

RE 29 175/11.02

Replaces: 01.99

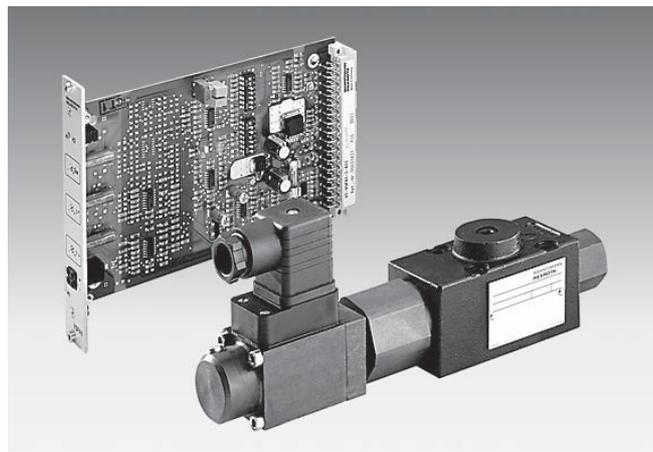
**Proportional pressure reducing valve,
pilot operated
Types DRE and ZDRE**

Nominal size 6

Series 1X

Maximum pressure 210 bar

Maximum flow 30 L/min



H/A 20446/98

Type DRE 6-1X/...G24K4... with plug-in connector and associated control electronics (separate order)

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Features

- Pilot operated valve for pressure reduction in ports A and P1 with a pressure safety function
- Operation via proportional solenoids
- For subplate or sandwich plate mounting:
Porting pattern to DIN 24 340, Form A6
Subplates to catalogue sheet RE 45 052
(separate order, see pages 8 and 9)
- Minimum scatter of the command value-pressure-characteristic curve via electrical compensation on the proportional solenoids
- Minimum settable pressure of 2 bar in ports A or P1, see page 7
- Control electronics:
 - Analogue amplifier type VT-VSPA1(K)-1 in Eurocard format (separate order), see page 4
 - Digital amplifier type VT-VSPD-1 in Eurocard format (separate order), see page 4
 - Analogue amplifier of modular design type VT 11132 (separate order), see page 4



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Ordering details

| | | | | | | | | | |
|--|------------|----------|--|--------------|----------|------------|-----------|--|----------|
| | DRE | 6 | | -1X / | M | G24 | K4 | | * |
|--|------------|----------|--|--------------|----------|------------|-----------|--|----------|

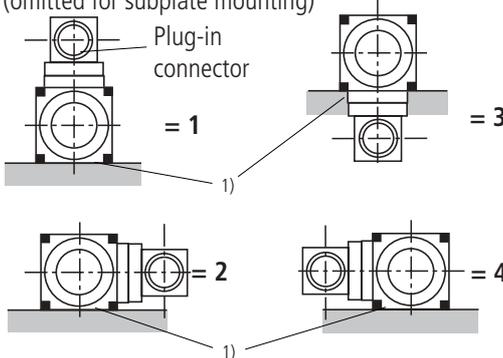
Subplate mounting = **No code**
 Sandwich plate = **Z**

Proportional pressure reducing valve = **DRE**

Nominal size 6 = **6**

Pressure reduction in port A (subplate mounting) = **No code**
 Pressure reduction in port P1 (sandwich plate) = **VP**

Position of the plug-in connector (omitted for subplate mounting)



1) Valve mounting interface (seal ring counterbores in the housing)

Further details in clear text

M = NBR seals, suitable for mineral oil (HL, HLP) to DIN 51 524
V = FKM seals

Electrical connections
K4 = Without plug-in connector, with component plug to DIN EN 175 301-803
 Plug-in connector – separate order, see page 5

Control electronics supply voltage
G24 = 24 V DC

M = Only available without check valve

50 = Pressure stage 50 bar
100 = Pressure stage 100 bar
210 = Pressure stage 210 bar

1X = Series 10 to 19 (10 to 19: unchanged installation and connection dimensions)

Preferred types

Type DRE

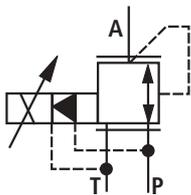
| Material No. | Type |
|--------------|---------------------|
| R900954429 | DRE 6-1X/50MG24K4M |
| R900932943 | DRE 6-1X/100MG24K4M |
| R900928873 | DRE 6-1X/210MG24K4M |

Type ZDRE

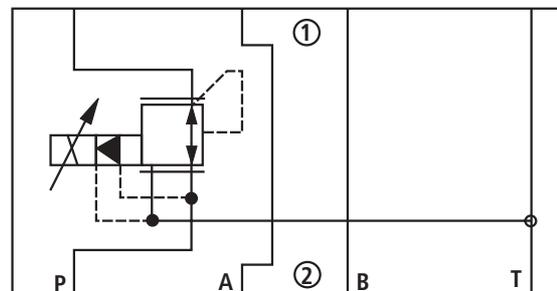
| Material No. | Type |
|--------------|--------------------------|
| R900954431 | ZDRE 6 VP2-1X/50MG24K4M |
| R900930942 | ZDRE 6 VP2-1X/100MG24K4M |
| R900915963 | ZDRE 6 VP2-1X/210MG24K4M |

Symbols (for sandwich plate symbol: ① = component side, ② = subplate side)

Type DRE 6...



Type ZDRE 6 VP...



Function, section

The valve types DRE and ZDRE are electrical, pilot operated 3-way pressure reducing valves with a pressure safety function for the actuator.

They are used to reduce system pressure.

Design:

The valve consists of three main components:

- Pilot operated valve (1)
- Proportional solenoid (2)
- Main valve (3) with main spool (4)

Function:

Type DRE 6

General function:

- Command value dependent setting of the pressure to be reduced in port A via the proportional solenoid (2).
- When port P is at zero pressure, spring (18) holds the main spool (4) in the initial position.
- Thereby open from A to T and closed from P to A.
- Pressure connection from port P to the ring channel (5).
- Pilot oil flows from bore (6) to port T, via the flow controller (7), the pilot valve (1) to orifice (8), the throttle gap (9) the long groove (10) and the bores (11, 12).

Pressure reduction:

- Build-up of pilot pressure in control chamber (17) as a function of the command value.
- Movement of the main spool (4) to the right results in pressure fluid flowing from P to A.
- Actuator pressure at port A acts on the spring chamber (15) via channel (13) and orifice (14).
- Increasing the pressure at port A to the pressure set on the pilot valve (1) causes the main spool (4) to move to the left. The pressure in port A is then virtually the same as the pressure set on the pilot valve (1).

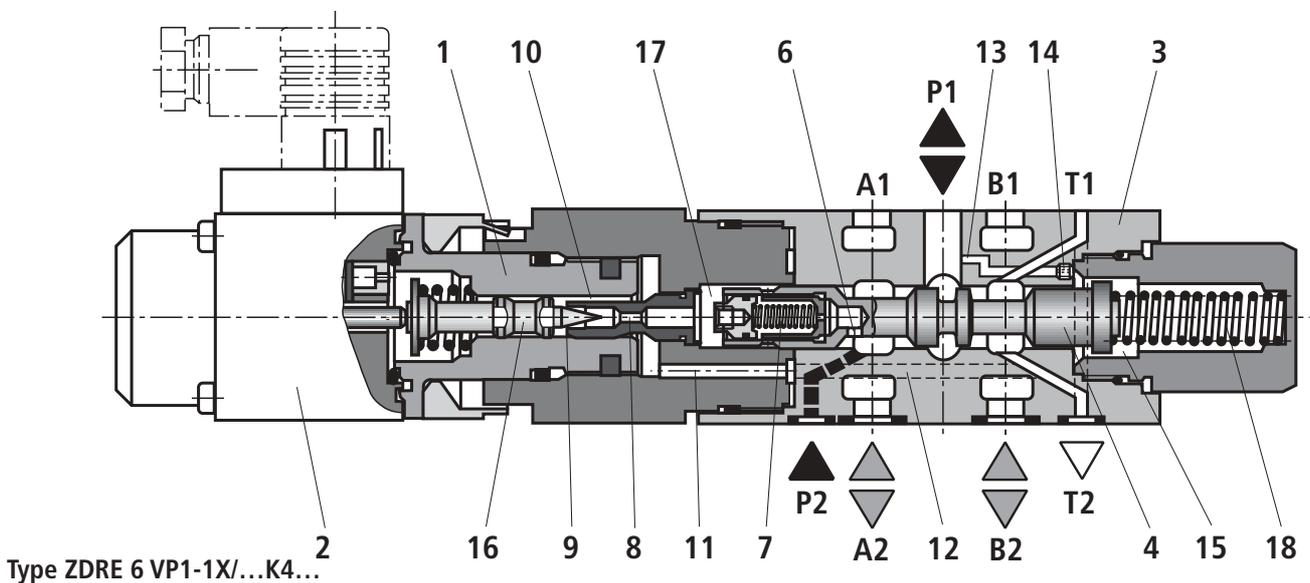
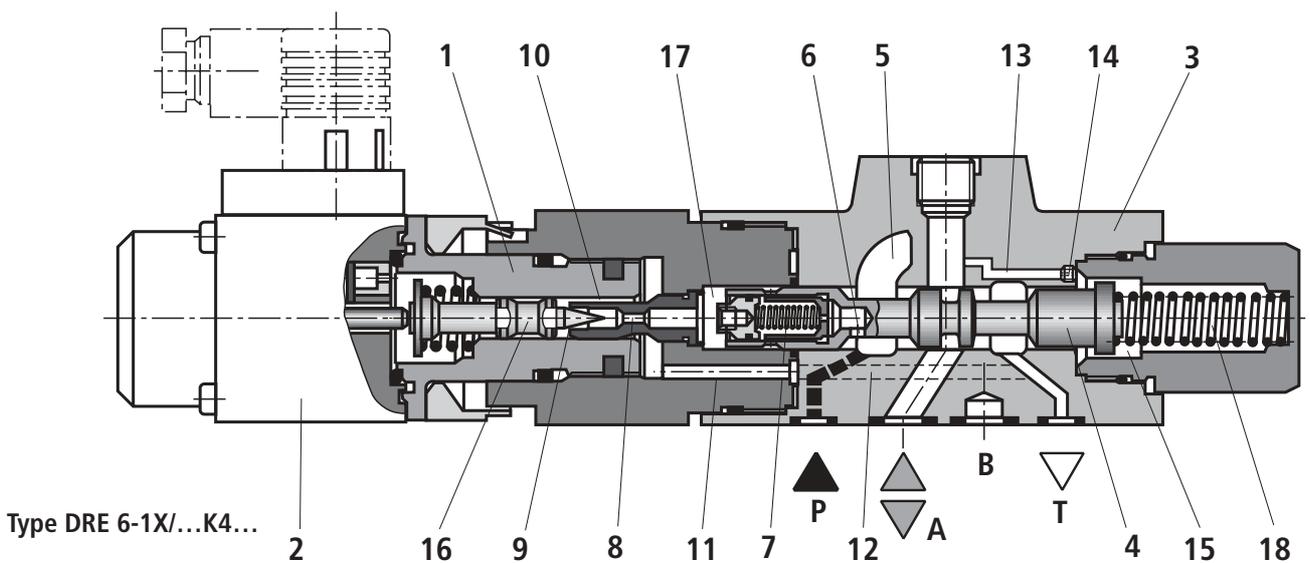
Pressure relief function:

- If the pressure in port a exceeds the pressure set on the pilot valve (1), then the main spool (4) will move further to the left.
- This permits the opening of the connection from A and T, and limitation of the pressure being applied to port A to the set command value.

Type ZDRE 6:

The function of this valve has in principle the same function as the type DRE 6.

The pressure reduction is however in port P1.



Technical data (for applications outside these parameters, please consult us!)**General**

| | | | |
|---------------------------|--------|----|--------------|
| Installation | | | Optional |
| Storage temperature range | | °C | – 20 to + 80 |
| Ambient temperature range | | °C | – 20 to + 70 |
| Weight | DRE 6 | kg | 1.96 |
| | ZDRE 6 | kg | 1.90 |

Hydraulic (measured with HLP 46; $\vartheta_{oil} = 40 \text{ °C} \pm 5 \text{ °C}$)

| | | | |
|---|---|--------------------|--|
| Max. operating pressure | Ports P or P2 | bar | 315 |
| | Ports P1, A and B | bar | 210 |
| | Port T | bar | Separate and at zero pressure to tank |
| Max. settable pressure in ports P1 and A | Pressure stage 50 bar | bar | 50 |
| | Pressure stage 100 bar | bar | 100 |
| | Pressure stage 210 bar | bar | 210 |
| Min. settable pressure at 0 command value in ports P1 and A | | bar | See characteristic curves on page 7 |
| Pilot oil flow | | L/min | 0.65 |
| Max. flow | | L/min | 30 |
| Pressure fluid | Mineral oil (HL, HLP) to DIN 51 524 Further pressure fluids on request! | | |
| Cleanliness class to ISO code | Maximum permissible degree of contamination of the pressure fluid is to ISO 4406 (c) class 20/18/15 ¹⁾ | | |
| Pressure fluid temperature range | | °C | – 20 to + 80 |
| Viscosity range | | mm ² /s | 15 to 380 |
| Hysteresis | | % | ± 2 of maximum settable pressure |
| Repeatability | | % | < ± 2 of maximum settable pressure |
| Linearity | | % | ± 3.5 of maximum settable pressure |
| Example spread of the com. value-pressure-char. curve, referring to the hysteresis char. curve, pressure increasing | | % | ± 1.5 of maximum settable pressure |
| Step response $T_u + T_g$ (measured with a standing oil column of between 0.2 and 5 litres) | 10 % → 90 % | ms | 200 (without pressure oscillation overshoots) |
| | 90 % → 10 % | ms | 200 (without pressure oscillation undershoots) |

Electrical

| | | | |
|--------------------------------|---|----|---------|
| Supply voltage | | | 24 V DC |
| Min. control current | | mA | 100 |
| Max. control current | | mA | 1600 |
| Solenoid coil resistance | Cold value at 20°C | Ω | 5 |
| | Max. warm value | Ω | 7.5 |
| Duty | Continuous | | |
| Electrical connections | With component plug to DIN EN 175 301-803 | | |
| | Plug-in connector to DIN EN 175 301-803 ²⁾ | | |
| Valve protection to DIN 40 050 | IP 65 with mounted and fixed plug-in connector | | |

Control electronics

| | | |
|--|----------|--|
| – Amplifier in Eurocard format (separate order) | Analogue | VT-VSPA1(K)-1 to catalogue sheet RE 30 111 |
| | Digital | VT-VSPD-1 to catalogue sheet RE 30 123 |
| – Amplifier of modular design (separate order) | Analogue | VT 11132 to catalogue sheet RE 29 865 |

¹⁾ The cleanliness class stated for the components must be adhered to in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.
For the selection of filters see catalogue sheets RE 50 070, RE 50 076 and RE 50 081.

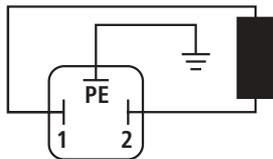
²⁾ Separate order, see page 5



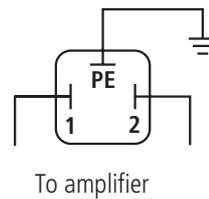
Note: For details regarding the **environmental simulation test** covering EMC (electro-magnetic compatibility), climate and mechanical loading see RE 29 175-U (declaration regarding environmental compatibility).

Electrical connections, plug-in connector

Connections at component plug

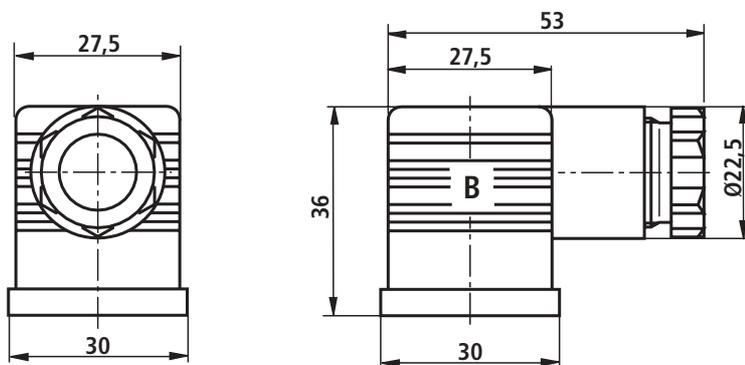


Connection at plug-in connector



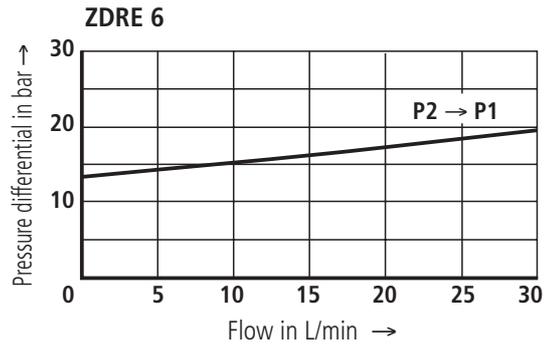
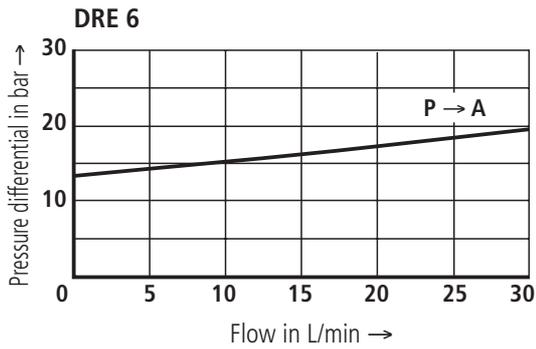
Plug-in connector to DIN EN 175 301-803

Separate order under Material No. **R900074684**

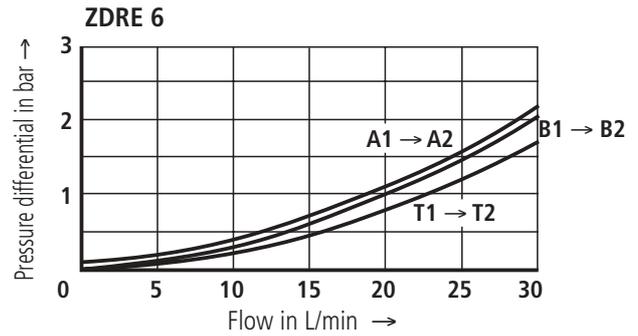


Characteristic curves (measured with HLP 46; $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

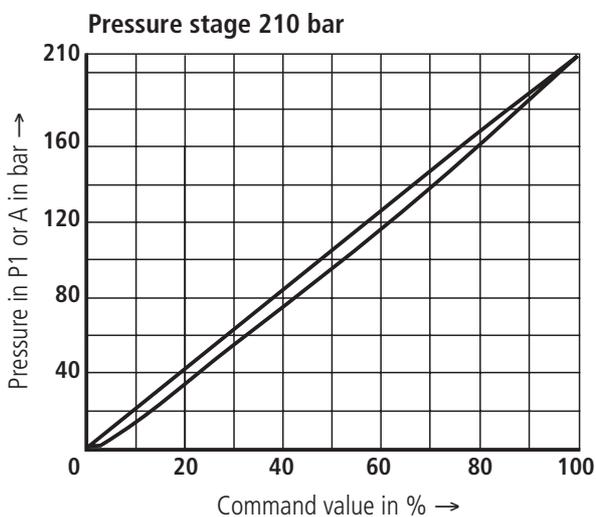
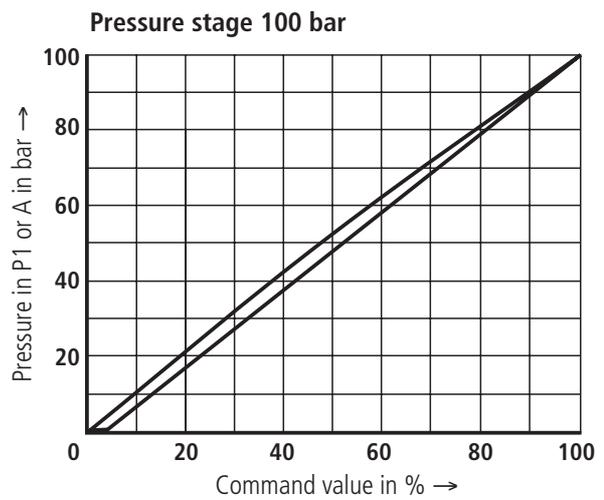
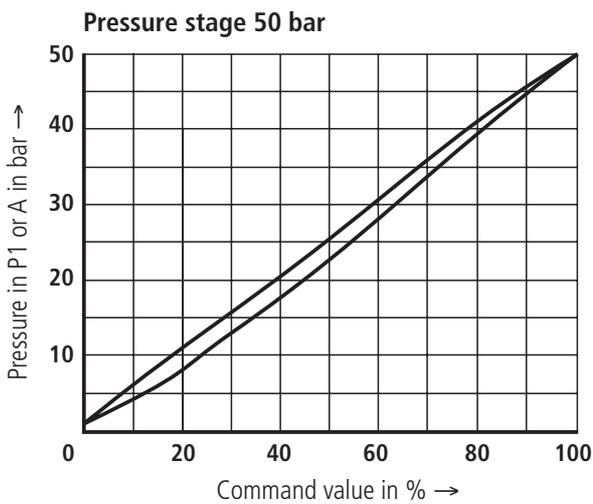
Δp - q_V characteristic curves



Note: The Δp value indicated corresponds to the minimum available pressure in port P (P2) minus the maximum pressure to be regulated in port A (P1).

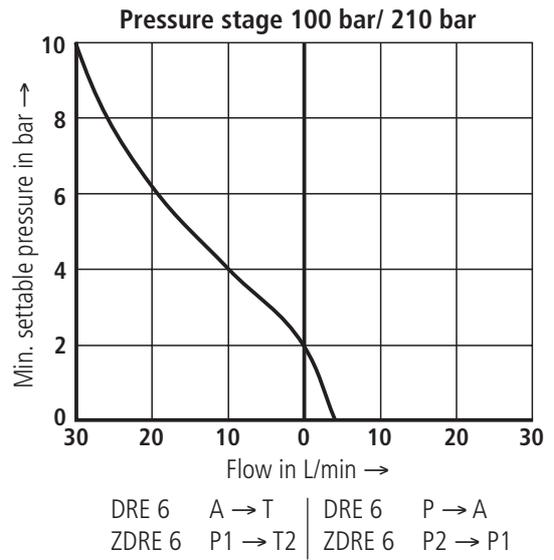
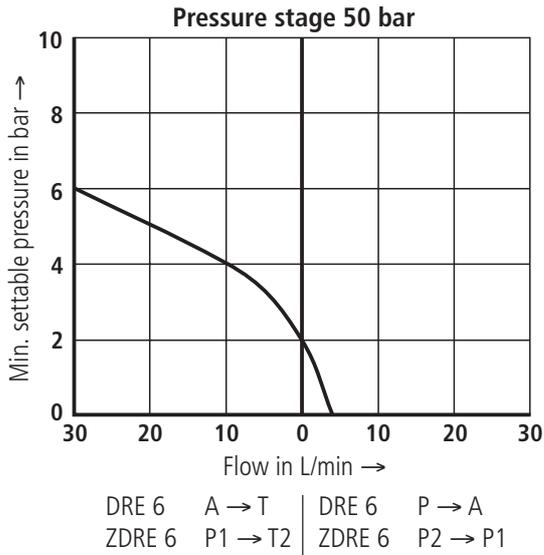


Pressure in port P1 or A in relation to the command value

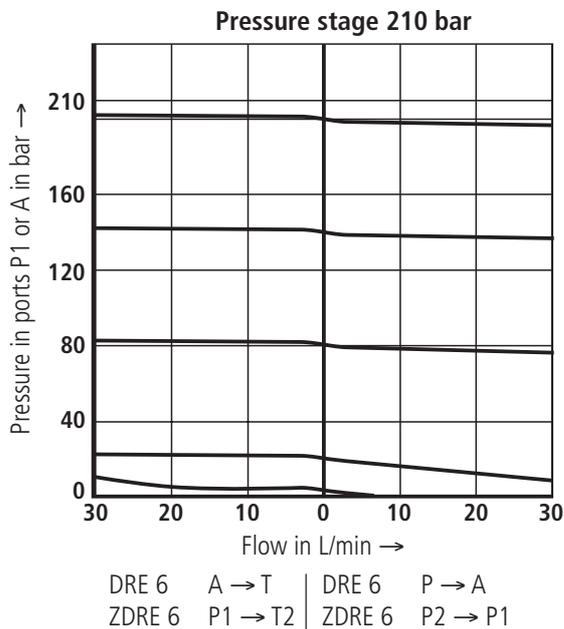
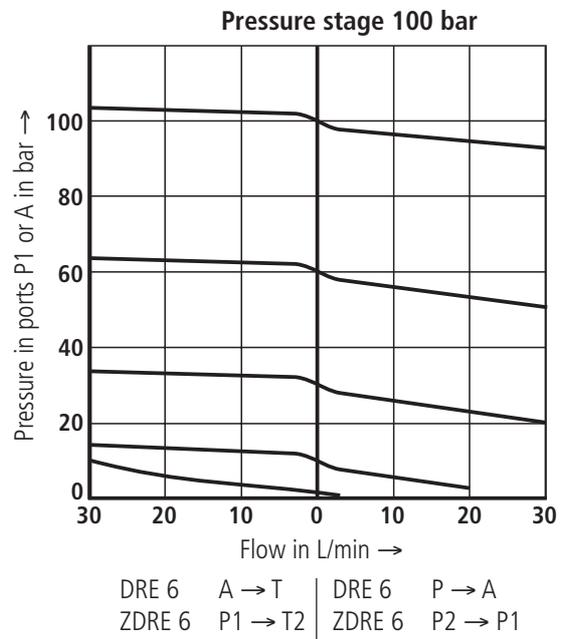
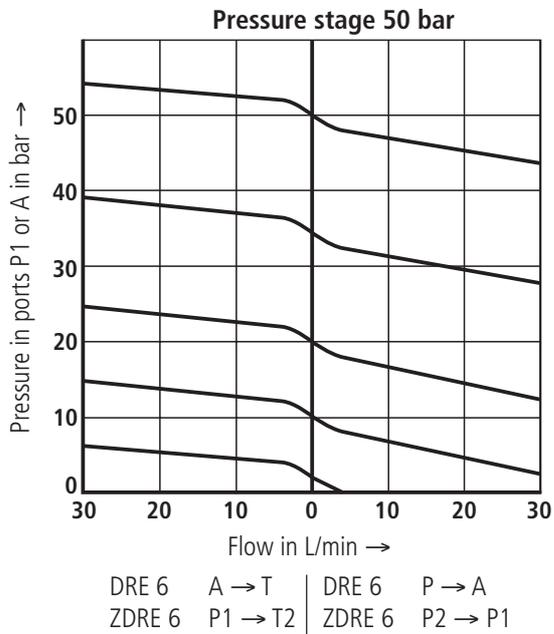


Characteristic curves (measured with HLP 46; $\vartheta_{oil} = 40 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$)

Min. settable pressure at ports P1 or A at 0 V command value (without back pressure in ports T or T1)



Pressure in ports P1 or A – flow



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