconnecting cable lengths available in increments of 50 feet to a maximum of 200 feet.

