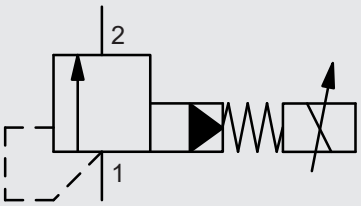
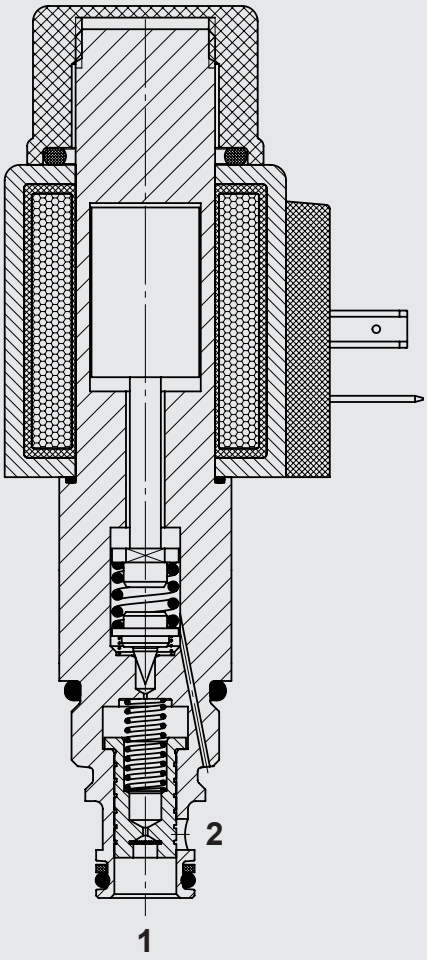


up to 60 l/min
up to 350 bar

Proportional pressure relief valve
PDB08P-01

Spool type, pilot-operated
Screw-in Cartridge Valve, UNF – 350 bar

FUNCTION



PRODUCT ADVANTAGES

- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent stability over the entire flow range
- High dynamic response
- Low pressure drop due to CFD-optimised flow path
- Improved safety thanks to screen-protected metering orifice
- Optionally with hydrodynamic damping
- External surfaces with advanced corrosion protection due to ZnNi coating (1,000 h salt spray test)

DESCRIPTION OF FUNCTION

The PDB08P is a spool type pilot-operated proportional pressure relief valve.

When the pressure at port 1 rises and exceeds the nominal value that has been set electrically, the pilot stage opens and the oil will flow from the rear of the main spool to tank connection 2. The pressure difference created as a result of this action will cause the main spool to press against the return spring and allows the oil to flow from port 1 to port 2. In accordance with the electrical nominal value, the pressure to be limited at port 1 can be continuously adjusted.

TECHNICAL CHARACTERISTICS[1)]

Operating pressure	max. 350 bar / 5000 psi
Flow rate	max. 60 l/min / 15.8 gpm
Operating pressure ranges	up to 60 bar / 870 psi up to 230 bar / 3300 psi up to 350 bar / 5000 psi
Internal leakage	-01(M): <0.5 l/min at 350 bar, ν = 34 mm²/s -11: <2.8 l/min at 350 bar, ν = 34 mm²/s
Pressure fluid	Hydraulic oil to DIN 51524 Part 1 and 2
Ambient temperature range	min. -30 °C up to max. +60 °C
Temperature range of operating fluid	NBR: min. -30 °C up to max. +100 °C FKM: min. -20 °C up to max. +120 °C
Viscosity range	min. 7.4 mm²/s up to max. 420 mm²/s
Filtration	Permitted operating fluid contamination level according to ISO 4406 Class 18/16/13 to 19/17/14 or higher
$MTTF_D$	150 - 1200 years, assessment according to DIN EN ISO 13849-1:2016, Table C.1, Confirmation of ISO 13849-2:2013; Tables C.1 and C.2
Installation	User-definable
Materials	Valve body: Machining steel Spools: Steel, hardened and ground Seals: NBR (standard) FKM (optional) Support rings: PTFE
Cavity	FC08-2
Weight	Valve assembly: 0.43 kg Coil only: 0.23 kg
Electric system	
Control current range	2100 mA, 2.2 ohms (12 volts) 1050 mA, 8.8 ohms (24 volts)
Dither frequency	180 - 200 Hz
Response time	Energised: Approx. 50 ms De-energised: Approx. 30 ms
Hysteresis with dither	2 - 4 % of the max. control current
Repeatability	≤1.5 % of the max. setting range
Reversal error	≤2 % of I_{nom}
Response sensitivity	≤1 % of I_{nom}
Coil design	Coil ... -40-1836

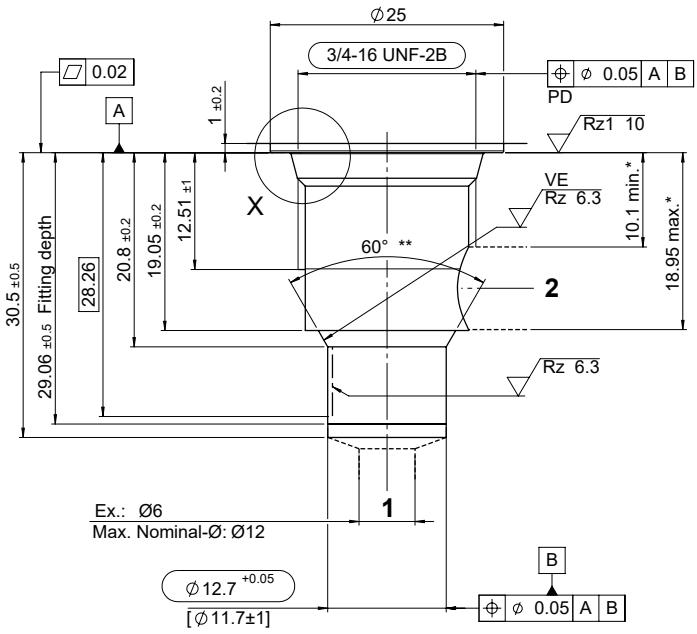
[1)] For more information, see “Operating conditions and instructions for valves” in brochure 53.000.

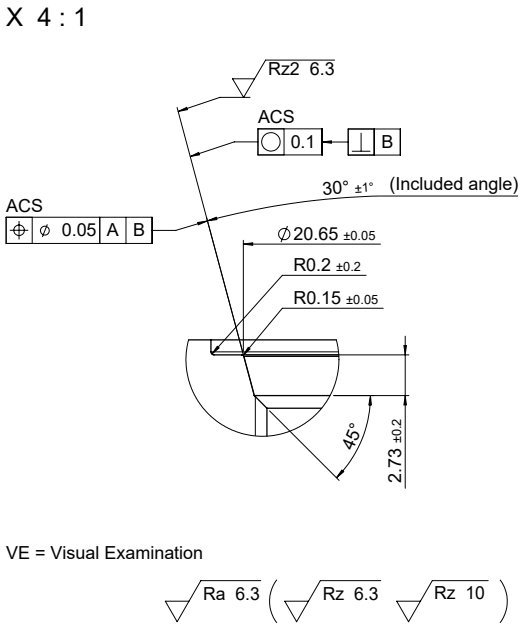
The PDB08P can also be delivered with emergency pressure setting (version –01M). This makes it possible to adjust the valve’s pressure manually if the electrical signal fails. This setting should only be used in emergencies, however, as the manual value is added to the electrical value and the system could be damaged when the electric system is switched back on.

For optimum efficiency, any trapped air should be vented using the drain plug on the pole tube (not for version -02M).

CAVITY

FC08-2





VE = Visual Examination

Ra 6.3 (Rz 6.3 Rz 10)

* Permitted boring zone (for block design)

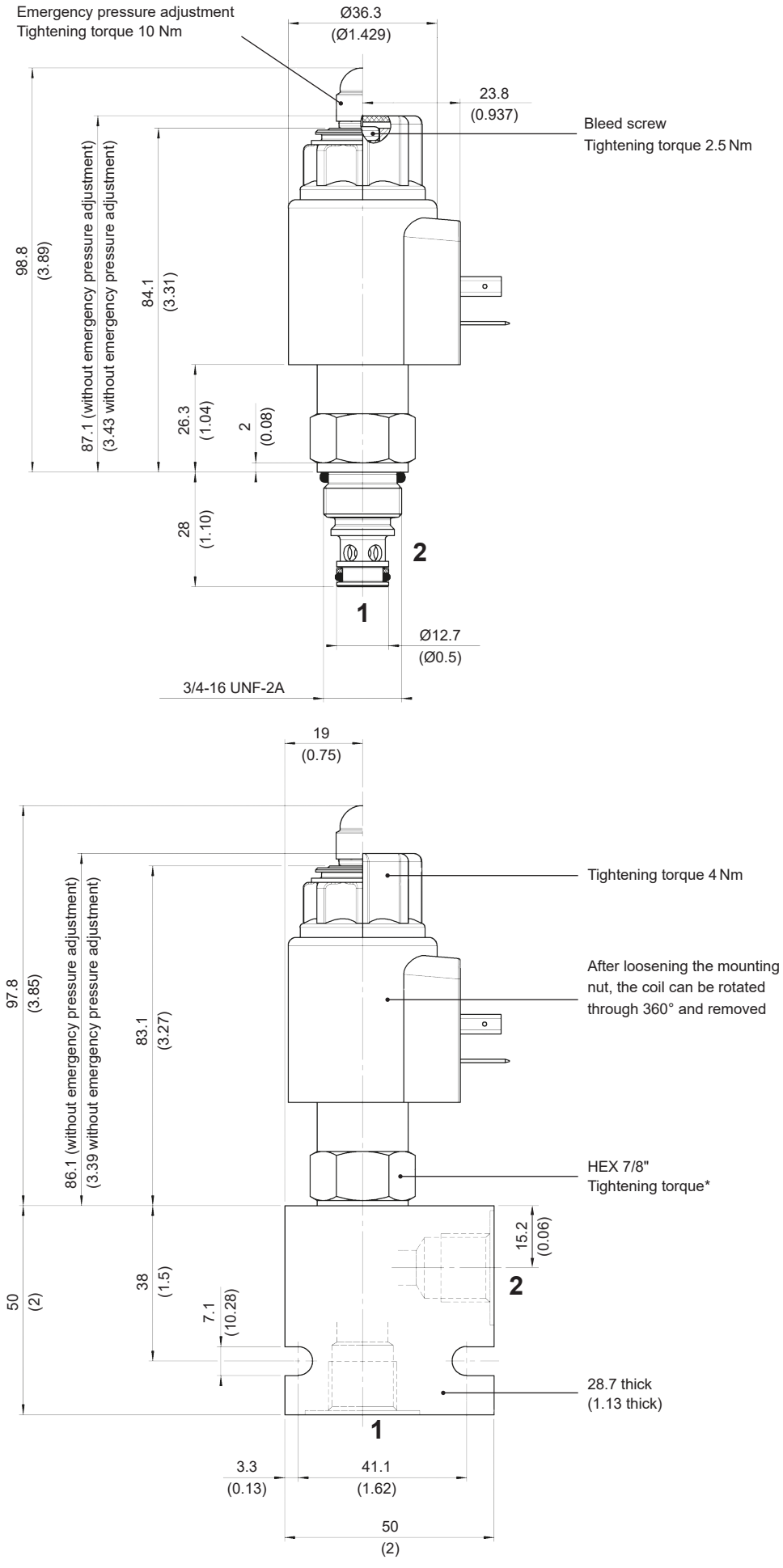
** Sharp edges should be avoided by using a radius of 0.1 mm to 0.2 mm

*** Largest pre-drilling diameter (nominal tool diameter)

Millimetre

Subject to technical modifications.

DIMENSIONS



* Tightening torque:
Steel housing (burst strength > 360 N/mm²): 30 Nm
Aluminium housing (burst strength > 330 N/mm²): 25 Nm
(With torque tool according to DIN EN ISO 6789, tool type II class A or B).

Millimetre (inch)
Subject to technical modifications.

MODEL CODE

PDB08P – 01M – C – N – 330 – 24 PG - 8.8

Designation
Proportional Pressure Relief Valve UNF

Design
01 = standard
01M = with emergency operation
11 = with hydrodynamic damping

Body and ports
C = cartridge valve
SB3 = G3/8 connection housing, steel
AB3 = G3/8 connection housing, aluminium

Sealing material
N = NBR (standard)
V = FKM (optional)

Pressure ranges
87 = up to 60 bar
330 = up to 230 bar
500 = up to 350 bar

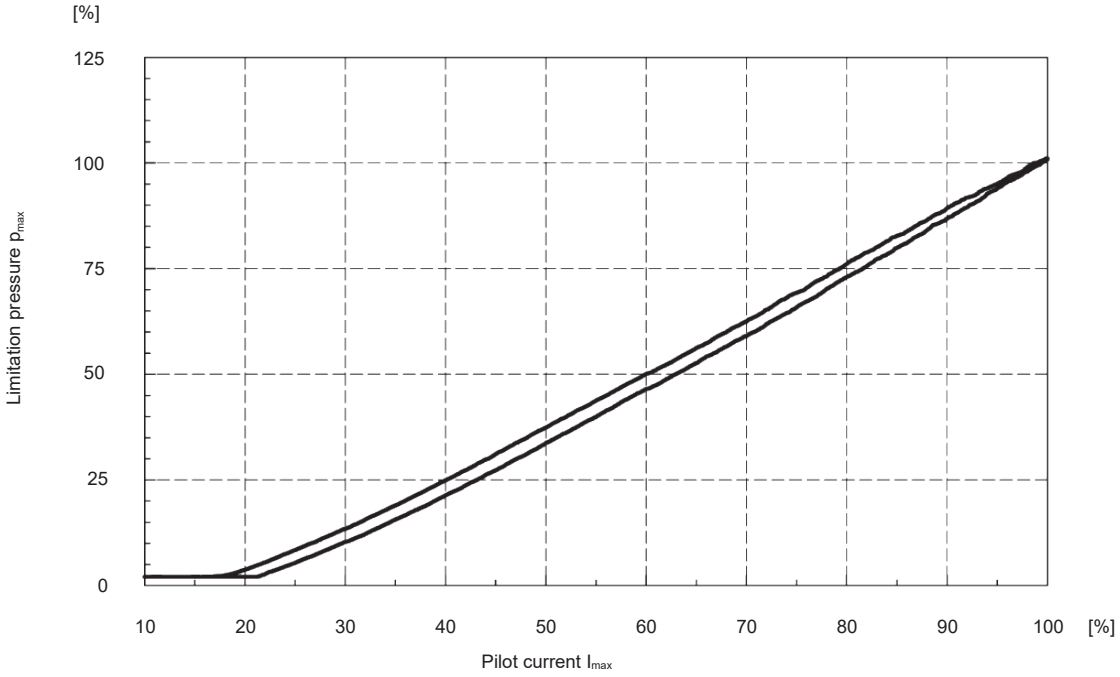
Nominal voltage
12 = 12 V DC
24 = 24 V DC

Coil design (type 40-1836)
DC:
PG = DIN plug connector to EN 175301-803
PU = AMP Junior Timer, 2-pole, radial
PL = two flying leads, 457 mm long, 0.75 mm²
PN = DEUTSCH plug connector, 2-pole, axial, DT04-22P-EF 04
Further versions on request.

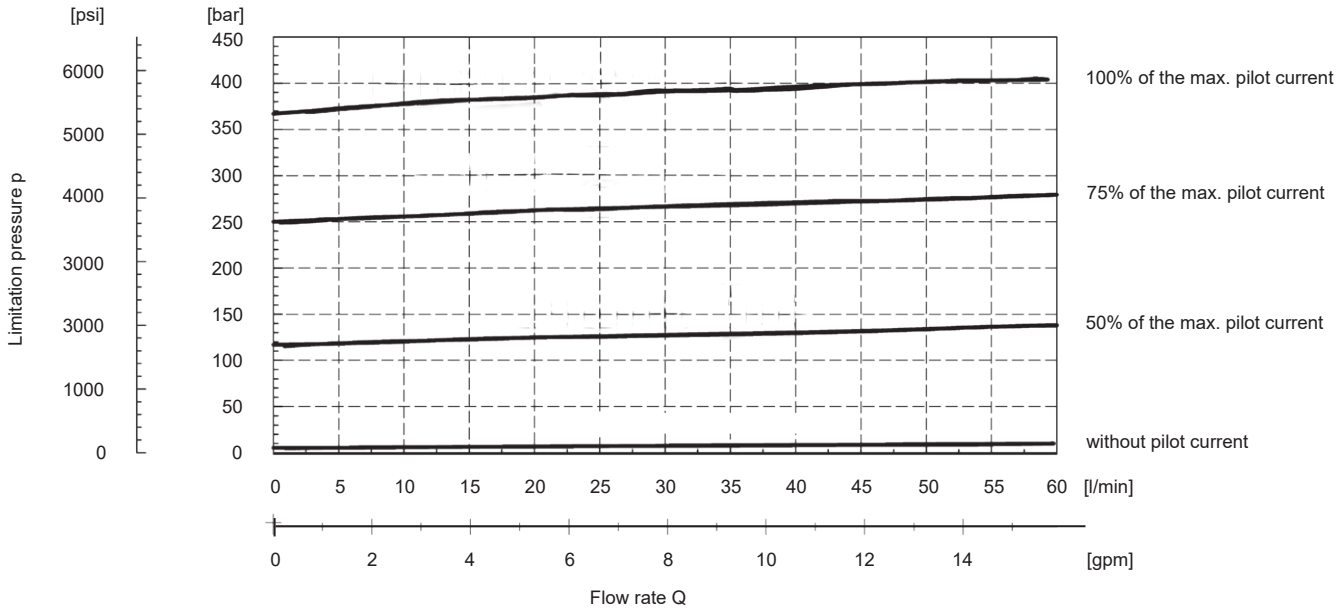
Coil resistance
2.2 = 2.2 Ω (12 V)
8.8 = 8.8 Ω (24 V)

SAMPLE CHARACTERISTICS

p/I characteristics measured at ν = 34 mm²/s, T_{oil} = 46 °C



p/Q characteristics measured at ν = 34 mm²/s, T_{oil} = 46 °C



MATERIAL OVERVIEW

Standard models

Designation	Part no.
PDB08P-01-C-N-087-12PG-2.2	3144426
PDB08P-01-C-N-087-24PG-8.8	3144459
PDB08P-01-C-N-330-12PG-2.2	3144427
PDB08P-01-C-N-330-24PG-8.8	3144460
PDB08P-01-C-N-500-12PG-2.2	3144458
PDB08P-01-C-N-500-24PG-8.8	3144461

Further versions on request.

Spare parts, seal kits

Designation	Material	Code	Part no.
Seal kit	NBR	FH082-N	3033920
Seal kit	FKM	FH082-V	3051756

Housing

Designation	Material	Code	Pressure max.	Connections	Weight	Part no.
Inline connection housing	Steel, zinc-plated	FH082-SB3	420 bar	G3/8	0.42 kg	560919
Inline connection housing	Aluminium, anodised	FH082-AB3	245 bar	G3/8	0.15 kg	3011423

Cavity tools

Designation	Part no.
Stage reducer FC08-2	175473
Reamer FC08-2	175474

NOTE

The information in this brochure relates to the operating conditions and fields of application described. For applications and operating conditions not described, please contact the relevant technical departments.

Subject to technical modifications.

Documents are only valid if they have been obtained via the website and are up-to-date.

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