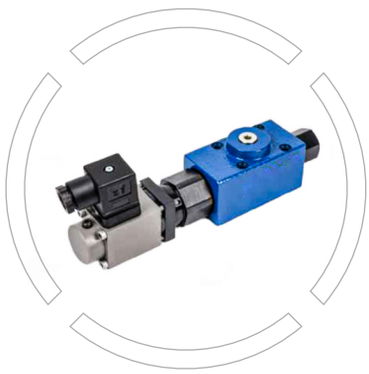
(Z)DRE(E)6-1XT

Proportional Pressure Reducing valve
Size 6
Maximum working pressure 210bar
Maximum working flow 30 L/ min



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Features

- Pilot operated valve for pressure reducing in ports A and P1 with pressure limitation
- Operated by proportional solenoids
- Subplate mounting or sandwich plate connection
- Low manufacturing tolerance of the command value-pressure characteristic curve due to electrical compensation to the proportional solenoids
- The minimum adjustable pressure at port A and P1 is 2bar

Function description, sectional drawing

The DRE and ZDRE are pilot operated electrically 3-way reducing valve with pressure limitation of the actuator. It is used to reduce the pressure of the system.

Structure:

The valve is consist of 3 main parts:

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

Function:

- The set value is achieved by adjusting the proportional solenoid (2) to adjust the pressure drop at port A
- When depressurized at port P, the spring (18) holds the main valve spool (4) in the initial position
- The port A and T connected but P and A closed
- Pressure connection from port P to the ring channel (5)
- The pilot oil flows from the orifice (6) to port T through the flow controller (7), pilot valve (1) and throttle (8), throttle gap(9), longitudinal groove (10) and orifice (11, 12).

Pressure reduction:

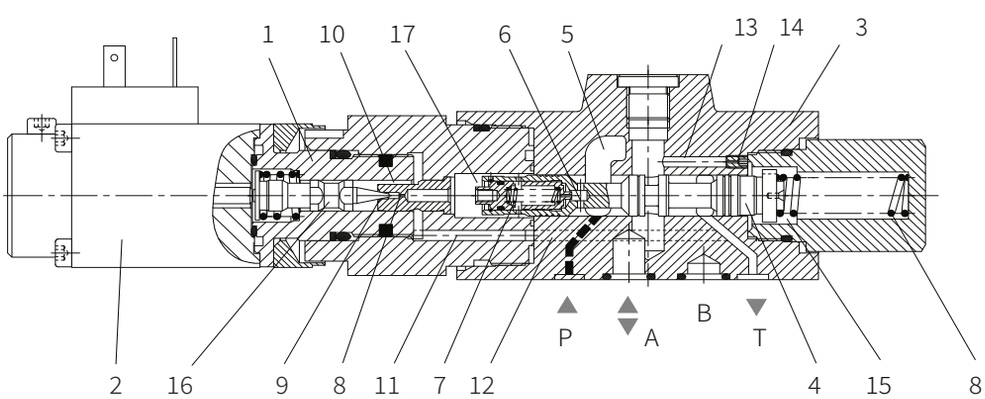
- Establish pilot pressure in control chamber(17) based on the set value
- The main valve spool (4) moves to the right to allow the the flow from port P to A
- The pressure of the actuator side at port A acts on the spring chamber (15) via channel (13) and throttle (14)
- When the pressure at port A increases to the set value of the pilot valve (1), the main valve spool (4) moves to the left, the pressure at port A is almost identical with the pressure set value of pilot valve (1)

Pressure limitation :

- If the pressure at port A exceeds the adjust pressure of pilot valve (1), the main valve spool moves to the left
- Port A and T connected, the pressure at port A is limited to the set value

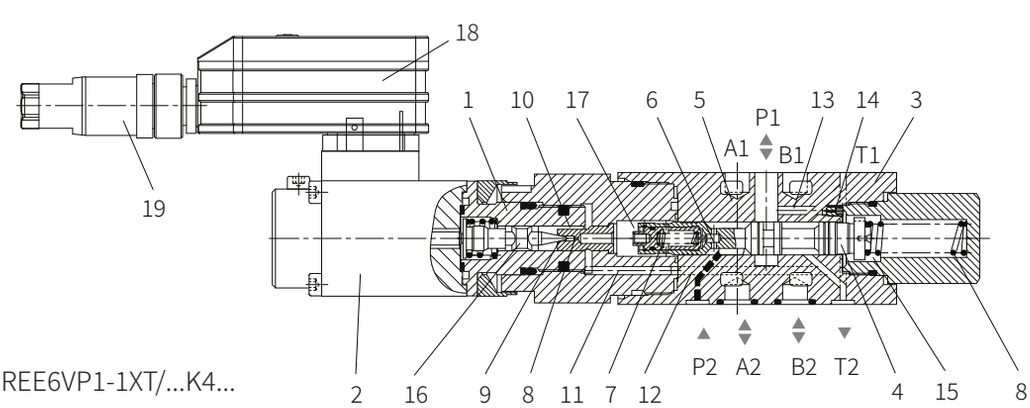
Model ZDRE6 :

In principle, the function of this valve is the same as that of the valve DRE6 but pressure reduction at port P1



Model DRE6-1XT/...K4...

In the function and structure, this valve is equivalent to the valve DRE and ZDRE, but adding a plug-in amplifier (18) with integrated electronic component(OBE) to the proportional solenoid. Supply and command value voltage are applied to the connector (19).



Model ZDREE6VP1-1XT/...K4...

Ordering Code

	DRE		6			1X	T		M	G24				*

Subplate mounting = No code
Sandwich type = Z

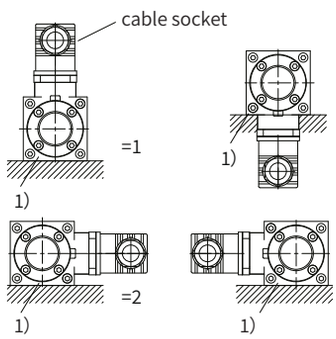
Proportional reducing valve = DRE

External amplifier = No code
Integrated amplifier(OBE) = E

Size 6 = 6

Pressure reducing at port A = No code (subplate mounting)
Pressure reducing at port P1 = VP (sandwich type)

Position of cable socket
(subplate mounting simplified drawing)



= 3

= 4

1) mounting surface
(O-ring groove in valve body)

10 to19 series = 1X
(10 to 19 series installation and connection size unchanged)

T = THM

Maximum pressure stage
50 = up to 50bar
100 = up to 100bar
210 = up to 210bar

M = Without check valve

G24 = Voltage 24V DC

Z)DRE electrical connection
K4 = square socket without plug
(Z)DREE electrical connection
K31S = with 1.5M cable and tin on the end
K31C = with M12×1 aviation plug, 5-pin

No code = (Z)DRE
A1 = control value0...10V
F1 = control value 4...20mA

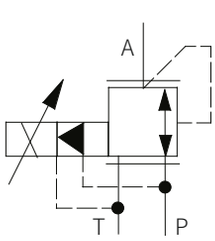
Sealing material
No code = NBR seals
V = FKM seals
(consult for other seaks)

more information in text

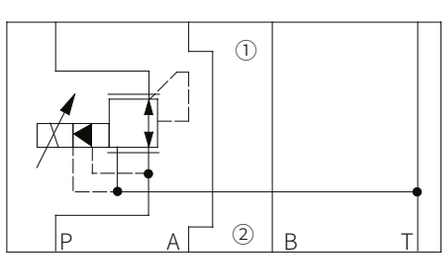
Functional symbols

(Symbols for sandwich type valve:①=Valve side,②=Subplate side)

Model DRE6...



Model ZDRE6VP...



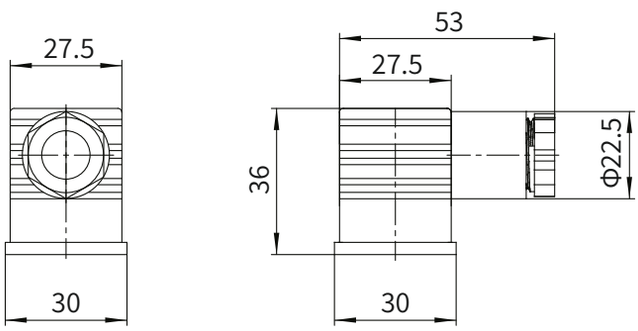
Technical Parameters

Overview			
Installation Position			Optional
Storage Temperature Range			-20 to +80
Environment temperature range			-20 to +70
Weight	DRE6	Kg	1.96
	ZDRE6	Kg	1.90
Hydraulic (Measured when using HLP46, θ_{oil}= 40°C ±5°C)			
Maximum working pressure	P and P2	Bar	350
	P1, A and B	Bar	210
	T	Bar	Separate and at zero pressure to tank
Max.setting pressure in port P1 and A	Pressure stage 50	Bar	50
	Pressure stage 100	Bar	100
	Pressure stage 210	Bar	210
Min.setting pressure in port P1 and A at zero command value		Bar	See characteristic curve
Pilot oil flow			0.65
Max. flow			30
Fluid			Mineral oil (HL , HLP) according to DIN51524
The maximum allowable pollution degree of oil			ISO 4406 (C)20/18/15[1)]
Oil temperature range			20 to +80
Viscosity range			15 to 380
Hysteresis			±2 of the max. pressure adjustment value
Repeatability			<±2 of the max. pressure adjustment value
Linearity			±3.5 of the max. pressure adjustment value
Manufacturing tolerance of command value-pressure characteristic curve, according to the hysteresis characteristic curve when pressure increasing			±2.5 of the max. pressure adjustment value
Step response Tu+Tg (measured at standard flow rate of 0.2 to 5L)	10 % →90 % 90 % →10 %	ms ms	200(No pressure pulsation) 200(No pressure pulsation)
Electrical			
Voltage type			24 VDC
Minimum pilot current		mA	100
Maximum pilot current		mA	1600
Coil resistance	Cold value at 20 °C	Ω	5
	Maximum value	Ω	7.5
Duty			100%
Valve protection to DIN 40050			IP65(plug installed and locked)

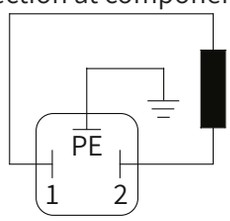
1) The oil must meet the cleanliness degree requested by the components in the hydraulic system. Effective oil filtration can prevent failure and increase the service life of the components

Electrical connection

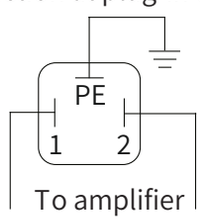
Model (Z)DRE...1XT/...K4
Plug-in connector to DIN EN 175301-803



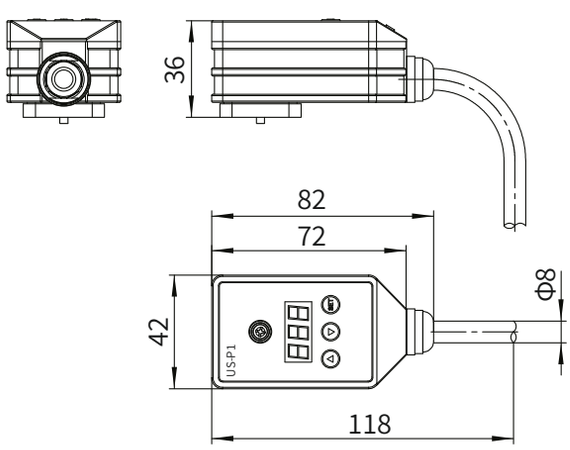
Connection at component plug



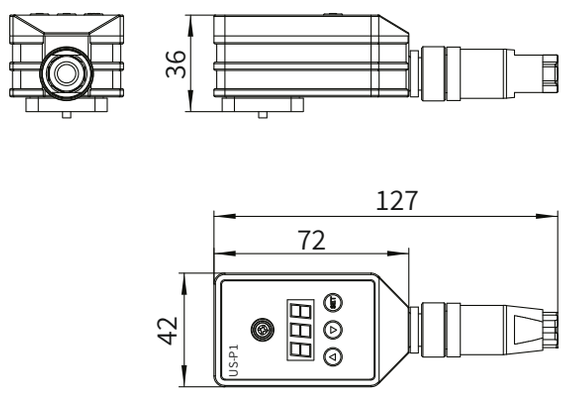
Connection at plug-in connector



Model (Z)DREE...1XT/...K31S



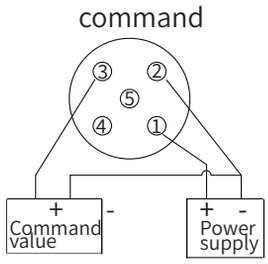
Model (Z)DREE...1XT/...K31C



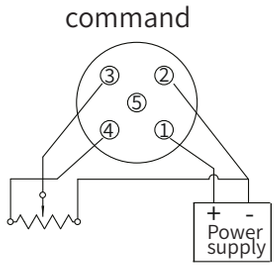
Terminal identification

M12 plug terminal number (K31C type)	Cable color (K31S type)	Terminal identification
1	Red	Power supply +
2	Black	Power supply-/ command value-
3	Yellow	Command value+
4	Blue	Reference voltage 5V
5	Green	-

Connection example:
PLC example input command



Connection example:
Potentiometer inout command

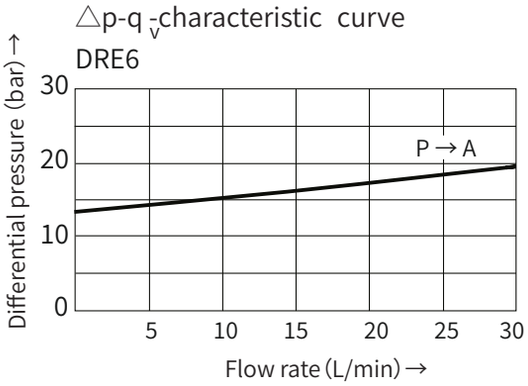


Characteristic Curve

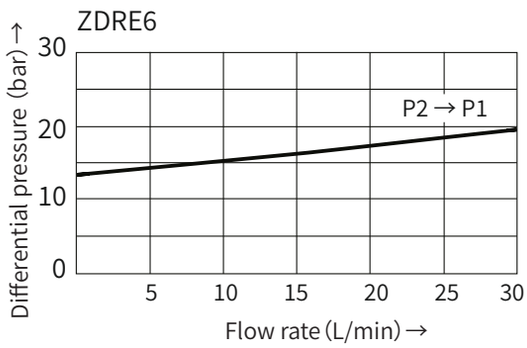
(Measures when using HLP46, θ_{oil}= 40°C ±5°C)

△p-q_V-characteristic curve

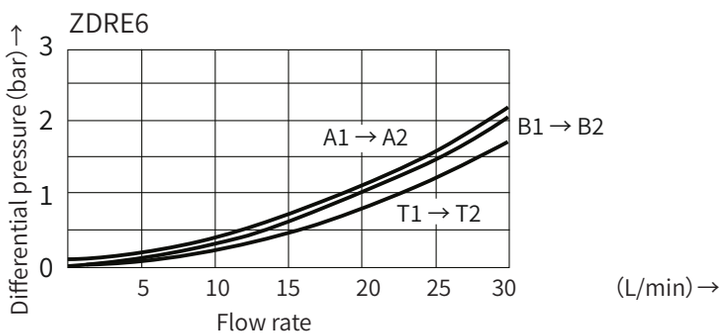
DRE6



ZDRE6



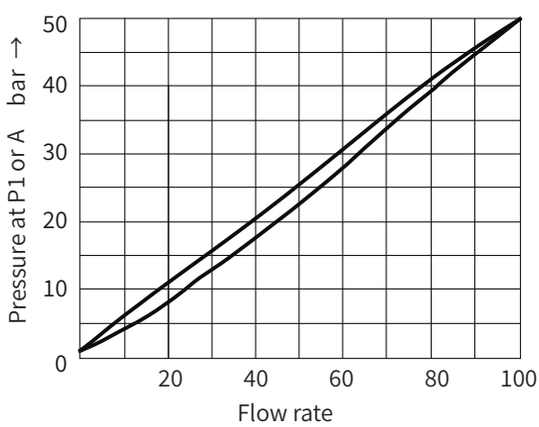
ZDRE6



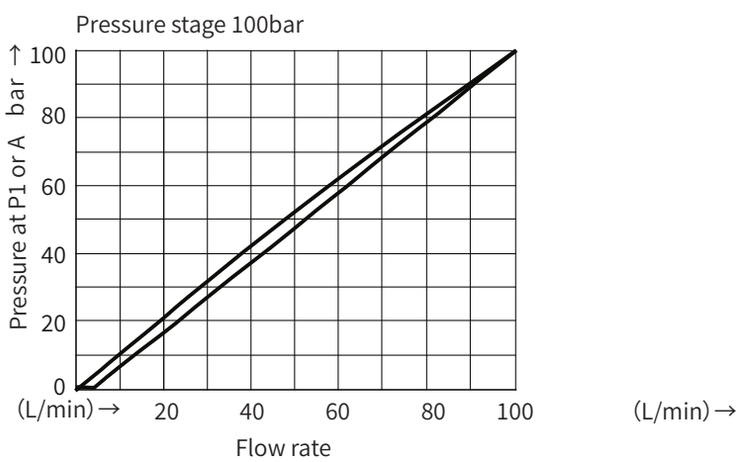
Note: The value of △p is the minimum pressure at port P (P2) minus the maximum adjust pressure at port A (P1) 。

Pressure at port P1 or A dependent on the command value

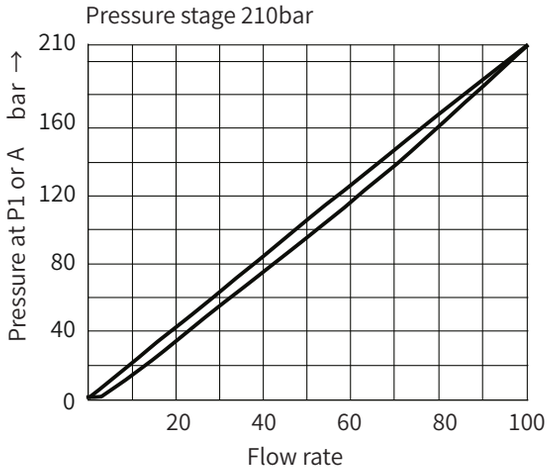
Pressure stage 50bar



Pressure stage 100bar



Pressure stage 210bar



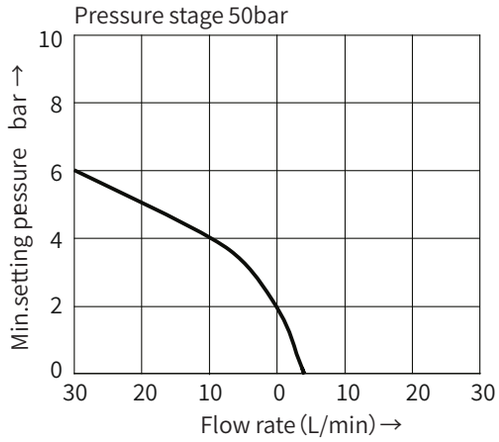
(L/min) →

Characteristic Curve

(Measures when using HLP46, θ_{oil}= 40°C ±5°C)

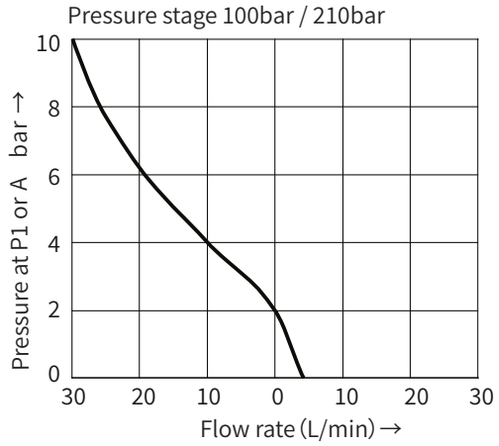
Minimum adjust pressure at port P1 or A with command value 0 V (without back pressure at port T or T1)

Pressure stage 50bar



DRE6 A → T	DRE6 P → A
ZDRE6 P1 → T2	ZDRE6 P2 → P1

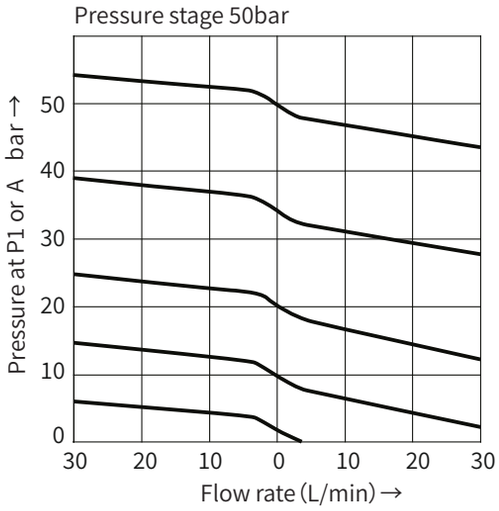
Pressure stage 100bar / 210bar



DRE6 A → T	DRE6 P → A
ZDRE6 P1 → T2	ZDRE6 P2 → P1

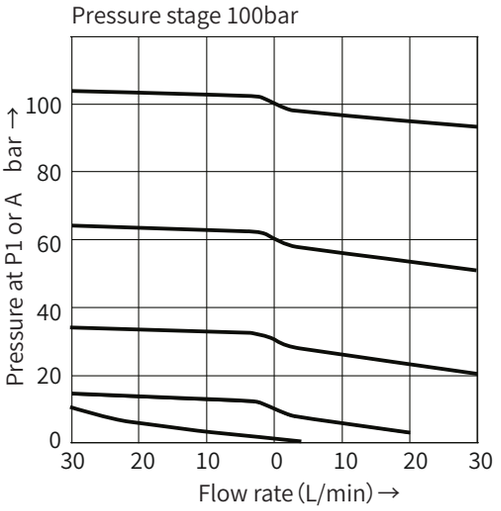
Pressure at port P1 or A - flow

Pressure stage 50bar



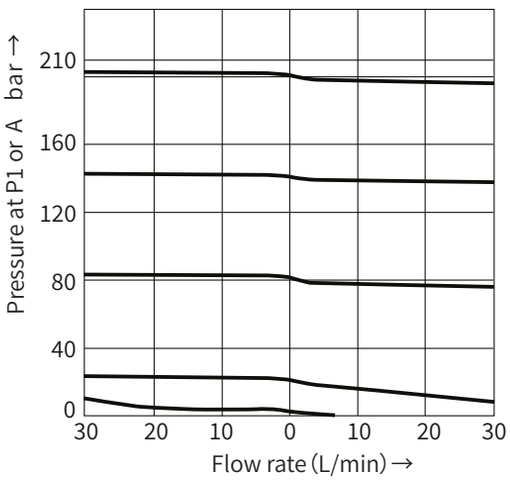
DRE6 A → T	DRE6 P → A
ZDRE6 P1 → T2	ZDRE6 P2 → P1

Pressure stage 100bar



DRE6 A → T	DRE6 P → A
ZDRE6 P1 → T2	ZDRE6 P2 → P1

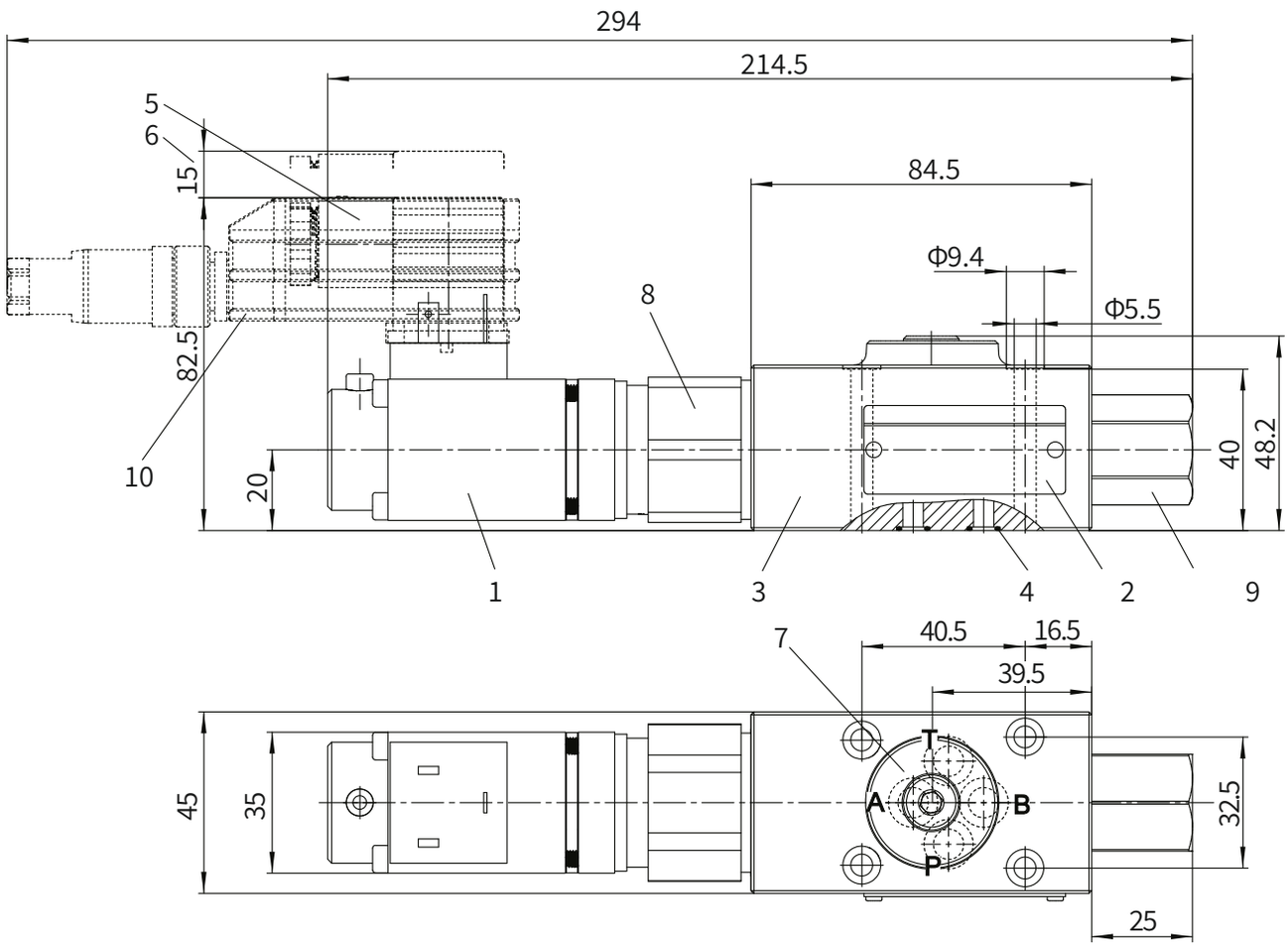
Pressure stage 210bar



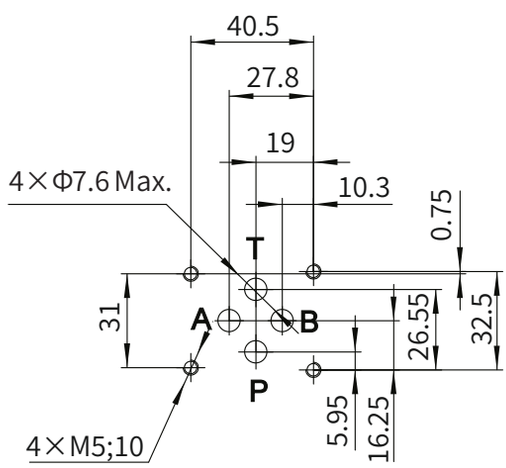
DRE6 A → T	DRE6 P → A
ZDRE6 P1 → T2	ZDRE6 P2 → P1

Unit Dimensions (Dimensions in mm)

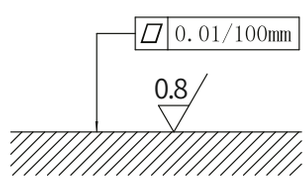
Model DRE



1. Proportional solenoid
2. Valve body
3. Name plate
4. O-ring 9.25x1.78 for ports A, B, P and T
5. Plug
6. Space required to remove the plug
7. Installation surface to DIN24 340; form A6
8. Hexagonal prisms 36A/F(diagonal diameter Φ39mm)
9. Hexagonal prisms 24A/F
10. Plug-in amplifier



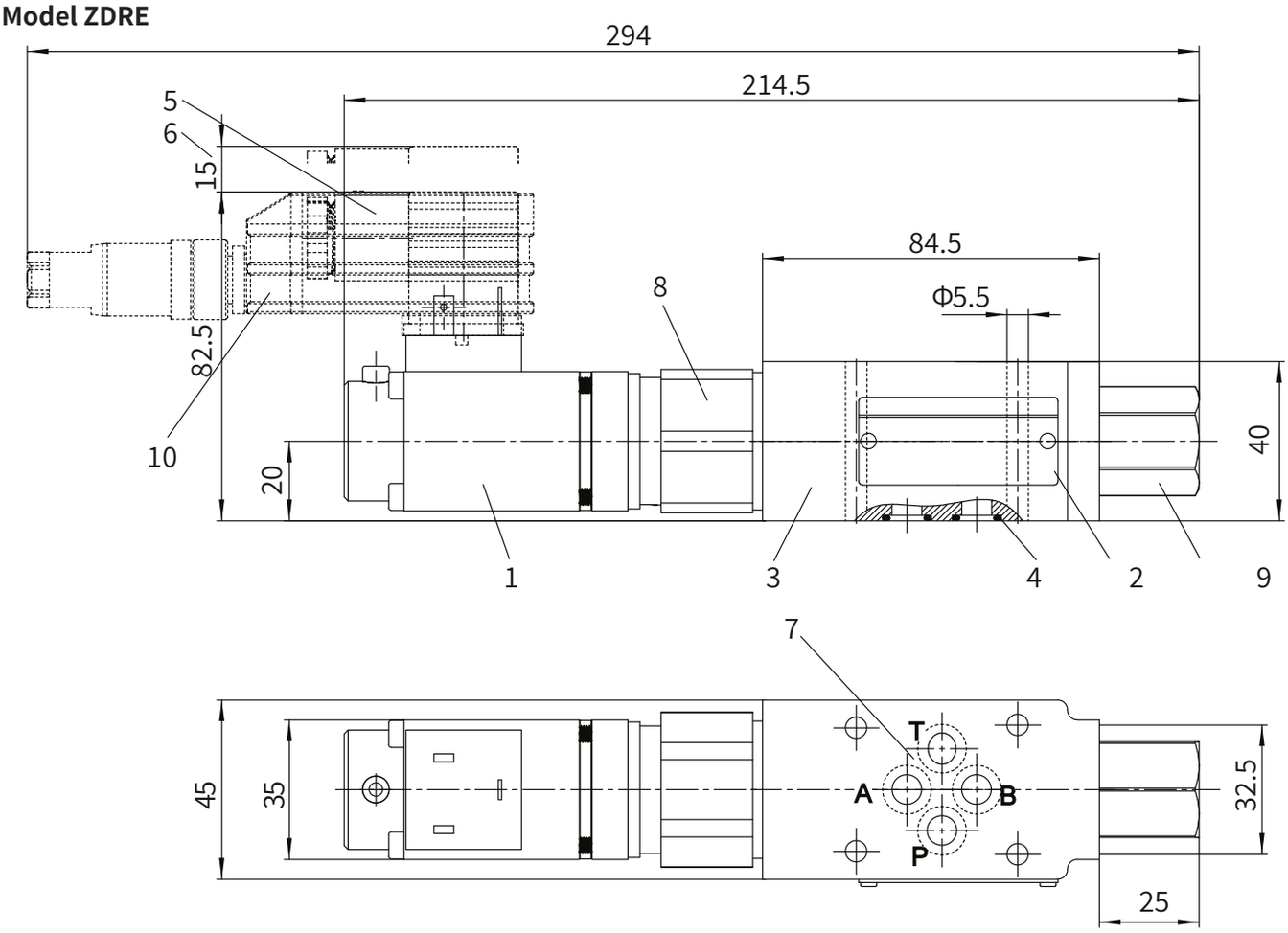
Valve fixing screw
M5×50-10.9 grade
GB/T70.1-2000 Tightening torque M_A=7.8Nm



Required surface finishing of mating components

Unit Dimensions (Dimensions in mm)

Model ZDRE



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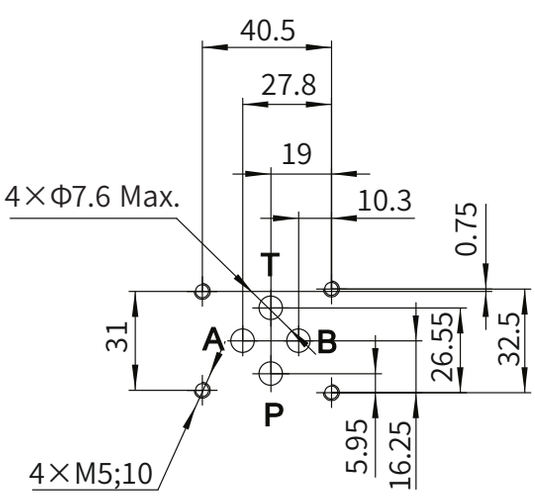

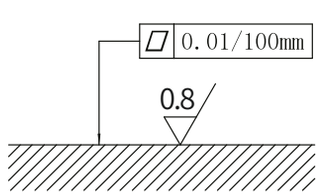

Required surface finishing of mating components

The specified data is for product description purposes only and may not be deemed to be guaranteed unless expressly confirmed in the contract.

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