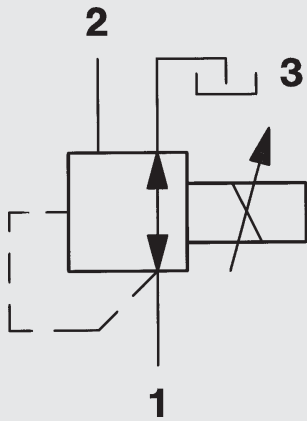
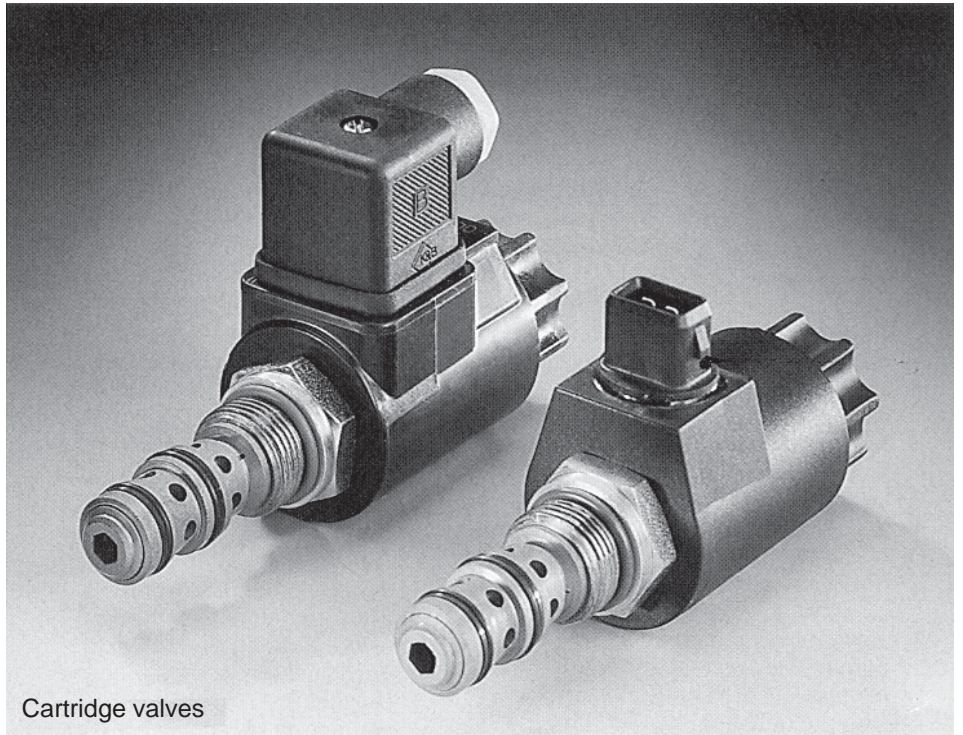


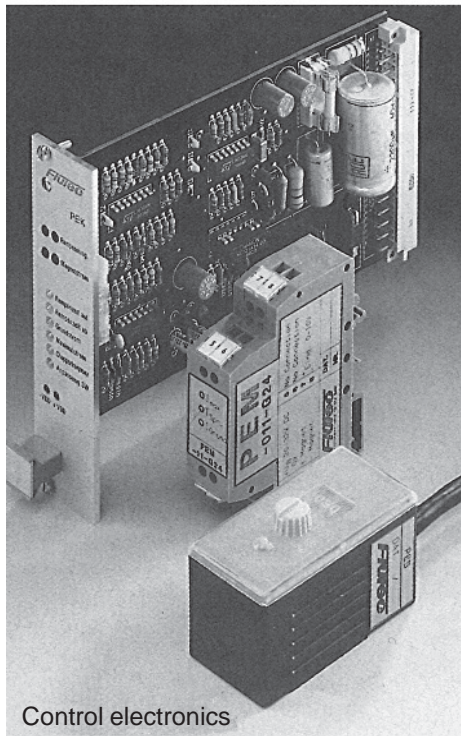
Proportional Pressure Reducing Valve PDM08



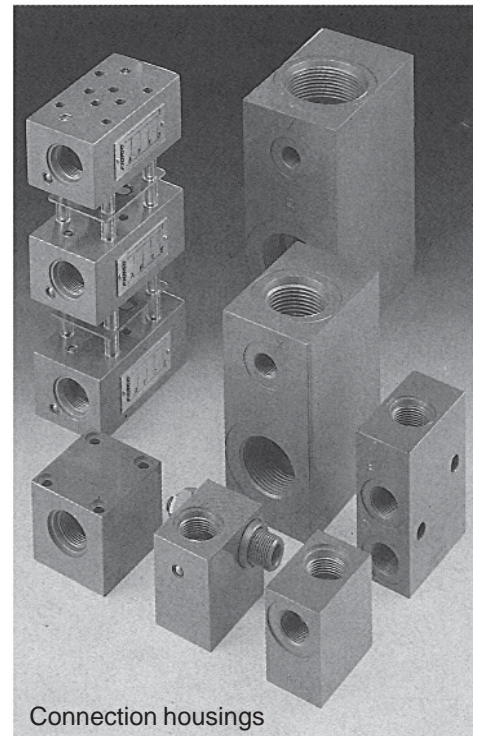
up to 80 bar
up to 10 l/min



Cartridge valves



Control electronics



Connection housings

1. DESCRIPTION

1.1. GENERAL

According to DIN-ISO 1219, HYDAC proportional pressure reducing valves, type PDM, are control valves, used in oil hydraulic systems, which in the main provide a constant outlet pressure where there is a variable inlet pressure. The outlet pressure to be controlled is determined by the current signal which is supplied by appropriate control electronics and which affects an actuating solenoid.

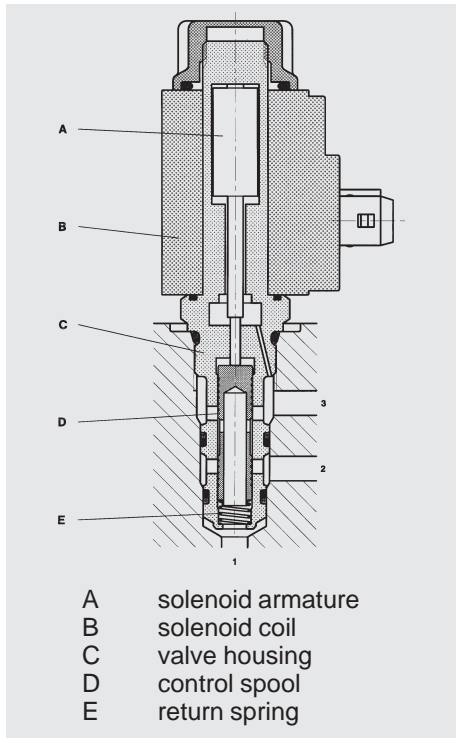
This solenoid is a pressure-tight, wet-pin type and has the following advantages:

- completely sealed
- low noise level and long service life due to oil damping
- good heat dissipation via the oil
- solenoid coil can be turned through 360°, as well as reversed and removed without having to open the hydraulic system.

The control electronics for the valve are available on request in three versions and are pre-set in accordance with the relevant valve details. The valve design also allows other commercially available control systems to be used, however, in this case the valve characteristics may differ from the details given in the brochure.

The HYDAC proportional pressure reducing valve PDM is designed as a compact cartridge valve and has the following advantages:

- safety type and surface protection make it suitable for use in the mobile sector
- excellent control and stability properties
- low hysteresis
- four pressure ranges mean excellent system adjustment
- standardised installation dimensions to ISO 7789
- space-saving installation in housings, control blocks etc.
- simple fitting and replacement
- various connection housings available for inline mounting



1.2. FUNCTION

HYDAC PDM proportional pressure reducing valves are direct-operated spool valves in a 3-way configuration, i. e. with outlet pressure relief. The valves consist essentially of a valve body, a hardened and polished control spool, a return spring and the solenoid coil with solenoid armature for electrical operation.

Pressure reducing function from 2 to 1:

In the initial position (no current signal) the valve is closed on the inlet side (port 2) and is connected on the outlet side (port 1) to the tank (port 3).

If a current signal is applied, the solenoid armature presses onto the control spool with a force corresponding to the amount of controlling current. This pushes the control spool down against the return spring and the oil flows from port 2 to port 1. A user unit, eg a cylinder, causes a build-up of pressure across port 1 which acts on the surface of the control spool and produces a counter force to the solenoid force, which moves the control spool up again. This reduces the flow from 2 to 1 until the pressure across port 1 is equal to the solenoid force and therefore the pre-set pressure value is as per the current signal. If the user unit does not require any more operating fluid (eg at the end of the cylinder stroke) then the control spool moves up further and shuts off the inlet ports.

If the outlet pressure falls below the pre-set pressure because the user unit is relieved, the solenoid armature pushes the control spool down and the control process starts again. The maximum outlet pressure that can be achieved is therefore determined by the solenoid force (pressure range).

Outlet pressure relief from 1 to 3: If the pressure across port 1 rises above the pre-set pressure, the control spool is pushed up by the solenoid armature and the connection from 1 to 3 is opened. This controls the pressure across port 1. If the controlling current is interrupted, the control spool is pushed up by the pressure across port 1 and by the return spring. This means that port 1 is connected to port 3 and the pressure across port 1 falls to tank level.

1.3. APPLICATIONS

- In oil hydraulic systems for
- control of couplings in gearboxes
 - control of couplings for power take off shafts with variable torque progression
 - specific modulation of pressure increase and decrease
 - remote adjustment of pressure
 - automatic or manual adjustment of secondary circuit pressures to the required values
 - control of pressure performance
 - pilot operation of hydraulic valves and logic elements
 - control of adjustment devices on pumps and in pump control circuits

1.4. RECOMMENDATIONS

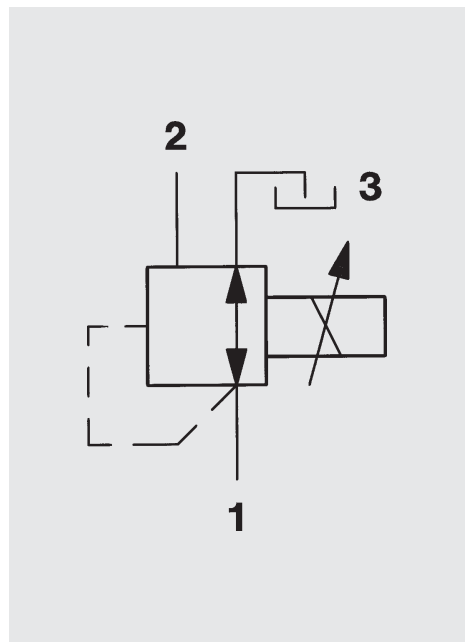
- port connections to be taken into account (see point 2.1.7.)
- torque ratings to be taken into account (see point 4.1.)
In order to guarantee correct operation and a long service life of the valve, the following recommendations should be adhered to:
- vent valve during commissioning: flush in preferred mounting position (solenoid pointing downwards) and operate several times.
- take max. permissible contamination level of operating fluid into account (see point 2.2.7.)

2. TECHNICAL SPECIFICATIONS

2.1. GENERAL

2.1.1 Designation and symbol

Proportional pressure reducing valve



2.1.2 Model code (also order example)

PDM 08130 - 01 X - 60 - G 24 - Z4

Proportional pressure reducing valve

Installation dimensions

Type

01 = technical specifications as per this brochure

Series

(determined by manufacturer)

Pressure range

15 = up to 15 bar
25 = up to 25 bar
45 = up to 45 bar
60 = up to 60 bar

Nominal voltage

G 12 = 12 V DC
G 24 = 24 V DC

Type of solenoid

no details = connection to DIN 43650

T = Junior AMP Timer 2-pole, flat plug 2.8 x 0.8 to DIN 46244

Others on request

Type of connection, electrical

no details = no plug

Z4 = plug to DIN 43650-AF2-PG11 (on DIN 43650 connection only)

Standard models

Stock no.	Model code
716 312	PDM08130-01X-15-G24T
716 320	PDM08130-01X-15-G24-Z4
716 313	PDM08130-01X-25-G24T
716 321	PDM08130-01X-25-G24-Z4
716 314	PDM08130-01X-45-G24T
716 322	PDM08130-01X-45-G24-Z4
716 315	PDM08130-01X-60-G24T
716 323	PDM08130-01X-60-G24-Z4

Please quote stock no. when ordering.

Delivery for non-standard models is longer and the price is higher.

2.1.3 Type of construction

Spool valve, direct-operated

2.1.4 Type of mounting

Cartridge valve

2.1.5 Mounting position

Optional, solenoid coil pointing downwards preferred (see point 1.4.)

2.1.6 Weight

0.4 kg

2.1.7 Flow direction

From 2 to 1: controlled flow

From 1 to 3: outlet pressure relief

2.1.8 Ambient temperature range

Min. - 20 °C

Max. + 50 °C

2.1.9 Materials

Control spool: hardened steel

Valve body: free-cutting steel

Seals: compatible with hydraulic

oil to DIN 51524, Part 1 and 2

2.1.10 Type of connection

Suitable connection housings with installation dimensions 08130 are available.

See separate housing brochure no.: E 5.252../..

2.1.11 Nominal size

NG = 08

2.2. HYDRAULIC DETAILS

2.2.1 Nominal pressure

Inlet (port 2) ... up to 80 bar

Outlet (port 1)

depending on pressure range

$p_{2\min} > p_1$

Port 3 no pressure to tank

2.2.2 Operating pressure ranges

... up to 15 bar

... up to 25 bar

... up to 45 bar

... up to 60 bar

2.2.3 Operating fluid

Hydraulic oil to DIN 51524,

Part 1 and 2

HD oils.

2.2.4 Operating fluid temperature range

Min. - 20 °C

Max. + 80 °C

2.2.5 Viscosity range

Min. 10 mm²/sec

Max. 380 mm²/sec

2.2.6 Flow rate

$Q_{\max} = 10$ l/min

2.2.7 Filtration

Max. permissible contamination level of the operating fluid to ISO 4406 Class 18/16/13 - 19/17/14 (NAS 1638, Class 7-8).

We recommend a filter with a minimum retention rate of $\beta_5 \geq 100$.

The fitting of filters and regular replacement of filter elements guarantees correct operation, reduces wear and tear and increases the service life.

2.2.8 p-I graphs

(measured at $v = 71$ mm²/s;

$t = 30$ °C; $Q = 0$ l/min;

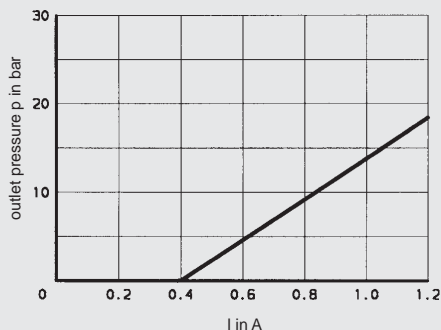
$f_c = 160$ Hz; $p_2 = 100$ bar)

Internal tolerances for each valve

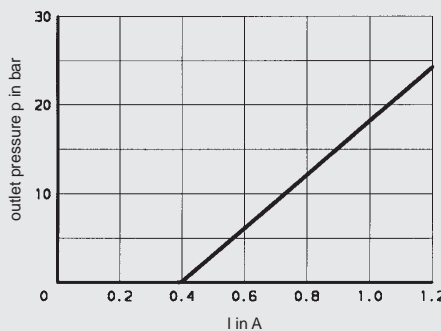
+ 3 / - 8 % of the max. value

24 V / 8 Ω

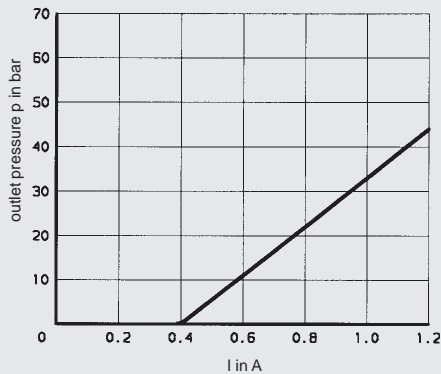
pressure range ... 15 bar



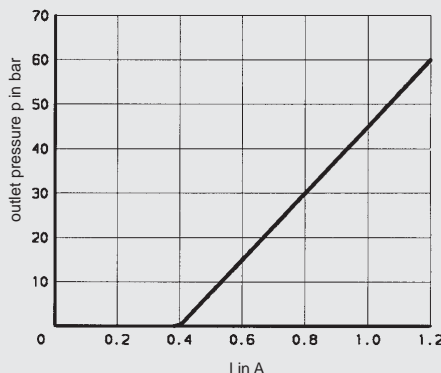
pressure range ... 25 bar



pressure range ... 45 bar

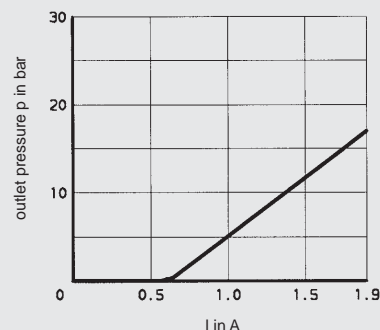


pressure range ... 60 bar

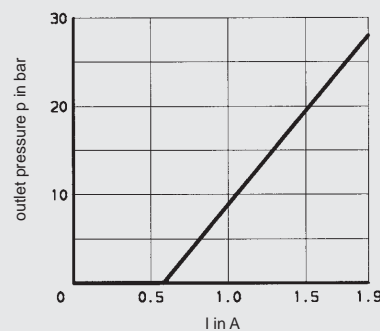


12 V / 3.1 Ω

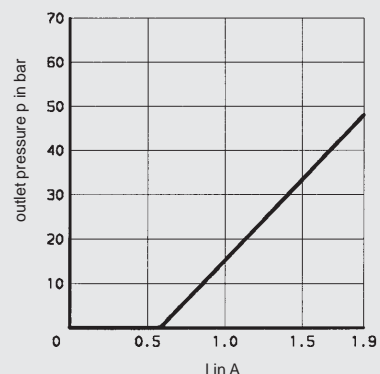
pressure range ... 15 bar



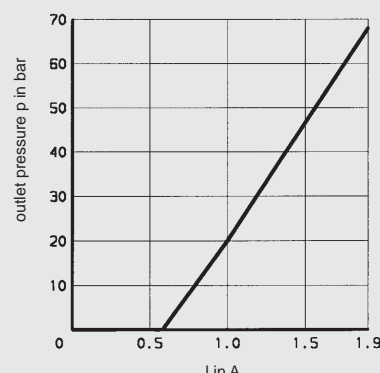
pressure range ... 25 bar



pressure range ... 45 bar



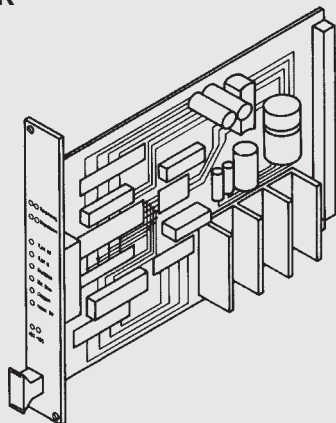
pressure range ... 60 bar



4. CONTROL ELECTRONICS

4.1. ELECTRONIC AMPLIFIER - TYPE OF CONSTRUCTION

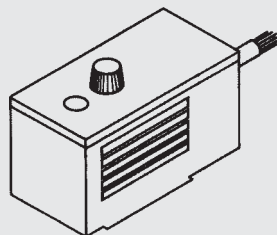
PEK



PEK: 19" Euro card system

- plug connector: male multipoint DIN 41612-D032
- Euro card system 100 x 160 mm
- 6 TE front plate width (1 TE = 5.08 mm)
- low-loss PDM output stage
- differential input (0-10 V) with level adjustment
- additional input for direct potentiometer connection
- 2 independently adjustable ramp times
- LED display for supply voltage
- base and maximum current adjustable
- chopper frequency adjustable

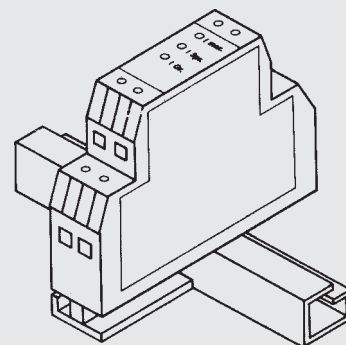
PES



PES: Plug amplifier for fitting directly onto valve solenoids

- suitable for fitting onto solenoid for valve type ...G24-Z4
- compact component, can be separated from the solenoid system
- low-loss PDM output stage
- differential input (0 - 10 V)
- reverse polarity protected and short-circuit proof
- LED display for control start
- base, step and maximum current adjustable

PEM



PEM: Amplifier module

- can be mounted onto DIN EN 50022 rail and DIN EN 50035 rail
- compact construction
- replaces terminal strip
- low-loss PDM output stage
- differential input (0 - 10 V)
- reverse polarity protected and short-circuit proof
- base, step and maximum current adjustable

4.2. MODEL CODE
(also order example)

PES - 02 X - G24

Proportional electronic amplifier construction

PEK = 19" Euro card system
PES = plug amplifier
PEM = amplifier module

Type

00 = not pre-set
02 = pre-set to suit PDM08130

Series

(determined by manufacturer)

Supply voltage

G24 = 24 V DC

Standard models:

Stock no. (= order no.)	Model code
552 863	PEK-02X-G24
552 864	PES-02X-G24
552 865	PEM-02X-G24

Please quote stock no. when ordering.
Delivery for non-standard models is longer and the price is higher.

4.3. SUPPLY VOLTAGE

PEK: 24 V DC \pm 10 % (permissible residual ripple 49 %)
PES: 20-32 V DC (permissible residual ripple 5 %)
PEM: 20-32 V DC (permissible residual ripple 5 %)

4.4. CURRENT OUTPUT

Amplifier type	Base current (mA)	Step current (mA)	Maximum current (A)	Chopper frequ. (Hz)	Ramp times up/down (sec)
PEK-00X-G24	0-500	–	0-1.6	50-200	0.1-10/0.1-10
PEK-02X-G24	200	–	1.2	160	0.1-10/0.1-10
PES-00X-G24	0-700	0-600	0-1.6	160	–
PES-02X-G24	200	0	1.2	160	–
PEM-00X-G24	0-700	0-600	0-1.6	160	–
PEM-02X-G24	200	0	1.2	160	–

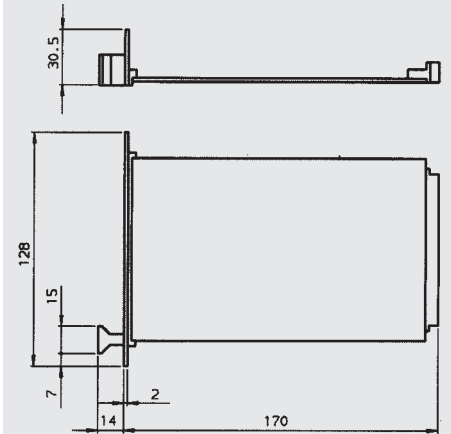
4.5. REFERENCE INPUT

PEK: 0-10 V DC and direct potentiometer connection
PES: 0-10 V DC
PEM: 0-10 V DC

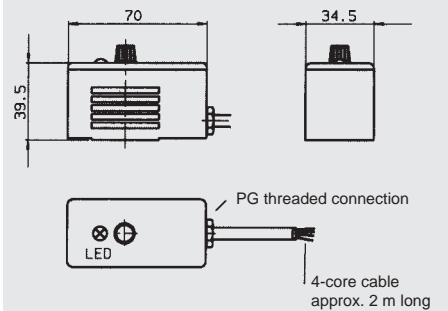
5. NOTE

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

4.6. DIMENSIONS
PEK



PES



PEM

