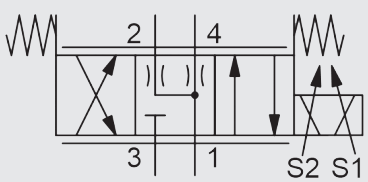
HYDAC INTERNATIONAL

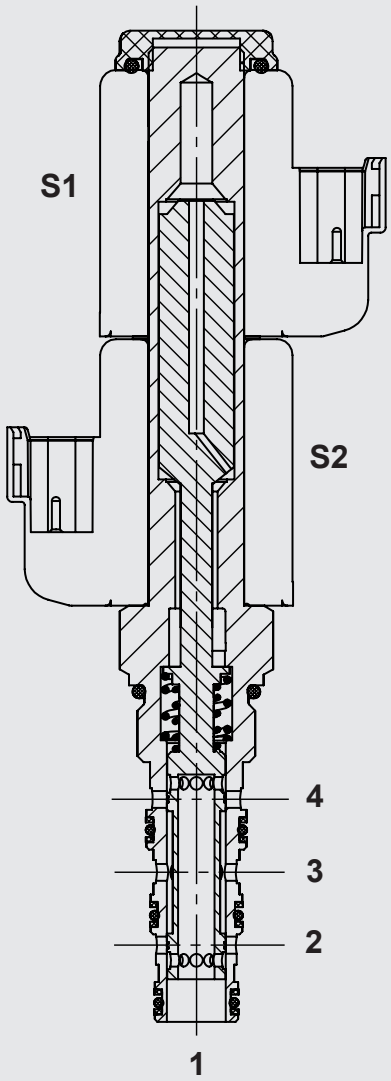


up to 26 l/min
up to 350 bar

4/3 proportional directional valve
PWK10J

Cartridge valve, spool type, direct-acting, UNF – 350 bar

FUNCTION



PRODUCT ADVANTAGES

- High stability across the whole pressure and flow range
- Quick response
- Hardened and ground valve components for minimised wear and extended availability
- External surfaces with advanced corrosion protection due to ZnNi coating (1,000 h salt spray test)

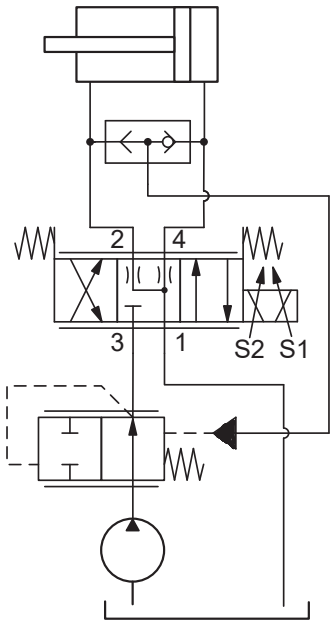
FUNCTION DESCRIPTIONS

The 4/3 proportional directional valve is closed in the centre position when de-energised. In this position it internally relieves ports 2 and 4 to port 1.

A consumer that is connected is therefore relieved to the tank on the pressure side. A maximum flow rate equivalent to the specified leakage is permitted at port 4.
When coil S1 is energised, flow passes through the ports in directions 3 to 4 and 2 to 1.
When coil S2 is energised, flow passes through the ports in directions 3 to 2 and 4 to 1.
The coils are to be energised alternately. The flow rate is proportional to the level of coil energisation.

Notice: For cylinders with different piston areas, the cylinder connection with the higher flow rate flowing to the tank must be connected to port 4 of the valve.

Application example



The valve function is largely equivalent to that of a pressure-dependent throttle valve. If the influence of a variable load pressure and/or supply pressure in the application is to be minimised, a pressure compensator should be installed upstream from the valve. See example of application.

EN 5.991.34.0/02.24

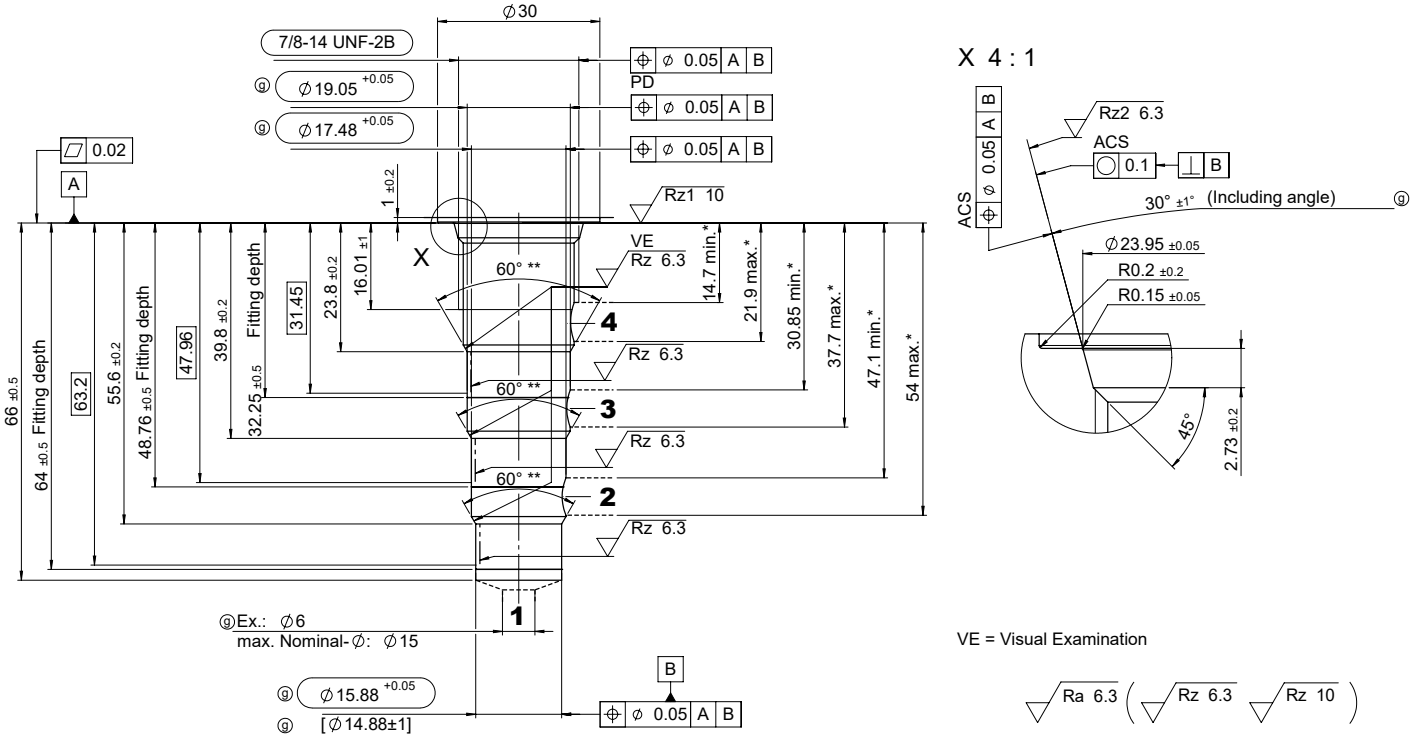
SPECIFICATIONS[1)]

Operating pressure	max. 350 bar (5000 psi) port 2, 3, 4
Tank pressure	max. 210 bar (3000 psi) port 1
Flow rate PWK10J-01 M	max. 26.0 l/min (7.0 gpm) at 6.9 bar (100 psi) with actuated S1 coil with 70% I_{max} max. 24.0 l/min (6.5 gpm) at 6.9 bar (100 psi) with actuated S2 coil with 70% I_{max}
Pressure fluid	Hydraulic oil to DIN 51524 Part 1, 2 and 3
Ambient temperature range	min. -30 °C to max. +60 °C with NBR seal ring
Temperature range of operating fluid	min. -20 °C to max. +120 °C with NBR seal ring
Viscosity range	min. 7.4 mm²/s to max. 420 mm²/s
Leakage	45 cm³/min at 210 bar and 34 mm²/s (2.7 in³/min at 3000 psi and 158 SUS)
Filtration:	Permitted operating fluid contamination level according to ISO 4406 Class 17/15/12 or better
$MTTF_D$	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	No orientation restrictions
Materials	Valve body: Steel Piston: Steel, hardened Seal ring: NBR (standard) FKM (optional) Support ring: PTFE
Cavity	FC10-4
Weight	0.29 kg
Electrics	
Type of voltage	DC: DC solenoid
Max. permitted coil current, switching coil	12 V coil: 0.68 A @ 12.2 ohms 24 V coil: 0.34 A @ 48.7 ohms
Max. permitted coil current, proportional coil	12 V coil: 1.2 A @ 5.6 ohms 24 V coil: 0.58 A @ 23.7 ohms
Recommended dither frequency	100 Hz (±25 % of max. control current)
Hysteresis with dither	≤10 % of the max. control current
Repeatability with dither	≤3 % of max. flow rate range
Neutral point overlap	25 % of the max. control current
Permitted voltage range, switching coil	85 %–115 % of rated voltage
Duty cycle	Continuous duty at 70 % of max. permitted control current
Step response time, current signal from 0–100 %	240 mn
Coil design	Coil 50-1836

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

CAVITY

FC10-4

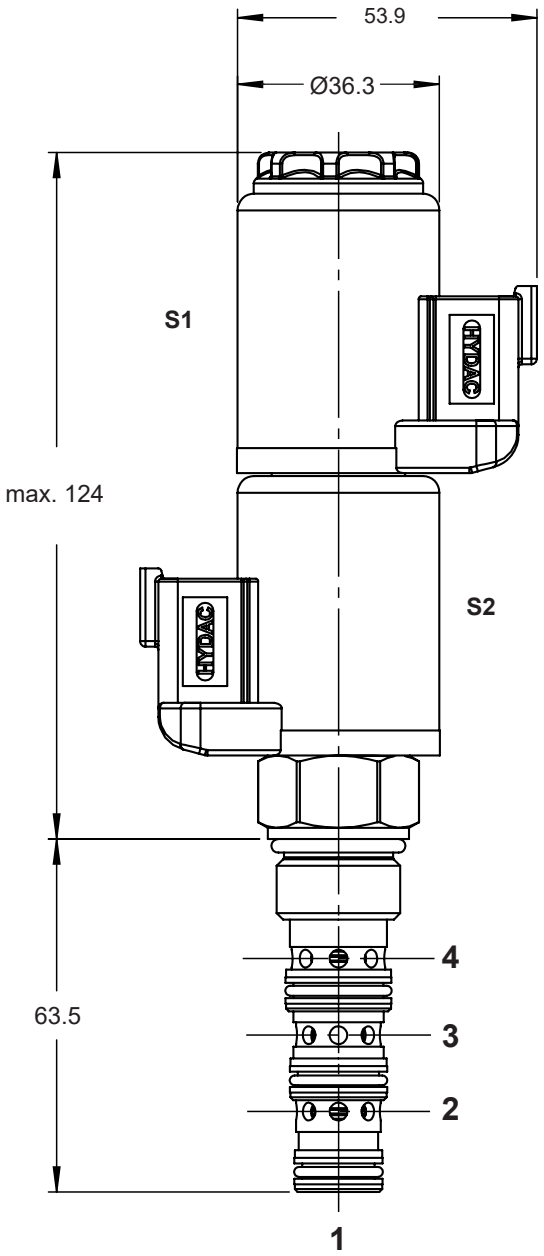


* Permitted boring zone (for block design)
** Sharp edges should be avoided (unless otherwise specified) using a radius of 0.1 mm to 0.2 mm.
*** Largest pre-drilling diameter (nominal tool diameter)

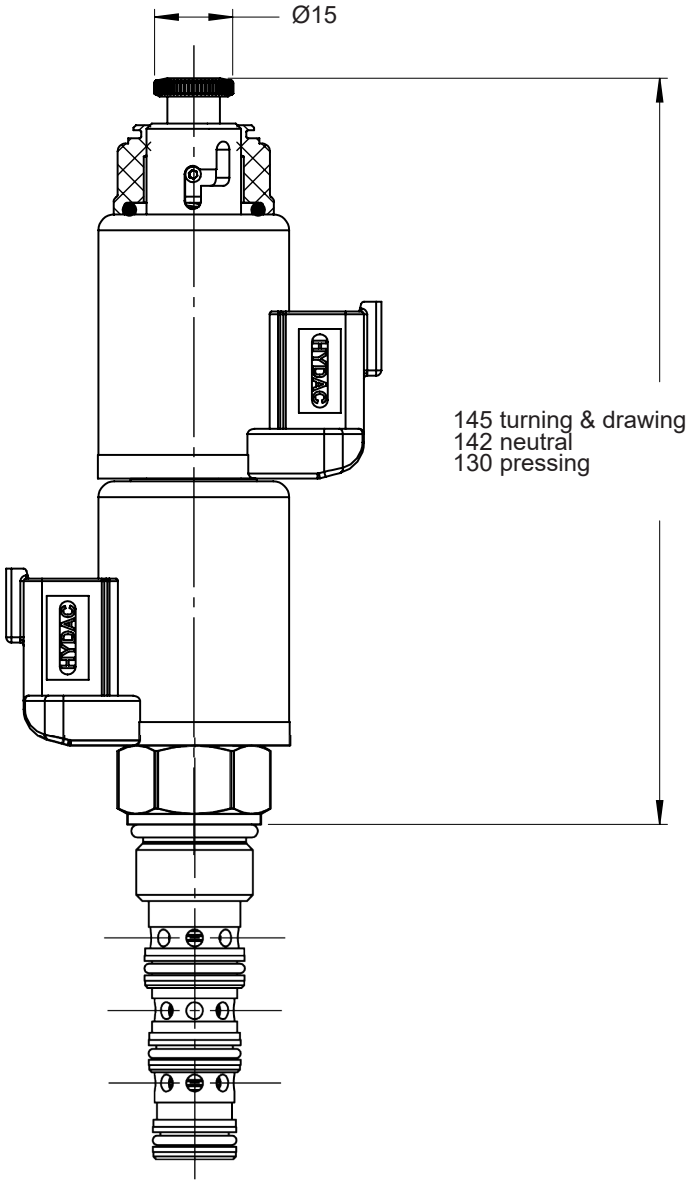
Millimetres
Subject to technical modifications.

DIMENSIONS

Version: -01



Version: -01M (manual override)



*Tightening torque:
Steel housing (burst strength > 360 N/mm²): 40 - 45 Nm
Aluminium housing (burst strength > 330 N/mm²): 40 - 45 Nm
(With torque tool according to DIN EN ISO 6789, tool type II class A or B)
For more information, see “Operating conditions and instructions for valves” in brochure 53.000

Millimetres
Subject to technical modifications.

MODEL CODE

PWK10J – 01 – C – N – 6.3 – 100 – 24 – DN

Designation
4/3 proportional directional valve

Version
01 = standard version
01M = manual override

Body and ports
C = cartridge valve
AS10 = mounted in inline connection housing, aluminium
SS10 = mounted in inline connection housing, steel

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

Flow rate
6.3 = 24 l/min (6.3 gpm) at 100 psi
9.5 = 36 l/min (9.5 gpm) at 200 psi

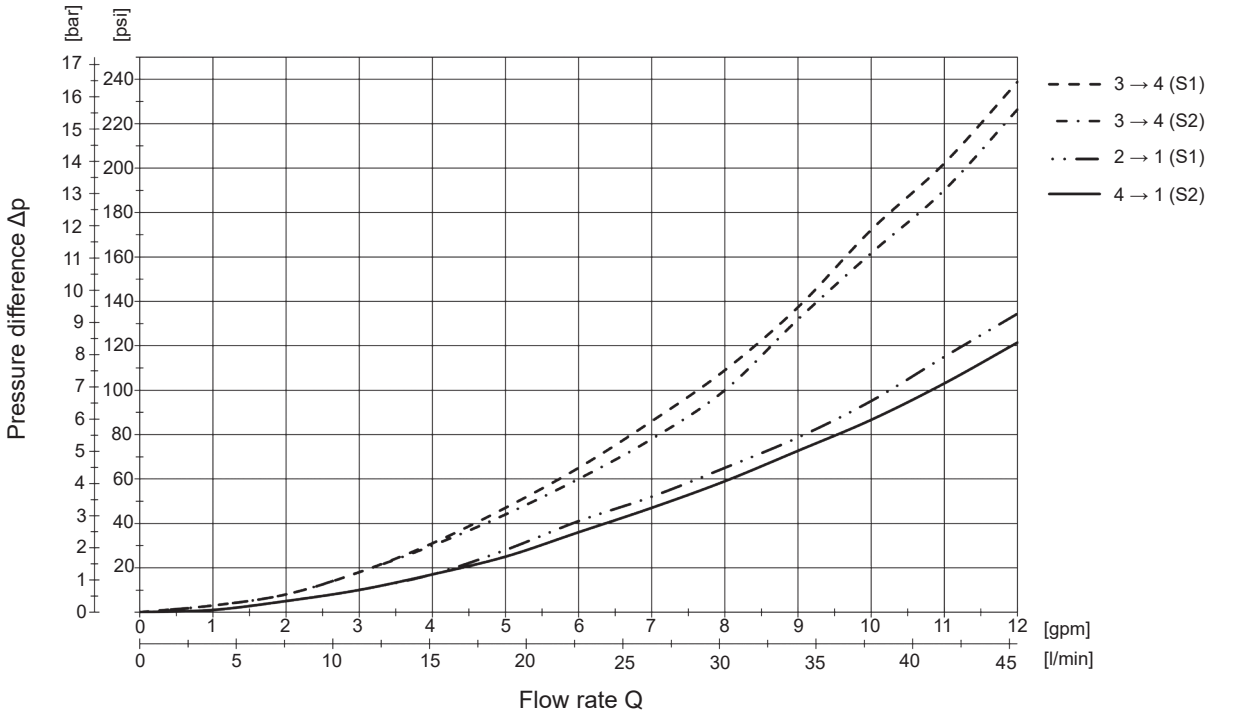
Pressure drop
100 = 6 bar (100 psi)
200 = 13.8 bar (200 psi)

Rated voltage for actuating coil
0 = without coil
12 = 12 V DC
24 = 24 V DC

Coil design
DG = connection plug, design A to DIN EN 175301-803, radial, protection class IP65
DL = connection with two flying leads, 0.75mm², 460 mm (18") long, radial, protection class IP65/IP67
DN = Deutsch plug connector DT04-2P, 2-pole, axial, protection class IP67/IP69
PN = Deutsch plug connector DT04-2P, 2-pole, proportional coil (IP69K, only operate with current limitation)

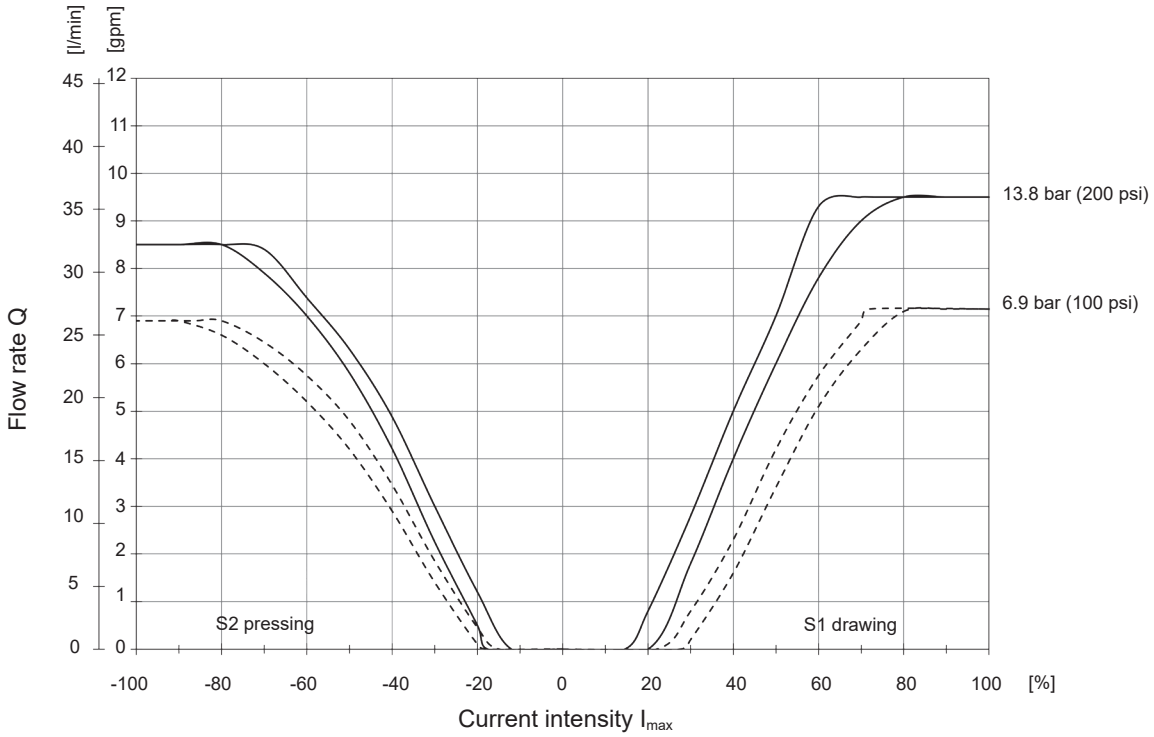
TYPICAL PERFORMANCE CURVES

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

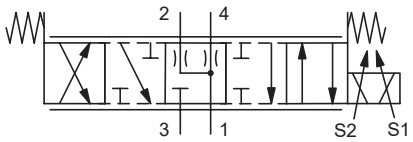


TYPICAL PERFORMANCE CURVES

Q/I performance curves with pressure compensator function in 100, 200 psi. Measured at ν = 34 mm²/s, T_{Oil} = 46 °C



SYMBOL WITH SWITCHING POSITION TRANSITION



MATERIAL OVERVIEW

Standard models

Designation	Part no.
PWK10J-01-C-N-6.3-100-0	2610701
PWK10J-01-C-N-9.5-200-0	2610855
PWK10J-01M-C-V-6.3-100-0	2611333

Further versions on request.

Spare parts, seal kits

Designation	Material	Part no.
Seal kit NBR	NBR	3051912
Seal kit FKM	FKM	3071275

Housings

Designation	Material	Code	Pressure max.	Weight	Part no.
Inline connection housing	Aluminium, anodised	FH104-AS10	210 bar	0.33 kg	2602109
Inline connection housing	Steel, zinc-plated	FH104-SS10	350 bar	0.96 kg	2602009

Cavity tools

Designation	Part no.
Step drill	2582057
Reamer	2582058

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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