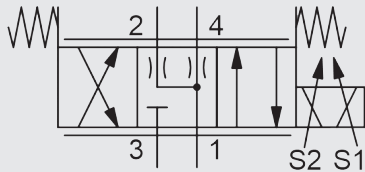


## 4/3 proportional directional valve

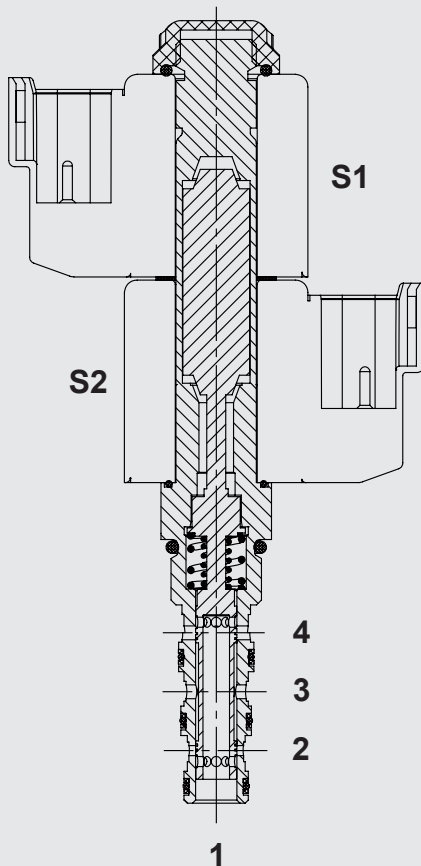
### PWK06J

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



up to 6 l/min  
up to 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.

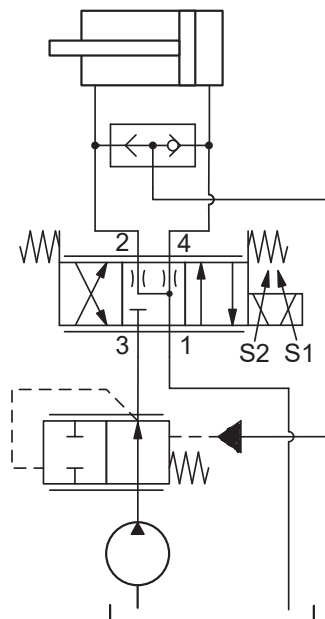
When coil S1 is energised, flow passes through the ports in directions 3 to 4 and 2 to 1.

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.

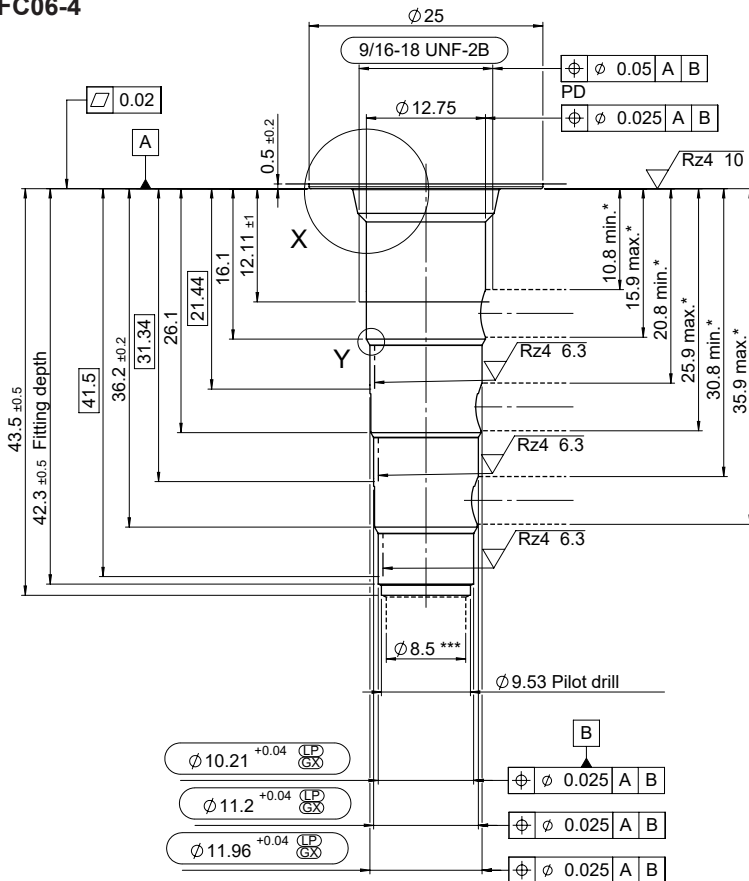
# SPECIFICATIONS<sup>1</sup>

Operating pressure	max. 350 bar (5000 psi) port 2, 3, 4	
Tank pressure	max. 210 bar (3000 psi) port 1	
Flow rate PWK06J-01	max. 6.0 l/min (1.6 gpm) at 6.9 bar (100 psi) with actuated S1 coil with 70% I <sub>max</sub> max. 5.0 l/min (1.3 gpm) at 6.9 bar (100 psi) with actuated S2 coil with 70% I <sub>max</sub>	
Flow rate PWK06J-01M	max. 5.3 l/min (1.4 gpm) at 6.9 bar (100 psi) with actuated S1 coil with 70% I <sub>max</sub> max. 5.0 l/min (1.3 gpm) at 6.9 bar (100 psi) with actuated S2 coil with 70% I <sub>max</sub>	
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 mm <sup>2</sup> /s to max. 420 mm <sup>2</sup> /s	
Leakage	45 cm <sup>3</sup> /min at 210 bar and 34 mm <sup>2</sup> /s (2.7 in <sup>3</sup> /min at 3000 psi and 158 SUS)	
Filtration:	Permitted operating fluid contamination level according to ISO 4406 Class 17/15/12 or better	
MTTF <sub>D</sub>	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	FC06-4	
Weight	0.29 kg	
<b>Electrics</b>		
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 32-1329	

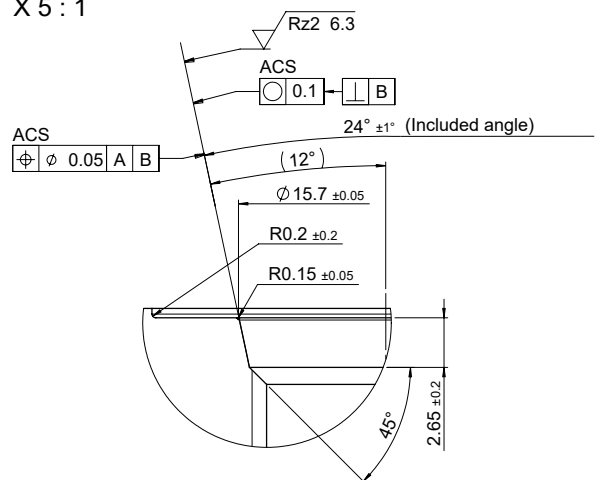
<sup>1</sup> See "Conditions and Instructions for Valves" in brochure 53.000

## CAVITY

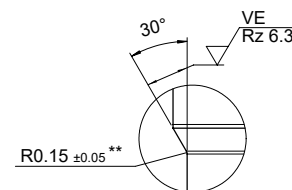
### FC06-4



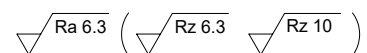
X 5 : 1



Y 10 : 1  
(3x)



VE = Visual Examination



\* 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.

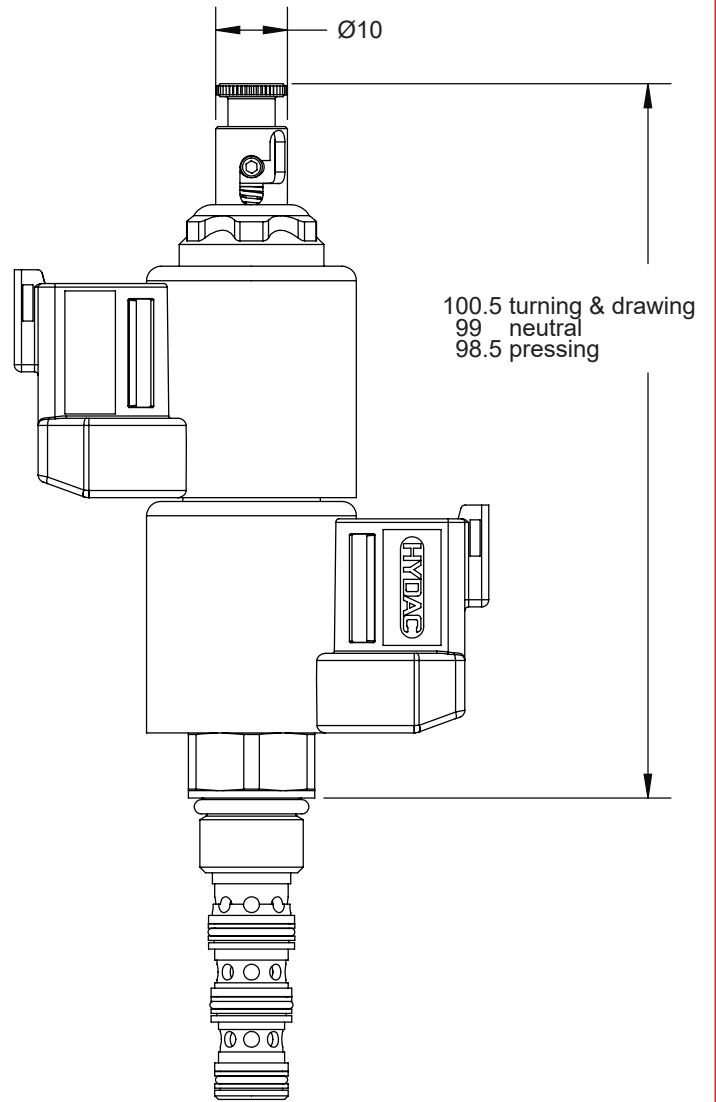
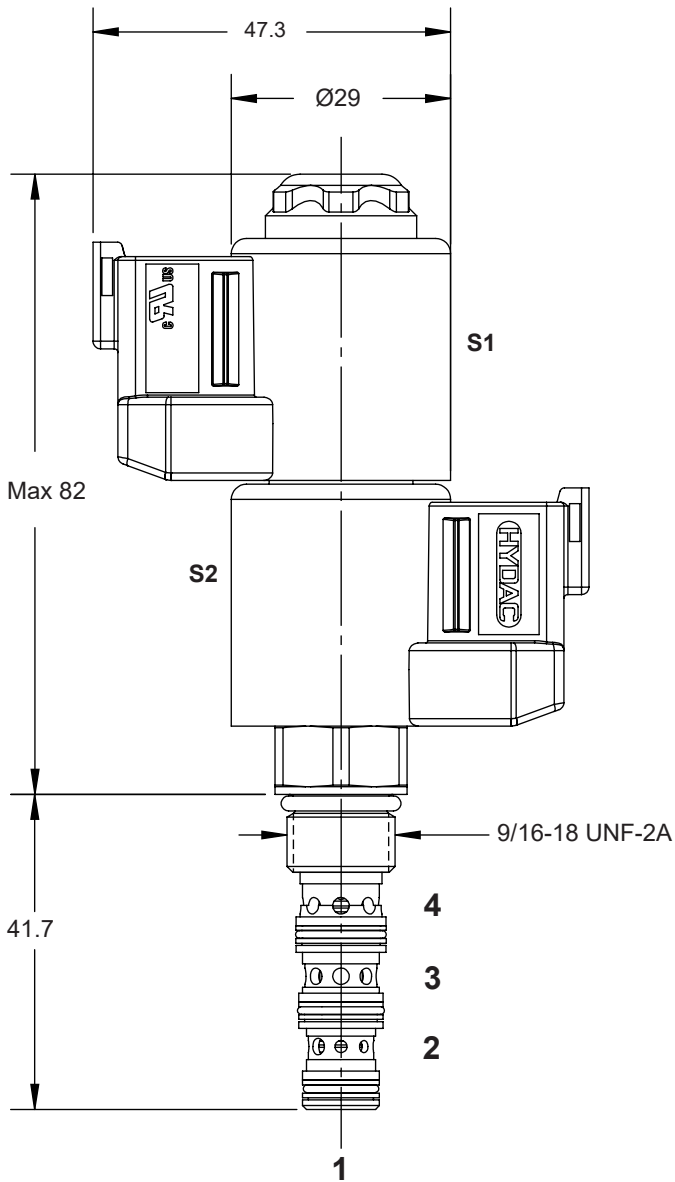
\*\*\* Largest pre-drilling diameter (nominal tool diameter)

Millimetres  
Subject to technical modifications.

# DIMENSIONS

Version: -01

Version: -01M (manual override)



\*Tightening torque:  
 Steel housing (burst strength > 360 N/mm<sup>2</sup>): 40 - 45 Nm  
 Aluminium housing (burst strength > 330 N/mm<sup>2</sup>): 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

PWK06J - 01 - C - N - 1.5 - 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

1.5 = 6 l/min (1.5 gpm)

### Pressure drop

100 = 6 l/min (100 psi)

### Rated voltage for actuating coil

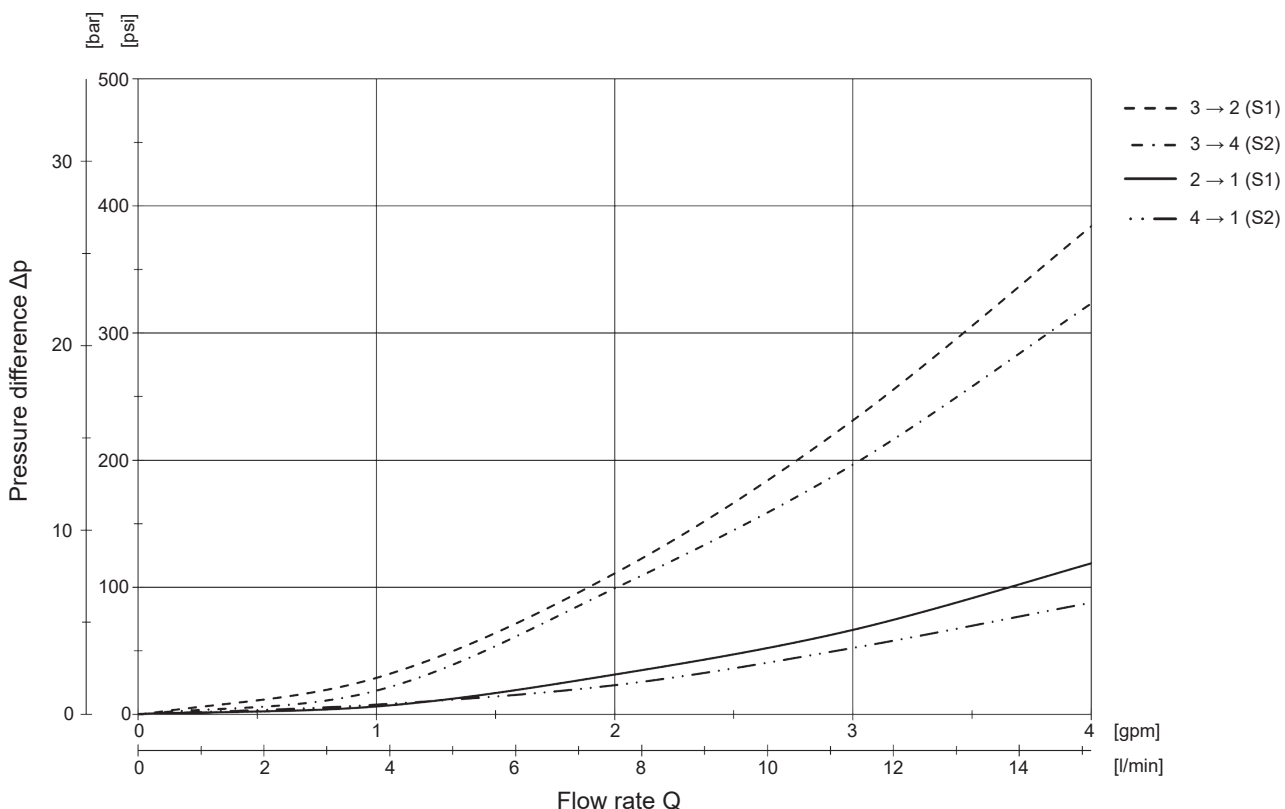
0 = without coil  
12 = 12 V DC  
24 = 24 V DC

### Coil design

DG = connection plug, design A to DIN EN 175301-803, radial, protection class IP65  
DL = connection with two flying leads, 0.75mm<sup>2</sup>, 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)

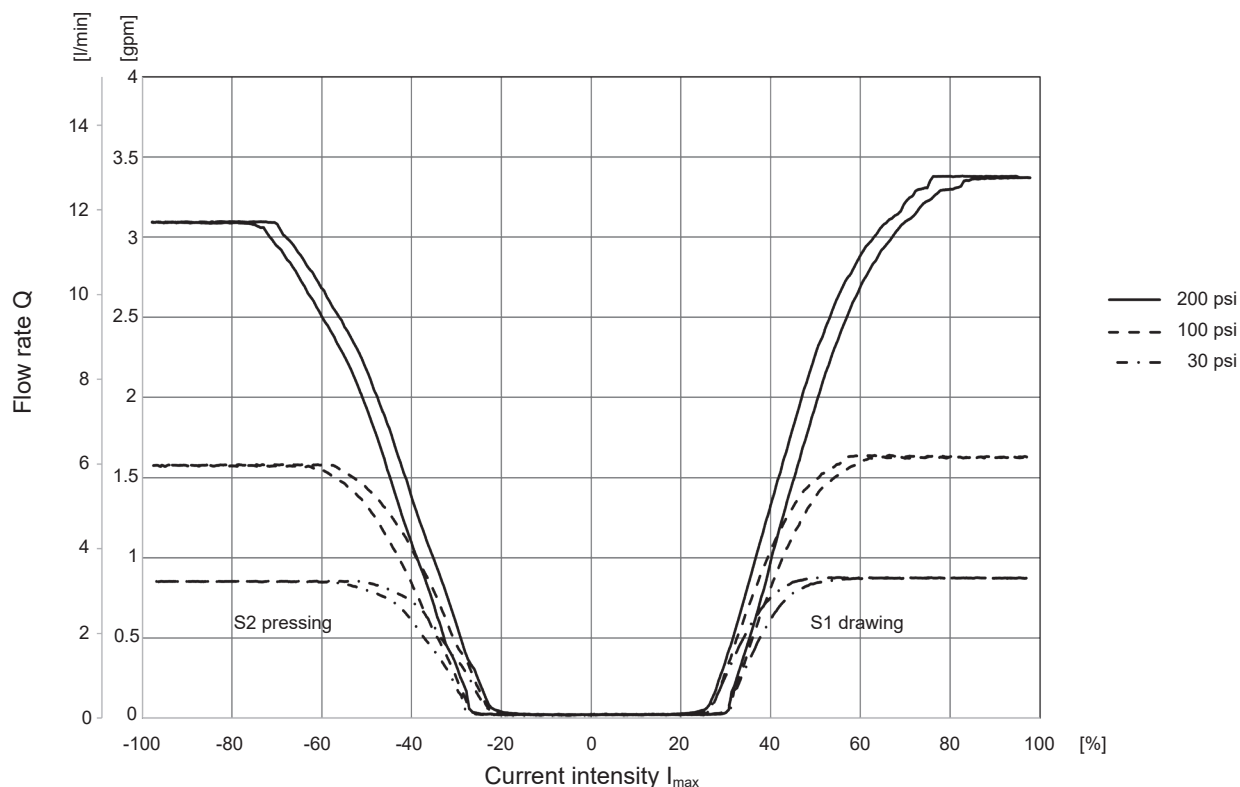
## TYPICAL PERFORMANCE CURVES

$\Delta p/Q$  performance curves measured at  $v = 34 \text{ mm}^2/\text{s}$ ,  $T_{\text{Oil}} = 46 \text{ }^\circ\text{C}$

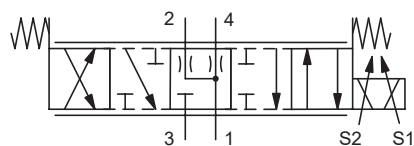


## TYPICAL PERFORMANCE CURVES

Q/I performance curves with pressure compensator function in 30, 100, 200 psi. Measured at  $v = 34 \text{ mm}^2/\text{s}$ ,  $T_{\text{Oil}} = 46 \text{ }^\circ\text{C}$



## SYMBOL WITH SWITCHING POSITION TRANSITION



## MATERIAL OVERVIEW

### Standard models

Designation	Part no.
PWK06J-01-C-N-1.5-100-0	2610813
PWK06J-01M-C-N-1.5-100-0	2611392

Further versions on request.

### Spare parts, seal kits

Designation	Material	Part no.
Seal kit NBR	NBR	2582057
Seal kit FKM	FKM	2582058

### Housings

Designation	Material	Code	Pressure max.	Weight	Part no.
Inline connection housing	Aluminium, anodised	FH064-AS6	210 bar	0.20 kg	2600923
Inline connection housing	Steel, zinc-plated	FH064-SS6	350 bar	0.57 kg	2600924

### 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.

**HYDAC FLUIDTECHNIK GMBH**  
 Justus-von-Liebig-Str.  
**66280 Sulzbach/Saar**  
**Germany**  
 Phone: +49 68 97 509-01  
 E-mail: valves@hydac.com  
 Internet: www.hydac.com