SAUER DANFOSS

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Unit Specification

MCV116A3102
Pressure Control Pilot Valve (PCP)

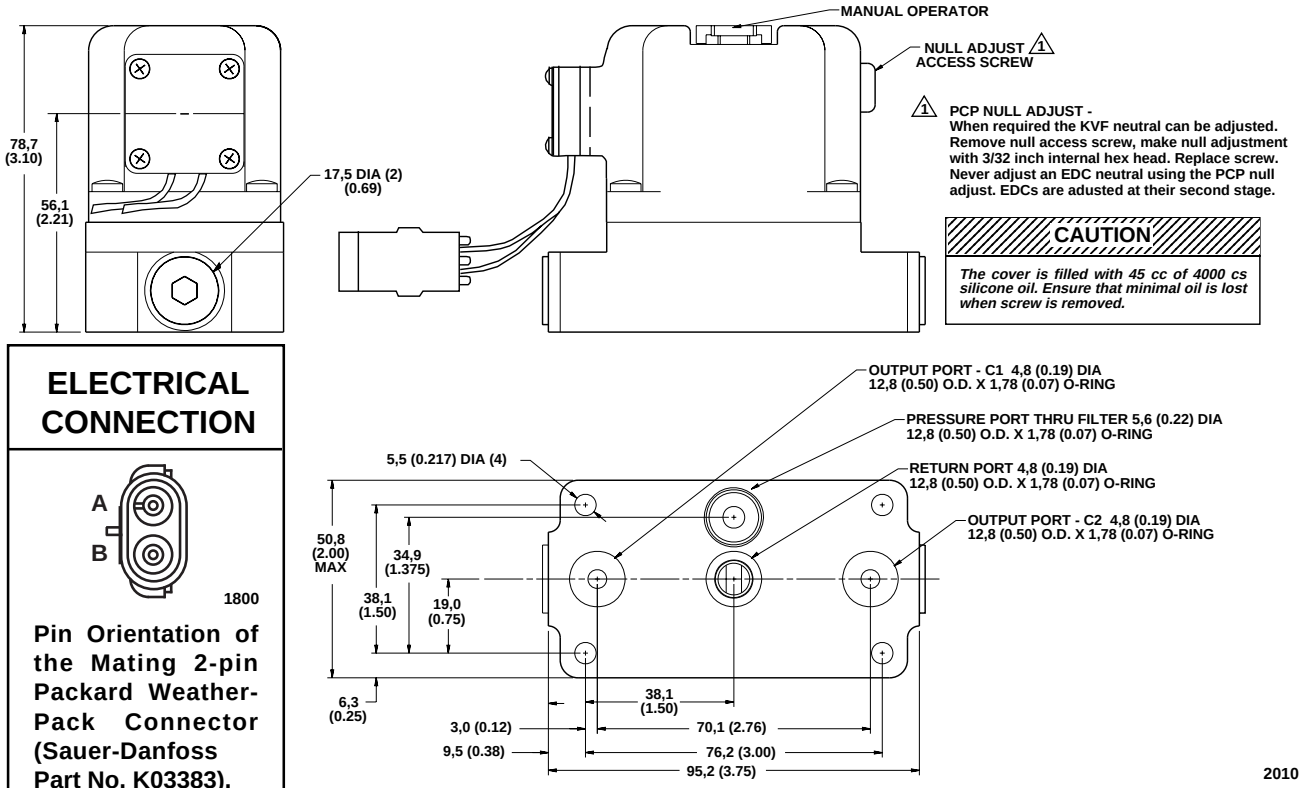
ISSUE: 1 **DATE:** July 1998

GENERAL DESCRIPTION

This device is a torque-motor actuated, double-nozzle flapper valve that produces a differential output pressure proportional to the applied electrical input signal. It is a single-stage, stand-alone, closed loop pressure control valve which uses internal hydraulic pressure reactions to achieve its closed loop control characteristics. Refer to bulletin number BLN-95-9033 for more information.

- The MCV116A3102 is typically used as the pilot for the Sauer-Danfoss Flow Control Servo Valve (KVF).

DIMENSIONS



ELECTRICAL CONNECTION

1800

Pin Orientation of the Mating 2-pin Packard Weather-Pack Connector (Sauer-Danfoss Part No. K03383).

Dimensions of the MCV116A3102 in Millimeters (Inches).

ELECTRICAL CHARACTERISTICS

- Single coil, coil resistance 23 Ω 

- Phasing: positive voltage to pin B produces a pressure rise at output port - C2
- Current/voltage range: up to 170 mA at 4.50 Vdc Maximum 325 mA at 7.5 Vdc
- Pulse Width Modulation (PWM)
  The PCP is designed to be controlled from a dc current source or voltage source. If a PWM signal is used, the signal should, preferably, be greater than 200 Hz. Do not use a pulse current of more than 120% of that required.

HYDRAULIC CHARACTERISTICS

- Scale factor: 1.15 psid / mA
- Supply pressure: 150 - 500 psi, maximum 1000 psi
- Maximum return pressure: 200 psi
- Maximum internal leakage: 0.65 gpm
- Maximum linear differential output pressure: 150 psi at between 250-500 psi supply
- Output flow: see Performance: Load Pressure Droop Slope
- Hydraulic Fluid: Petroleum based, other fluids may be used, provided that they are compatible with viton and fluorosilicone seals. Fluid cleanliness is ISO 4406 code 18/15 or better

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MOUNTING

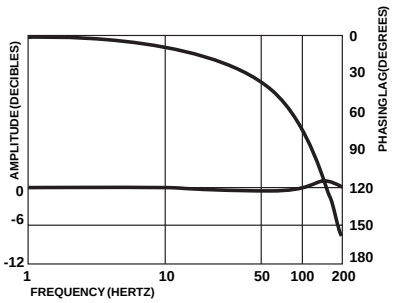
This PCP is typically mounted to a second stage valve, such as the EDC. Before mounting, ensure that the PCP O-rings are in place.

If the PCP is to be used as a single-stage, stand-alone, pressure control valve this will require a manifold. When mounted onto a Sauer-Danfoss manifold, torque bolts to 26-60 N•m (35-45 in • lb). A common single station manifold is Sauer-Danfoss Part Number KK02501. KK style manifolds for PCPs are shipped with PCP to manifold mounting bolts.

PERFORMANCE

FREQUENCY RESPONSE

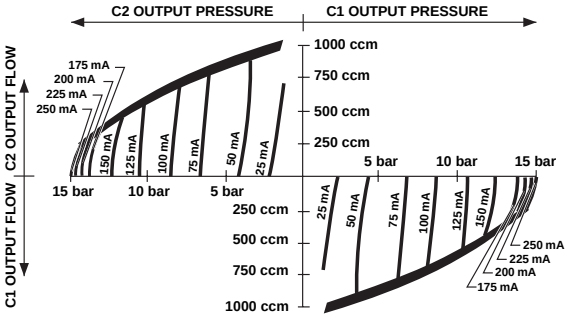
These curves demonstrate the amplitude and phase response of the valve tested over a given frequency range with a supply pressure of 17.23 bar. Frequency response curves are on the bottom of the graph, phase lag on top. The amplitude at low frequency was ±30 mA and the load was a 34.47 bar transducer. Frequency response varies with the applied load. Curves are shown with a current driver.



2011

LOAD PRESSURE DROOP SLOPE

This curve demonstrates the output impedance characteristics of the valve. Output flow vs. output differential pressure are shown at various positive and negative constant input currents. The slopes of these curves indicate the output conductance (load pressure droop slope) or impedance of the valve. Supply pressure is 17.23 bar. Dual coil and low current coil devices have similar load pressure droop slope curves at proportionally different steady current levels.
(1 bar = 14.5 psi) (1 ccm = 0.061 cubic inch)



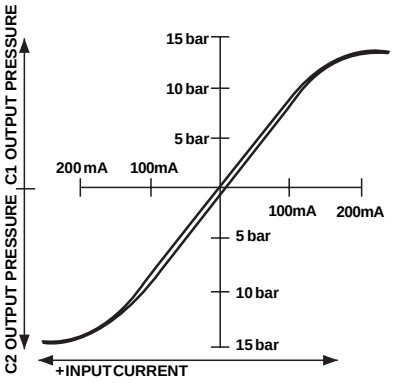
2012

DIFFERENTIAL OUTPUT PRESSURE

This curve demonstrates the typical relationship between input current and output differential pressure. Curve slopes are insensitive to input pressure, temperature and load. Supply pressure is 17.23 bar.

To calculate output differential pressure multiply 1.15 (scale factor) by input current (mA).

The maximum linear output differential pressure is 160 psid. When applying the PCP as a stand alone pressure control using both output ports as a differential will ensure repeatable pressure levels.



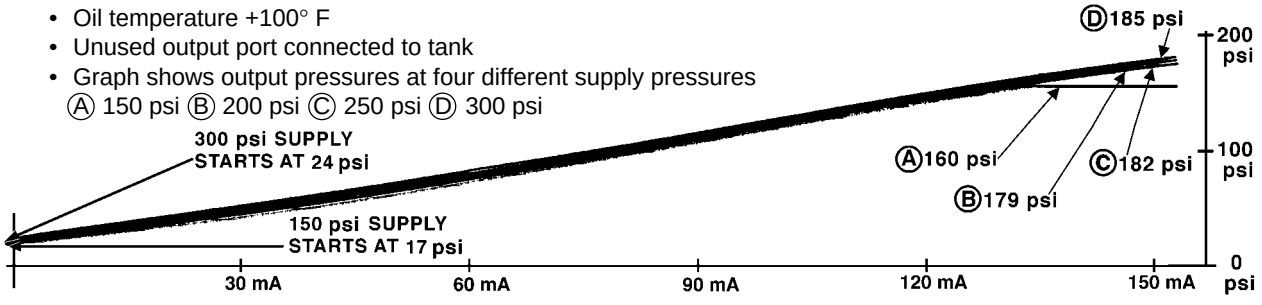
2013

SINGLE SERVICE PORT USAGE

When using just one of the output ports be aware of the pressure level variations which are influenced by the following changes: supply pressure, oil temperature, and back pressure.

TEST CONDITIONS

- Oil temperature +100° F
- Unused output port connected to tank
- Graph shows output pressures at four different supply pressures
  Ⓐ 150 psi Ⓑ 200 psi Ⓒ 250 psi Ⓓ 300 psi



2014