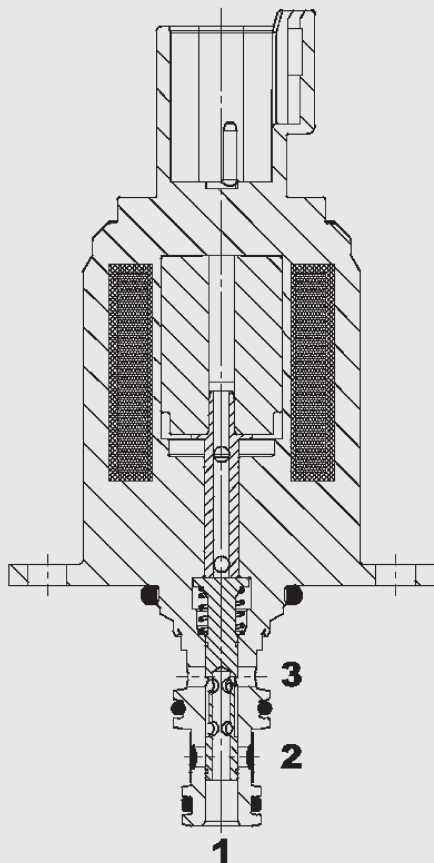


3-Way Proportional Pressure Control Valve **PDRC04T30D**

Spool Type, Direct-Acting
Slip-In Valve – 60 bar

FUNCTION



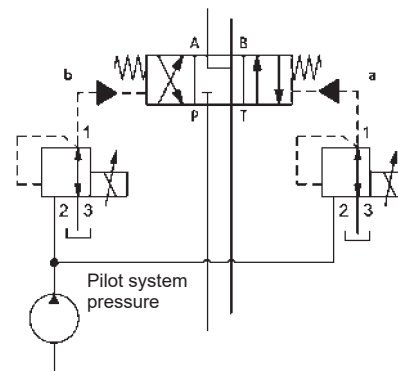
PRODUCT ADVANTAGES

- Main applications: pilot valve for directional spool valves and other main-stage valves, accumulator charging circuits, slewing angle adjustment on pumps, clutches.
- Very compact design
- Excellent small signal characteristics combined with low leakage.
- Very good dynamics thanks to low coil inductance.
- Stable operating behaviour thanks to self-venting after several actuations.
- Robust spring design not affected by tank pressure spikes.
- Extensive environmental trial test has been performed.
- Exposed surfaces zinc-nickel plated for increased corrosion protection.

DESCRIPTION OF FUNCTION

The proportional pressure control valve is a direct-acting 3-way spool-type valve.

When de-energised, port 2 is closed and port 1 (consumer) is connected to port 3 (tank). When the control current is increased, the solenoid coil acts on the control piston with a force that is proportional to the control current, defining the adjusted pressure at port 1. If a pressure acts on port 1 that is higher than the set pressure, because of external influences, the valve opens from port 1 to port 3 (tank).



The valve has been specially developed for pilot applications. In these applications, the main requirement is precise conversion of the input signals to a stable control pressure. At the same time, the leakage during the control procedure must remain low, to ensure that the hydraulic accumulator can preserve the emergency supply of the pilot control circuit for as long as possible in the event of an error.

Notice

Pressures at port 3 are additive to the control pressure. We recommend discharging the oil flowing to the tank from port 3 separately, to shield the valve from pressure spikes caused by the work hydraulics.

SPECIFICATIONS ¹⁾

Operating pressure at port: 2	Max. 60 bar
Tank pressure at port 3	Max. 30 bar (dynamic) Notice: should be piped to tank separately, i.e. not connected to the work hydraulics.
Setting ranges (port 1)	20 / 25 / 32 bar
Flow rate	max. 4 l/min
Internal leakage	25 ml/min. at p2 (primary) = 30 bar and 36 cSt (de-energised)
Temperature range of operating fluid	NBR: min. -30 °C up to max. +105 °C FKM: min. -20 °C up to max. +105 °C
Ambient temperature range	Min. -30 °C to max. +80 °C (see thermal load capacity of the coil)
Operating fluid	Hydraulic oil to DIN 51524 Part 1, 2 and 3
Viscosity range	Min. 7.4 mm ² /s to max. 420 mm ² /s
Filtration of operating fluid	Min. class 20/18/15, to ISO 4406
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
Mounting position	No orientation restrictions
Materials	Valve bodies Steel Pistons Hardened and ground steel Seals NBR, FKM
Corrosion protection ³⁾	672 h salt spray test, in acc. with DIN EN ISO 9227
Cavity	04T30
Weight	0.19 kg
Electronics	
Duty cycle	100 % duty cycle (continuous) ²⁾
Control current range	0–750 mA; 20.8 Ω (24 volt) 0–1500 mA; 4.9 Ω (12 volt)
Dither frequency	110–200 Hz
Hysteresis with dither	≤ 3 % of the max. control current
Repeatability	≤ 1 % of the max. setting range
Reversal error	≤ 0.5 % of the max. control current
Response accuracy	≤ 1 % of the max. control current
Insulation class	H to VDE0580, 180 °C

¹⁾ See "Conditions and Instructions for Valves" in brochure 53.000

²⁾ See "Thermal load capacity of the coil"

³⁾ Downstream actions such as marking or flanging may result in impairment to the surface finish and thus to reduced corrosion protection at these points.

THERMAL LOAD CAPACITY OF THE COIL

100 % duty cycle at T_{ambient} max = 80 °C

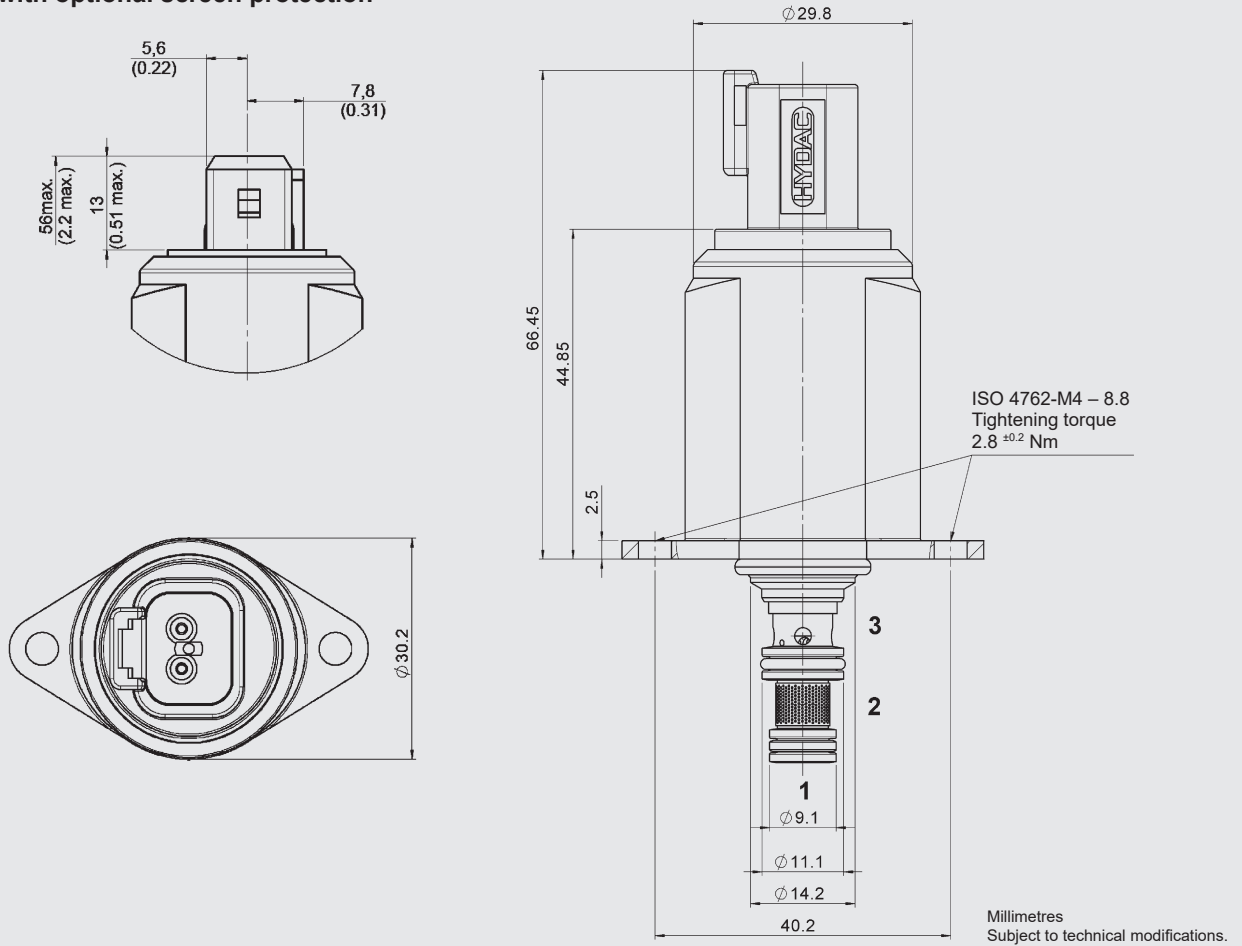
Please note:

The data is based on the complete valve, mounted in a line body (block temperature 105 °C, aluminium or steel; dimensions 40 x 60 x 56 mm), flanged to a base block (block temperature 105 °C, steel; dimensions 200 x 150 x 100 mm).

In the underlying test, air was circulated in the climate chamber with T_{ambient}.

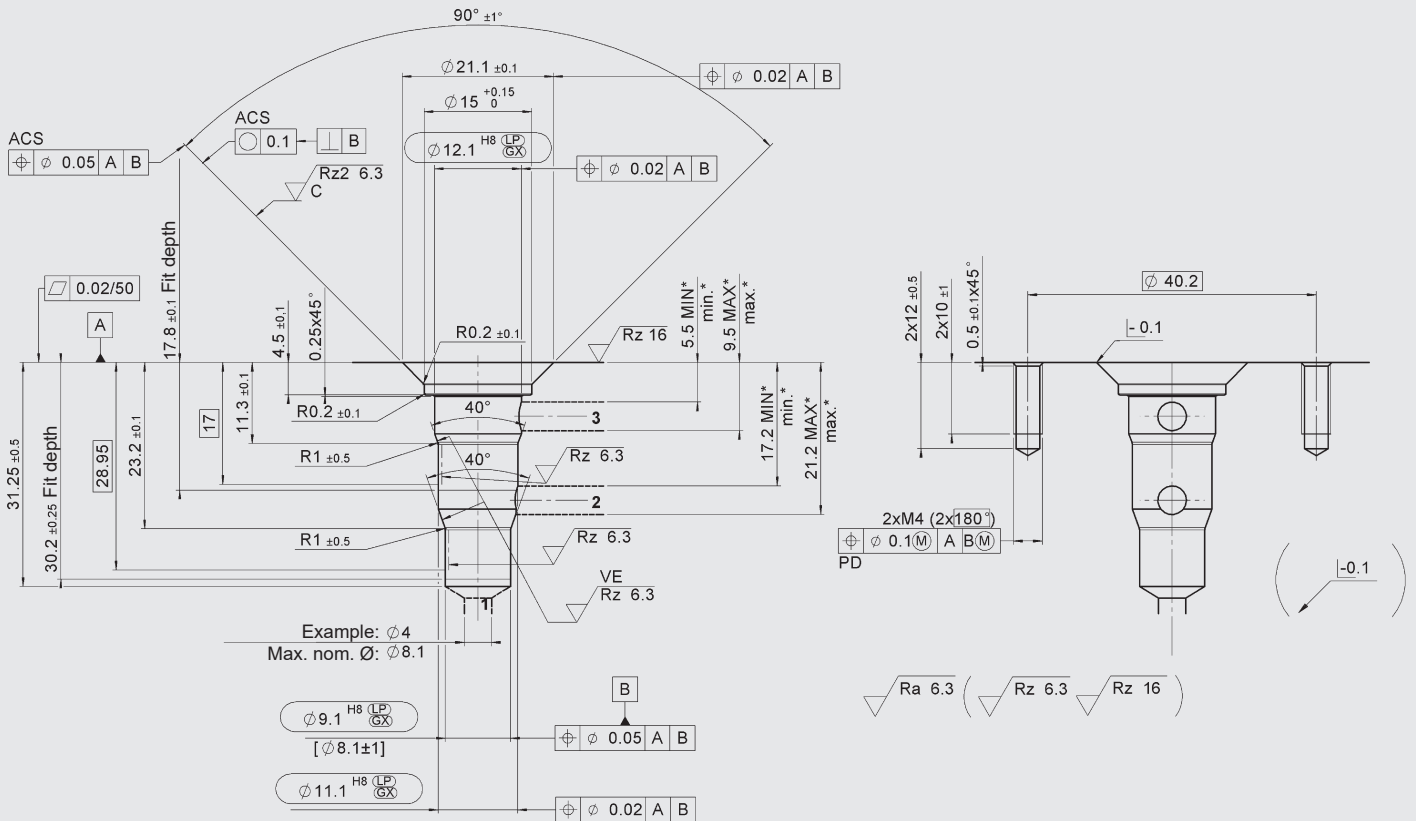
DIMENSIONS

Depiction with optional screen protection



CAVITY

04T30



* Permitted boring zone (for block design)

Millimetres
Subject to technical modifications.

MODEL CODE

PDRC04T30D - 03 - C - V - 20 - 24 PN - 20.8

Description

3-way proportional pressure control valve, compact

Design

01 = without screen
03 = with screen at port 2

Type of connection

C = only cartridge valve (slip-in cartridge)

Sealing material

N = NBR
V = FKM

Setting range

20 = 20 bar
25 = 25 bar
32 = 32 bar

Coil voltage

24 = 24 V DC (20.8 Ω)
12 = 12 V DC (4.9 Ω)

Coil type

DC: PN = Deutsch connector, 2-pole, axial
PU = Junior Timer, 2-pole axial

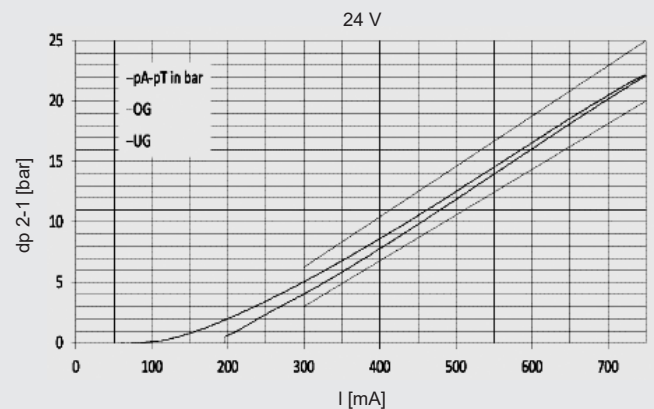
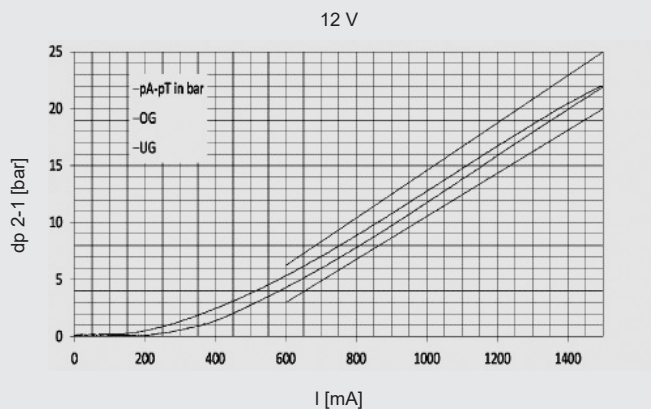
Coil resistance

20.8 = 20.8 Ω (24 V)
4.9 = 4.9 Ω (12 V)

EXAMPLE CHARACTERISTICS

Measured at $\mu = 64 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 32 \text{ }^\circ\text{C}$, $Q = 0 \text{ l/min}$

p/I curve, pressure range 20



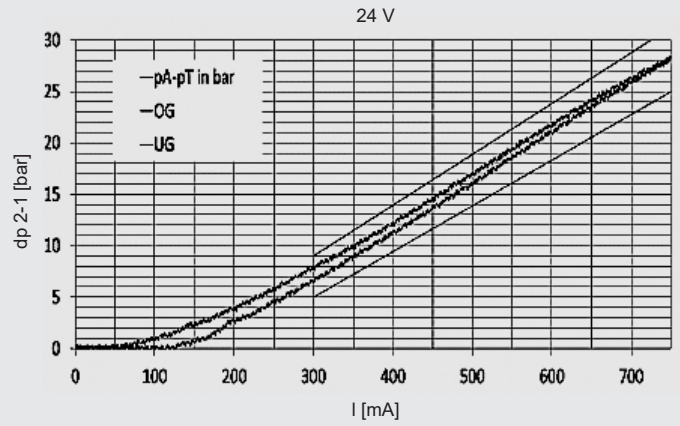
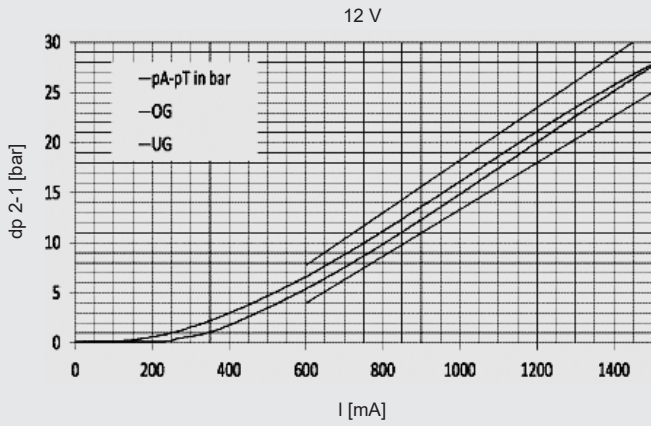
Note:

Upper limit and lower limit refer to the permitted tolerance range for the position of the characteristic curve in series testing. The curve shown represents the statistical average curve in the series testing.

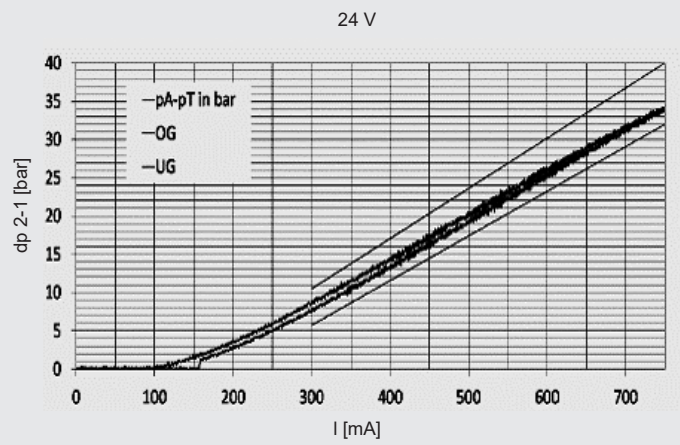
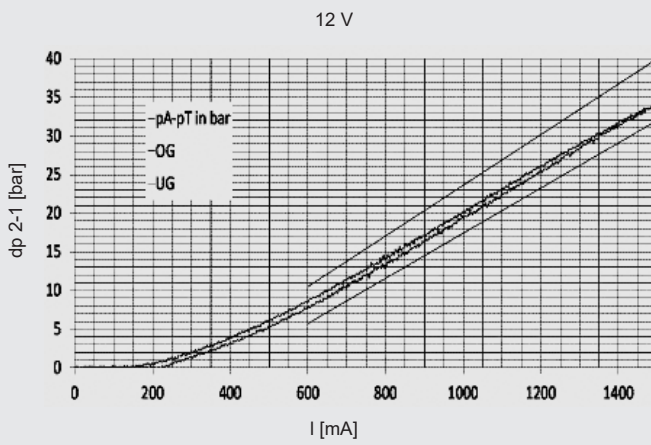
EXAMPLE CHARACTERISTICS

Measured at $\mu = 64 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 32 \text{ }^\circ\text{C}$, $Q = 0 \text{ l/min}$

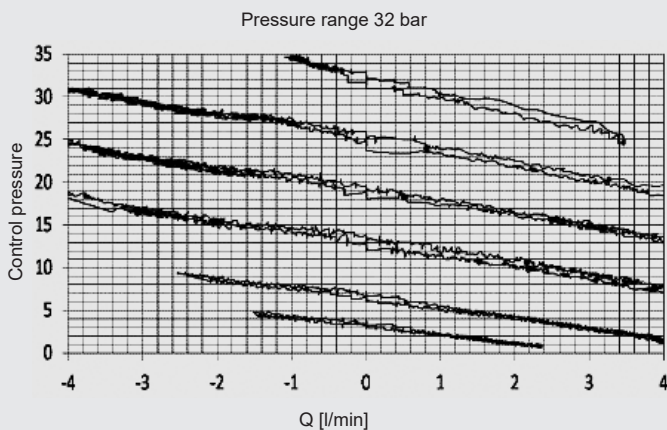
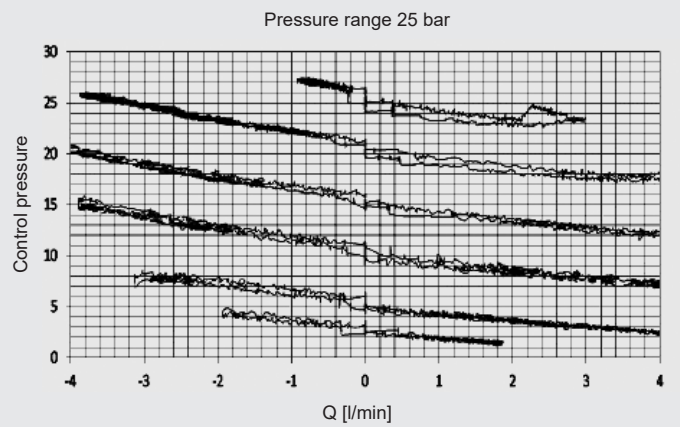
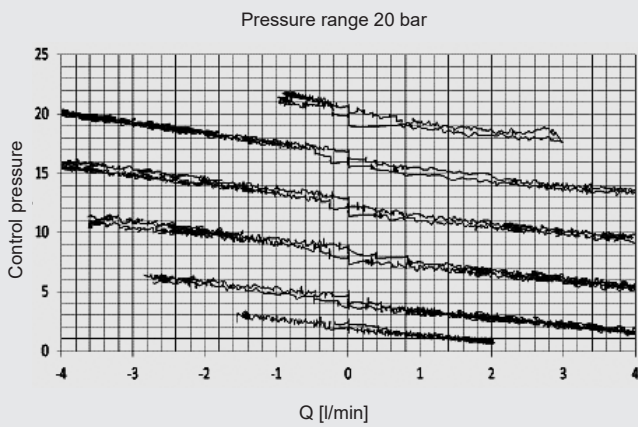
p/I curve, pressure range 25



p/I curve, pressure range 32



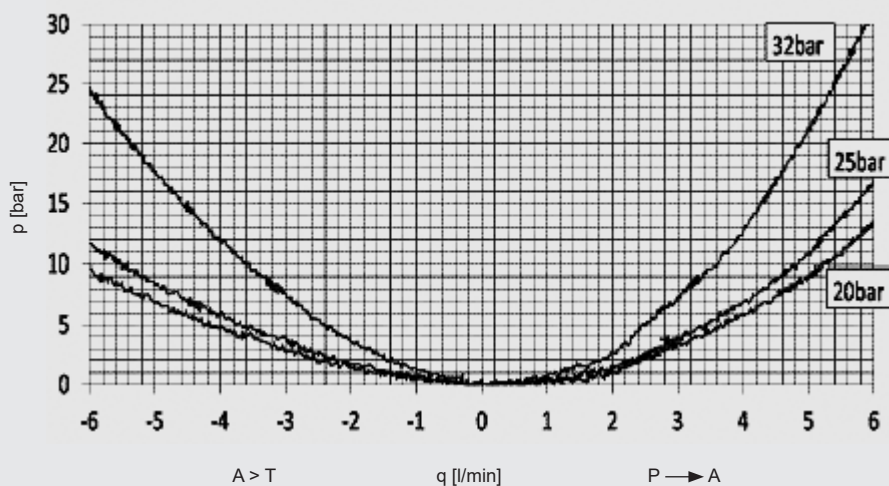
p/Q curve by pressure range



EXAMPLE CHARACTERISTICS

Measured at $\mu = 64 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 32 \text{ }^\circ\text{C}$, $Q = 0 \text{ l/min}$

$\Delta p/Q$ curve (all pressure ranges)



MATERIAL OVERVIEW

Standard models

Designation	Part no.
PDRC04T30D-01-C-N-20-24PN-20.8	4538955
PDRC04T30D-01-C-N-25-12PN-4.9	4495331
PDRC04T30D-03-C-N-25-12PN-4.9	4674488
PDRC04T30D-01-C-V-20-12PN-4.9	4538957

Other versions on request.

Spare parts, seal kits

Description	Material	Part no.
Seal kit 04T30-FKM	FKM	4527332
Seal kit 04T30-NBR	NBR	4527330

Accessories, cavity tools for material aluminium

Designation	Part no.
Step drill	4593830
Countersink	4594238

NOTE

The information in this brochure relates to the operating conditions and applications described.

For applications not described, please contact the relevant technical department.

Subject to technical modifications.

HYDAC Fluidtechnik GmbH

Justus-von-Liebig-Str.

66280 Sulzbach/Saar

Germany

Phone: +49 68 97 / 509-01

Fax: +49 68 97 / 509-598

E-mail: valves@hydac.com