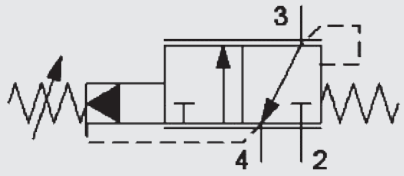
HYDAC INTERNATIONAL

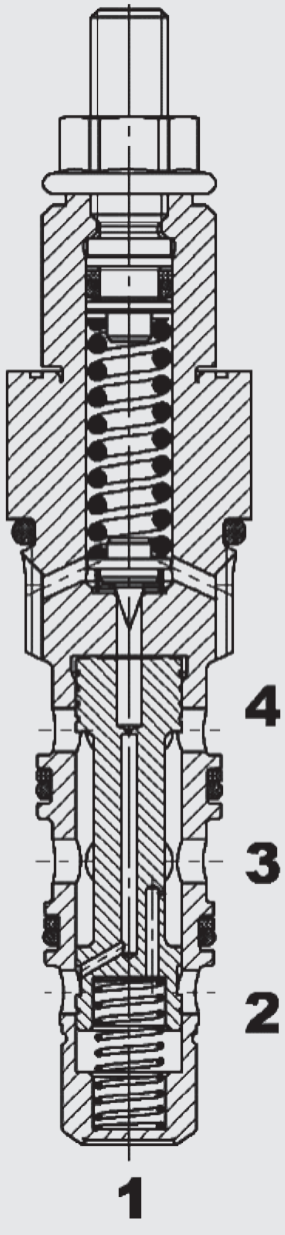


Up to 60 l/min
up to 350 bar

3-directional pressure reducing valve **DR10P-10**

Inverse assignment
Spool Design, Pilot-Operated
Cartridge Valve UNF – 350 bar

FUNCTION



(not used)

PRODUCT ADVANTAGES

- Rapid quadrant change from positional closed-loop position control to pressure limiting function
- Increased safety, gap filter protects control orifice
- Smallest pressure setting < 1 bar
- Optional pressure ranges up to 350 bar
- Stability throughout the entire flow range
- Exposed surfaces zinc-nickel plated for increased corrosion protection (1,000 h salt spray test)

DESCRIPTION OF FUNCTION

The pressure reducing valve is a pilot-operated, spring-loaded 3-way spool valve. Its job is to keep the pressure at actuator connection 3 constant.

Pump connection 2 is internally connected to the back of the main spool via a metering orifice. Actuator connection 3 is connected to port 4 and therefore depressurised to the tank.
If the inlet pressure at port 2 rises, the actuator pressure initially follows the pressure increase with a pressure difference of 1 to 2 bar. When the value preset at the compression spring is reached, the pilot stage opens and oil flows from the back of the main spool to tank connection 4, with the desired pressure materialising at the back of the main spool. The front of the spool, on the opposite side, (spring) communicates with closed-loop control connection 3. If the pressure at closed-loop control connection 3 is lower than the set pressure, the spool moves down and oil can flow from pump connection 2 to the actuator connection 3. If the pressure is too high, the spool moves up and the actuator pressure at connection 3 can be channelled away to tank connection 4 (pressure limiting). Because of the spring force at the main stage spool, the control pressure will always be roughly 1 to 2 bar lower than the pressure in the pilot control system.

Caution:
Port 1 is not used.
Connection 1 is connected to connection 2 in the cavity.

Notice:
Any pressure at port 4 is additive to the valve pressure setting.

Typical field of application:
When a rapid change in the flow direction – change between closed-loop position control and pressure limiting function – is needed.
Example: pressure cylinders in mowing machines, road milling machines, forest harvesting machines, etc. in which the force of a pressure cylinder needs to follow a dynamic profile (e.g. terrain) without any change in the contact force.

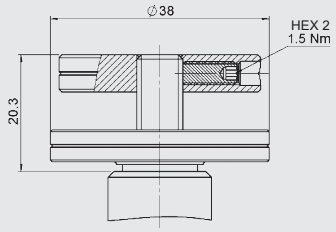
TECHNICAL DATA*

Operating pressure	max. 350 bar	
Setting ranges	< 1 to 35 bar < 1 to 60 bar < 1 to 120 bar < 1 to 230 bar < 1 to 350 bar	
Flow rate	max. 60 l/min	
Internal leakage	< 2.0 l/min. at 350 bar, 40 °C and 46 mm²/s (connection P to T)	
Temperature range of operating fluid	NBR: min. -30 °C up to max. +100 °C FKM: min. -20 °C up to max. +120 °C	
ambient temperature range	NBR: min. -30 °C up to max. +100 °C FKM: min. -20 °C up to max. +100 °C	
Operating fluid	Hydraulic oil to DIN 51524 Part 1, 2 and 3	
Viscosity range	min. 10 mm²/s to max. 420 mm²/s	
Filtration (to ISO 4406)	≤ 210 bar: min. Class 20/18/15 > 210 bar: min. Class 19/17/14	
$MTTF_d$	150–1200 years, according to DIN EN ISO 13849-1	
Mounting position	No orientation restrictions	
Materials	Valve bodies	Steel
	Pistons	Hardened and ground steel
	Seals	NBR (standard) FKM
	Support rings	PTFE
Cavity	FC10-4	
Weight	0.26 kg	

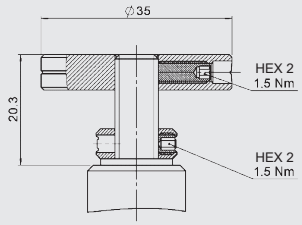
* See “Conditions and Instructions for Valves” in brochure 53.000

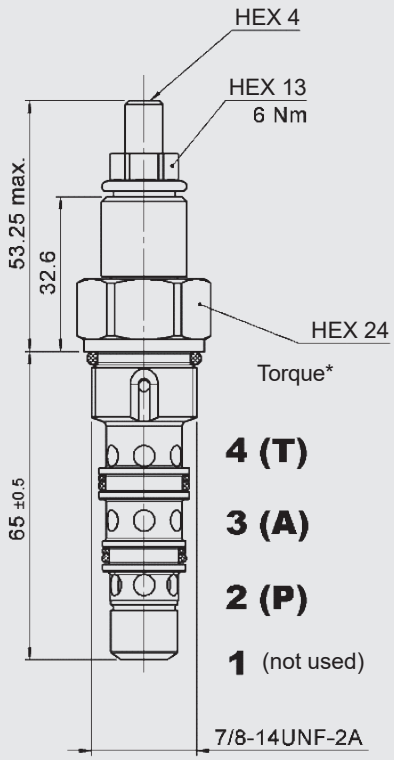
DIMENSIONS

Adjustment type H

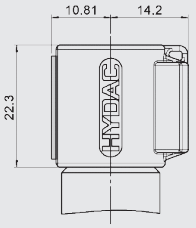


Adjustment type HL





Adjustment type C

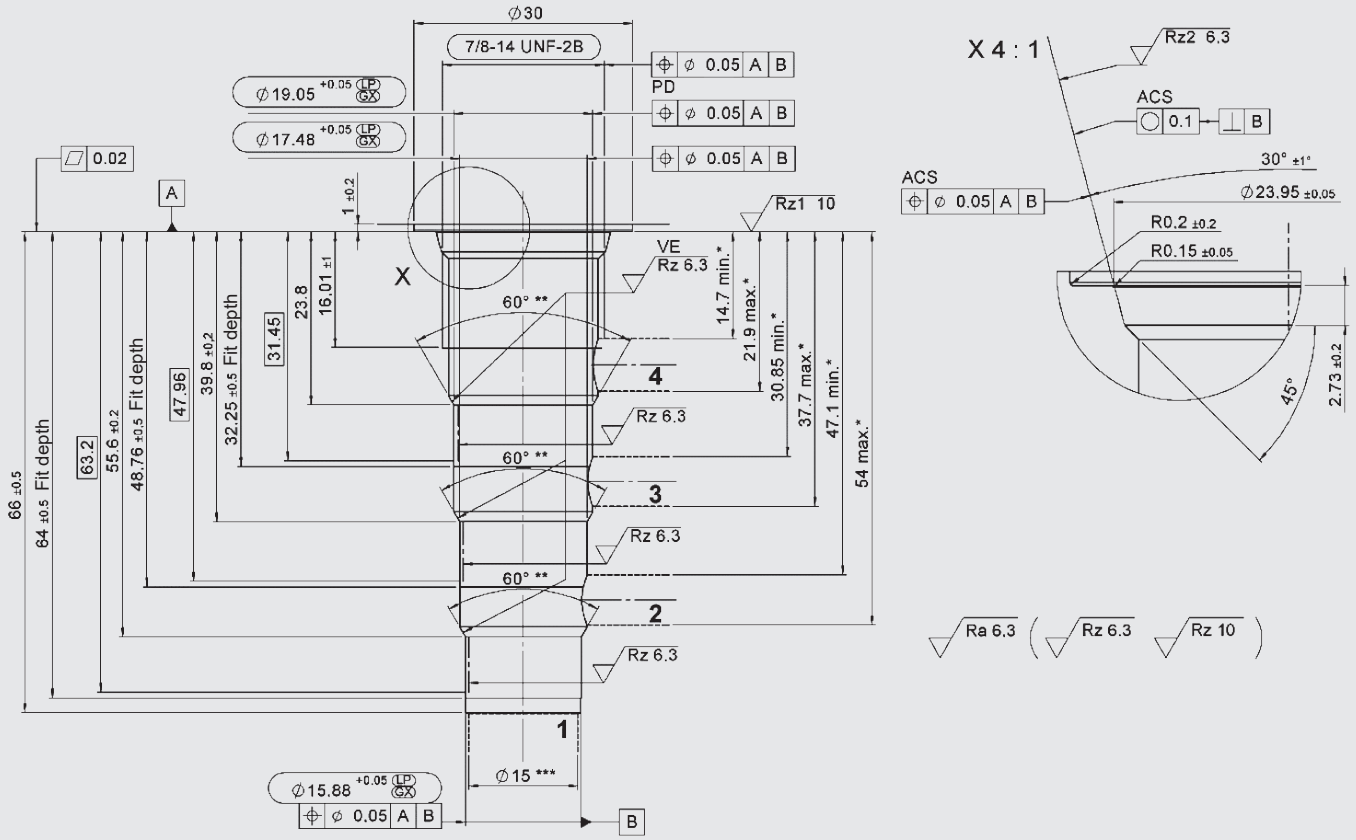


*Torque:
Steel housing (burst strength > 360 N/mm²): 45 Nm
Aluminium housing (burst strength > 330 N/mm²): 35 Nm
(with torque tool according to DIN EN ISO 6789, tool type II Class A or B)
For more information see “Operating conditions and instructions for valves” in brochure 53.000

Millimetres
Subject to technical modifications.

CAVITY

FC10-4 UNF



VE = visual examination
* Permitted boring zone (for block design)
** Sharp edges should be avoided using a radius of 0.1 mm to 0.2 mm
*** Largest pre-drilling diameter (nominal tool diameter)

Millimetres
Subject to technical modifications.

MODEL CODE

DR10P - 10 - C - N 050 V 050

Designation
3-way pressure reducing valve, UNF

Version
10 = inverse assignment P(1/2), A(3), T(4); control start < 1 bar

Type of connection
C = cartridge only

Sealing material
N = NBR (standard)
V = FKM

Pressure setting range (expressed in PSI/10)
050 = 500 PSI (35 bar)
090 = 900 PSI (60 bar)
180 = 1800 PSI (120 bar)
330 = 3300 PSI (230 bar)
500 = 5000 PSI (350 bar)

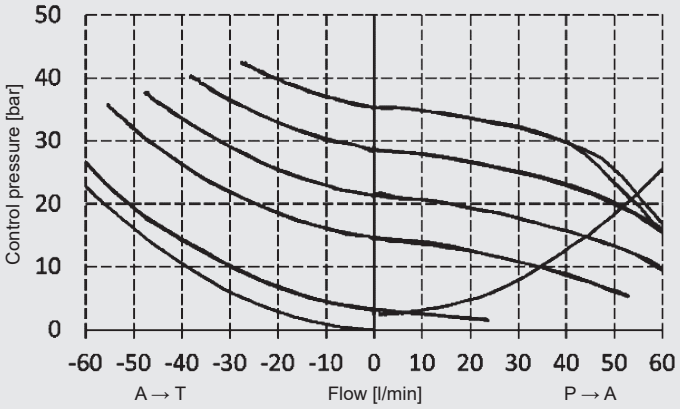
Type of adjustment
V = adjustable with tool
C = seal cap, preset before delivery and not adjustable
H = hand wheel
HL = hand wheel with limitation for max. pressure setting

Cracking pressure
Not specified = no adjustment, spring relaxed
050 = 5000 PSI ± 3% of nominal pressure (expressed in PSI/10)

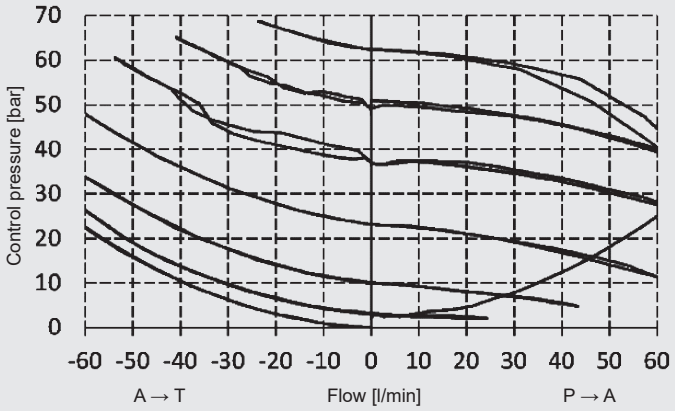
EXAMPLE CHARACTERISTICS

Measured at ν = 34 mm²/s, T_{oil} = 46 °C

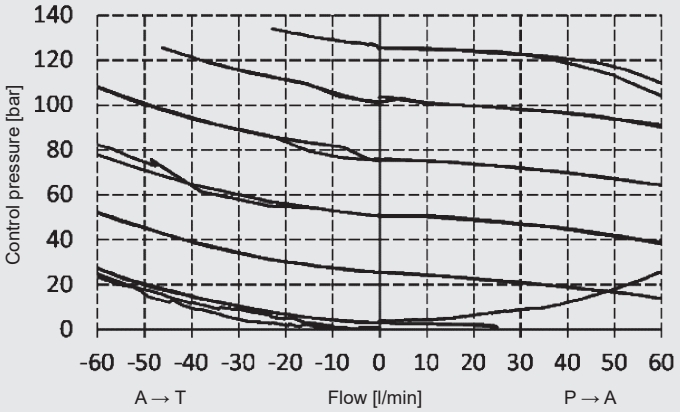
35 bar



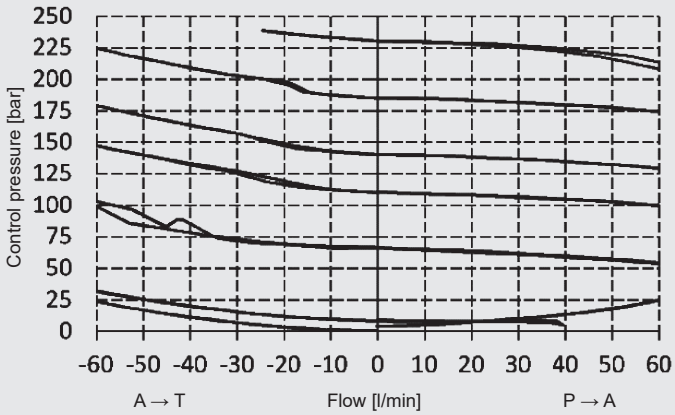
60 bar



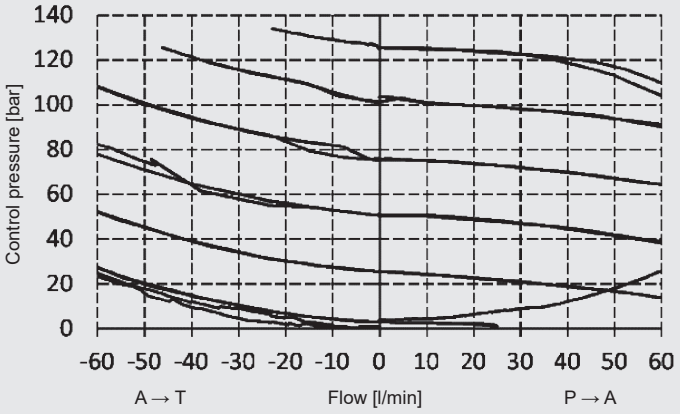
120 bar



230 bar



350 bar



MATERIAL OVERVIEW

Standard models

Designation	Part no.
DR10P-10-C-N-050V	4603832
DR10P-10-C-N-090V	4603834
DR10P-10-C-N-180V	4603875
DR10P-10-C-N-330V	4603876
DR10P-10-C-N-500V	4603877

Other versions on request.

Spare parts, seal kits

Description	Material	Part no.
FS UNF 10/N	NBR	3651557
FS UNF 10/V	FKM	3651559

Accessories, inline connection housing

Description	Material	Ports	Pressure	Part no.
FH104-AB3 without connection 1	Aluminium, anodised	G3/8"	210 bar	3320605

Other housing on request.

Accessories, cavity tools

Description	Part no.
Countersink	176174
Reamer	176175

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.

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