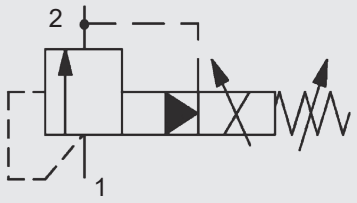
HYDAC INTERNATIONAL

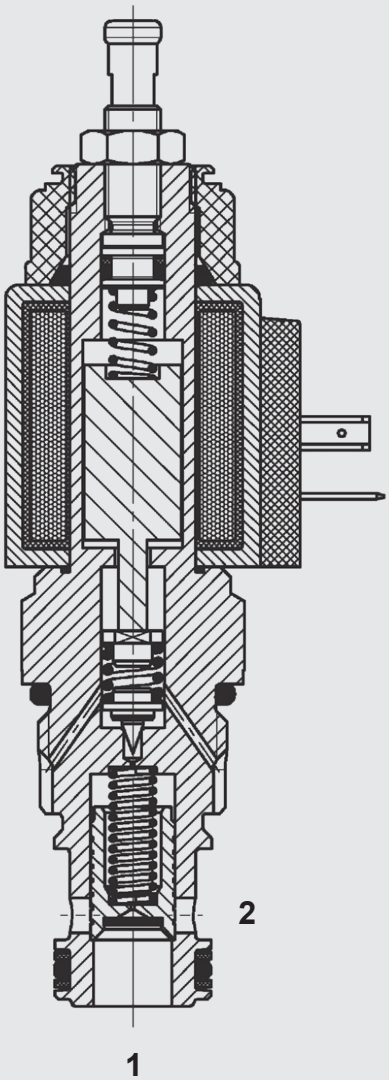


up to 200 l/min
up to 350 bar

Proportional pressure relief valve
PDB12PZ-08/-09

Spool type, Pilot-operated – Inverse
Screw-in cartridge valve UNF – 350 bar

FUNCTION



PRODUCT ADVANTAGES

- Reduced cavitation tendency
- Good stability across the whole pressure and flow range
- High dynamic response
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Low pressure drop due to CFD-optimised flow path
- Can be adjusted across the entire setting range
- External surfaces with advanced corrosion protection due to ZnNi coating (1,000 h salt spray test)

DESCRIPTION OF FUNCTION

The PDB12PZ 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.

The valve is controlled inversely: when the pilot current is reduced, the valve's pilot stage is closed, the main stage follows the pilot control and a back pressure is generated at port 1, driving a fan motor, for example.

The maximum pressure can be preset mechanically.

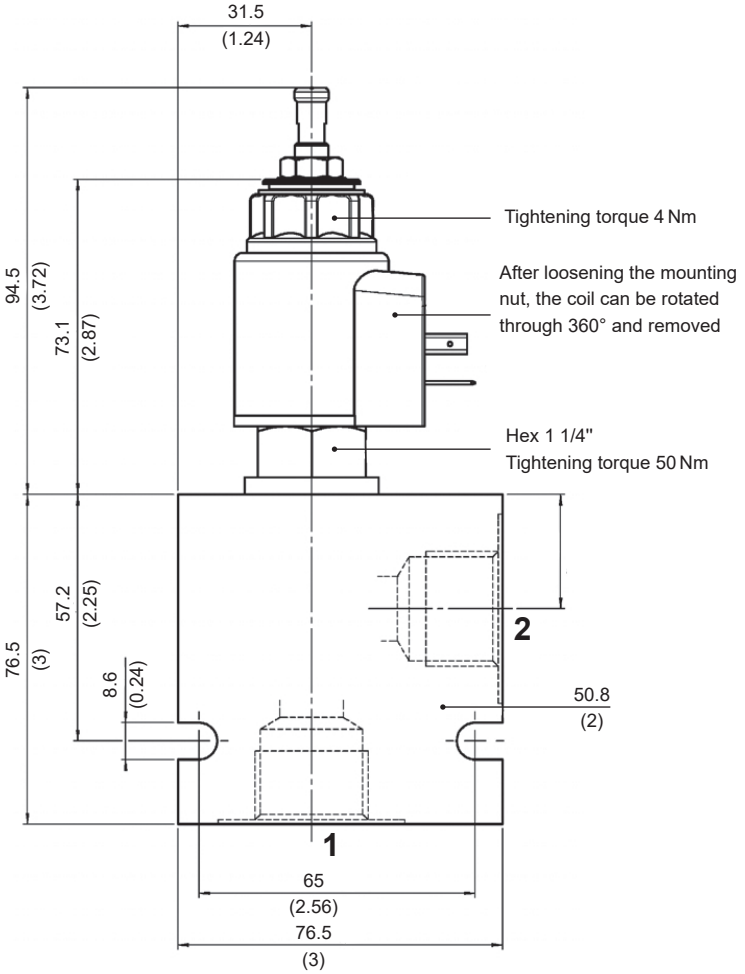
TECHNICAL CHARACTERISTICS[1)]

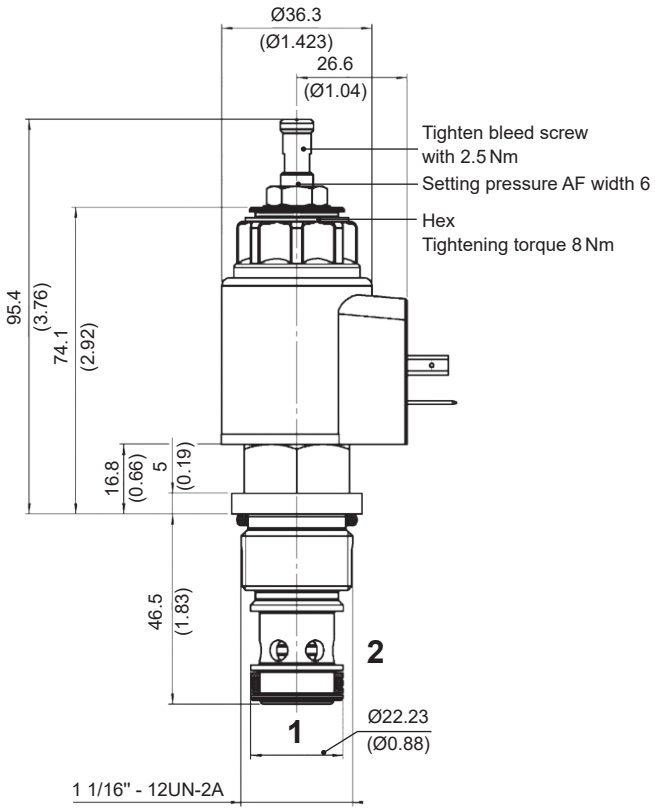
Operating pressure	max. 350 bar (port 1)	50 bar (port 2)
Flow rate	max. 200 l/min	
Internal leakage	< 0.5 l/min at 80 % of p_{nom}	
Pressure fluid	Hydraulic oil to DIN 51524 Part 1 and 2	
Ambient temperature range	min. -20 °C to max. +60 °C	
Temperature range of operating fluid	NBR: min. -30 °C up to 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 p < 210 bar: Class 18/16/13 p > 210 bar: Class 19/17/14	
$MTTF_D$	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 position	User-definable	
Materials	Valve body: Machining steel Spool: Steel, hardened and polished Seals: NBR (standard) FKM Support rings: PTFE Coil: Steel/polyamide	
Cavity	FC12-2	
Weight	Valve assembly: 0.84 kg Coil only: 0.22 kg	
Electric system		
Control current range	2100 mA, 2.2 ohms (12 volts) 1050 mA, 8.8 ohms (24 volts)	
Dither frequency	200 Hz	
Hysteresis with dither	2 - 4 % at I_{nom}	
Repeatability	≤ 2 % of p_{nom}	
Reversal error	≤ 2 % of I_{nom}	
Response sensitivity	≤ 1 % of I_{nom}	
Coil design	Coil (12 or 24) P... -40-1836	

Note: For optimal effectiveness, trapped air should be vented by means of the bleed screw at the pole tube.

[1)] See “Conditions and Instructions for Valves” in brochure 53.000

DIMENSIONS

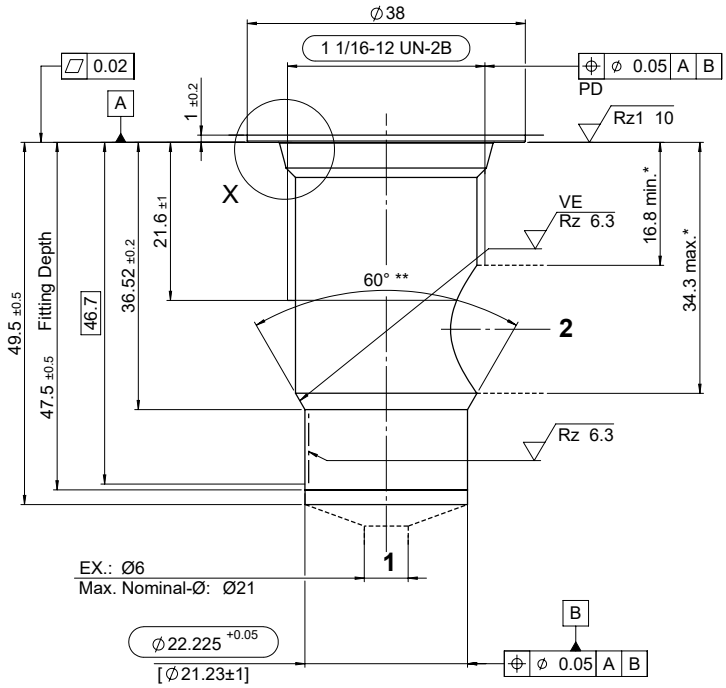




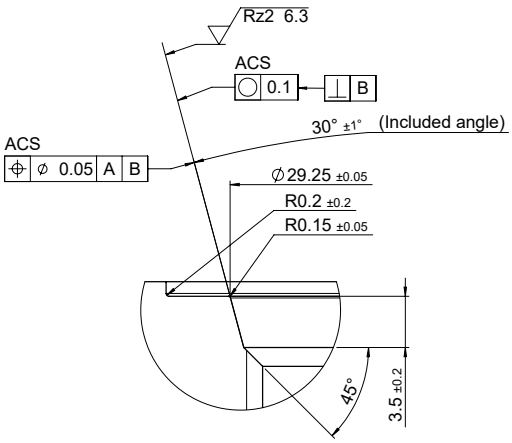
Millimetre (Inch)
Subject to technical modifications.

CAVITY

FC12-2



X 4 : 1



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.

MODEL CODE

PDB12PZ – 08 – C – N – 330 V 330 – 24 DG - 8.8

Designation
Proportional pressure relief valve

Version
08 = higher base Δp: improved opening & closing behaviour (pressure range 330 - 500)
09 = lower base Δp: main application = fan control (pressure range 87 - 330)

Body and ports
C = Screw-in cartridge valve

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

Pressure range
87 = 4 - 60 bar | 60 - 870 psi
140 = 4 - 96 bar | 60 - 1400 psi
330 = 4 - 230 bar | 60 - 3300 psi
500 = 4 - 345 bar | 60 - 5000 psi

Adjustment type
V = adjustable using tool

Setting
None = no setting, compression spring depressurised
330 = 230 bar specific cracking pressure (3300 psi)

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

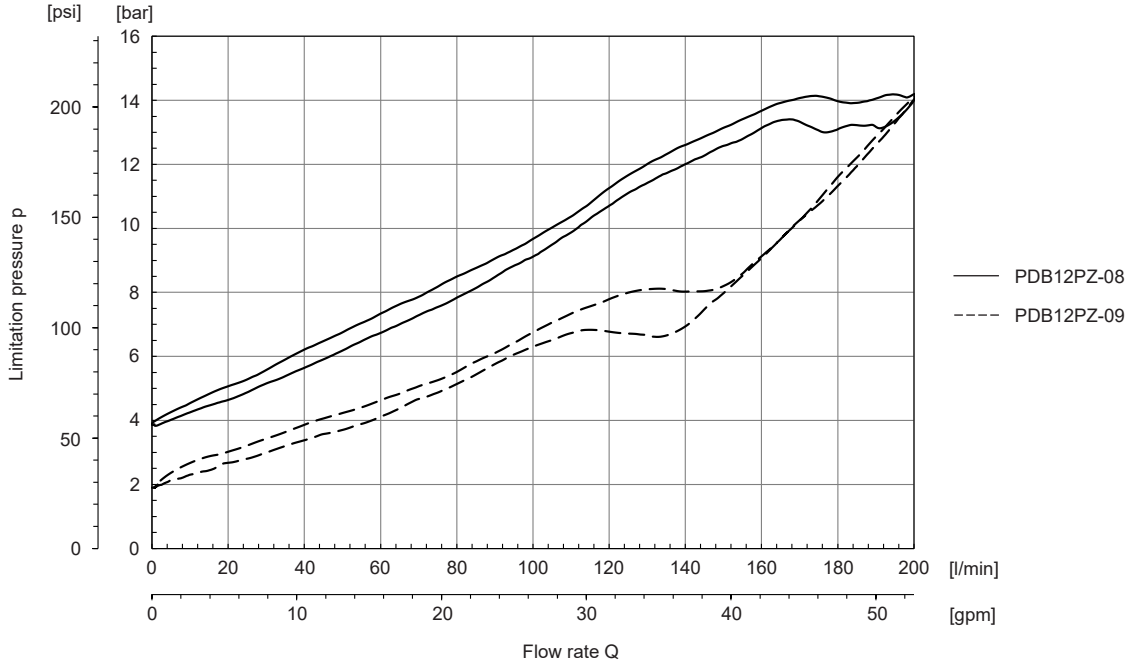
Coil Connector*		Poles	Connection	Protection class
DC:				
DG	= Design A/B to DIN EN 175301-803	3-pole	radial	IP65
DK	= KOSTAL connector M27x1	2-pole	radial	IP65 / IP67
DL	= 2 free single leads 0.75 mm² x 457 mm (18")	2-pole	radial	IP65 / IP67
DN	= DEUTSCH connector DT04-2P	2-pole	axial	IP67 / IP69
DO	= M12 connector	4-pole	radial	IP65
DT	= AMP Junior Timer	2-pole	radial	IP65 / IP67
DU	= AMP Junior Timer	2-pole	axial	P65 / IP67
AC:				
AG	= Design A to DIN EN 175301-803	3-pole	radial	IP65

Further more information you will find in Prospect 5.207.6 –Solenoid coils for directional valves.

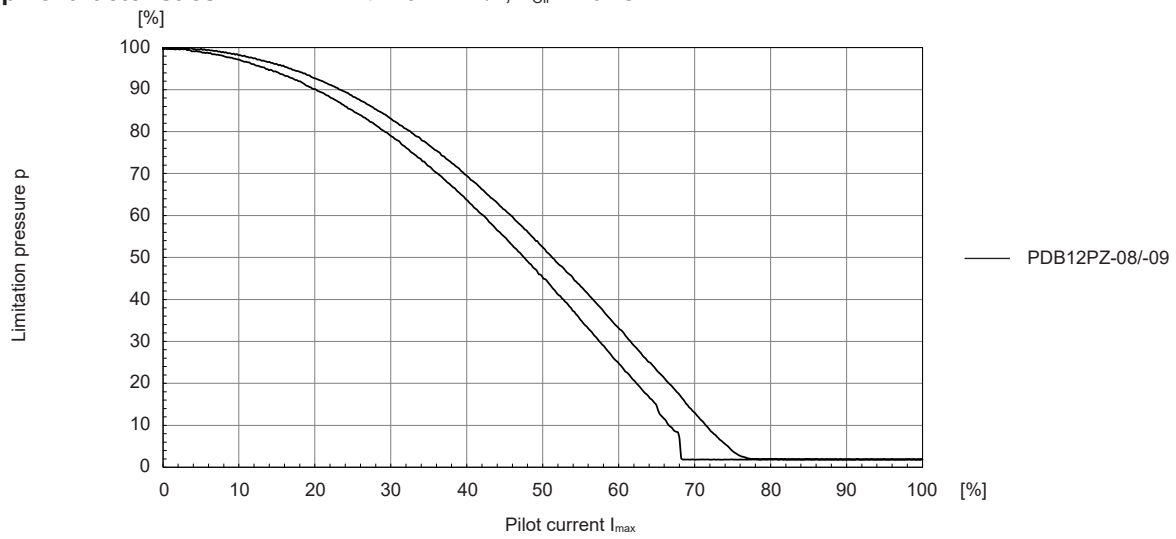
Coil resistance
2.2 = 2.2 Ω (12 V)
8.8 = 8.8 Ω (24 V)

SAMPLE CHARACTERISTICS

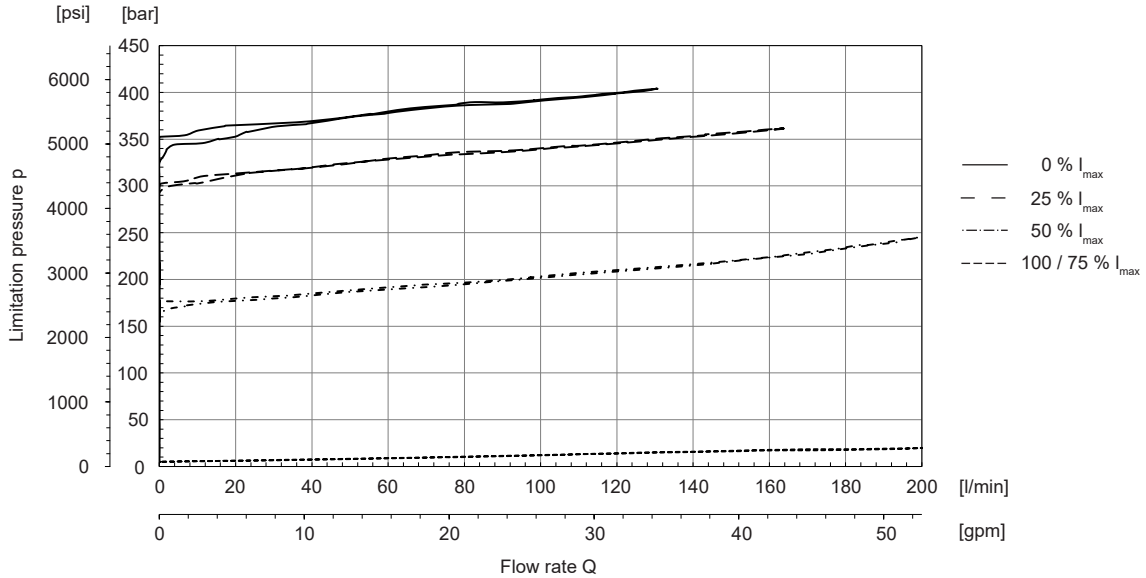
Δp/Q characteristics measured at ν = 34 mm²/s, T_{Oil} = 46 °C



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.
PDB12PZ-08-C-N-330V330-12PG-2.2	3370977
PDB12PZ-08-C-N-330V330-24PG-8.8	3370978
PDB12PZ-08-C-N-500V500-12PG-2.2	3370953
PDB12PZ-08-C-N-500V500-24PG-8.8	3370976
PDB12PZ-09-C-N-087V087-12PG-2.2	3370981
PDB12PZ-09-C-N-087V087-24PG-8.8	3370980
PDB12PZ-09-C-N-140V140-12PG-2.2	3370986
PDB12PZ-09-C-N-140V140-24PG-8.8	3370985
PDB12PZ-09-C-N-330V330-12PG-2.2	3370983
PDB12PZ-09-C-N-330V330-24PG-8.8	3370984

Further versions on request.

Spare parts, seal kits

Designation	Material	Code	Part no.
Seal kit	NBR	FS122-N	3071298
Seal kit	FKM	FS122-V	3262477

Housing

Designation	Material	Code	Pressure max.	Connections	Weight	Part no.
Inline connection housing	Steel, zinc-plated	FH122-SB6	420 bar	G3/4	1.88 kg	3053782
Inline connection housing	Aluminium, anodised	FH122-AB6	245 bar	G3/4	0.56 kg	3053843

Cavity tools

Designation	Part no.
Step drill FC12-2	176951
Reamer FC12-2	176952

NOTE

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

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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