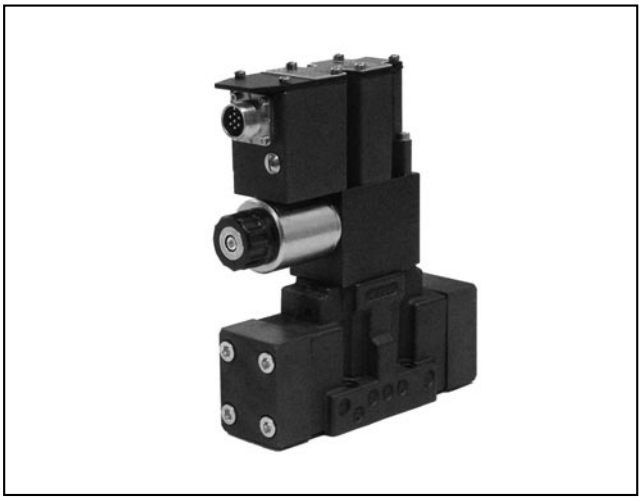


DZCE*G

PROPORTIONAL PRESSURE REDUCING VALVES WITH INTEGRATED ELECTRONICS

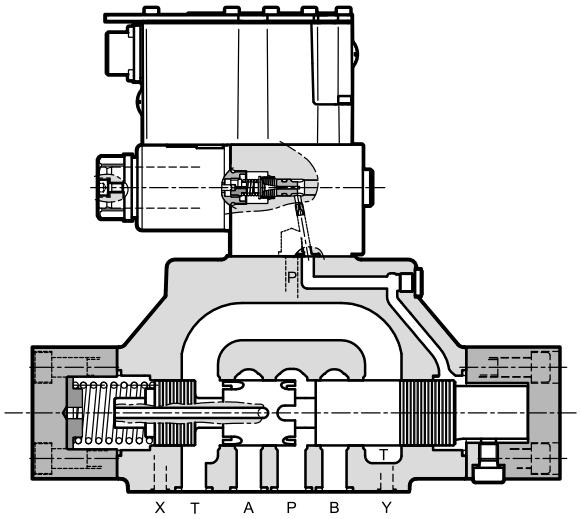
SERIES 40

DZCE5G	**CETOP P05**
DZCE5RG	**ISO 4401-05**
DZCE7G	**ISO 4401-07**
DZCE8G	**ISO 4401-08**

p max **350** bar

Q max (see performance table)

OPERATING PRINCIPLE



— The DZCE*G are proportional pressure reducing valves with integrated electronics, with mounting interface in compliance with ISO 4401 standards.

— Besides reducing the pressure from line P to working line A, these valves allow the flow to return from the line A to the return line T when a pressure greater than the set value is generated in the downstream circuit (flow path A): a typical case of hydraulic counterweight or load balancing.

— The valves are available with command signal in voltage or current and on-board electronics with internal enable, external enable or 0V monitor on pin C.

— A solenoid current monitoring signal is available.

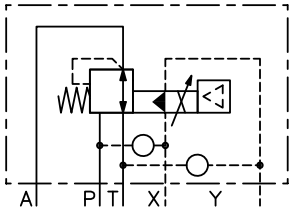
— The valves are easy to install. The driver directly manages digital settings. In the event of special applications, you can customize the settings using the optional kit (see p.15.3).

PERFORMANCES

(obtained with mineral oil with viscosity of 36 cSt at 50°C p = 140 bar)

		DZCE5G DZCE5RG	DZCE7G	DZCE8G
Max operating pressure	bar	350		
Maximum flow	l/min	150	300	500
Step response		see point 7		
Hysteresis	% of p_{max}	< 2%		
Repeatability	% of p_{max}	< ±2%		
Electrical characteristics		see point 3		
Ambient temperature range	°C	-20 / +60		
Fluid temperature range	°C	-20 / +80		
Fluid viscosity range	cSt	10 ÷ 400		
Fluid contamination degree	According to ISO 4406:1999 class 18/16/13			
Recommended viscosity	cSt	25		
Mass	kg	7.5	8.5	15.3

HYDRAULIC SYMBOL



1 - IDENTIFICATION CODE

D	Z	C	E		G	-		/	40		-			/		K11	

Pressure reducing valve

Electric proportional control

Nominal size:
5 = CETOP P05
5R = ISO 4401-05
7 = ISO 4401-07
8 = ISO 4401-08

Integrated electronics for open loop

Pressure control range:
070 = 1 ÷ 70 bar
140 = 1 ÷ 140 bar
210 = 1.2 ÷ 210 bar
300 = 1.8 ÷ 300 bar

Series No.
(the overall and mounting dimensions remain unchanged from 40 to 49)

Seals:
N = NBR seals for mineral oil (**standard**)
V = FPM seals for special fluids

Piloting: **I** = internal
E = external

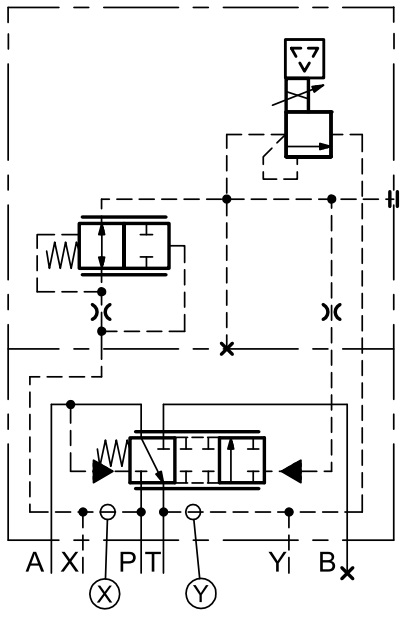
Drainage: **I** = internal
E = external

Reference signal:
E0 = voltage 0÷10 V
E1 = current 4÷20 mA

Main connector 6 pin + PE

Pin C function:
A = external enable
B = internal enable
C = 0V monitor

2 - DETAILED SYMBOL



3 - ELECTRICAL CHARACTERISTICS

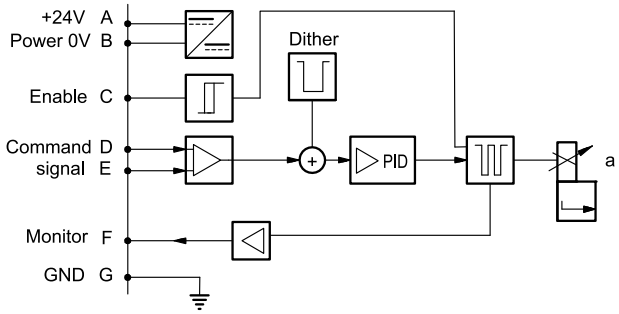
3.1 - Electrical on board electronics

Duty cycle		100% (continuous operation)
Protection class according to IEC 60529		IP65 / IP67 (**NOTE**)
Supply voltage	V DC	24 (from 19 to 30 VDC), ripple max 3 Vpp
Power consumption	VA	25
Maximum solenoid current	A	1.88
Fuse protection, external		2A time lag
Command signals: voltage (E0) current (E1)	V DC mA	0 ÷ 10 (Impedance Ri > 11 kOhm) 4 ÷ 20 (Impedance Ri = 58 Ohm)
Monitor signal (current to solenoid): voltage (E0) current (E1)	V DC mA	0 ÷ 10 (Impedance Ro > 1 kOhm) 4 ÷ 20 (Impedance Ro = 500 Ohm)
Managed breakdowns		Overload and electronics overheating, cable breakdown, supply voltage failures
Communication		LIN-bus Interface (with the optional kit)
Connection		7 - pin MIL-C-5015-G (DIN-EN 175201-804)
Electromagnetic compatibility (EMC) emissions EN 61000-6-4 immunity EN 61000-6-2		According to 2014/30/EU standards

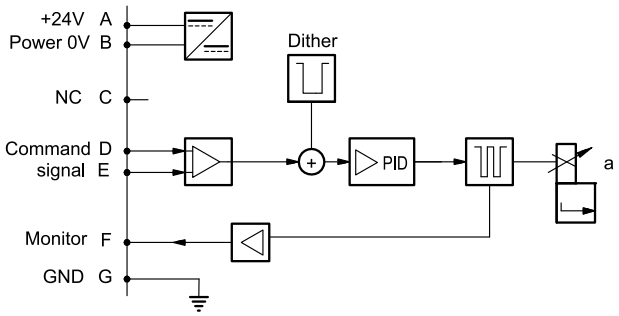
NOTE: The IP degree is guaranteed only with mating connector of equivalent IP degree, installed and tightened correctly.

3.2 - On-board electronics diagrams

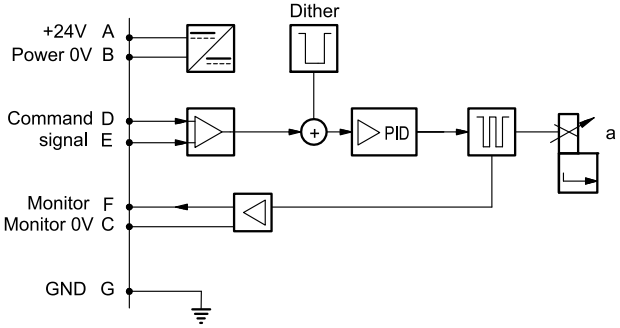
VERSION A - External Enable



VERSION B - Internal Enable

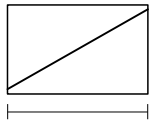


VERSION C - 0V Monitor

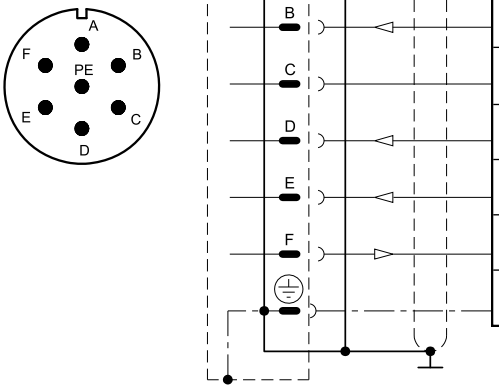


4 - VERSIONS WITH VOLTAGE COMMAND (E0)

The reference signal is between 0 ÷ 10V. The monitor feature of versions B and C becomes available with a delay of 0.5 sec from the power-on of the card.



COMMAND	**0V**	**+10V**
MONITOR	**0V**	**+10V**

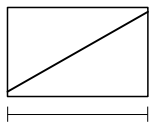


Pin	Values	version A	version B	version C
A	24 V DC	Supply Voltage		
B	0 V			
C		Enable 24 V DC	not used -	PIN F reference 0 V
D	0 ÷ 10 V	Command (differential input)		
E	0 V	PIN D reference		
F	0 ÷ 10 V	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

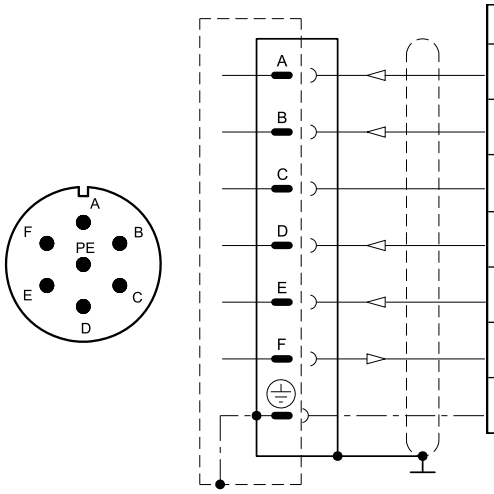
5 - VERSIONS WITH CURRENT COMMAND (E1)

The reference signal is supplied in current 4 ÷ 20 mA. If the current for command is lower, the card shows a breakdown cable error. To reset the error is sufficient to restore the signal.

The monitor feature of versions B and C becomes available with a delay of 0,5 sec from the power-on of the card.



COMMAND	**4 mA**	**20 mA**
MONITOR	**4 mA**	**20 mA**



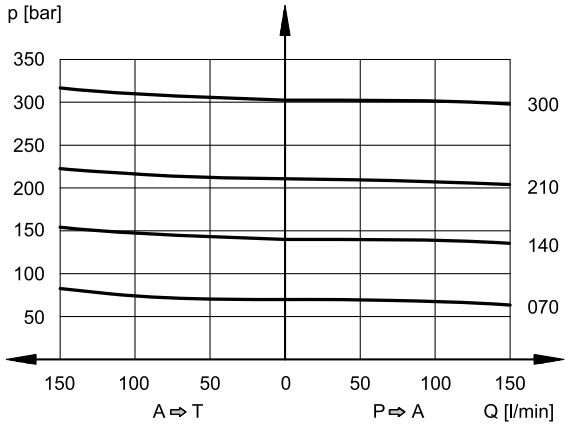
Pin	Values	version A	version B	version C
A	24 V DC	Supply Voltage		
B	0 V			
C		Enable 24 V DC	not used -	PIN F reference 0 V
D	4 ÷ 20 mA	Command		
E	0 V	PIN D reference		
F	4 ÷ 20 mA	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

6 - CHARACTERISTIC CURVES

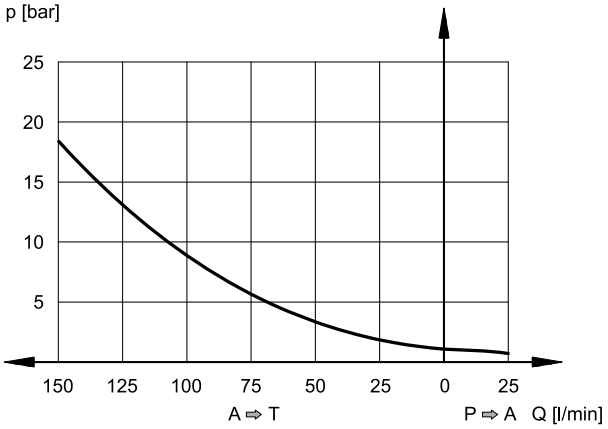
(with mineral oil with viscosity of 36 cSt at 50°C)

6.1 - Characteristic Curves of DZCE5G and DZCE5RG

PRESSURE CONTROL p_A = f(Q)

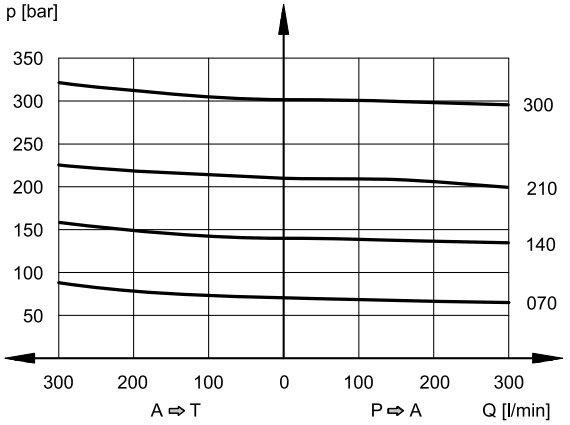


MINIMUM SET PRESSURE p min = f(Q)

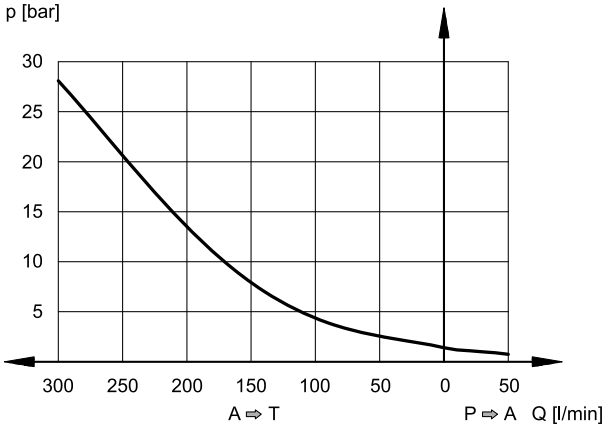


6.2 - Characteristic Curves of DZCE7G

PRESSURE CONTROL p_A = f(Q)

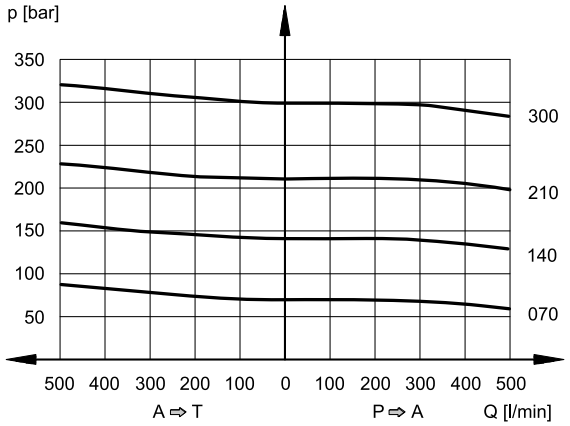


MINIMUM SET PRESSURE p min = f(Q)

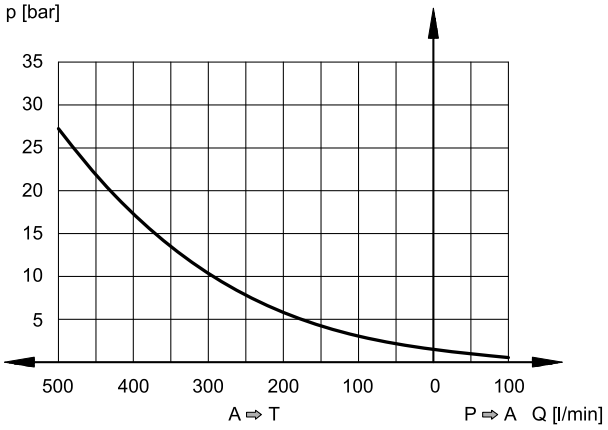


6.3 - Characteristic Curves of DZCE8G

PRESSURE CONTROL p_A = f(Q)

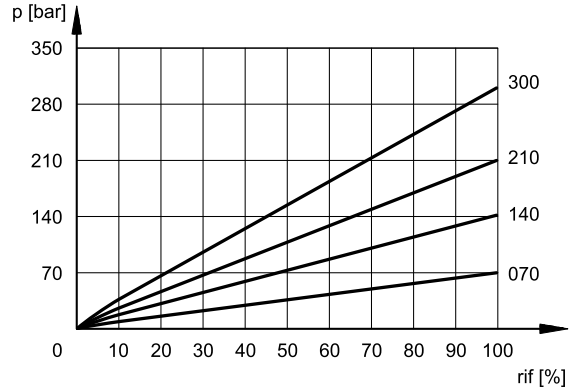


MINIMUM SET PRESSURE p min = f(Q)



6.4 - Pressure in port A depending on the command value p = f(I)

The graph applies to all sizes.



7 - STEP RESPONSE

(measured with mineral oil with viscosity of 36 cSt at 50°C with electronic control card)

The graphs show the typical step response tested with static pressure 100 bar.

Step response is the time taken for the valve to reach 90% of the set pressure value following a step change of reference signal.

The values change significantly according to the variation of the available flow rate and to the construction of the circuit.

REFERENCE SIGNAL	0 →100%	100 →0%
Step response [ms]		
DZCE5G and DZCE5RG	100	50
DZCE7G	100	50
DZCE8G	150	70

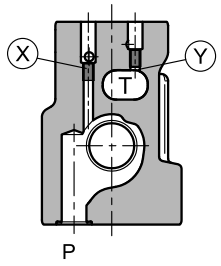
8 - PILOTING AND DRAINAGE

The DZCE*G valves are available with pilot and drain both internal and external. The version with external drain allows a higher back pressure on the discharge line.

NOTE: The configuration of pilots and drains must be chosen when ordering. Subsequent modifications are allowed only to specialized operators with authorization and in factory.

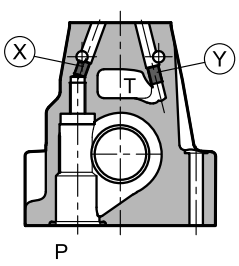
TYPE OF VALVE		Plug assembly	
		X	Y
IE	internal pilot and external drain	NO	YES
II	internal pilot and internal drain	NO	NO
EE	external pilot and external drain	YES	YES
EI	external pilot and internal drain	YES	NO

DZCE5G and DZCE5RG

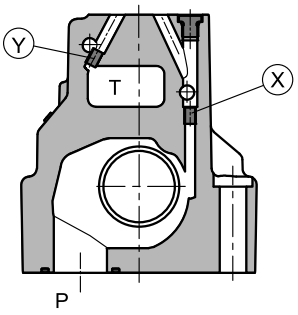


X: M5x6 plug for external pilot
Y: M5x6 plug for external drain

DZCE7G



DZCE8G



X: M6x8 plug for external pilot
Y: M6x8 plug for external drain

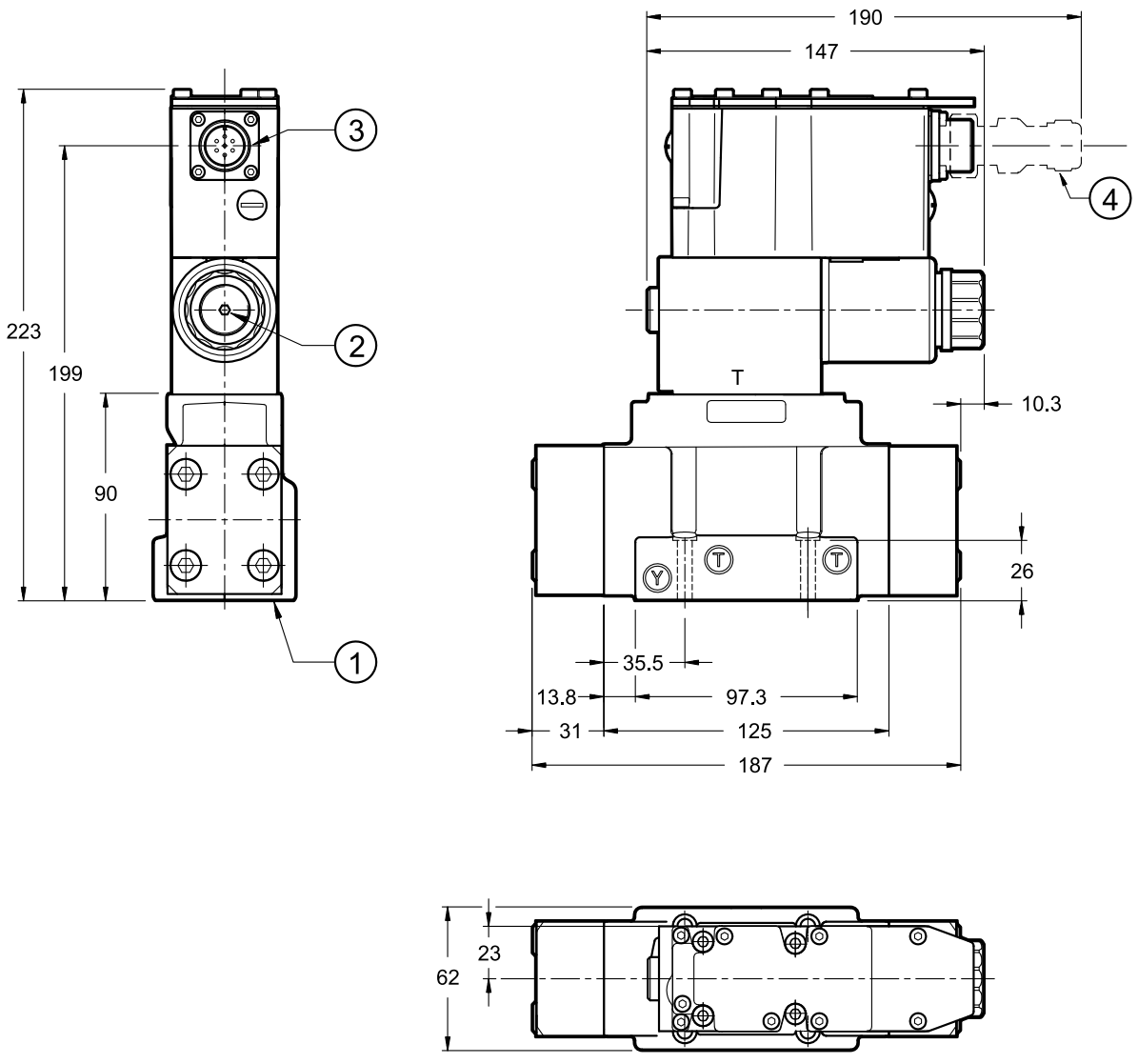
PRESSURES (bar)

Pressure	MAX
Piloting pressure on external X port	350 (**NOTE**)
Pressure on T port with internal drain	2
Pressure on T port with external drain	250

NOTE: The pilot pressure must be 10% higher than the set value for the reduced pressure, in order to let the valve work properly.

9 - OVERALL AND MOUNTING DIMENSIONS DZCE5G AND DZCE5RG

dimensions in mm



NOTE: at the first start up, or after a long period of no use, it is necessary to vent the air through the breather (2) placed at the end of the solenoid tube.

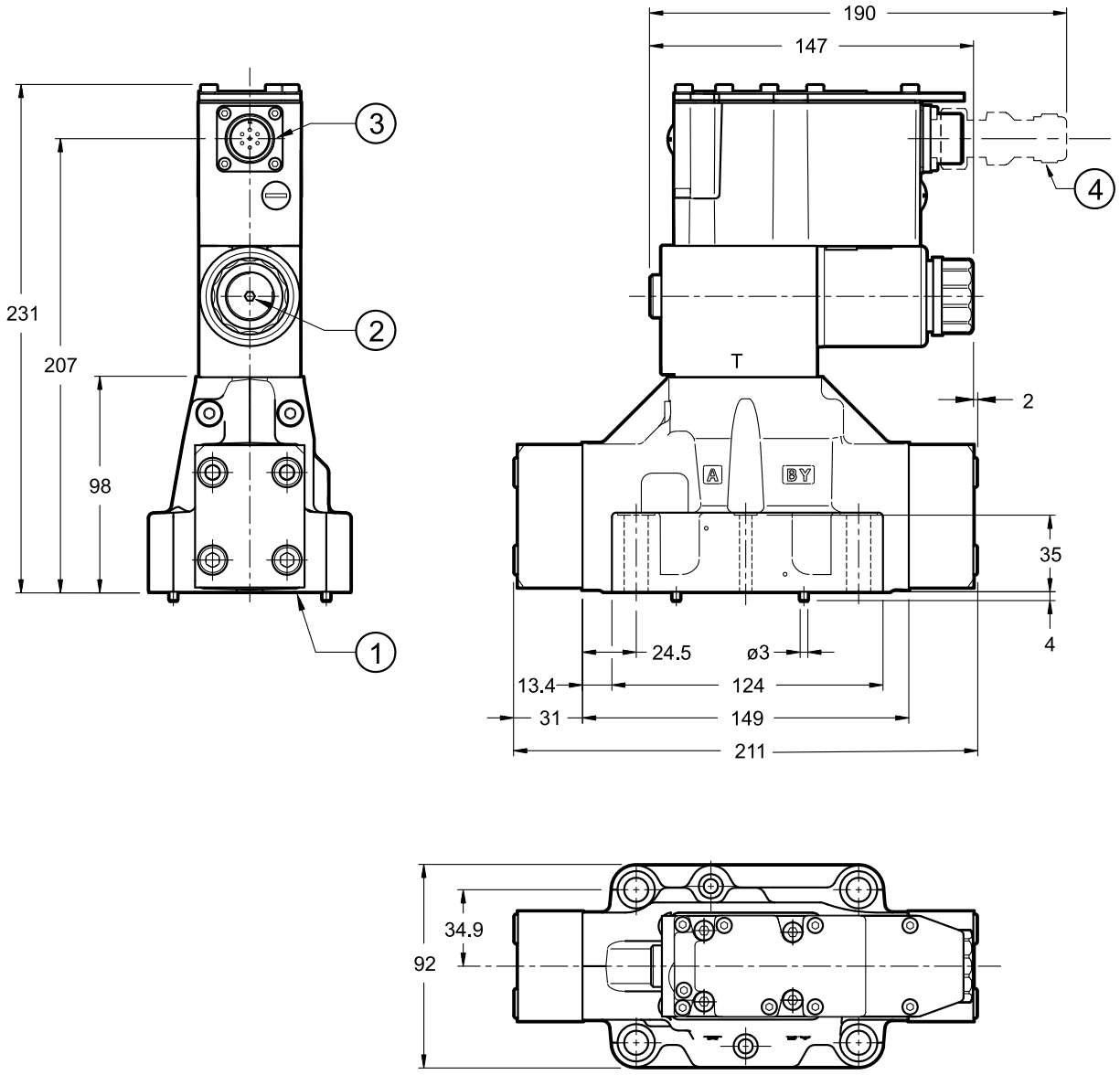
Mounting surface shown at point 12.

Valve fastening: N. 4 bolts SHC M6x35 - ISO 4762
Tightening torque: 8 Nm (bolts A 8.8)
Thread of mounting holes: M6x10

1	Mounting surface with sealing rings: N. 5 OR type 2050 (12.42x1.78) - 90 Shore N. 2 OR type 2037 (9.25x1.78) - 90 Shore
2	Breather (Allen key 4)
3	Main connection 6 pin + PE
4	Mating electrical connector **to be ordered separately.** See at section 15

10 - OVERALL AND MOUNTING DIMENSIONS DZCE7G

dimensions in mm



NOTE: at the first start up, or after a long period of no use, it is necessary to vent the air through the breather (2) placed at the end of the solenoid tube.

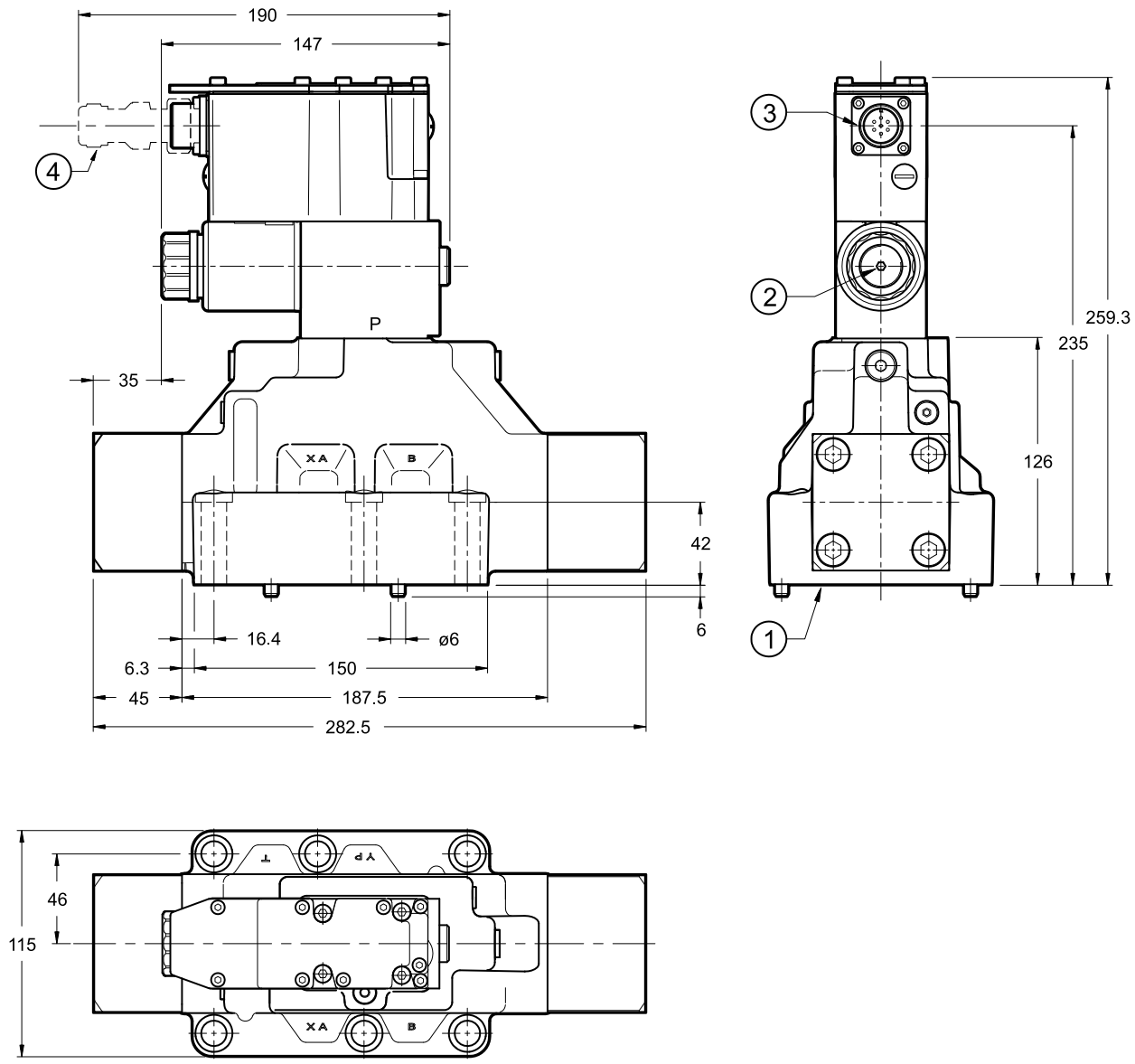
Mounting surface shown at point 12.

Valve fastening:	N. 4 bolts SHC M10x50 - ISO 4762 N. 2 bolts SHC M6x50 - ISO 4762
Tightening torque:	M10x50: 40 Nm (bolts A 8.8) M6x50: 8 Nm (bolts A 8.8)
Thread of mounting holes:	M6x18; M10x18

1	Mounting surface with sealing rings: N. 4 OR type 130 (22.22x2.62) - 90 Shore N. 2 OR type 2043 (10.82x1.78) - 90 Shore
2	Breather (Allen key 4)
3	Main connection 6 pin + PE
4	Mating electrical connector **to be ordered separately.** See at section 15

11 - OVERALL AND MOUNTING DIMENSIONS DZCE8G

dimensions in mm



NOTE: at the first start up, or after a long period of no use, it is necessary to vent the air through the breather (2) placed at the end of the solenoid tube.

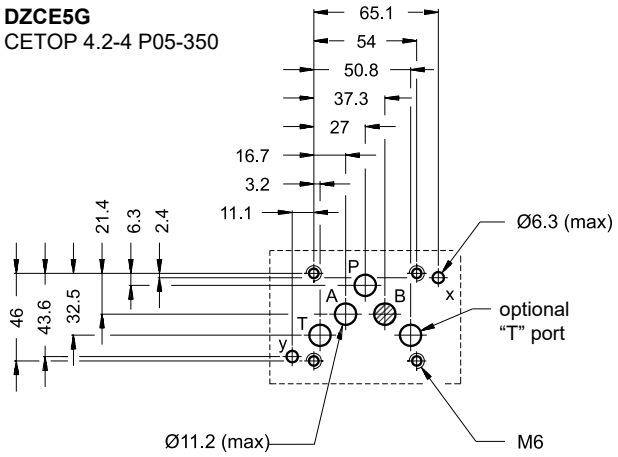
Mounting surface shown at point 12.

Valve fastening: N. 6 bolts SHC M12x60 - ISO 4762
Tightening torque: 69 Nm (bolts A 8.8)
Thread of mounting holes: M12x20

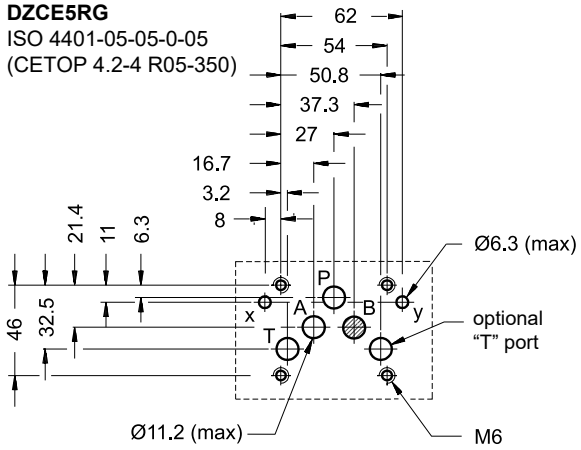
1	Mounting surface with sealing rings: N. 4 OR type 3131 (32.99x2.62) - 90 Shore N. 2 OR type 3087 (21.89x2.62) - 90 Shore
2	Breather (Allen key 4)
3	Main connection 6 pin + PE
4	Mating electrical connector **to be ordered separately.** See at section 15

12 - MOUNTING SURFACES

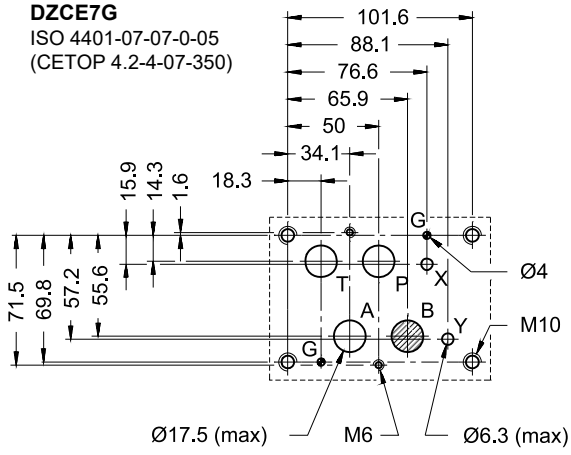
DZCE5G
CETOP 4.2-4 P05-350



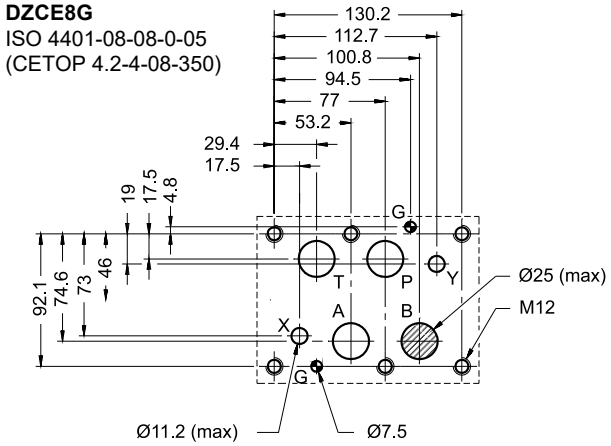
DZCE5RG
ISO 4401-05-05-0-05
(CETOP 4.2-4 R05-350)



DZCE7G
ISO 4401-07-07-0-05
(CETOP 4.2-4-07-350)



DZCE8G
ISO 4401-08-08-0-05
(CETOP 4.2-4-08-350)



13 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department.

Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics. The fluid must be preserved in its physical and chemical characteristics.

14 - INSTALLATION

We recommend to install the valves either in horizontal position, or vertical position with the solenoid downward. If the valve is installed in vertical position and with the solenoid upward, you must consider possible variations of the minimum controlled pressure, if compared to what is indicated in point 6.

Ensure that there is no air in the hydraulic circuit. In particular applications, it can be necessary to vent the air entrapped in the solenoid tube, by using the appropriate drain screw in the solenoid tube.

Ensure the solenoid tube is always filled with oil. At the end of the operation, make sure of having correctly replaced the drain screw.

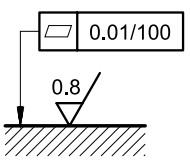
Connect the valve T port directly to the tank. Add any backpressure value detected in the T line to the controlled pressure value.

Maximum admissible backpressure in the T line, under operational conditions, is 2 bar.

Valves are fixed by means of screws or tie rods on a flat surface with planarity and roughness equal to or better than those indicated in the relative symbols.

If minimum values are not observed, fluid can easily leak between the valve and support surface.

Surface finishing



15 - ACCESSORIES
(to be ordered separately)

15.1 Mating connectors
Mating connectors must be ordered separately. See catalogue 89 000.

We recommend the choice of a metal connector to avoid electromagnetic disturbances and to comply with EMC regulations on electromagnetic compatibility. If you opt for a plastic connector, make sure that it guarantees and maintains the IP and EMC protection characteristics of the valve.

15.2 - Connection cable
The optimal wiring provides for 7 isolated conductors, with separate screen for the signal wires (command, monitor) and an overall screen.

Cross section for power supply:
- up to 20 m cable length: 1,0 mm^2
- up to 40 m cable length: 1,5 mm^2

Cross section for signals (command, monitor):
- 0,50 mm^2

15.3 - Kit for start-up LINPC-USB
Device for service start-up and diagnostic, see catalogue 89 850.

16 - SUBPLATES
(see catalogue 51 000)

No subplates are available for DZCE5RG.

		DZCE5G	DZCE7G	DZCE8G
Type with rear ports		PME4-AI5G	PME07-AI6G	-
Type with side ports		PME4-AL5G	PME07-AL6G	PME5-AL8G
Thread of ports:	P - T - A - B X - Y	3/4” BSP 1/4” BSP	1” BSP 1/4” BSP	1½” BSP 1/4” BSP

DUPLOMATIC MOTION SOLUTIONS
a member of DAIKIN group

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