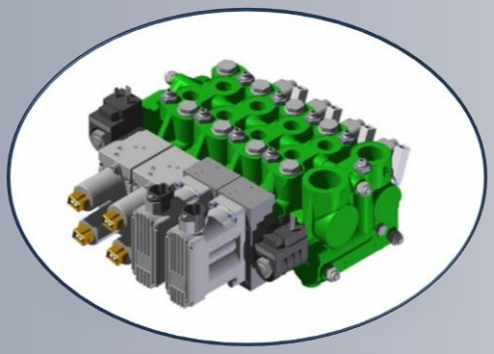
VDP08 SERIES
Pressure Pre-Compensated Load Sensing Proportional Directional Control Valve



Proportional Load Sensing Valve

Closed and Open Loop Electro Proportional, Hydraulic Pilot, Pneumatic and Manual Control, fixed and variable displacement pump, for mobile and industrial applications

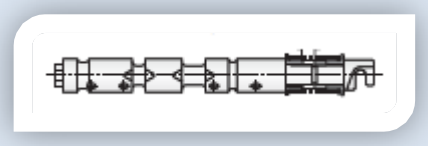
Cross Hydraulics

VDP08 SERIES
PRESSURE PRE – COMPENSATED LOAD SENSING PROPORTIONAL DIRECTIONAL CONTROL VALVE

MAIN CHARACTERISTICS

- MAX. PUMP FLOW PORT P: 130 l/min
- MAX. SERVICE PORTS A&B FLOW: 95 l/min WITH FIXED DISPLACEMENT PUMP
- MAX. SERVICE PORTS A&B FLOW: 95-105 l/min WITH VARIABLE DISPLACEMENT PUMP DEPENDING ON ΔP STAND-BY PRESSURE
- MAX. PRESSURE PORT P: 315 bar
- MAX. PRESSURE PORT A&B: 350 bar
- P PORT: ¾ " BSPP
- T PORT: 1" BSPP
- A&B PORTS: ½" BSPP
- LSA & LSB PORTS: 1/8" BSPP
- PG (PRESSURE GAGE PORT) & LS PORT: ¼" BSPP
- INLET MODULE FOR FIXED AND VARIABLE DISPLACEMENT PUMP
- INLET MODULE and END PLATE AVAILABLE FOR PARALLEL CONNECTION (ONE PUMP AND TWO VALVE BANKS)
- INDIVIDUAL A&B LS ADJUSTABLE PRESSURE RELIEF VALVES
- A&B FIXED PRESSURE SETTING PORT RELIEF + ANTI CAVITATION FUNCTION
- SINGLE ACTING PORT A&B SHUTTLE VALVE CARTRIDGES
- LS PUMP UNLOADING SOLENOID VALVE
- PILOT LINE UNLOADING SOLENOID VALVE
- PILOT LINE PROTECTED BY BUILT IN FILTER ELEMENT
- EXTERNAL PILOT LINE PORT
- PILOT LINE MANUAL BY-PASS VALVE

SPOOL FLOW RATE:
8.16.25.45,63,95 l/min



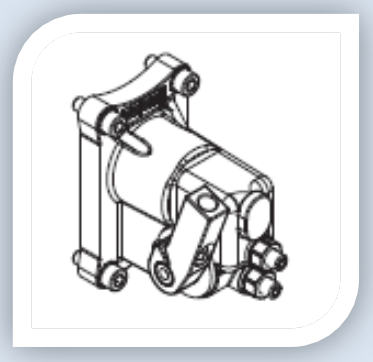
SPOOL CONTROLS

MANUAL CONTROL

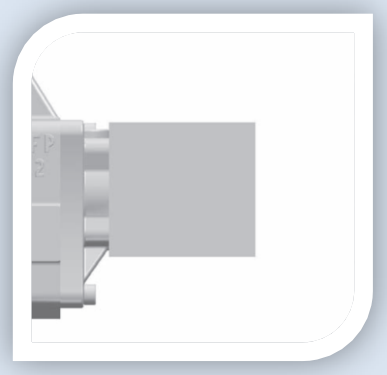
NL – STANDARD WITH SPOOL STROKE ADJUSTMENT

SPS – W/O LEVER MECHANISM AND WITH SPOOL STROKE ADJUSTMENT

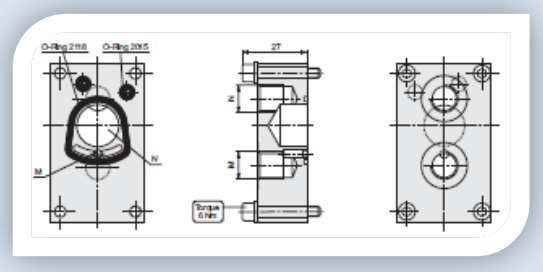
FL – WITH FRICTION DETENT AND SPOOL STROKE ADJUSTMENT



PNEUMATIC PROPORTIONAL CONTROL PP



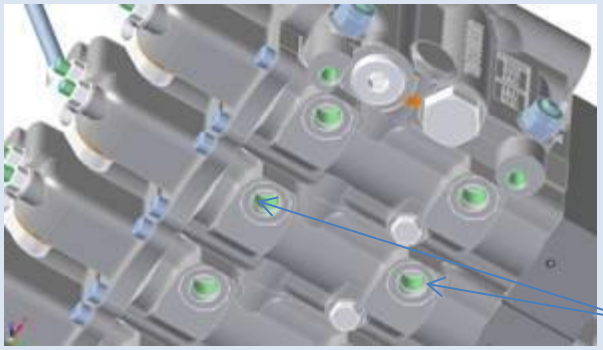
HYDRAULIC PILOT PROPORTIONAL CONTROL IP



LSA & LSB PORTS

External Pressure Adjustment for each actuator port A&B located underneath the body element 1/8” BSPP

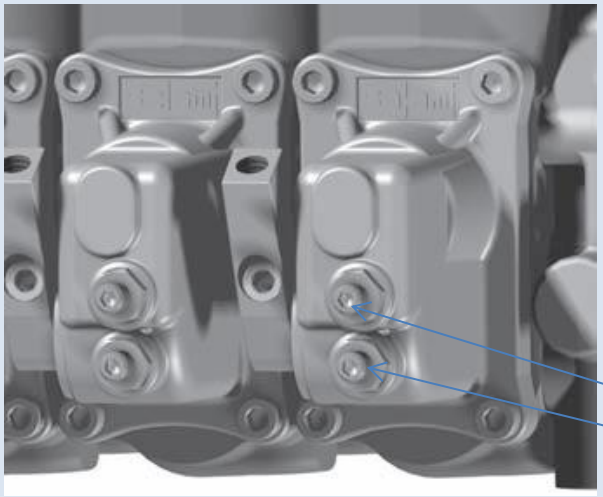
The LS pressure as per actuator port can be adjusted internally via the LS pressure relief valves or externally via the LS ports.



LSA & LSB ports

FLOW LIMITATION

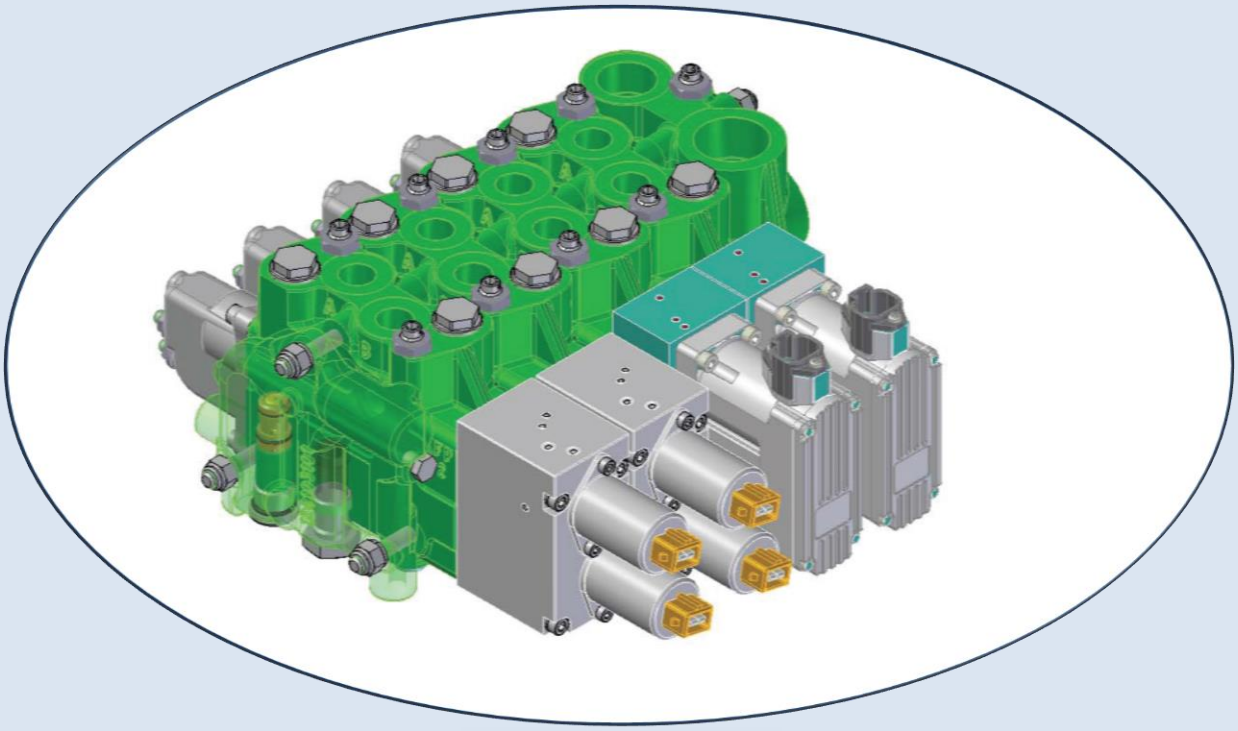
The maximum flow can be set mechanically and individually via spool stroke limitation



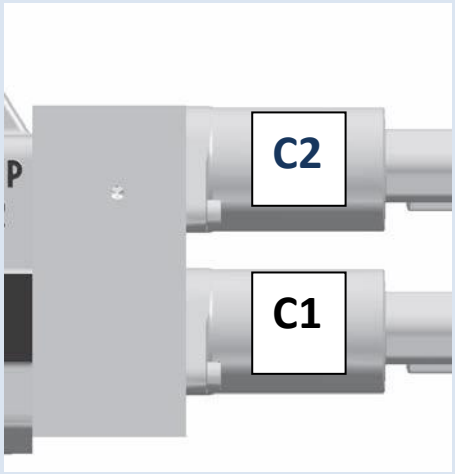
Mechanical spool stroke adjuster

ELECTROHYDRAULICS

- KE1/2 Open loop proportional
- KM Closed loop proportional with Hall effect spool position transducer and on-board electronics



OPEN LOOP PROPORTIONAL or ON-OFF CONTROL KE1&KE2 (12 & 24 VDC)



C1 & C2 COILS DE-ENERGIZED → SPOOL IN NEUTRAL POSITION

C1 COIL ENERGIZED → POS. 2 SPOOL IN FLOW TO PORT B

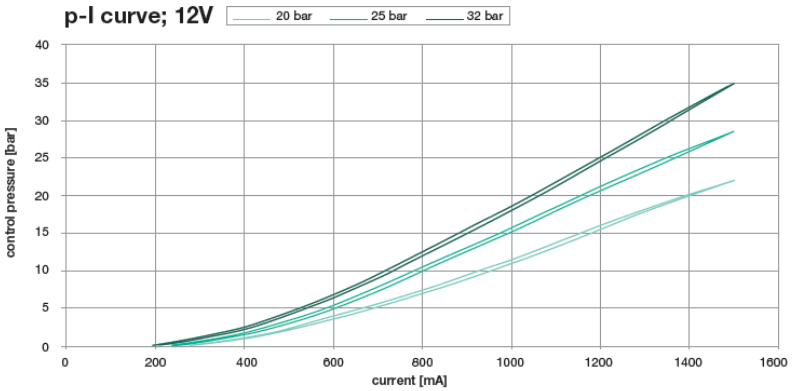
C2 COIL ENERGIZED → POS.1 SPOOL OUT FLOW TO PORT A

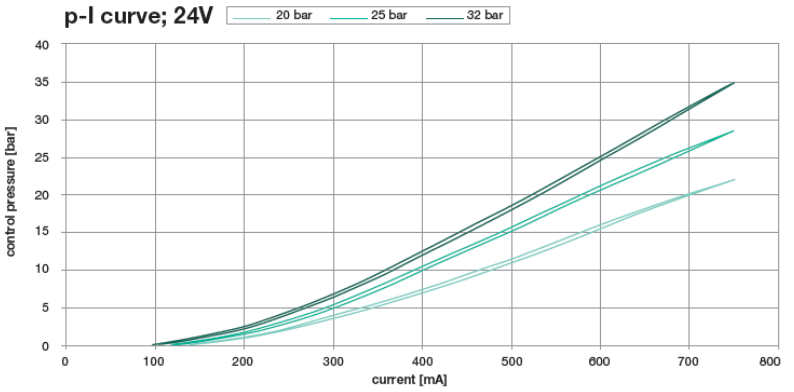
Electrical Data

Voltage	12V	24V
Current	1500 mA	750 mA
Resistance	4.72 Ω ± 5%	20.8 Ω ± 5%
Type of Control	Current Control PWM 100 Hz Recommended	Current Control PWM 100 Hz Recommended

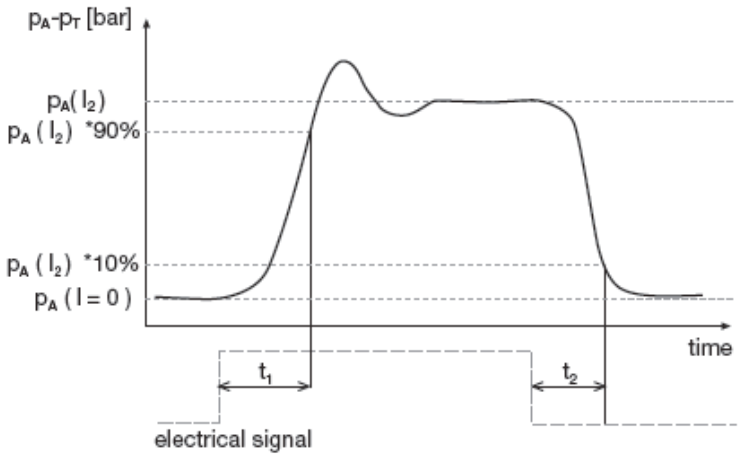
Features	Benefits
Pressure reducing proportional valve with integrated relief function	Protection against pressure spikes
Low leakage	Lower energy loss
Excellent repeatability	No calibration required over the valve lifetime

Current vs. Pressure
Less than 2% Hystereris





Step Response
(50°C Oil Temperature) t_1, t_2 < 50 ms



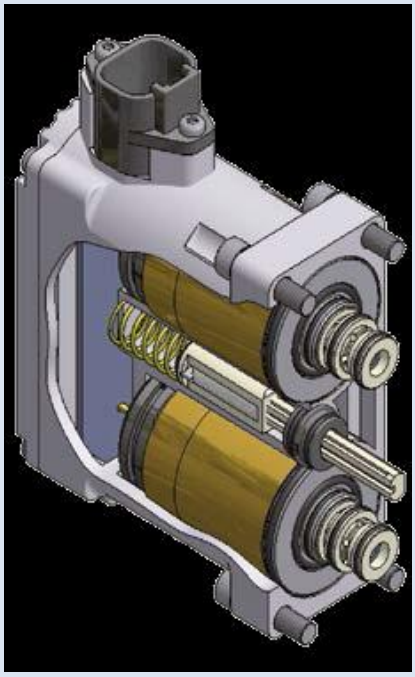
CLOSED LOOP ELECTRONIC PROPORTIONAL CONTROL KM

The KM closed loop position control makes the VDP08 spool achieve the desired position with accuracy levels approaching the performance of a servo valve by continuously comparing the set-point of a remote control device with the feed-back signal generated by a high-precision Hall effect position transducer.

Features

- Two independent proportional valves - flow rate: 0.2÷0.5 lt/min max. flow requirement under normal conditions
- Hall effect/contactless spool position sensor – excellent linear control on 10% of spool travel, no “cross talking” between adjacent work sections”
- Built-in Electronics
  Analog Operating Mode: +5 Volts supply to external potentiometers or Joystick controllers

  CANBUS Operating Mode: the remote control set point is processed via CANbus according to ISO 11898 at 250 Kbit/s by means of address-based (SAE J1939) or message-based (CAN 2.05) protocols

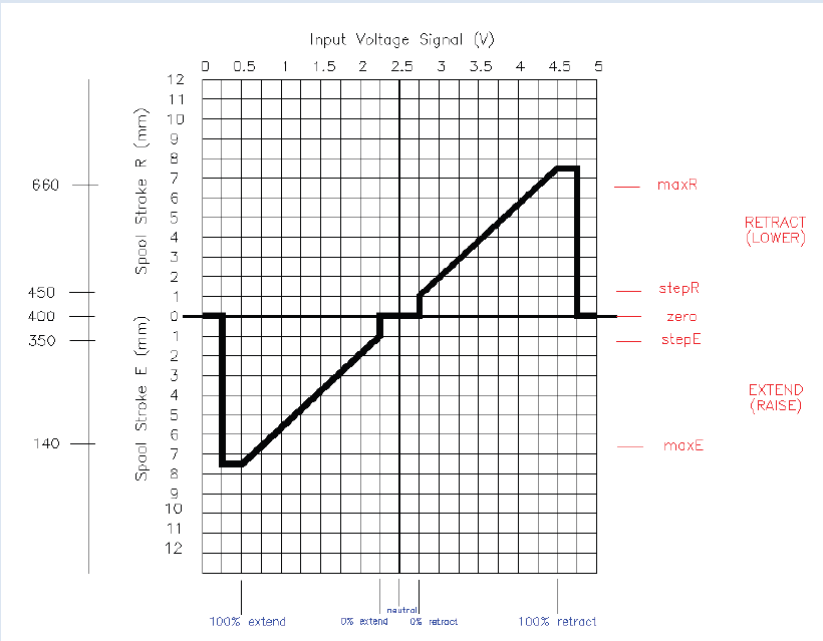


ALARM/FAIL-SAFE MODE

An input voltage variation beyond the calibration range (≤0.25 V or ≥4.75 V) will bring the system into an ALARM mode, urging the spool to return to its NEUTRAL position until Vin is brought back to its nominal control range.

SPOOL STROKE A

When the input voltage fed to the KM is maintained within 2.25 and 2.75 V, the VDP08 spool is at rest (neutral dead band).
When Vin = 2.75 V, the spool steps up from NEUTRAL to MINIMUM FLOW control position. A linear ramp from MIN. to MAX. spool stroke will follow by increasing Vin from 2.75 to 4.5 V
By decreasing the input voltage from 4.5 to 2.75 V, the spool stroke is linearly reduced and after the oil flow is fully shut-off, a step down from MINIMUM FLOW to NEUTRAL position takes place.



SPOOL STROKE B – Same as for STROKE A, by varying Vin from 2.25 to 0.5 V, the spool will go from NEUTRAL to MAX. STROKE in the opposite direction.

Spool neutral position: 2.5 V

MAX. spool stroke A at 4.5 V

MAX. spool stroke B at 0.5 V

Neutral spool position dead band from 2.25 to 2.75 V

Signal cut-off is triggered at ≤ 0.25V and ≥ 4.75 V

Hydraulic Specifications

Max. spool stroke: 8.5 mm

Max. supply pressure: 35 bar

Min. supply pressure: 12 bar

Max. return line pressure: 5 bar

Pilot flow requirement: 0.2 l/min

Oil temperature range: -20 / +95˚C

Oil viscosity range: 3-650 cSt

Filtration: 18/15 (ISO 4406)

Response time:

Neutral to max. ≤180 ms

Max. to Neutral: ≤ 250 ms

Resolution: ± 0.06 mm

Ramp time: 0 to 5 sec.

Electrical Specifications

Operating voltage: 8-30 VDC

Max. current consumption: 750 mA/KM module

Operating temperature: -20 / +95˚C

Analog Input impedance: ≥ 40 Kohm

Control pot. Configuration: 3-pins

Typical control pot. Resistance: 1-10 Kohm

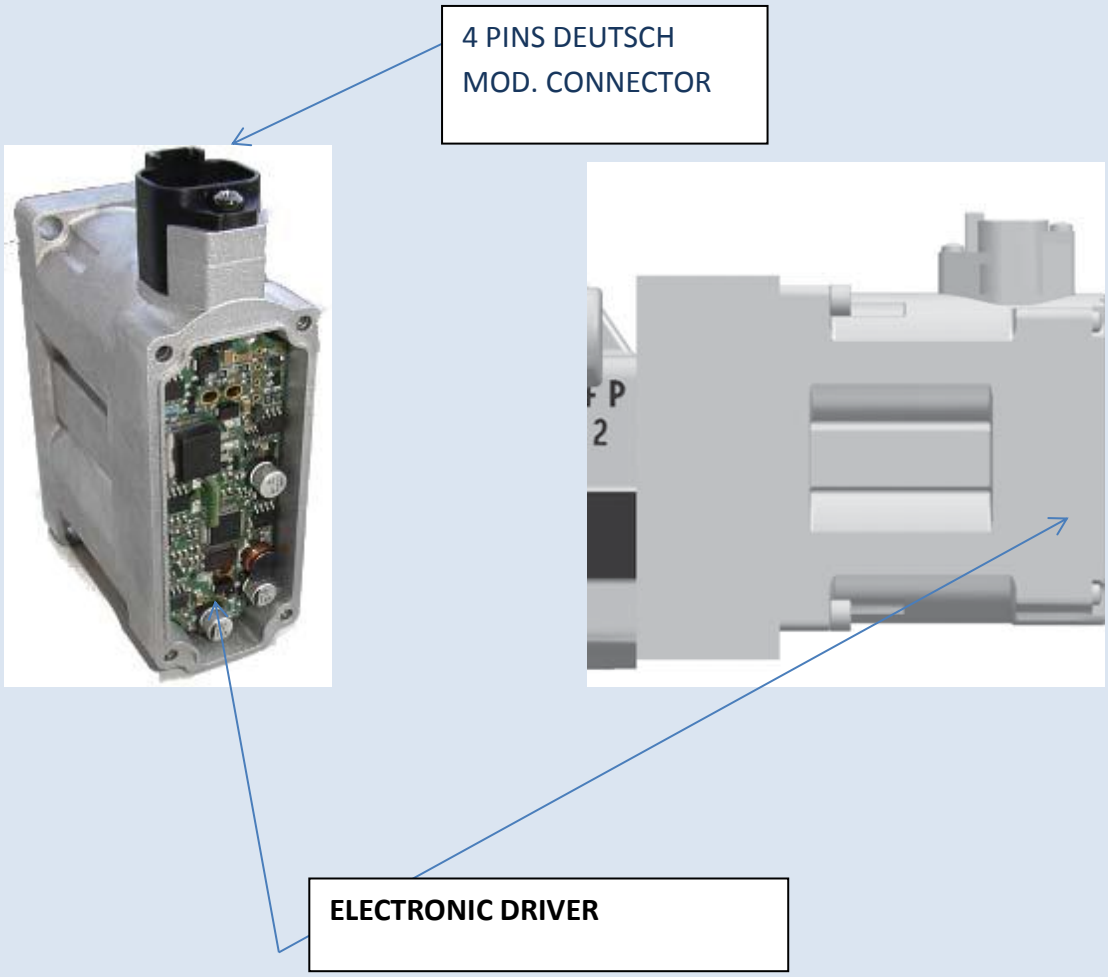
Analog input signal: 0-5V

CAN bus interface: ISO 11898

Environmental protection: IP 68

EMC characteristics: ISO 7637

ON BOARD ELECTRONICS



The microprocessor – based digital control of inherent functions such as response time, flow rate pre-setting and spool position recovery after cut-off, makes it possible to adjust relevant parameters like PWM dither frequency, feedback signals during motion and operational conditions through a continuous teach – in process that will then maintain said parameters at their optimum level.

See VDP08 technical catalogue for more details, dimensional data, hydraulic circuits, options, assembling & adjustment procedures, calibration, ordering code.

REV.00 / 2014