

DXRE*J

DIRECTIONAL CONTROL VALVES, PILOT OPERATED, WITH OBE AND FEEDBACK SERIES 31

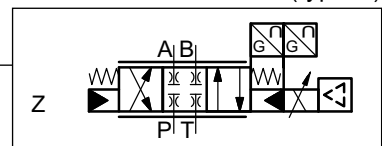
SUBPLATE MOUNTING

DXRE5RJ	ISO 4401-05
DXRE7J	ISO 4401-07
DXRE8J	ISO 4401-08
DXRE10J	ISO 4401-10
DXRE11J	ISO 4401-10 oversized ports

OPERATING PRINCIPLE

- DXRE*J are directional control valves operated by a servo-proportional pilot, with mounting surface compliant with ISO 4401 standards.
- The spool position is controlled by a linear transducer LVDT in closed loop, which ensures high precision and repeatability. In the event of switch-off or inactive electronics the main spool is set to a fail-safe position by springs.
- The valve is featured by integral electronic based on SMD technology which ensures standard regulations and simplifies the electric wiring. The unit does not require any adjustment.
- The valve is 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 par. 16.3).

HYDRAULIC SYMBOL (typical)



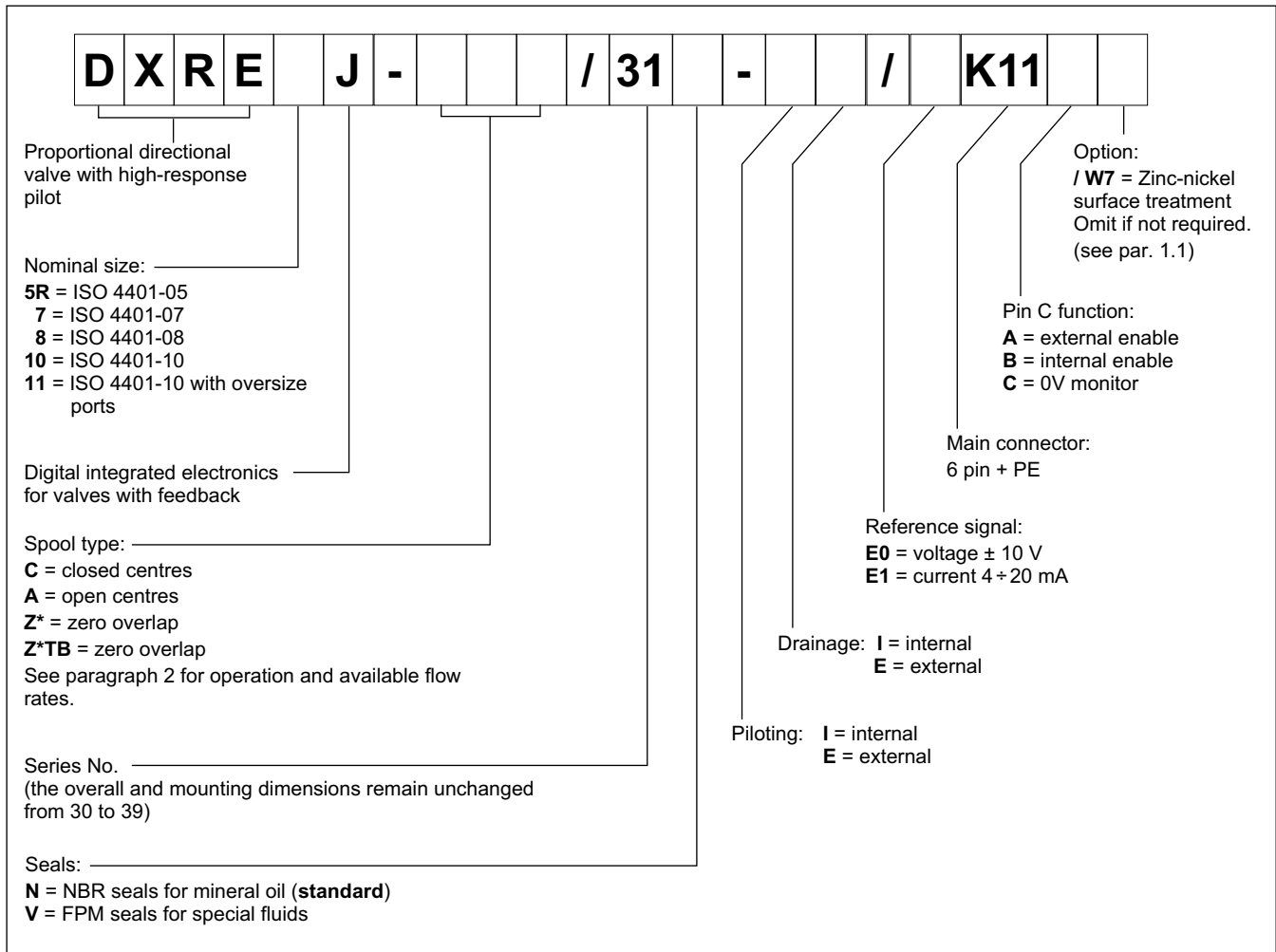
PERFORMANCES

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

		DXRE5RJ	DXRE7J	DXRE8J	DXRE10J	DXRE11J
Max operating pressure: P - A - B ports T - X - Y ports	bar	350 250				
Controlled flow with Δp 10 bar P-T	l/min	100	220	400	800	1000
Hysteresis	% Q _{max}	< 0,2%				
Repeatability	% Q _{max}	± 0,1%				
Electrical characteristics		see paragraph 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 (16/14/11 for longer life)				
Recommended viscosity	cSt	25				
Mass:	kg	8	10,5	17	56	56



1 - IDENTIFICATION CODE



1.1 - Surface treatments

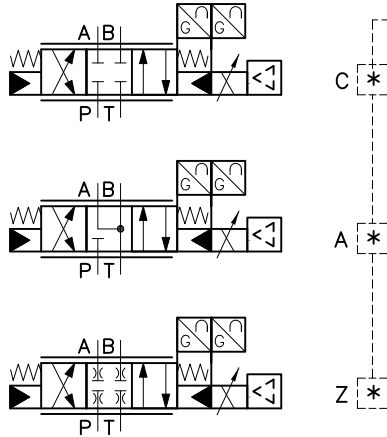
The standard valve is supplied with surface treatment of phosphating black.

The zinc-nickel finishing makes the valve suitable to ensure a salt spray resistance up to **600** hours (test operated according to UNI EN ISO 9227 standards and test evaluation operated according to UNI EN ISO 10289 standards).

2 - AVAILABLE CONFIGURATIONS

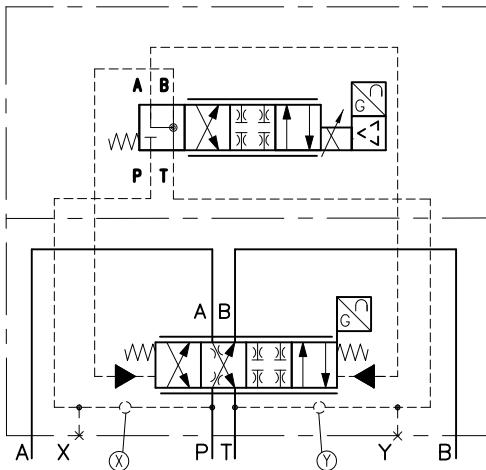
The valve configuration depends on the combination of spool type and rated flow.

3 positions with spring centering



valve type	*	Controlled flow with Δp 10 bar P-T
DXRE5RJ	100	100 l/min
DXRE7J	120	120 l/min
	220	220 l/min
DXRE8J	250	250 l/min
	400	400 l/min
DXRE10J	800	600 l/min
DXRE11J	1000	1000 l/min

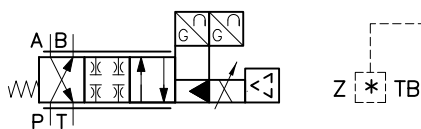
detailed symbol (spool Z)



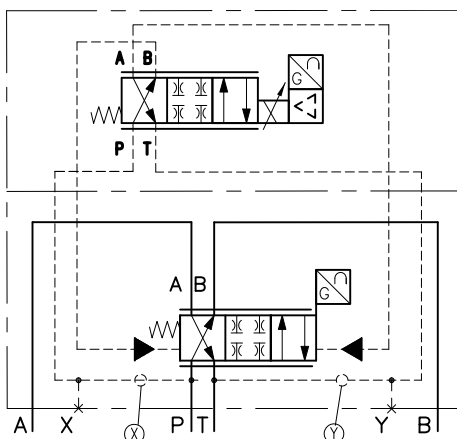
OFFSET POSITION for Z SPOOLS

After electrical switch-off or Enable signal switch-off (version K11A) the main spool moves to springs offset position, with limited opening (1%... 6% of main spool stroke in direction P-B / A-T)

3 positions with spring offset



detailed symbol (spool Z)



valve type	*	Controlled flow with Δp 10 bar P-T
DXRE5RJ	100	100 l/min
DXRE7J	120	120 l/min
	220	220 l/min
DXRE8J	250	250 l/min
	400	400 l/min
DXRE10J	800	600 l/min
DXRE11J	1000	1000 l/min

FAIL SAFE POSITION

After electrical switch-off or Enable signal switch-off (version K11A) the main spool moves by spring to the fail-safe position P-B / A-T wide open.

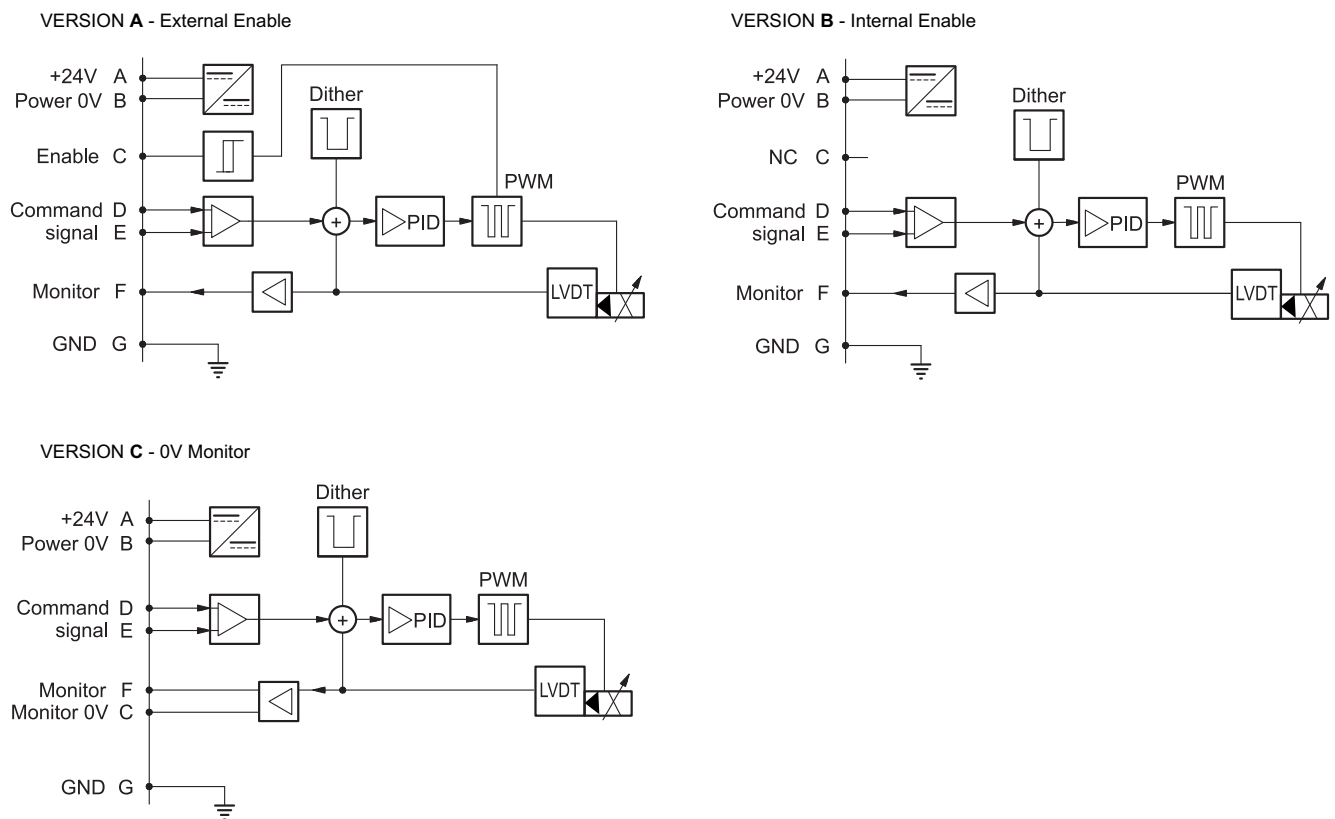


3 - ELECTRICAL CHARACTERISTICS

3.1 - Electrical on board electronics

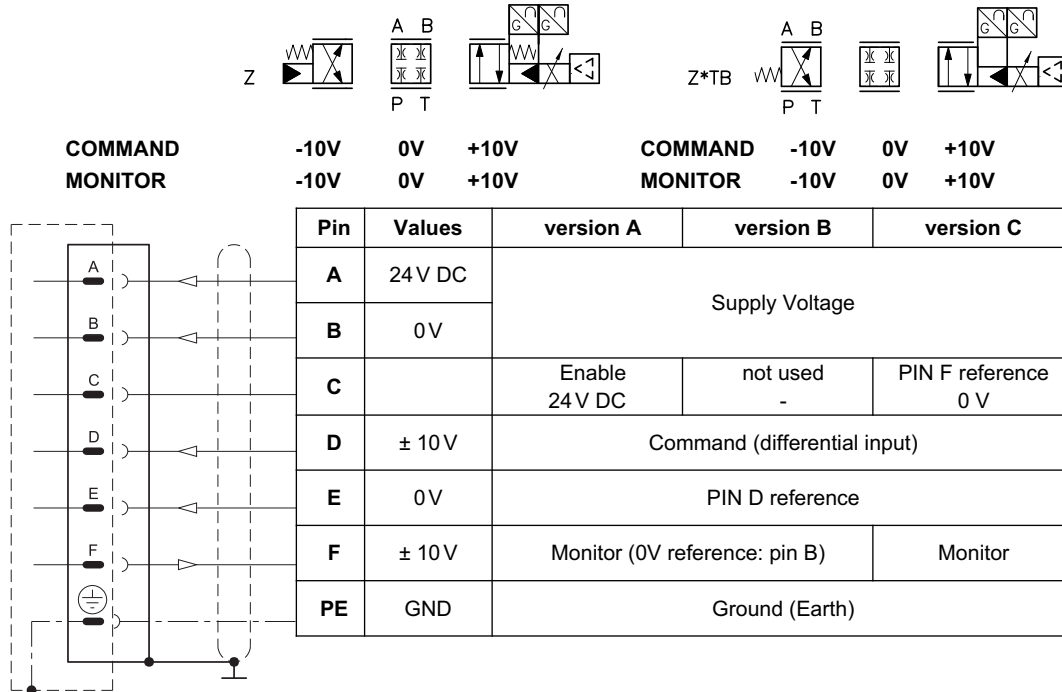
Duty cycle		100% (continuous operation)
Protection class according to EN 60529		IP65 / IP67
Supply voltage	V DC	24 (from 19 to 30 VDC), ripple max 3 Vpp
Power consumption	VA	35
Maximum solenoid current	A	2.6
Fuse protection, external		(fast), max current 4A
Command signals:	voltage (E0) current (E1)	V DC mA
		± 10 (Impedance $R_i > 11$ kOhm) $4 \div 20$ (Impedance $R_i = 58$ Ohm)
Monitor signals:	voltage (E0) current (E1)	V DC mA
		± 10 (Impedance $R_o > 1$ kOhm) $4 \div 20$ (Impedance $R_o = 500$ Ohm)
Managed breakdowns		Overload and electronics overheating, LVDT sensor error, cable breakdown, supply voltage failure
Communication		LIN-bus Interface (with the optional kit)
Connection		7 - pin MIL-C-5015-G (DIN-EN 175201-804)
Electromagnetic compatibility (EMC)		According to 2014/30/EU standards (testing accordingly: IEC 61000-6-2, IEC 61000-6-4, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8)

3.2 - On-board electronics diagrams



4 - VERSIONS WITH VOLTAGE COMMAND (E0)

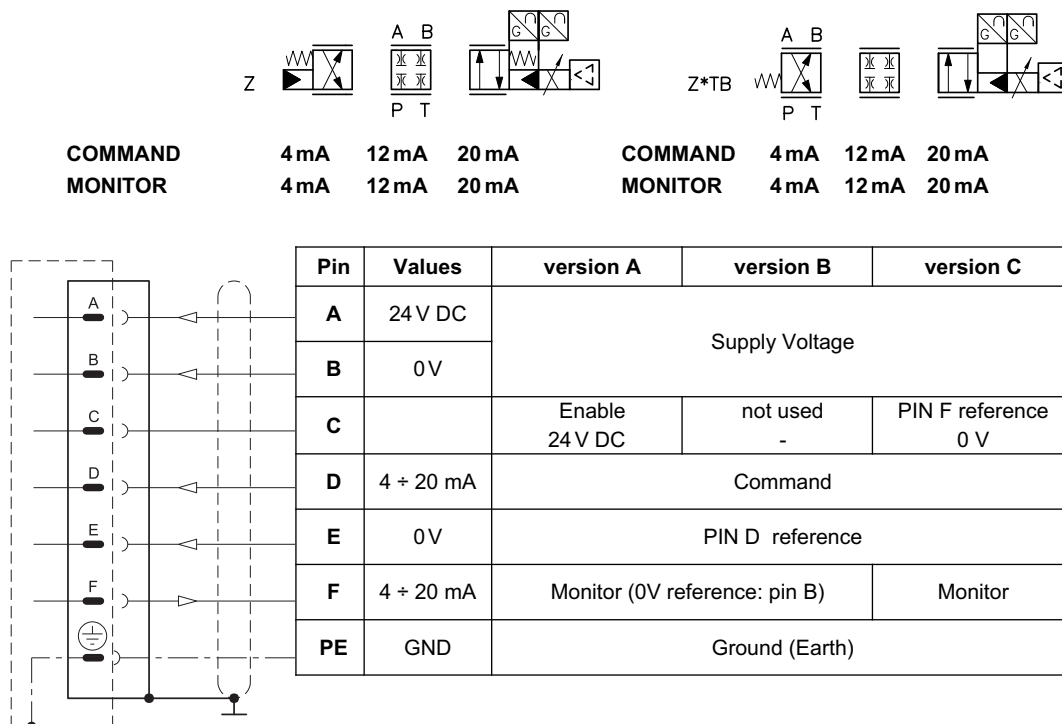
The reference signal must be between -10V and +10V. The monitor feature of versions B and C becomes available with a delay of 0,5 sec from the power-on of the card.



5 - VERSIONS WITH CURRENT COMMAND (E1)

The reference signal is supplied in current $4 \div 20$ 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.



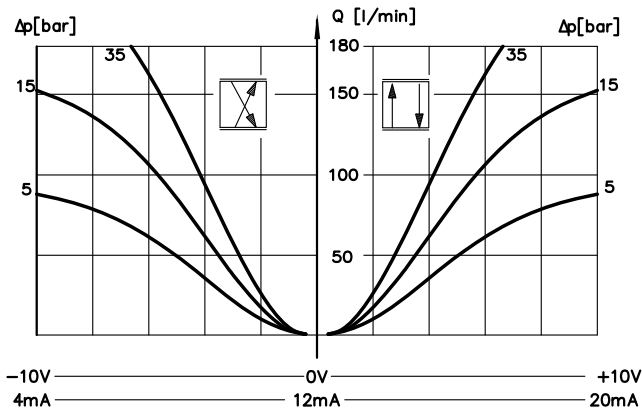
6 - CHARACTERISTIC CURVES

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

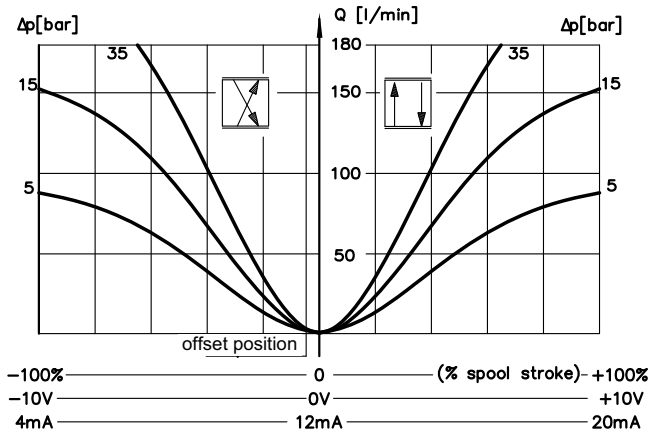
Typical flow rate curves at constant Δp related to the reference signal and measured for the available spools. The Δp values are measured per land.

6.1 - Characteristic curves DXRE5RJ

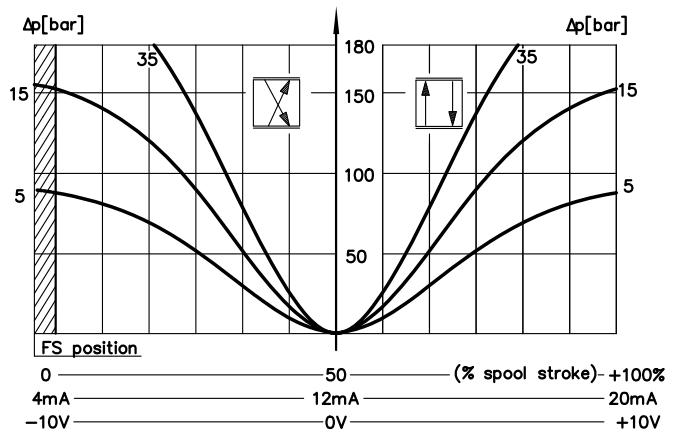
SPOOL C100 / A100



SPOOL Z100

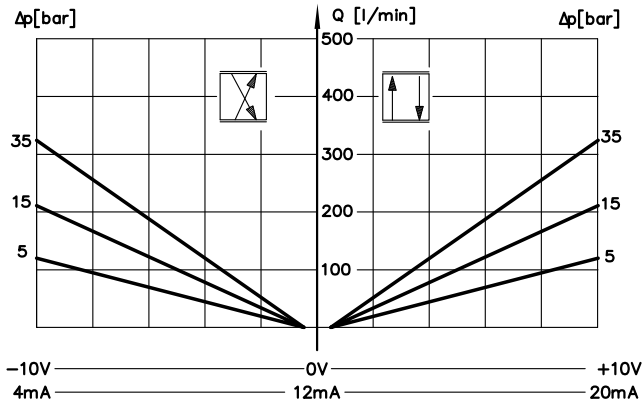


SPOOL Z100TB

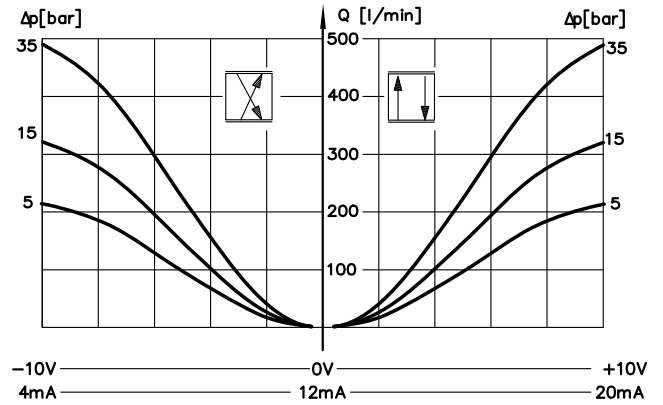


6.2 - Characteristic curves DXRE7J

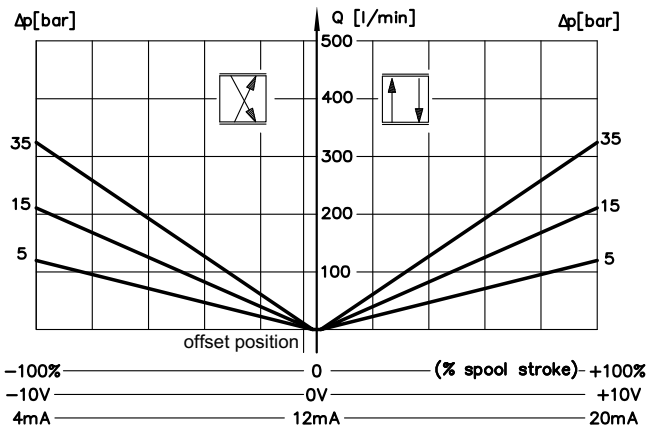
SPOOL C120 / A120



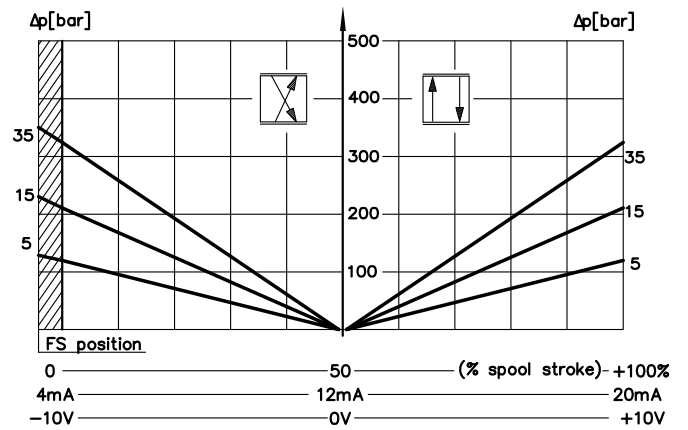
SPOOL C220 / A220



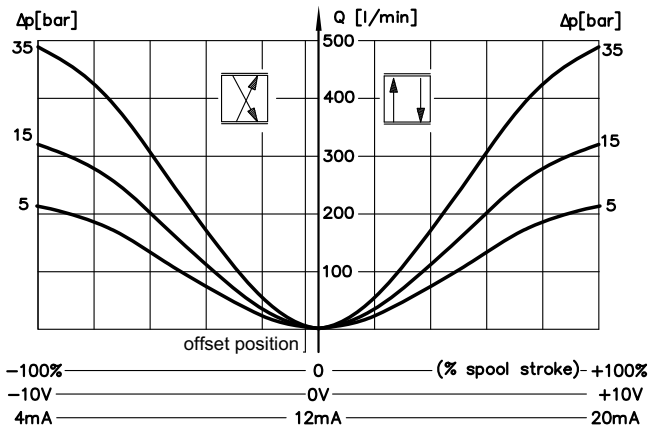
SPOOL Z120



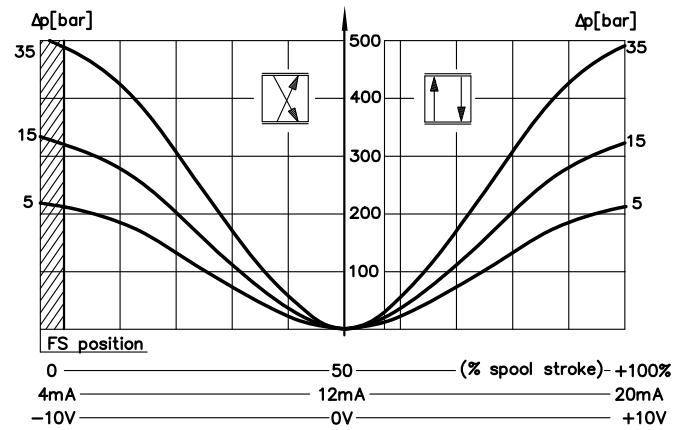
SPOOL Z120TB



SPOOL Z220

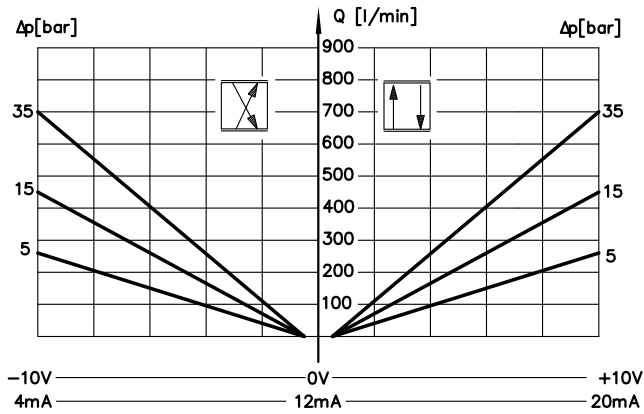


SPOOL Z220TB

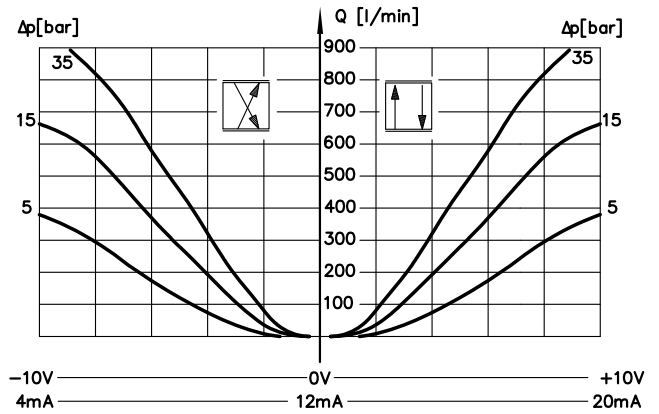


6.3 - Characteristic curves DXRE8J

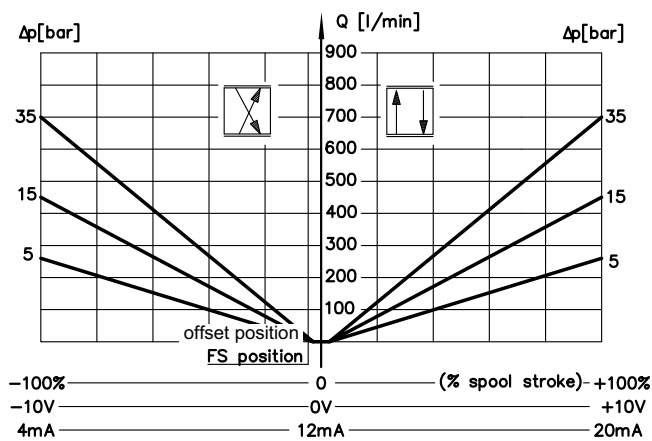
SPOOL C250 / A250



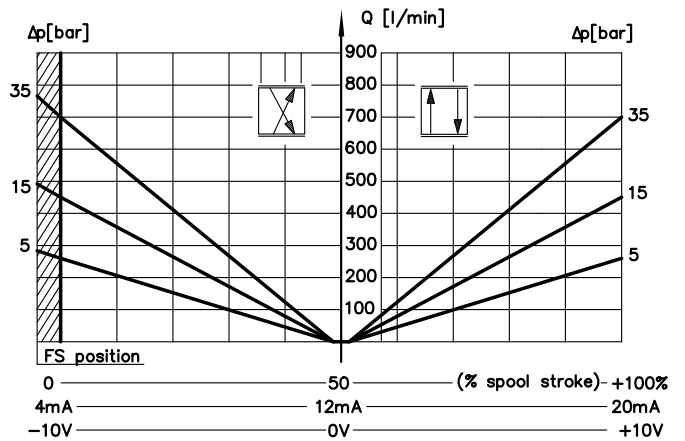
SPOOL C400 / A400



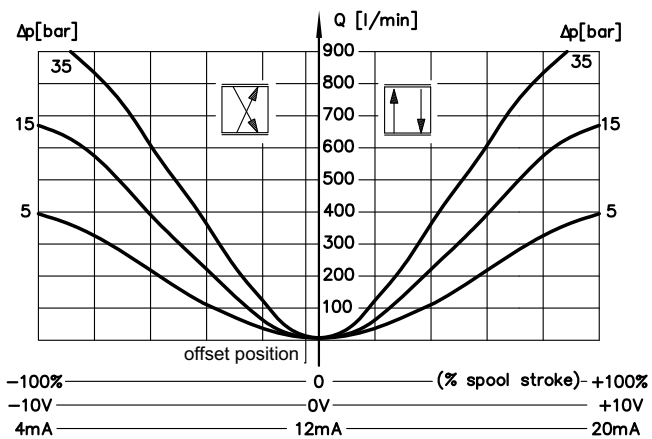
SPOOL Z250



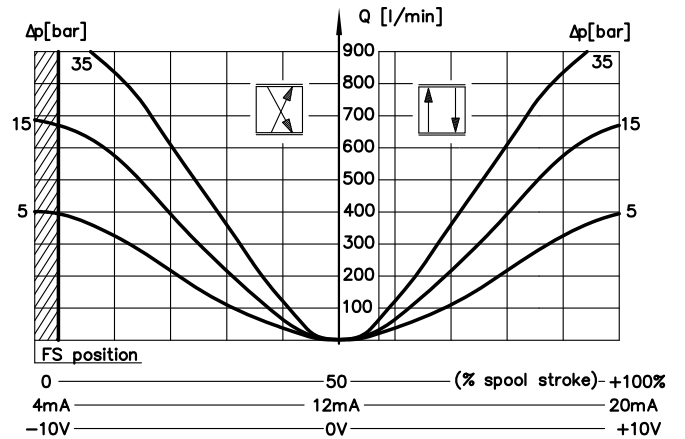
SPOOL Z250TB



SPOOL Z400

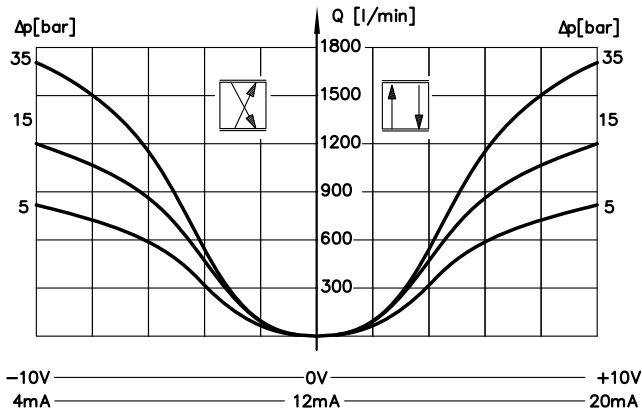


SPOOL Z400TB

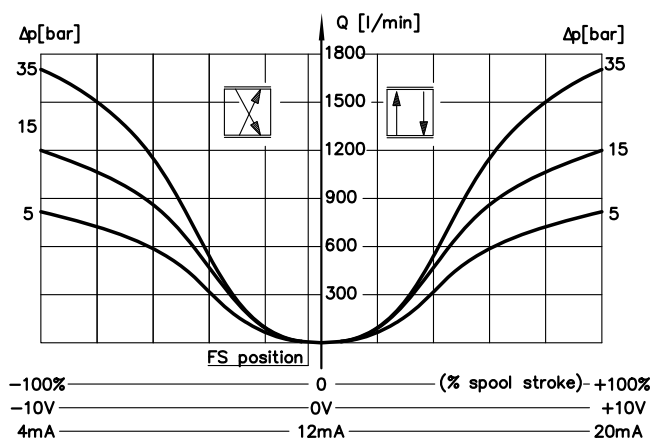


6.4 - Characteristic curves DXRE10J*

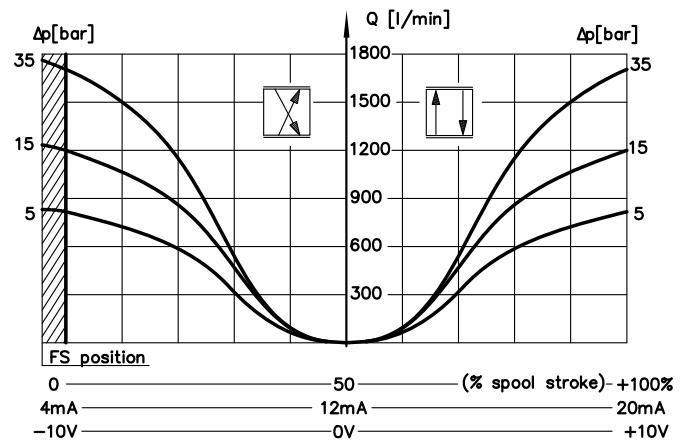
SPOOL C800



SPOOL Z800

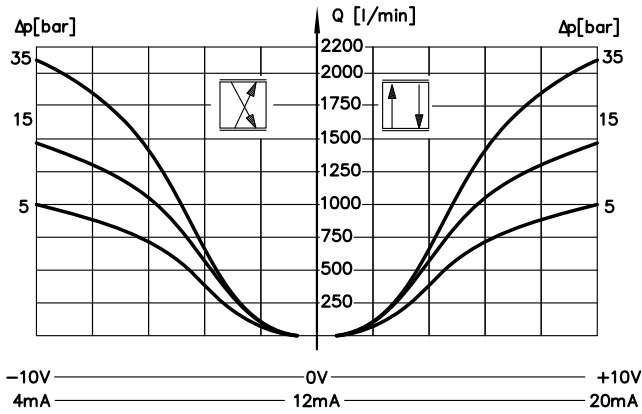


SPOOL Z800TB

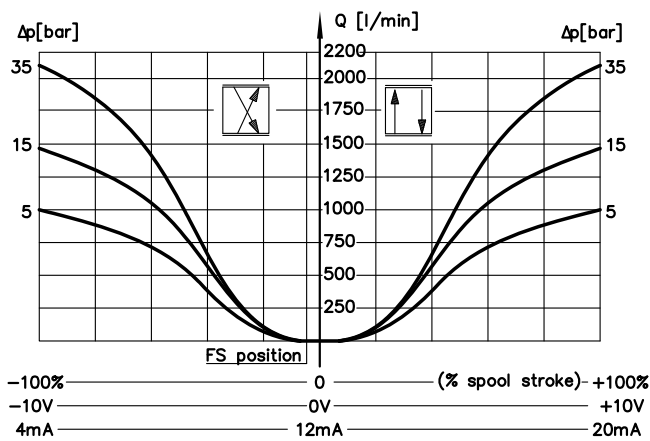


6.5 - Characteristic curves DXRE11J

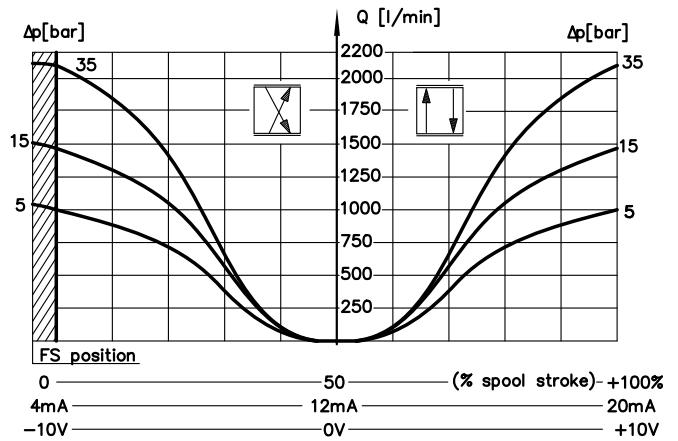
SPOOL C1000 / A1000



SPOOL Z1000



SPOOL Z1000TB



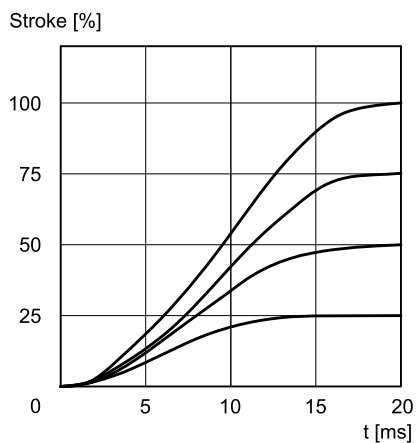
7 - RESPONSE TIMES

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

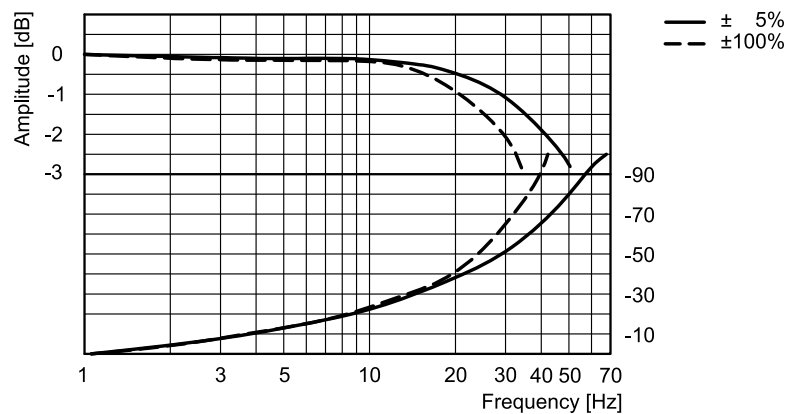
The tables shows the typical step response tested with static pressure 100 bar.

7.1 - DXRE5RJ

RESPONSE TIME



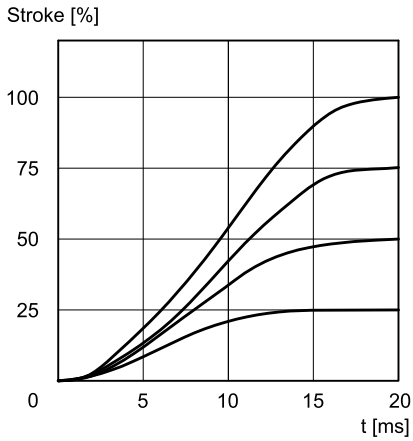
FREQUENCY RESPONSE



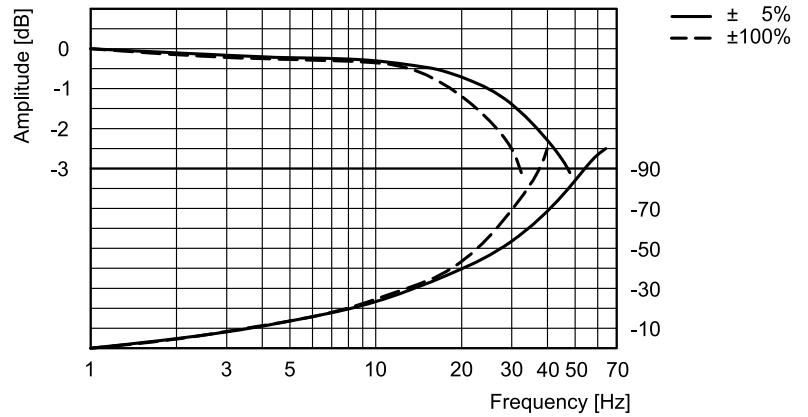


7.2 - DXRE7J

RESPONSE TIME

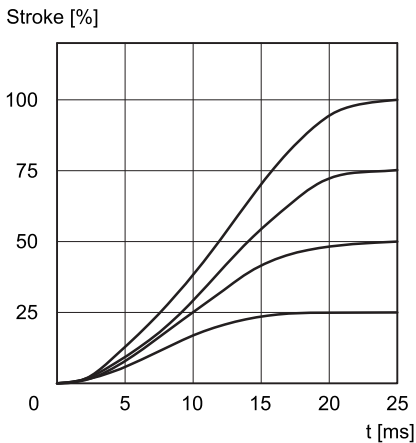


FREQUENCY RESPONSE

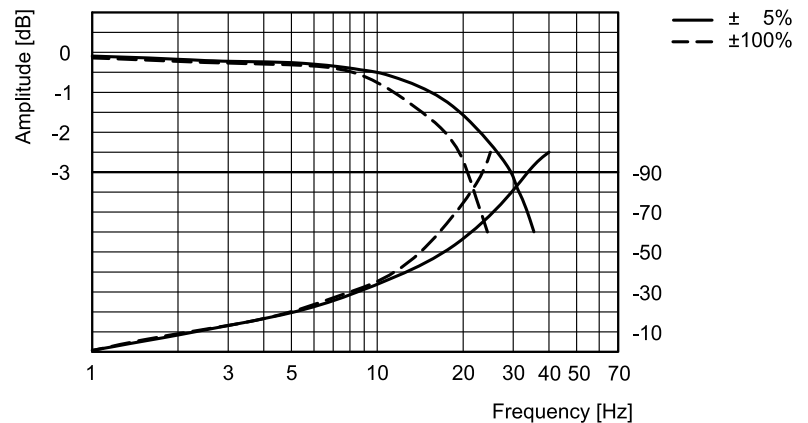


7.3 - DXRE8J

RESPONSE TIME

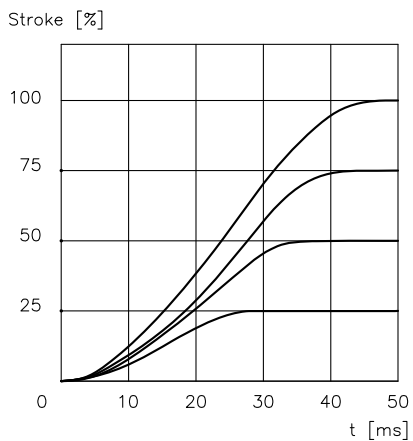


FREQUENCY RESPONSE

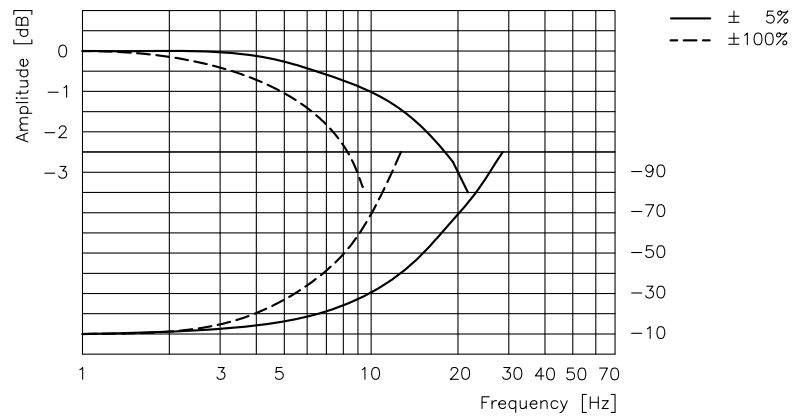


7.4 - DXRE10J and DXRE11J

RESPONSE TIME



FREQUENCY RESPONSE





8 - HYDRAULIC CHARACTERISTICS

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

		DXPER5J	DXRE7J	DXRE8J	DXRE10J	DXRE11J
Max flow rate	l/min	180	450	900	1600	3500
Piloting flow requested with operation 0 → 100%	l/min	7	13	28	35	35
Piloting volume requested with operation 0 → 100%	cm ³	1,7	3,2	10	22	22

8.1 - Pilot and drain

The DXRE*J valves are available with pilot and drain both internal and external. The version with external drain allows a higher back pressure on the unloading. The version with external pilot with reduced pressure must be used when higher pressures are needed.

PRESSURES (bar)

Pressure	MIN	MAX
Piloting pressure on X port	15	250
Pressure on T port with internal drain	-	30
Pressure on T port with external drain	-	250

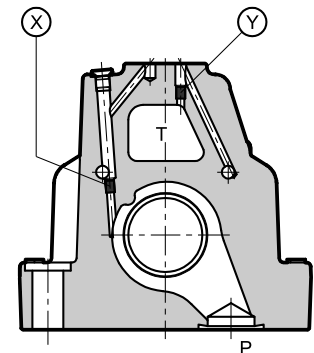
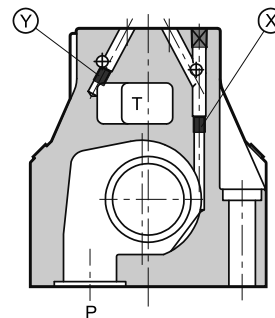
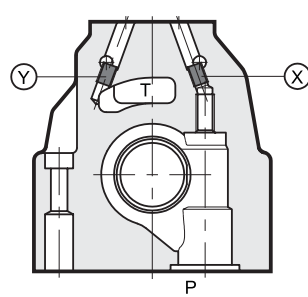
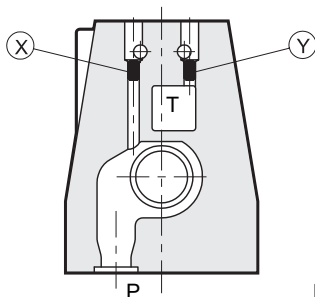
TYPE OF VALVE	Plug assembly	
	X	Y
IE INTERNAL PILOT AND EXTERNAL DRAIN	NO	YES
II INTERNAL PILOT AND INTERNAL DRAIN	NO	NO
EE EXTERNAL PILOT AND EXTERNAL DRAIN	YES	YES
EI EXTERNAL PILOT AND INTERNAL DRAIN	YES	NO

DXRE5RJ

DXRE7J

DXRE8J

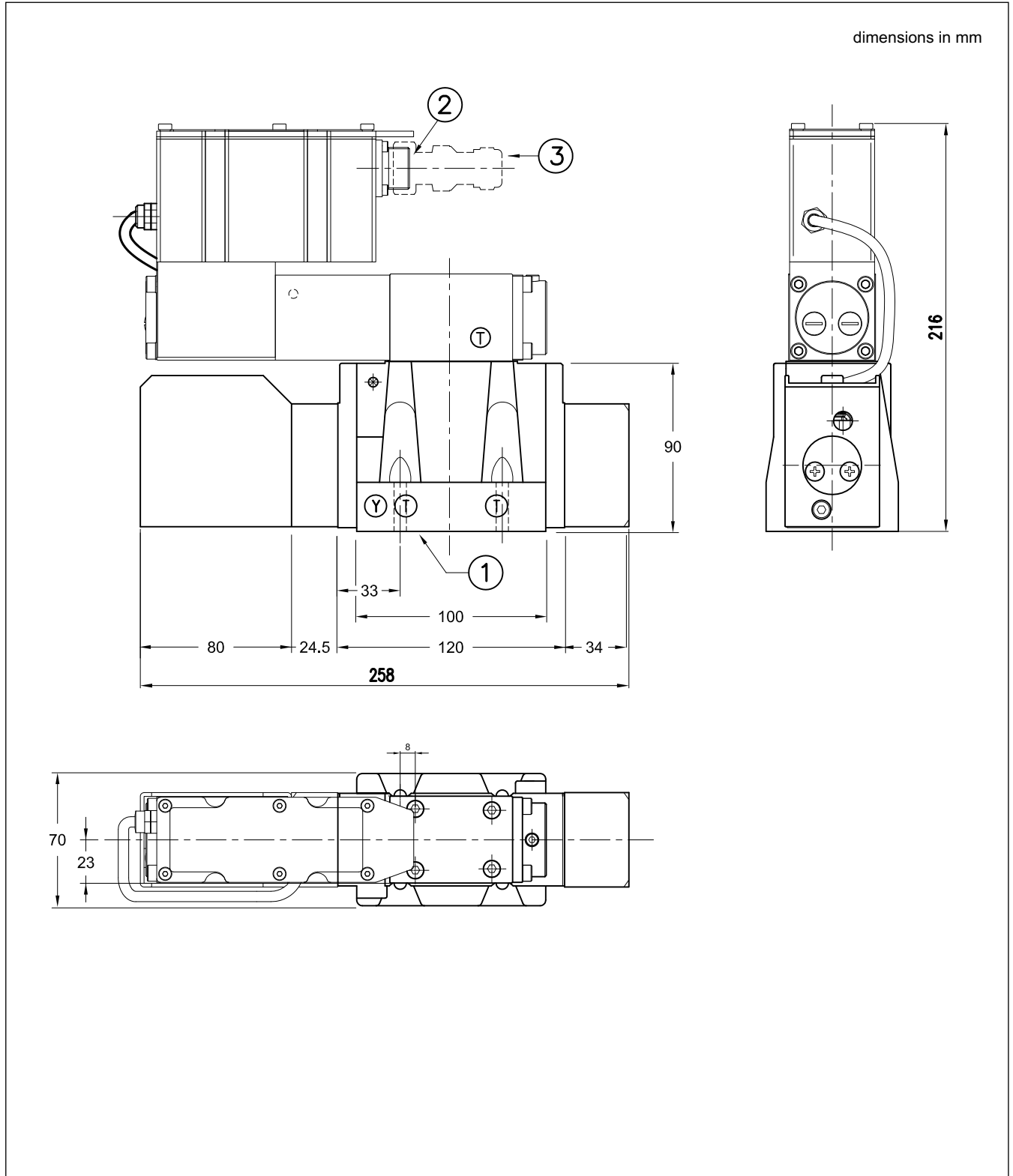
DXRE10J/DXRE11J



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

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

9 - OVERALL AND MOUNTING DIMENSIONS DXRE5RJ



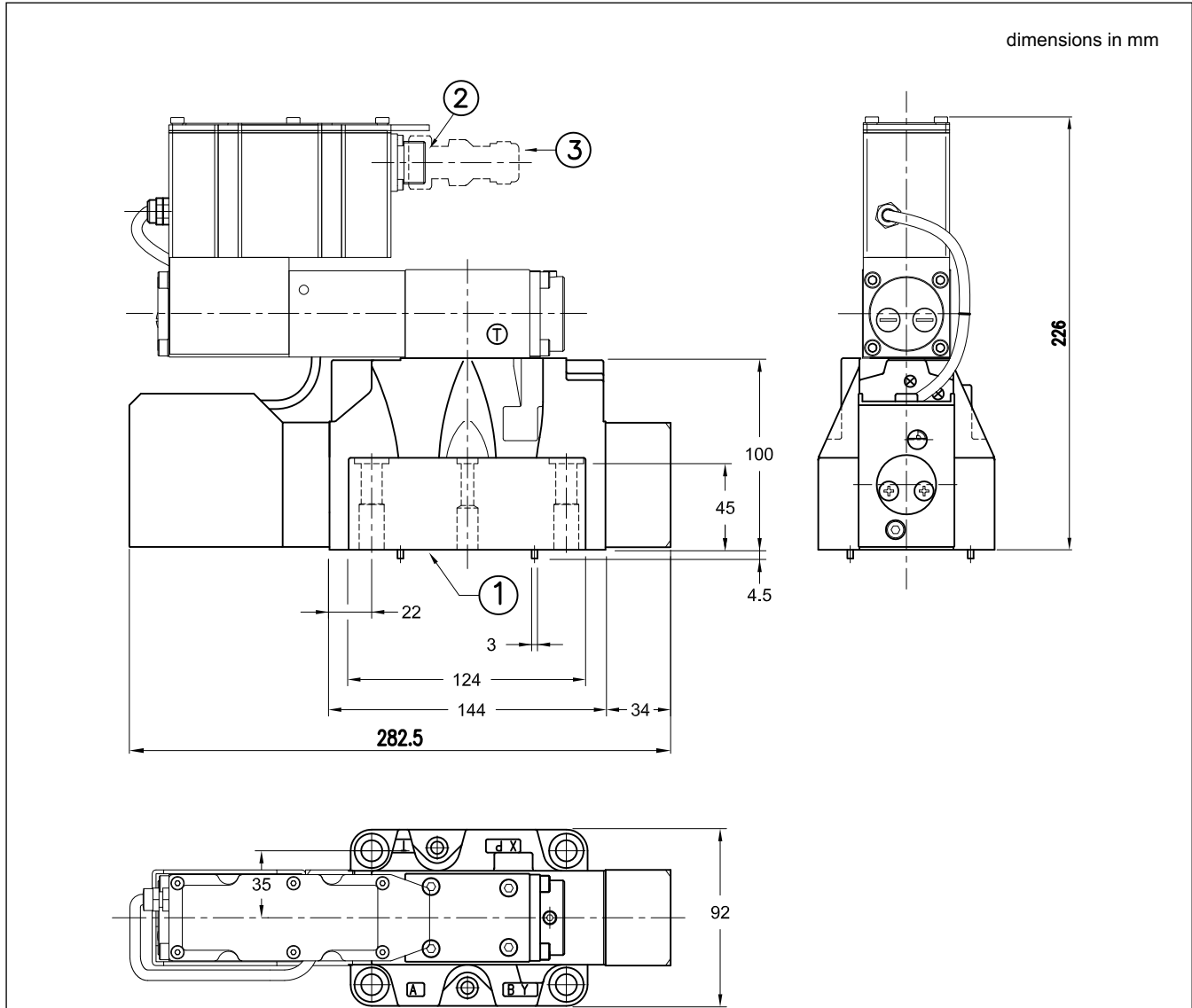
NOTES:

See mounting surface at section 13.
 - Do not dismantle the transducers.

Valve fastening: N. 4 bolts M6x35 - ISO 4762
Tightening torque: 8 Nm (A8.8 screws)
Threads of mounting holes: M6x10

1	Mounting surface with sealing rings: 5 OR type 2050 (12.42x1.78) - 90 Shore 1 OR type 2037 (9.25x1.78) - 90 Shore
2	Main connection
3	Electrical connector 7 pin DIN 43563 - IP67 PG11 EX7S/L/10 code 3890000003 (to be ordered separately)

10 - OVERALL AND MOUNTING DIMENSIONS DXRE7J



NOTES:

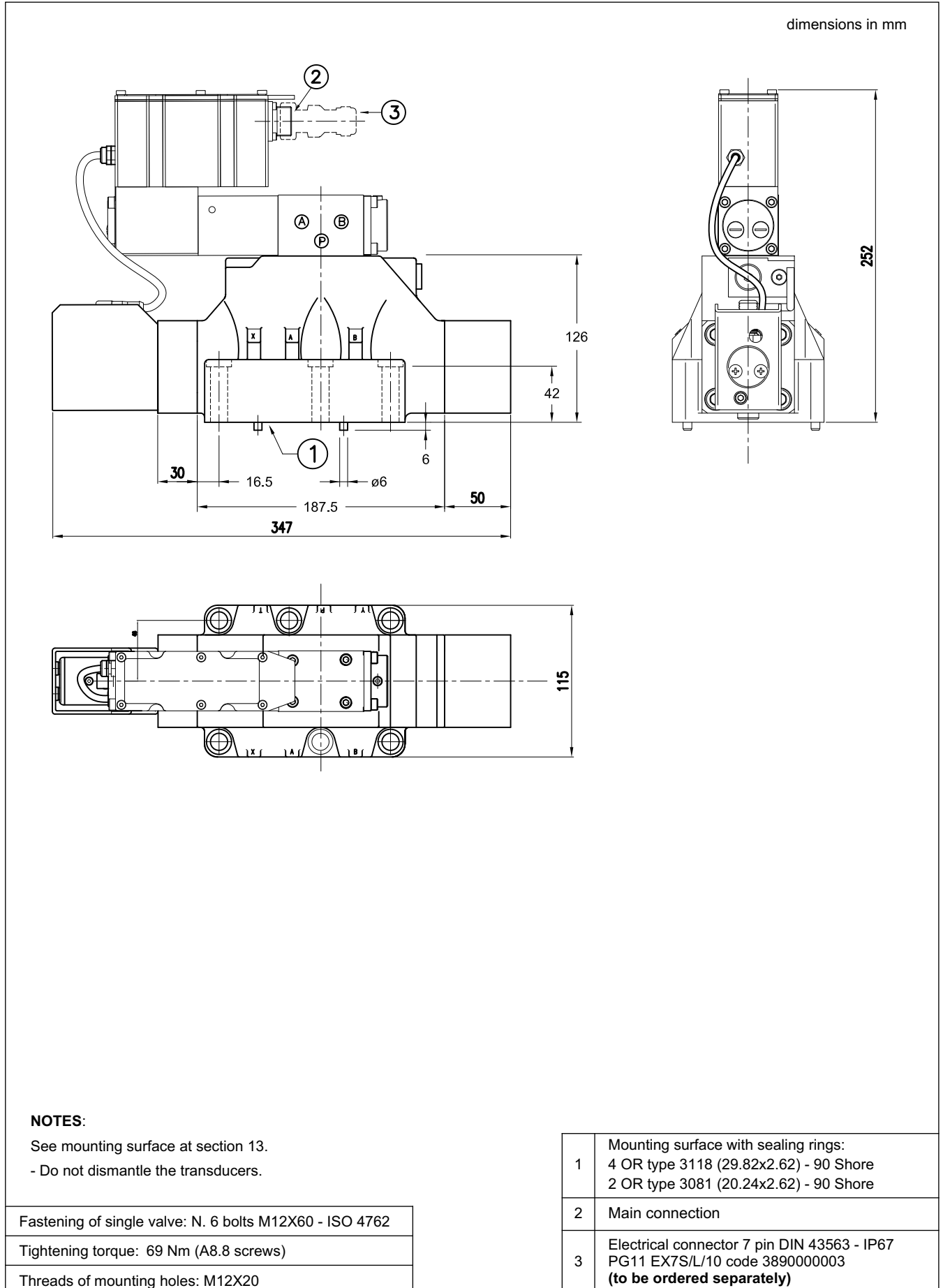
See mounting surface at section 13.

- Do not dismantle the transducers.

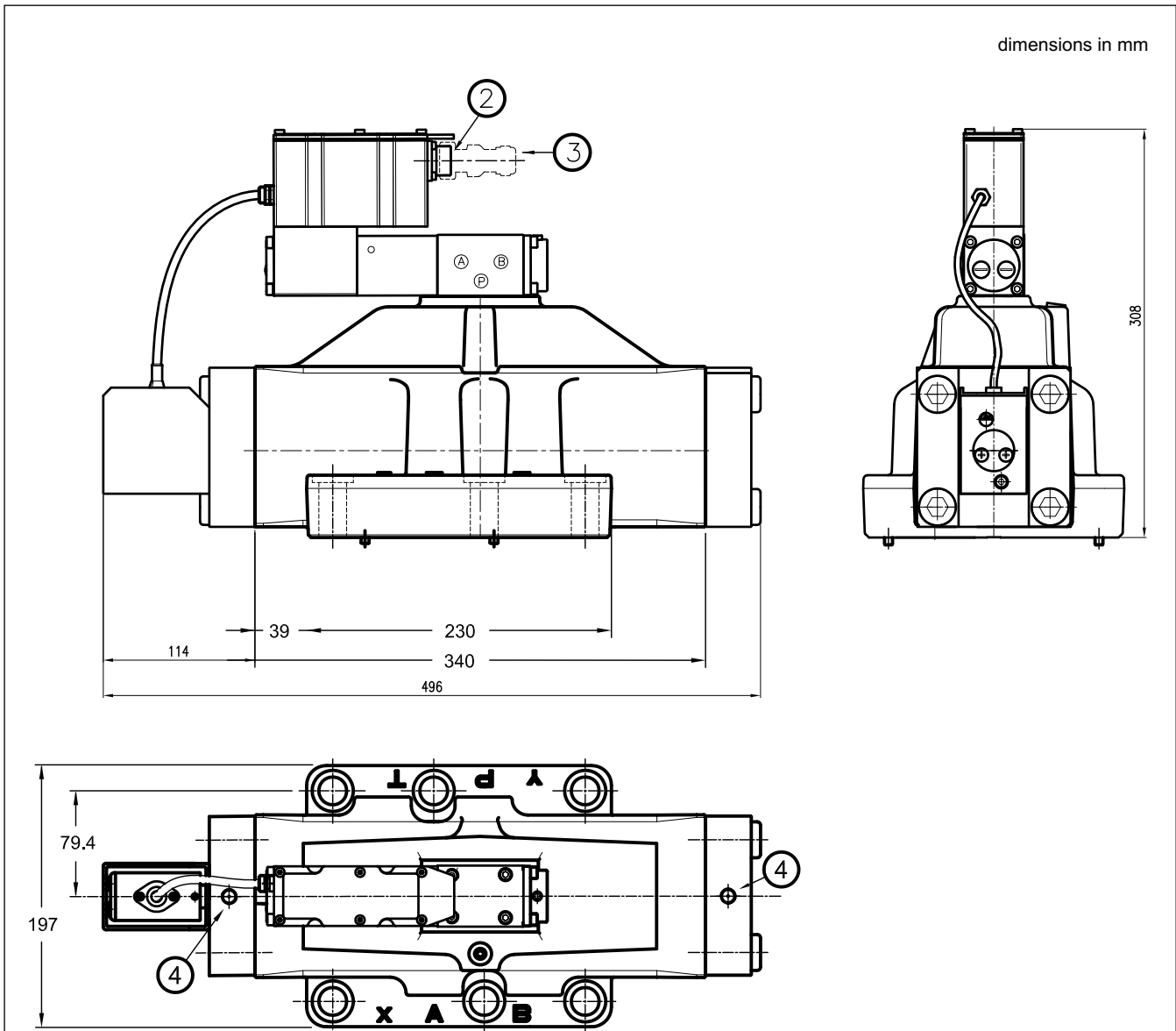
Valve fastening:	N. 4 bolts M10x60 - ISO 4762 N. 2 bolts M6x60 - ISO 4762
Tightening torque	M10x60: 40 Nm (A8.8 screws) M6x60: 8 Nm (A8.8 screws)
Threads of mounting holes:	M6x18; M10x18

1	Mounting surface with sealing rings. 4 OR type 130 (22.22X2.62) - 90 Shore 2 OR type 2043 (10.82x1.78) - 90 Shore
2	Main connection
3	Electrical connector 7 pin DIN 43563 - IP67 PG11 EX7S/L/10 code 3890000003 (to be ordered separately)

11 - OVERALL AND MOUNTING DIMENSIONS DXRE8J



12 - OVERALL AND MOUNTING DIMENSIONS DXRE10J / DXRE11J



NOTES:

See mounting surface at section 13.
 - Do not dismantle the transducers.

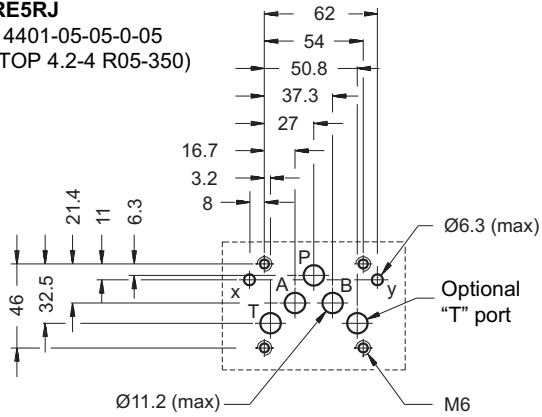
Valve fastening: 6 SHC screws ISO 4762 M20x70
Tightening torque: 330 Nm (A8.8 screws)
Threads of mounting holes: M20x40

1	Mounting surface with sealing rings: DXRE10J 4 OR type 4150 (37.59x3.53) - 90 Shore 2 OR type 3081 (20.24x2.62) - 90 Shore DXRE11J 4 OR type 4212 (53.57x3.53) - 90 Shore 2 OR type 3081 (20.24x2.62) - 90 Shore
2	Main connection
3	Electrical connector 7 pin DIN 43563 - IP67 PG11 EX7S/L/10 code 3890000003 (to be ordered separately)
4	Eyebolt seat for safe lift

13 - MOUNTING SURFACES

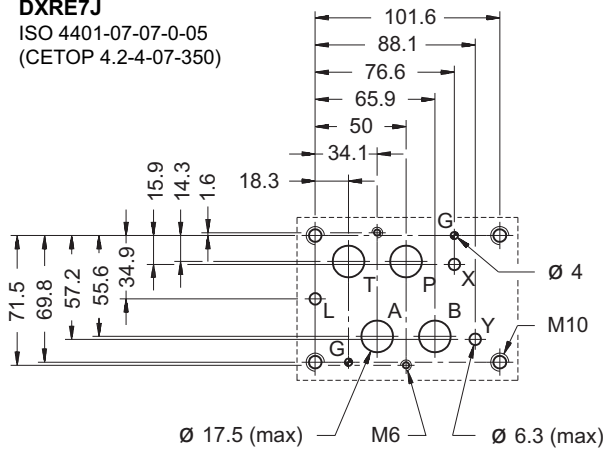
DXRE5RJ

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



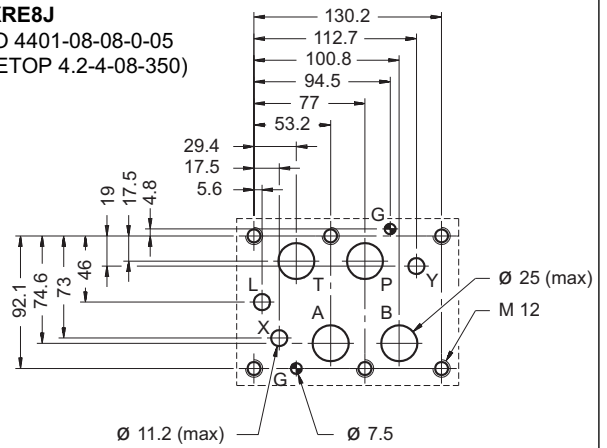
DXRE7J

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



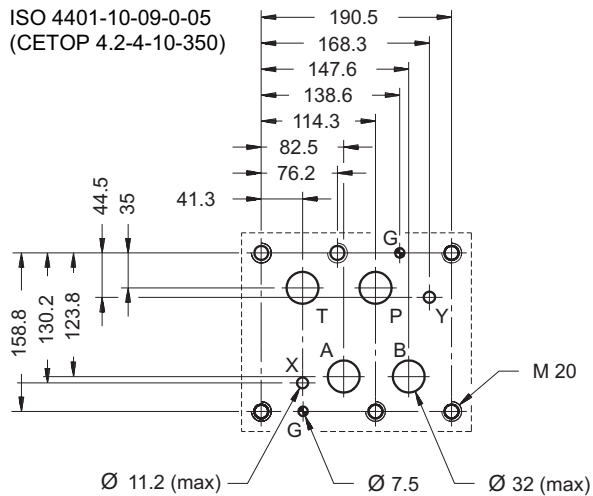
DXRE8J

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



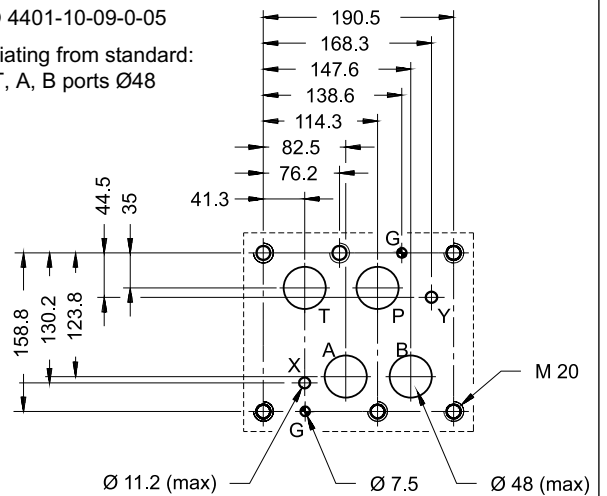
DXRE10J

ISO 4401-10-09-0-05
(CETOP 4.2-4-10-350)



DXRE11J

ISO 4401-10-09-0-05
deviating from standard:
P, T, A, B ports $\varnothing 48$





14 - 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.

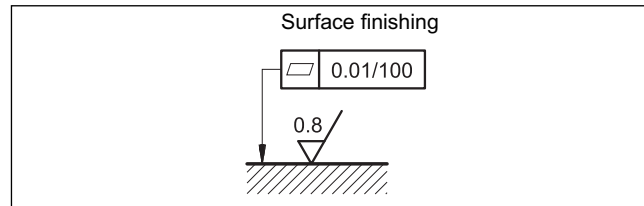
The fluid must be preserved in its physical and chemical characteristics.

15 - INSTALLATION

The valves can be installed in any position without impairing correct operation.

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.

Take care to the cleanliness of the mounting surfaces and surrounding environment upon installation.



16 - ACCESSORIES

(to be ordered separately)

16.1 - Mating connector

These valves have a plug for 7-pin mating connector, that is placed on the box of the integral motion control.

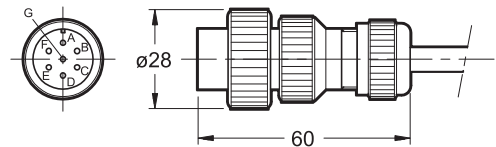


So as to avoid electromagnetic troubles and comply with the electromagnetic compatibility regulation EMC, it is recommended the use of a metal connector.

If a plastic connector is used, make sure that the protection characteristics IP and EMC of the valve are guaranteed.

Diplomatic can provide a metal cable connector type MIL-C-5015-G (EN 175201-804).

name: **EX7S/L/10** code **3890000003**



16.2 - Connection cables size

Power supply:

- up to 20 m cable length : 1,0 mm²
- up to 40 m cable length : 1,5 mm²

Signal: 0,50 mm²

A suitable cable would have 7 isolated conductors, a separate screen for the signal wires and an overall screen.

16.3 - Kit for start-up LINPC-USB

Device for service start-up and diagnostic, see catalogue 89850.

17 - SUBPLATES

(see catalogue 51 000)

	DXRE5J	DXRE7J	DXRE8J	DXRE10J / DXRE11J
with rear ports	PME4-AI5G	PME07-AI6G	-	-
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	1 1/2" BSP 1/4" BSP



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