HYDAC INTERNATIONAL

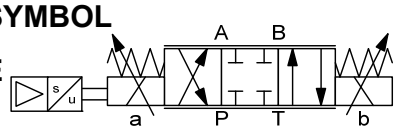
4/3-Proportional Solenoid Valve direct acting, with integrated Electronics and transducer

Subplate to ISO4401

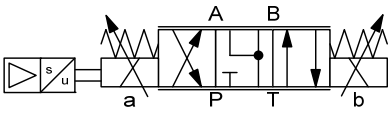
P4WRE 10

SYMBOL

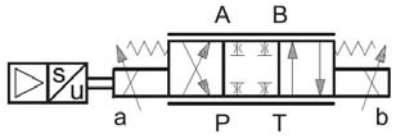
E



J

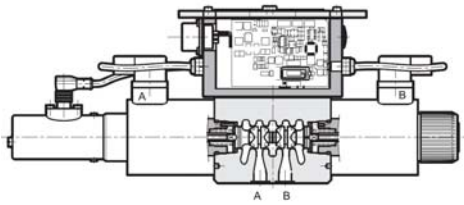


Z



Up to 180 l/min
Up to 320 bar

FUNCTION



The P4WRE10 is a direct acting solenoid valve which combines the directional control with the velocity control of the consumer.
The controlled nominal flow is proportional to the electrical input signal at the coil.
Analogue to his size the coil creates a force and moves the piston against the spring. Herewith the corresponding cross section diameters are opened which determines the flow rate in dependence of the pressure differential.
The integrated digital electronics permits a better performance of the valve and function by
- shortened response times
- reduced hysteresis
- better repeat accuracy

FEATURES

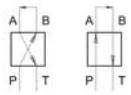
- High flow rate due to optimized casted housing
- Small hysteresis by super finish of moving parts
- Long life cycle times by armature switching under oil
- Minimal wear by hardened and ground valve piston
- Simple exchangeability by international standardized hole pattern to ISO 4401
- Integrated digital amplifier and position transducer

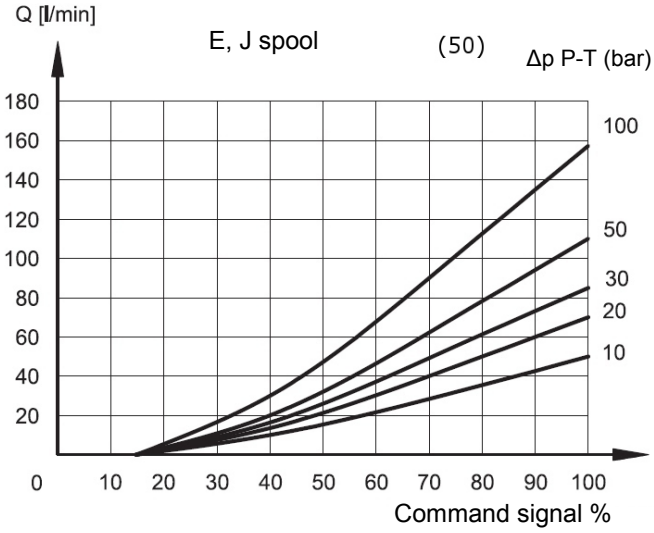
SPECIFICATIONS

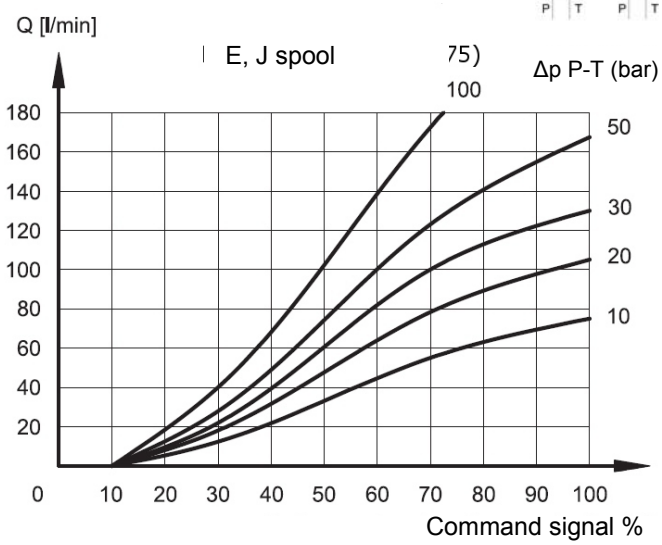
Operating pressure:	ports P,A,B max. 320 bar port T max. 210 bar
Maximal flow:	180 l/min (ΔP 10 bar P->T)
Nominal flow:	50 l/min 75 l/min 70/35 = 70 l/min (P-A) 35 l/min (P-B)
Hysteresis:	(in % of Qmax) < 0,2 %
Repeat accuracy: (in % of Qmax)	< +/- 0,1 %
Media operating temp.range:	-20°C up to +80°C
Ambient temperature range:	-20°C up to +50°C
Hydraulic fluid:	Hydraulic fluid to DIN 51524 part 1 / 2
Viscosity range:	10 mm^2/s up to 400mm^2/s
Filtration:	Class 18/16/13 up to 19/17/14 according to ISO4406
Coil duty rating:	100% (continuous)
Supply voltage:	DC
Nominal current:	0,86 A bei 24V DC
Resistance at 20°C:	17,6 Ohm bei 24V DC
Electromagnetic compatibility: (EMC)	Emissions to EN 50081-1 compatibility to EN 50082-2 to Norm 89/336 CEE
IP rating:	IP65
Installation:	no orientation restrictions
Hint:	Vent system and valve before setting in motion
Hole pattern:	ISO4401-05-04-0-05
Weight:	7,1 kg

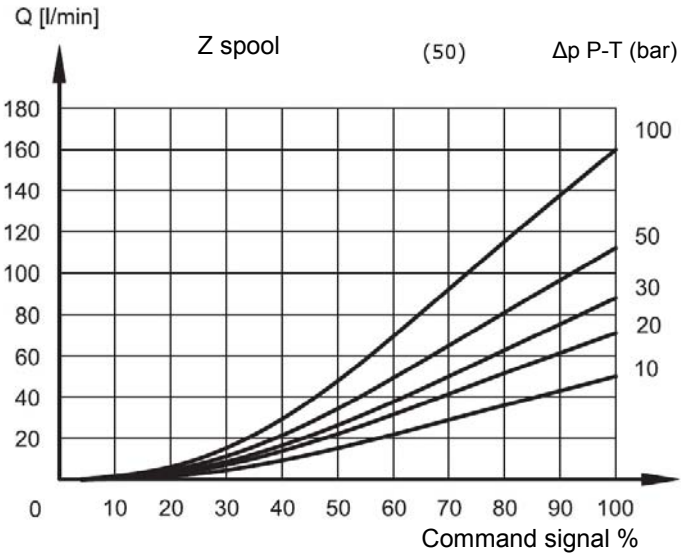
PERFORMANCE

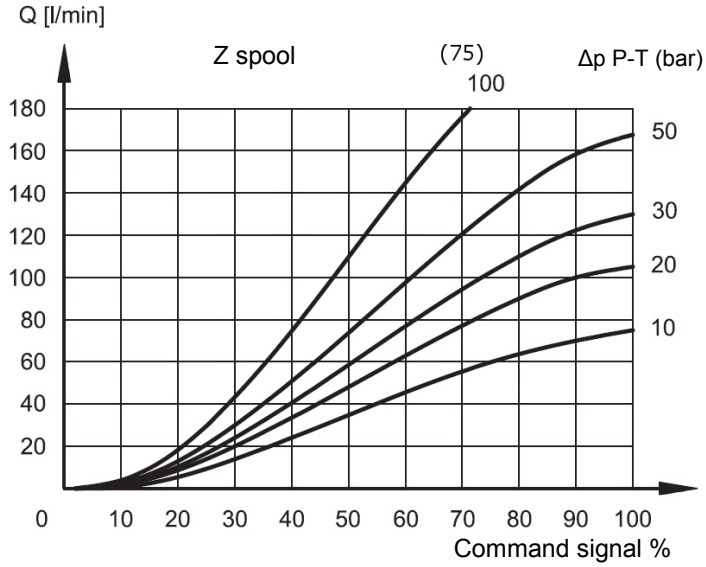
measured at ν= 33 mm²/s and T_{oil} = 46° C (The related Δp is measured between lines P and T of the valve)





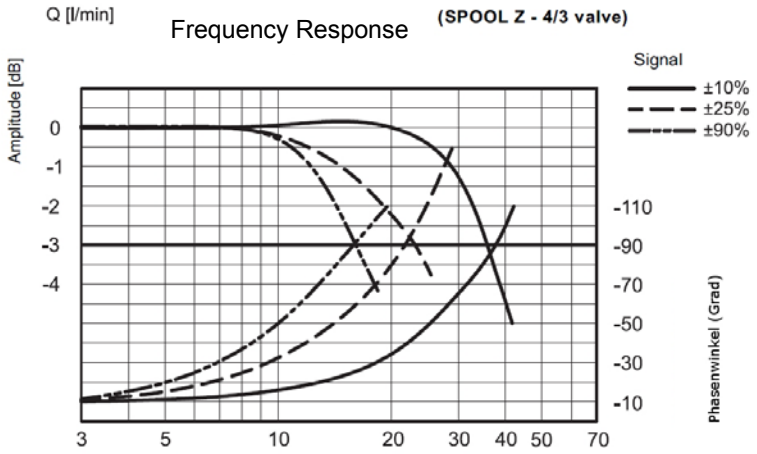




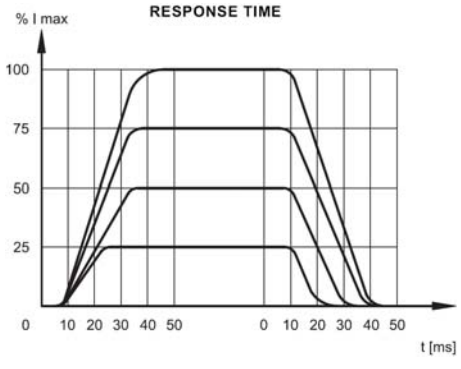


Pressure gain

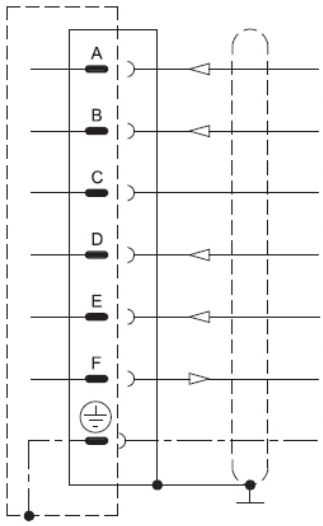
Frequency Response



Curve taken at 50% flow and ΔP 10 bar P->T

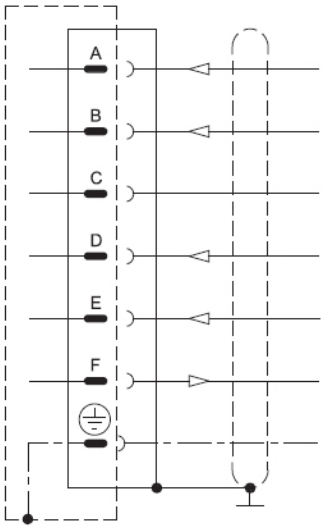


Input signal E0 voltage signal



Pin	Values	Function	NOTES
A	24 V DC	Voltage	from 19 to 35 V DC (ripple max 3 Vpp) (see **NOTE 1**)
B	0 V	Power supply (zero)	0 V
C	24 V DC	Valve Enable	**NOTE 2**
D	± 10 V	Input signal analogue	Impedence R_i > 50 kΩ (see **NOTE 3**)
E	0 V	Ground analogue	---
F	6 - 10V o 2 - 6 -10V	Monitor feedback or Lin comm	see **NOTE 4**
PE	GND	Protective ground	---

Input signal E1 current signal



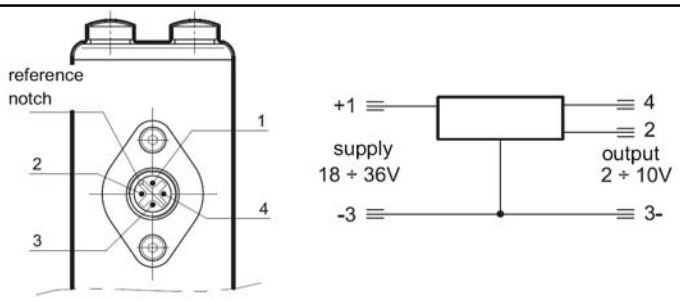
Pin	Values	Function	NOTES
A	24 V DC	Voltage	from 19 to 35 V DC (ripple max 3 Vpp) (see **NOTE 1**)
B	0 V	Power supply (zero)	0 V
C	24 V DC	Valve Enable	**NOTE2**
D	4 ÷ 20 mA	Input signal	Impedence R_i > 500 kΩ
E	0 V	Zero reference	---
F	6 - 10V o 2 - 6 -10V	Monitor point or Lin comm	see **NOTE 4**
PE	GND	Protective ground	---

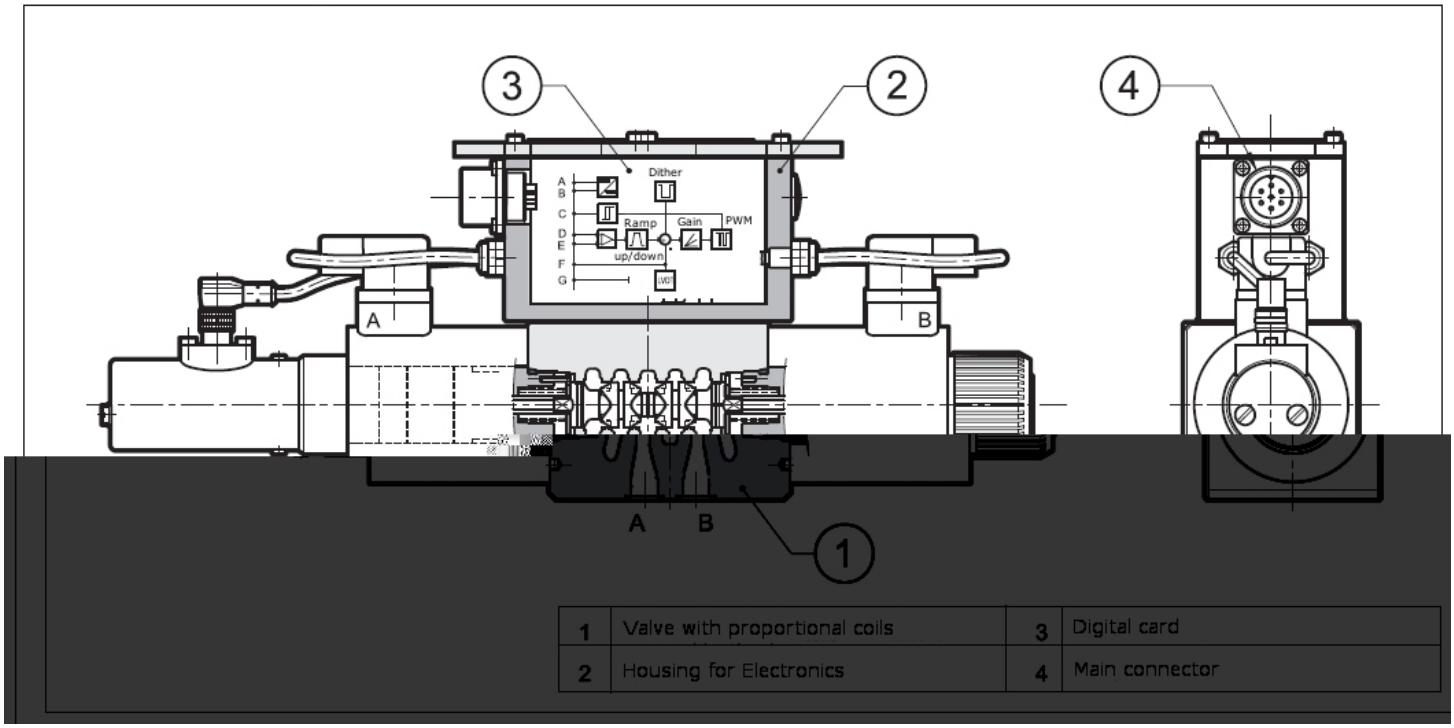
NOTE 1: preview on the Pin A (24 VDC) an external fuse for protecting electronics. Fuse characteristics: 5A/50V type fast.
NOTE 2: preview 24V DC on the PIN C to activate the card power stage.
NOTE 3: The input signal is differential type on E0 version only. For double solenoid valves, with positive reference signal connected to pin D, the valve opening is P - A and B - T. With zero reference signal the valve is in central position. For “SA” single solenoid valves, with positive reference to pin D, the valve opening is P-B and A-T. The spool stroke is proportional to UD - UE. If only one input signal (single-end) is available, the pin B (0V power supply) and the pin E (0V reference signal) must be connected through a jumper and both connected to GND, electric panel side.
NOTE 4: This value changes, as shown in the table below. When MONITOR function is enabled and the card is enabled, read the test point pin F in relation to pin B (0V). When detect a failure or error of the sensor LVDT, the drive bring the valve back in central position and locks it. In this condition the pin F, referring to the pin B, indicates 0V DC output. To reset the fault, the card must be disabled and re-enable. When the card is disabled, the pin F referred to the pin B shows 2.7V DC output: this value is given by the voltage of the LIN bus communication and not by the MONITOR value.

ELECTRONICS

Position Transducer – Electrical connection

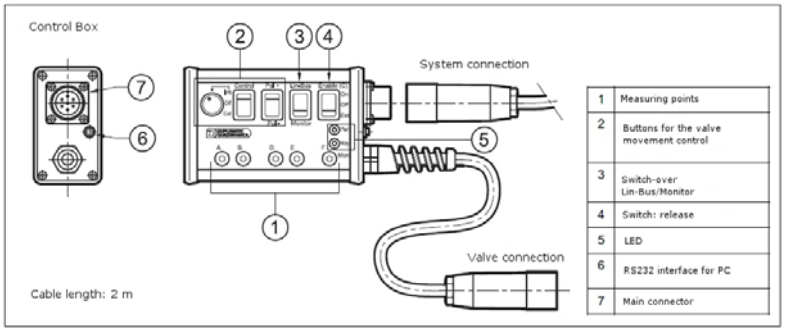
Pin 1	Supply 18 ÷ 36 V	Pin 8c	
Pin 2	Outlet 0 ÷ 10 V	Pin 24a	
Pin 3	0 V	Pin 22c	
Pin 4	NC	NC	





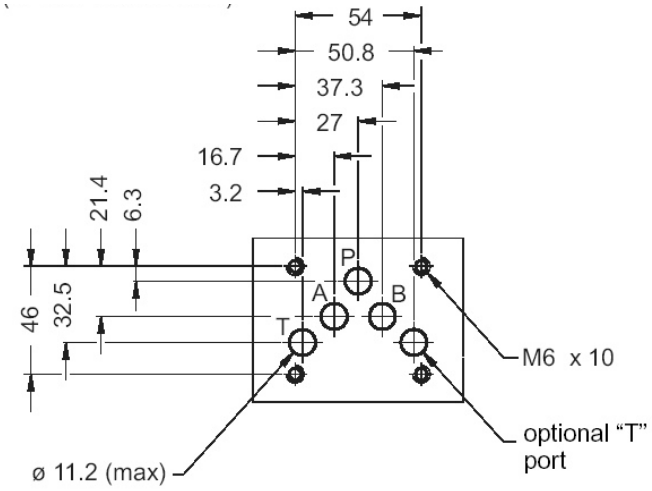
Power input:	70 W
Current draw:	2,6 A max.
Nominal voltage:	24 VDC (19-35VDC, ripple max.3Vpp)
Coil duty rating:	100% (continuous)
Input signal E0:	voltage signal +/-10VDC (Impedance Ri >50 kOhm)
Input signal E1:	current signal 4-20mA (Impedance Ri =500 Ohm)
Alert signals:	Overload and overheating of Electronics, LVDT sensor failure, cable break, power failure <4mA
Communication:	LIN Bus Interface (optional on request)
Electronics port:	7-pin MIL-C-5015-G (DIN43563)
EMC EN61000-6-4:	Corresponding 2004/108 CE Standard
EMC EN61000-6-4:	Corresponding 2004/108 CE Standard
IP rating:	IP65 (CEI EN 60529 Standard)

Attention: to parameterize the OBE a control box is necessary (not in the standard scope of delivery)
Price on request



Standard models **Part No.**
on request

Hole pattern to ISO4401 05-04-0-05



MODEL CODE

P4WRE 10 E 50 D01- 24PG E0 /V

Name
Proportional solenoid valve subplate with integr. Electronics

Nominal size
10

Symbol
E, J, Z

Nominal flow
50= 50 l/min
75 = 75 l/min
70/35 = 70 l/min (P-A), 35 l/min (P-B)
} at Δp= 10 bar P-T

Type
D01 = Standard type with manual override

Nominal voltage
24= 24 V DC

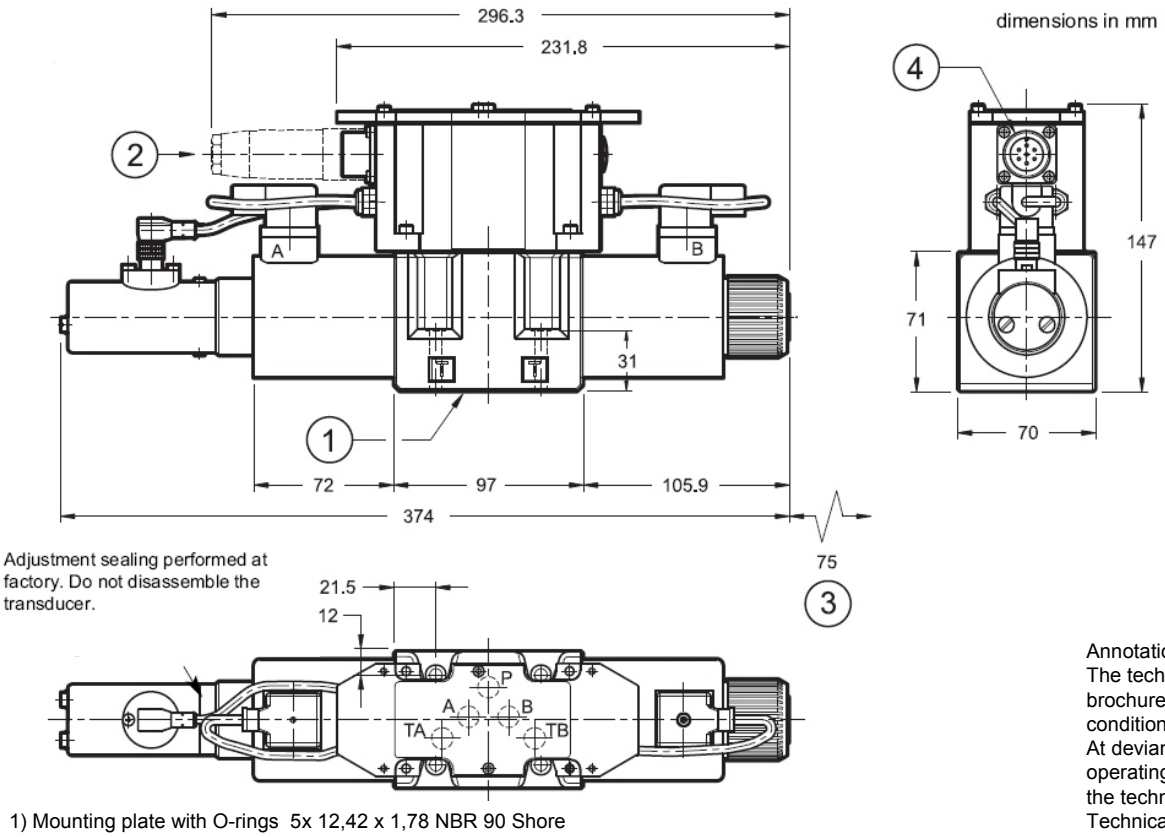
Coil Connector
PG= DIN plug to EN175301-803 (for coil)

Input signal
E0= +/-10 V
E1= 4-20 mA

Seal material
V= FPM (Standard)
N= NBR (optional)

DIMENSIONS

dimensions in mm



Adjustment sealing performed at factory. Do not disassemble the transducer.

1) Mounting plate with O-rings 5x 12,42 x 1,78 NBR 90 Shore
2) Plug 7 pin DIN 43563 – IP65 PG11 EX7/L/10
(not included in delivery Mat. 6080324)
3) Free space for mounting the coil
4) Main plug
Fastening screws: 4x M6 x 40 10.9, Torque 8 Nm +0,5 Nm or quality 12.9 14 Nm
All dimensions in mm. Fastening elements are not in the scope of delivery.

Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com