

DXRE*J

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

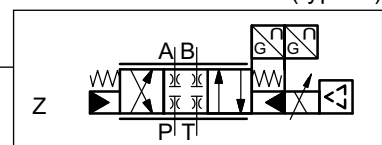
SUBPLATE MOUNTING

DXRE5RJ	ISO 4401-05
DXRE7J	ISO 4401-07
DXRE8J	ISO 4401-08
DXRE10J	ISO 4401-10
DXRE11J	ISO 4401-10 oversize 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 settings 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)



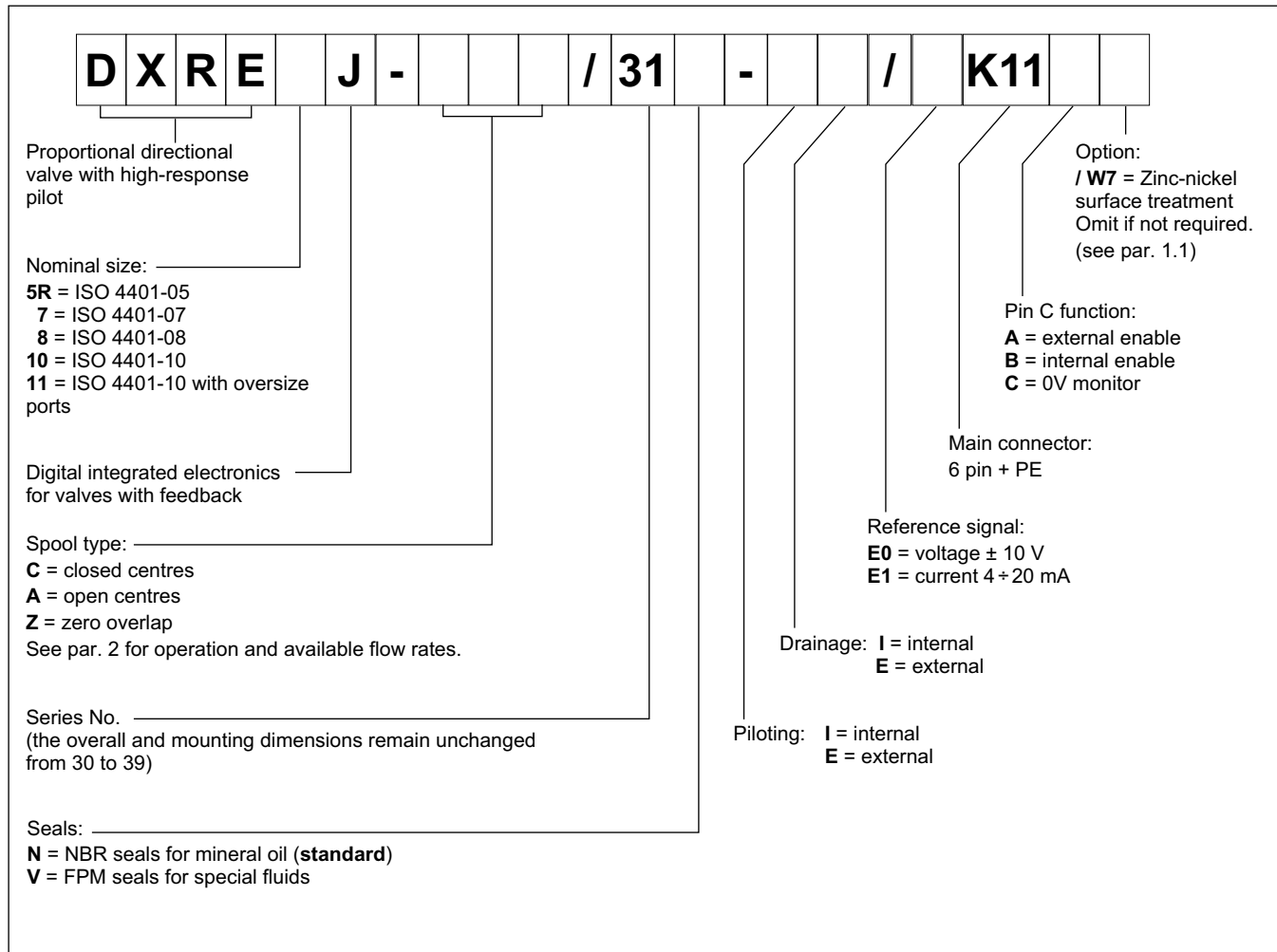
PERFORMANCES

(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

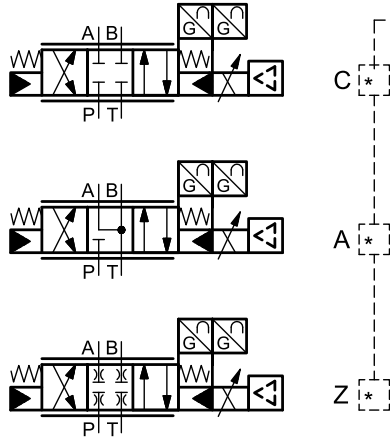
The standard valve is supplied with surface treatment of phosphating black.

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

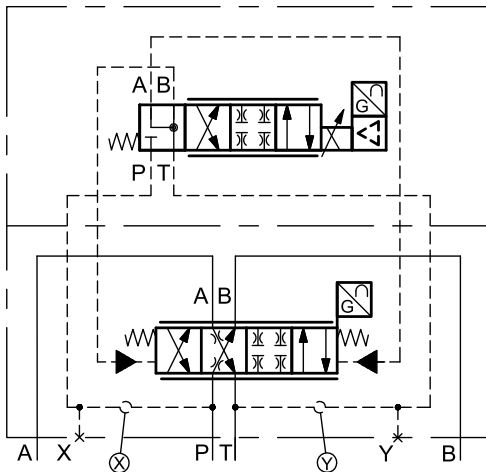


valve type	*	Controlled flow with Δp 10 bar P-T
DXRE5RJ	100	100 l/min
DXRE7J	120	120 l/min
	220	220 l/min
DXRE8J	250	250 l/min
	400	400 l/min
DXRE10J	800	800 l/min
DXRE11J	1000	1000 l/min

OFFSET POSITION for Z SPOOLS

After electrical swith-off or Enable signal swich-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)

detailed symbol (spool Z)



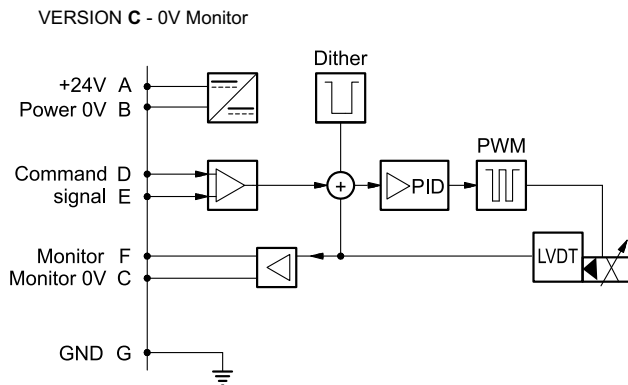
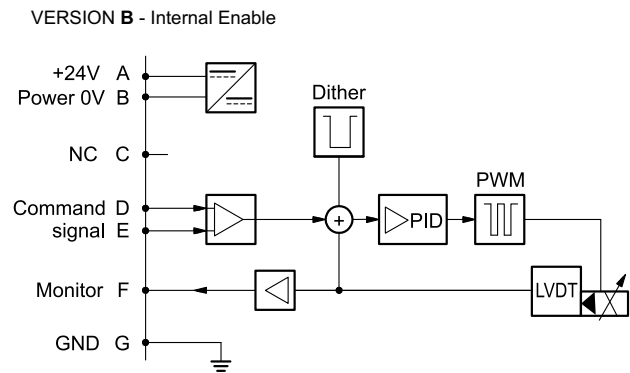
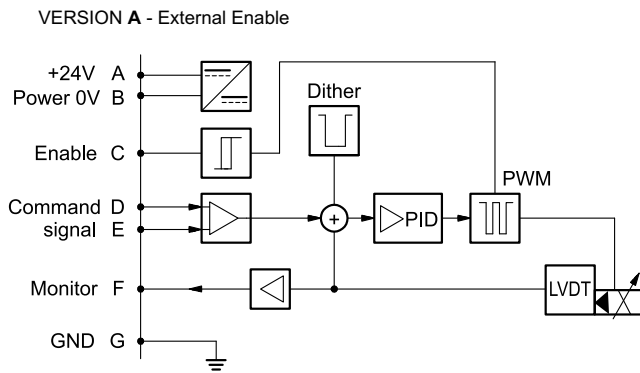


3 - ELECTRICAL CHARACTERISTICS

3.1 - Electrical on board electronics

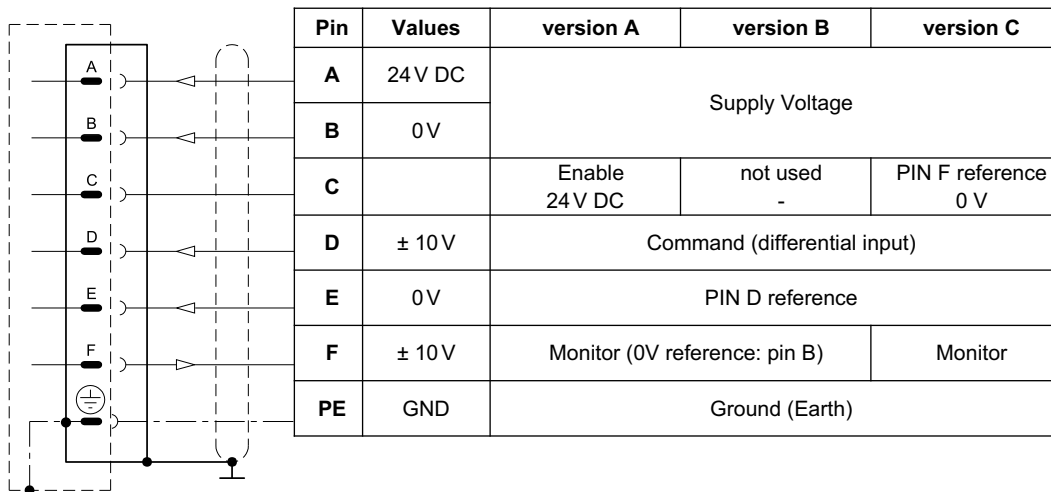
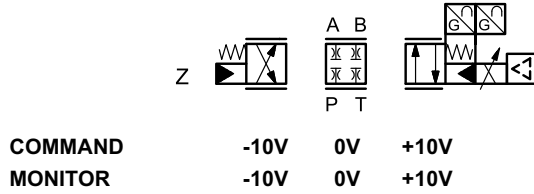
Duty cycle		100% (continuous operation)
Protection class according to EN 60529		IP65 / IP67
Supply voltage	V DC	24 (from 19 to 30 VDC), ripple max 3 Vpp
Power consumption	VA	35
Maximum solenoid current	A	2.6
Fuse protection, external		(fast), max current 4A
Command signals:	voltage (E0) current (E1)	V DC mA
		± 10 (Impedance $R_i > 11 \text{ kohm}$) $4 \div 20$ (Impedance $R_i = 58 \text{ Ohm}$)
Monitor signals:	voltage (E0) current (E1)	V DC mA
		± 10 (Impedance $R_o > 1 \text{ kohm}$) $4 \div 20$ (Impedance $R_o = 500 \text{ ohm}$)
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)

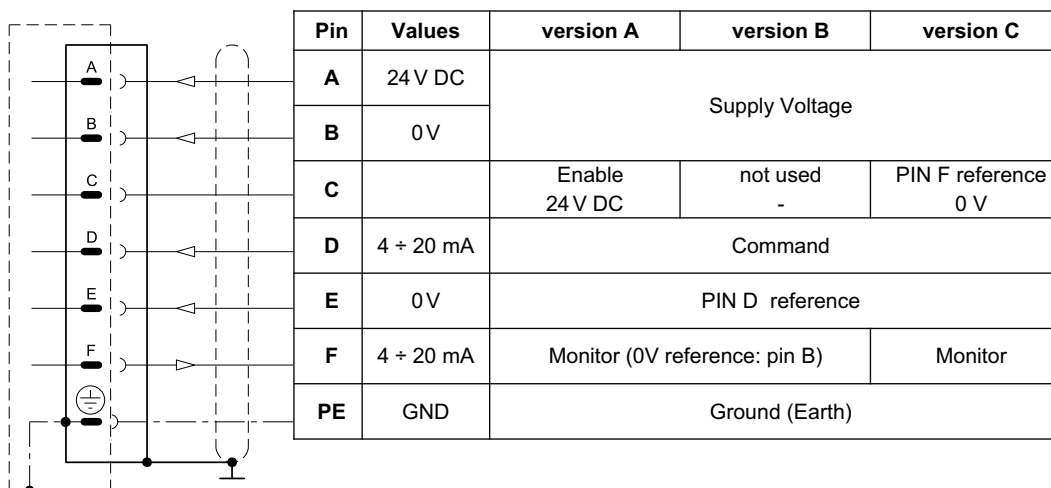
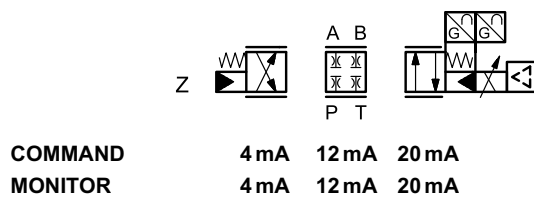
The reference signal must be between -10V and +10V. The monitor feature of versions B and C becomes available with a delay of 0.5 sec from the power-on of the card.



5 - VERSIONS WITH CURRENT COMMAND (E1)

The reference signal is supplied in current $4 + 20$ mA. If the current for command is lower than 4 mA 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.



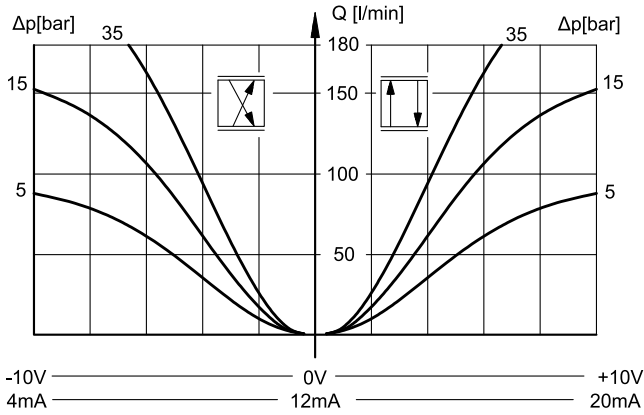
6 - CHARACTERISTIC CURVES

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

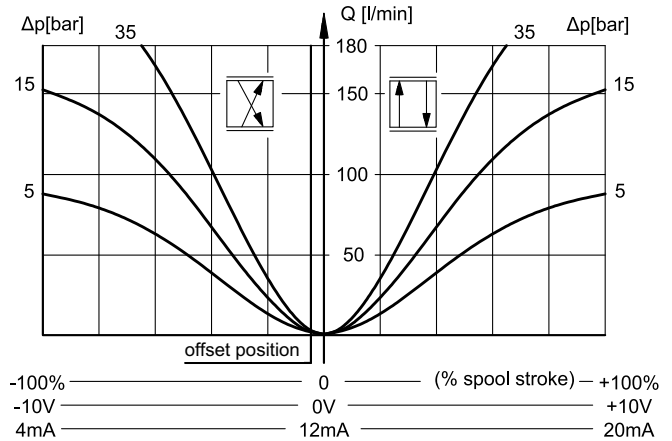
Typical flow rate curves at constant Δp related to the reference signal and measured for the available spools. The Δp values are measured per land.

6.1 - Characteristic curves DXRE5RJ

SPOOL C100 / A100

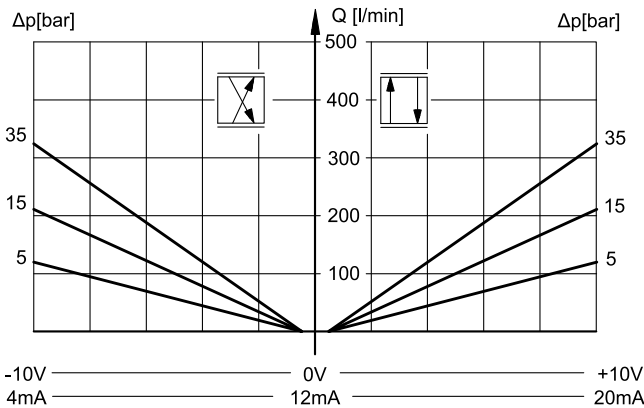


SPOOL Z100

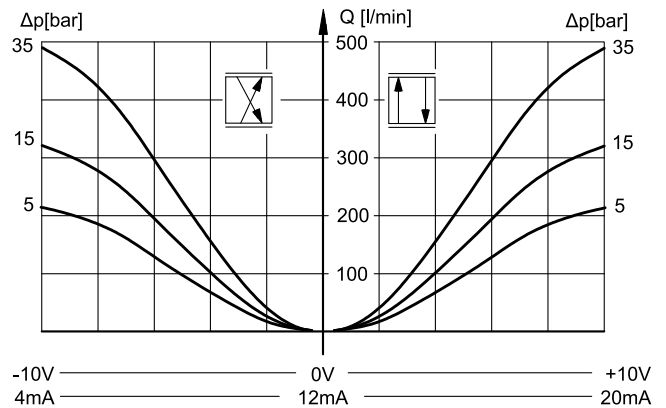


6.2 - Characteristic curves DXRE7J

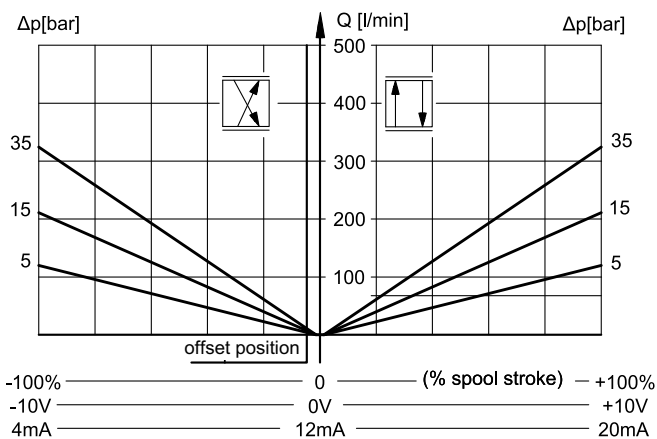
SPOOL C120 / A120



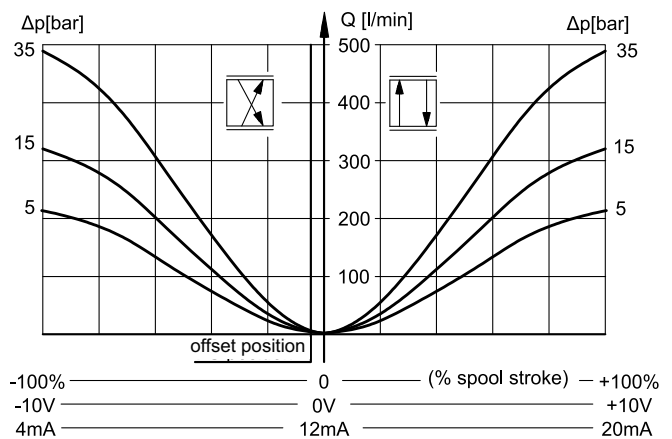
SPOOL C220 / A220



SPOOL Z120

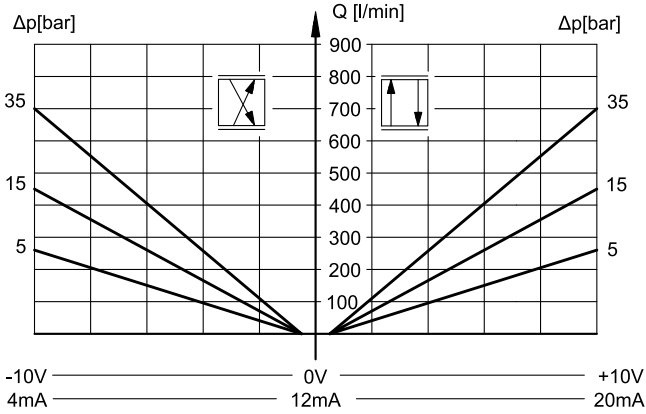


SPOOL Z220

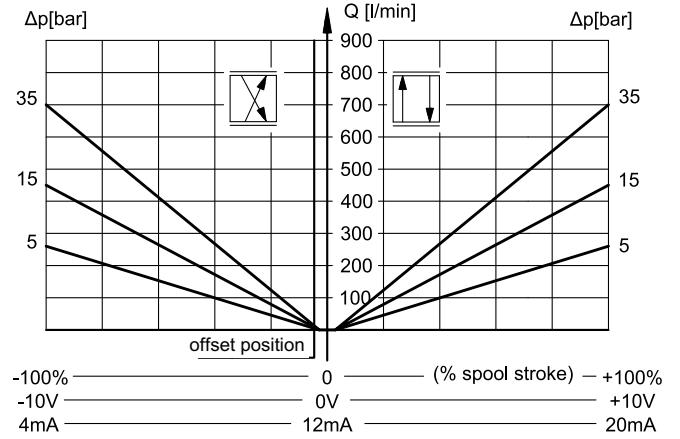


6.3 - Characteristic curves DXRE8J

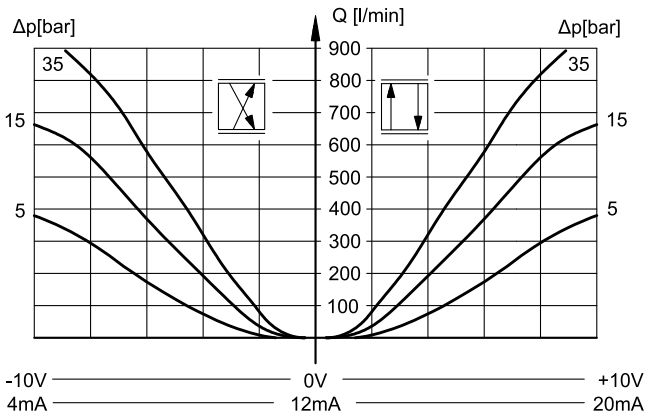
SPOOL C250 / A250



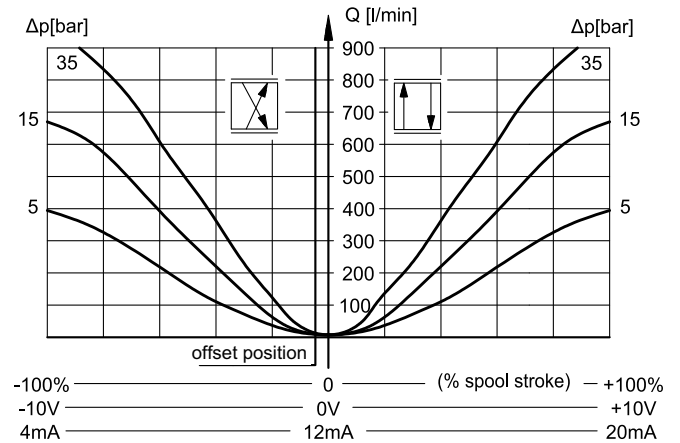
SPOOL Z250



SPOOL C400 / A400

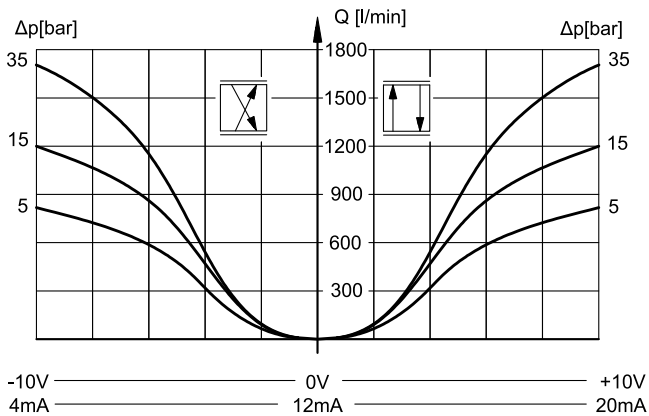


SPOOL Z400

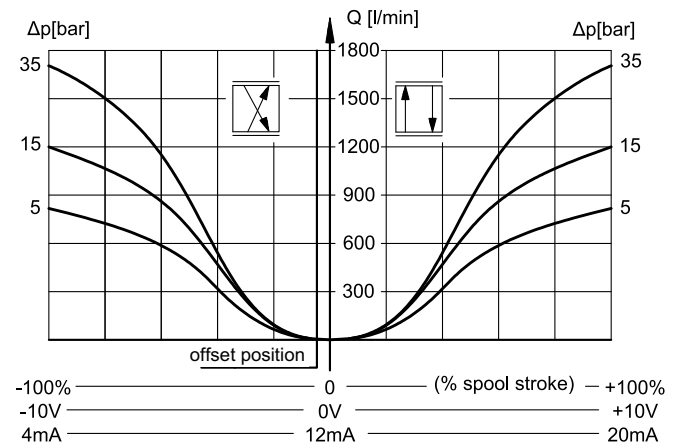


6.4 - Characteristic curves DXRE10J*

SPOOL C800

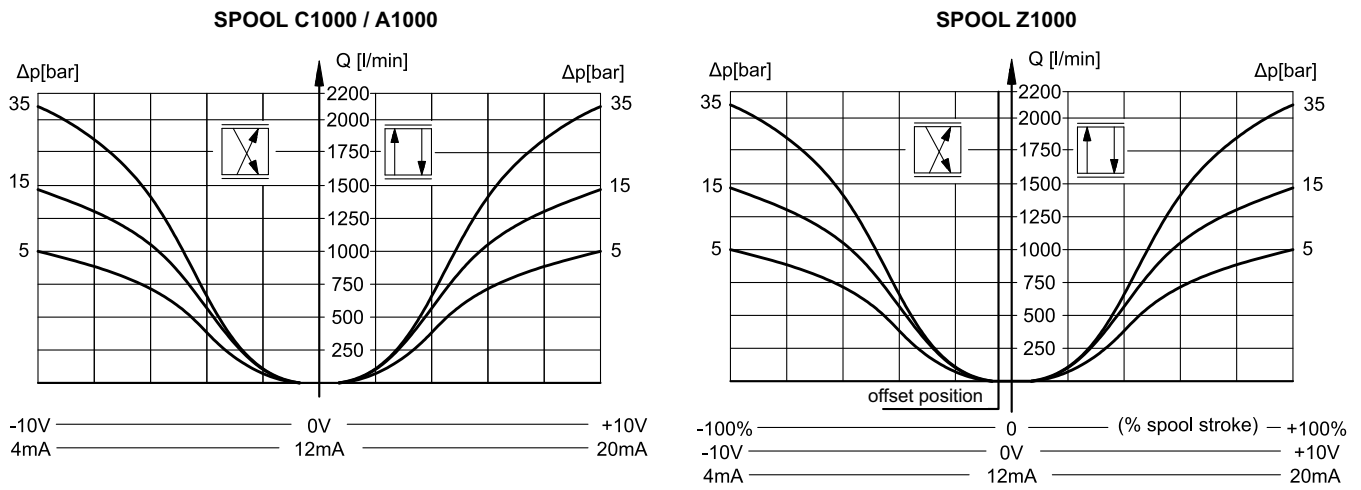


SPOOL Z800





6.5 - Characteristic curves DXRE11J



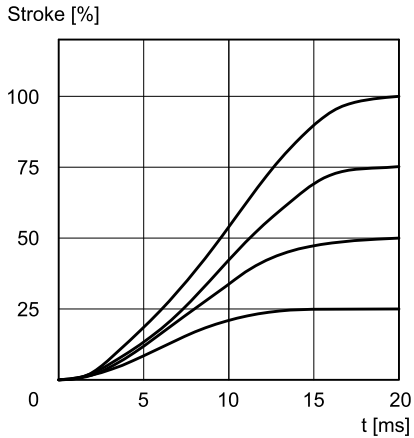
7 - RESPONSE TIMES

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

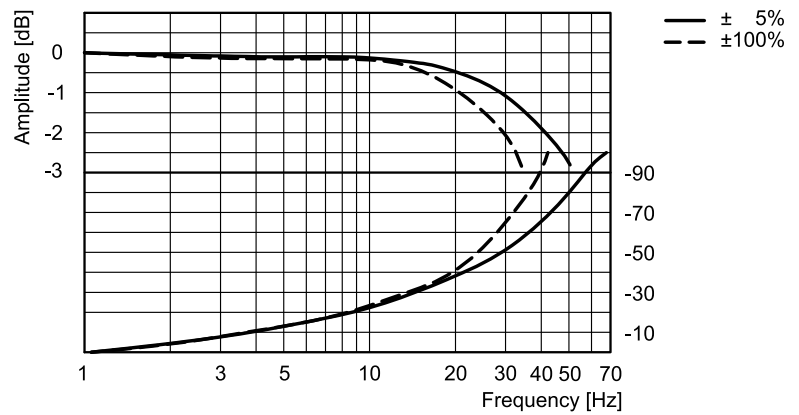
The tables shows the typical step response tested with static pressure 100 bar.

7.1 - DXRE5RJ

RESPONSE TIME

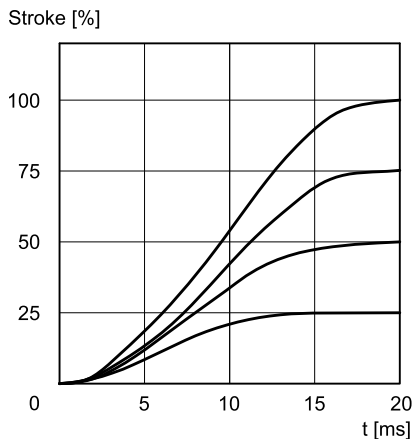


FREQUENCY RESPONSE (spools type Z)

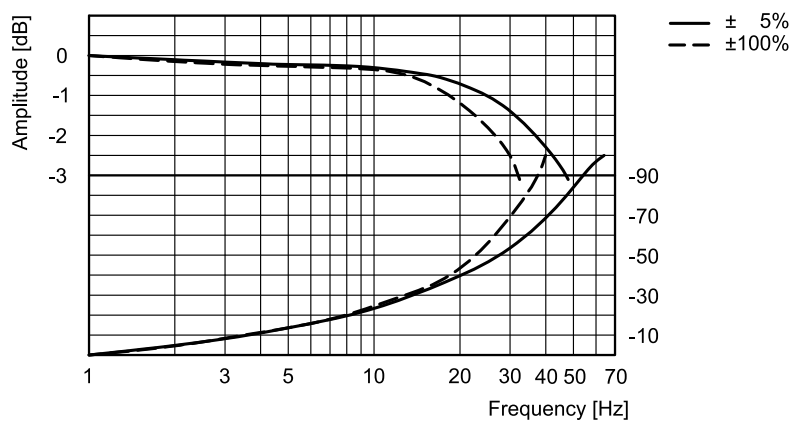


7.2 - DXRE7J

RESPONSE TIME



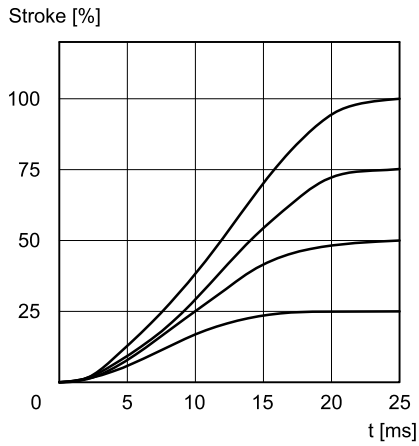
FREQUENCY RESPONSE (spools type Z)



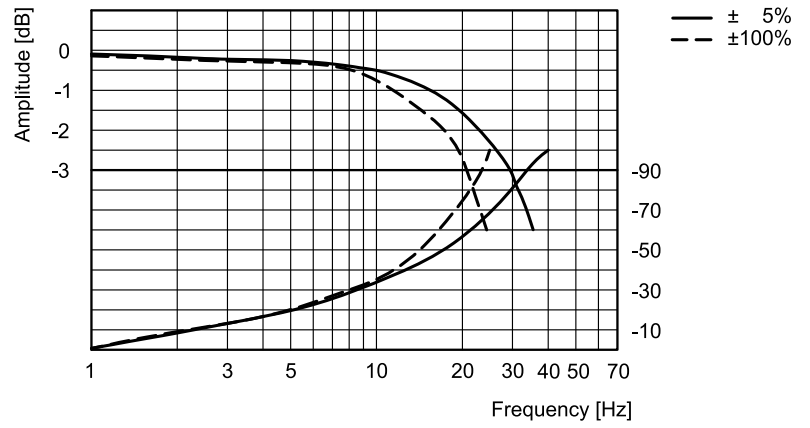


7.3 - DXRE8J

RESPONSE TIME

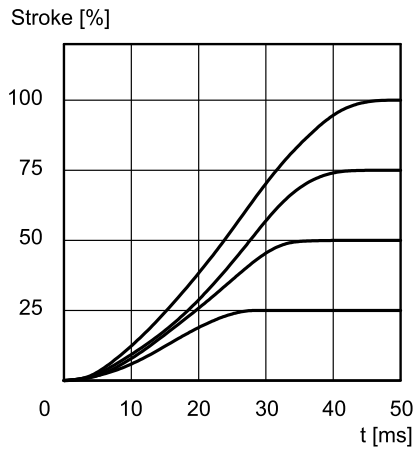


FREQUENCY RESPONSE (spools type Z)

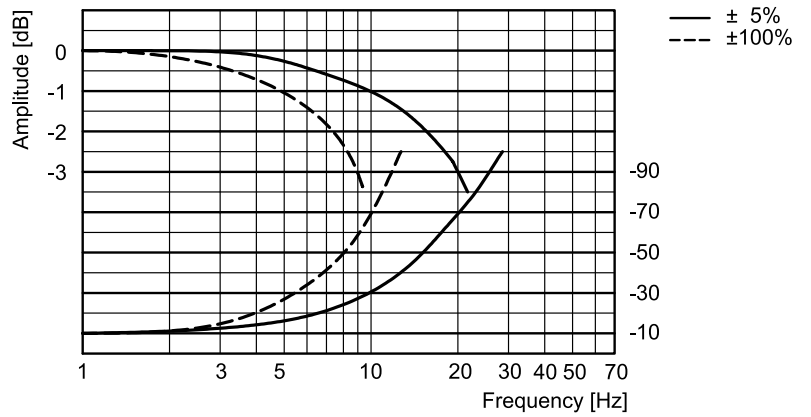


7.4 - DXRE10J and DXRE11J

RESPONSE TIME



FREQUENCY RESPONSE (spools type Z)





8 - HYDRAULIC CHARACTERISTICS

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

		DXRE5RJ	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

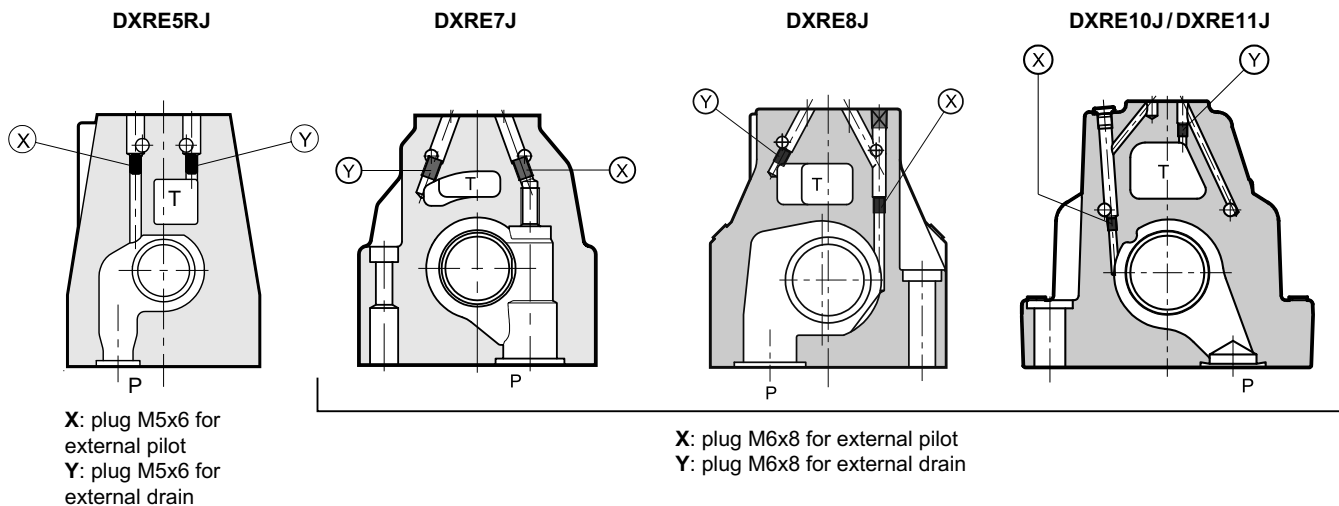
8.1 - Pilot and drain

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 discharge line.

PRESSURES (bar)

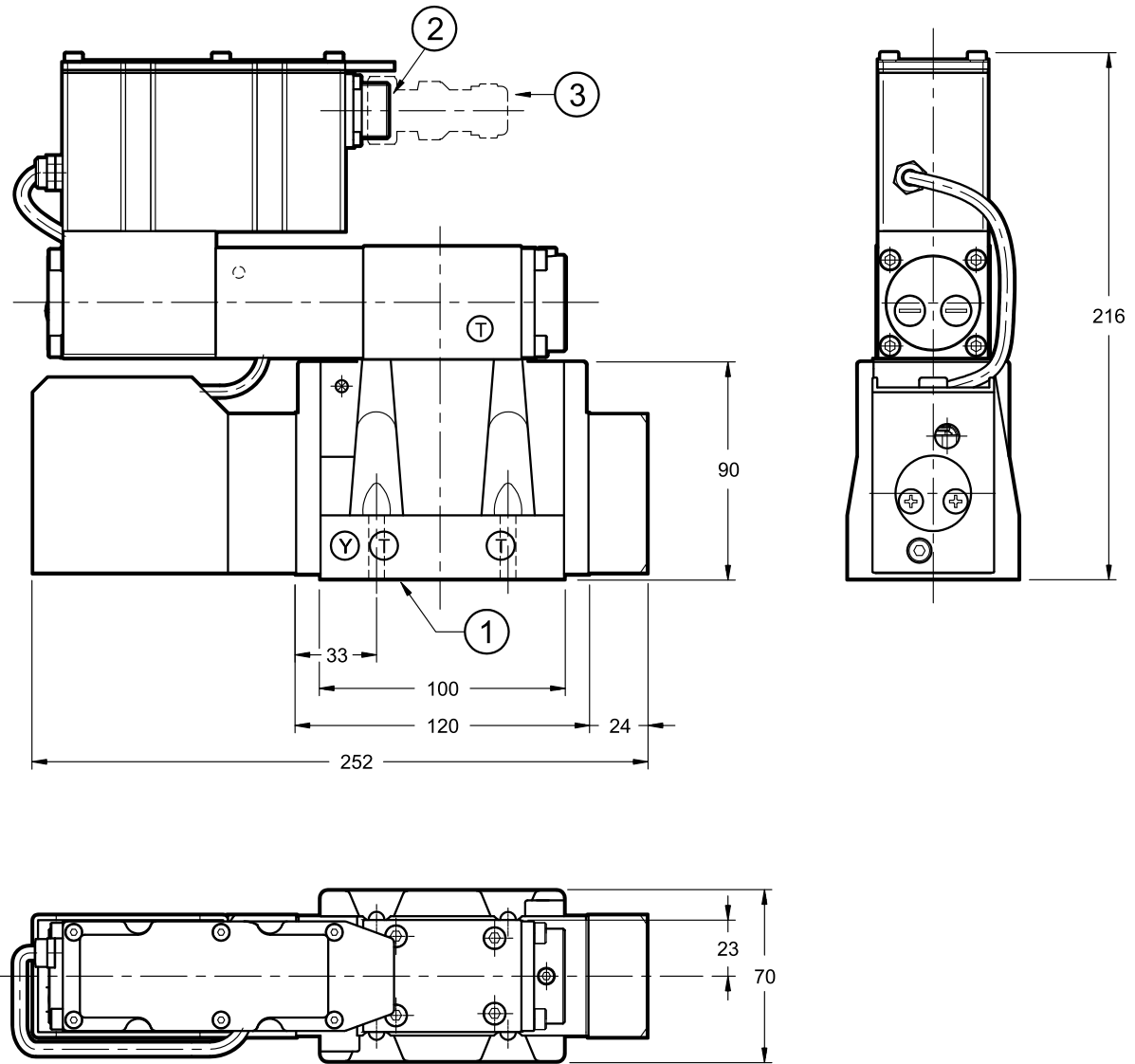
Pressure	MIN	MAX
Piloting pressure on X port	15	250
Pressure on T port with internal drain	-	30
Pressure on T port with external drain	-	250

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



9 - OVERALL AND MOUNTING DIMENSIONS DXRE5RJ

dimensions in mm



NOTES:

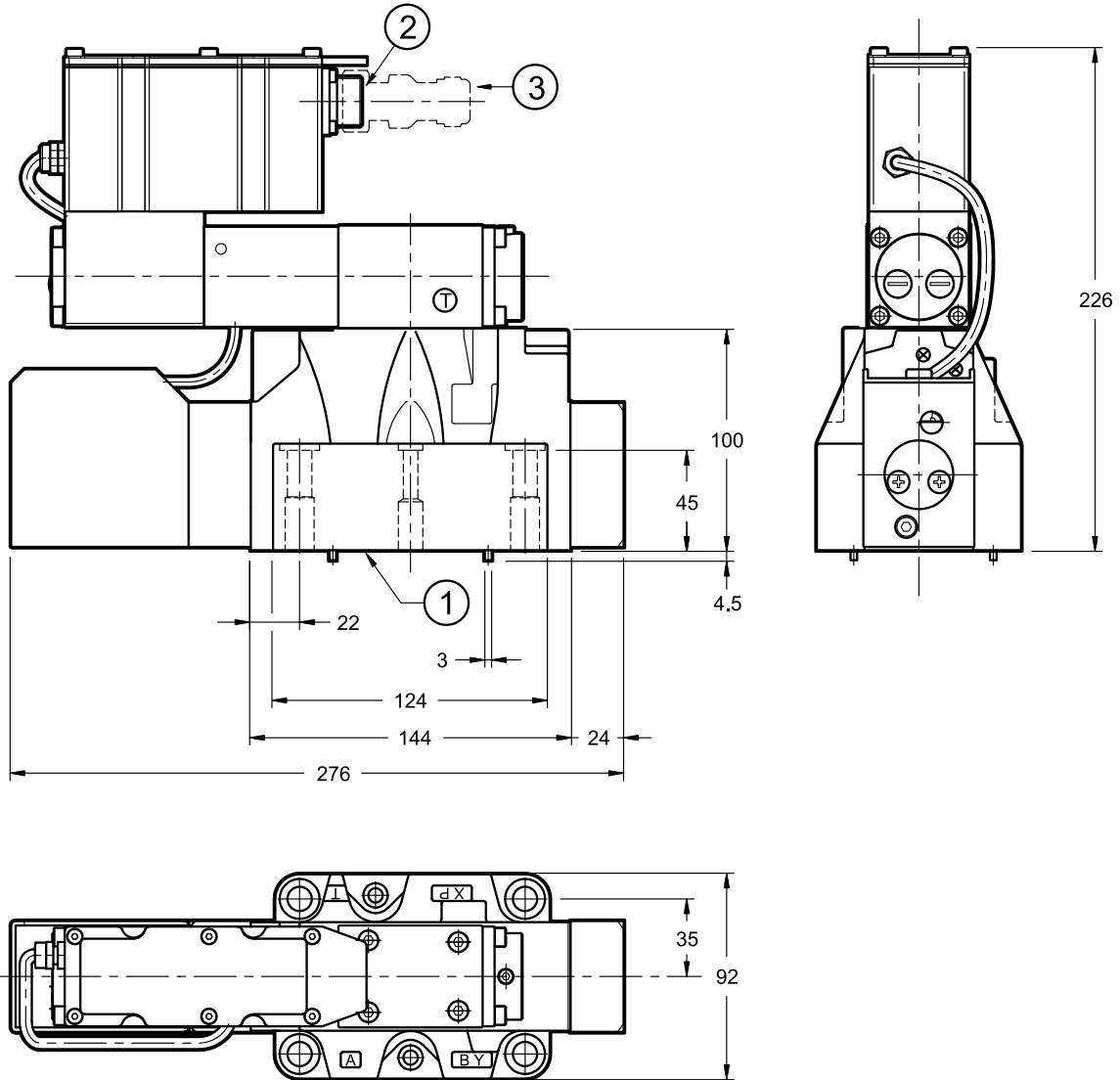
See mounting surface at section 13.
- Do not dismantle the transducers.

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 (to be ordered separately) see paragraph 16

10 - OVERALL AND MOUNTING DIMENSIONS DXRE7J

dimensions in mm



NOTES:

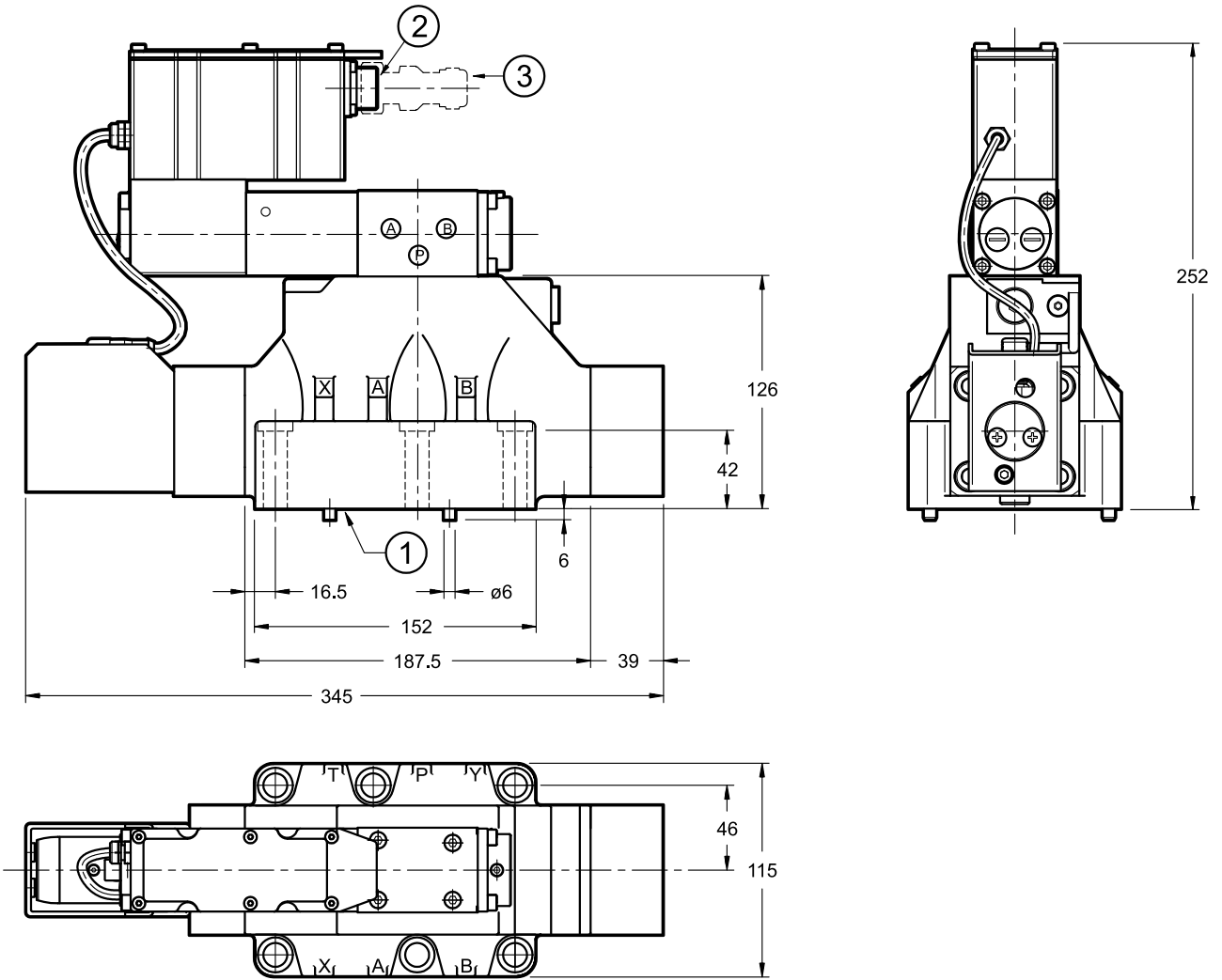
See mounting surface at section 13.

- Do not dismantle the transducers.

Valve fastening:	N. 4 bolts M10x60 - ISO 4762 N. 2 bolts M6x60 - ISO 4762	1	Mounting surface with sealing rings. 4 OR type 130 (22.22X2.62) - 90 Shore 2 OR type 2043 (10.82x1.78) - 90 Shore
Tightening torque	M10x60: 40 Nm (A8.8 screws) M6x60: 8 Nm (A8.8 screws)	2	Main connection
Threads of mounting holes:	M6x18; M10x18	3	Electrical connector (to be ordered separately) see paragraph 16

11 - OVERALL AND MOUNTING DIMENSIONS DXRE8J

dimensions in mm



NOTES:

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

Fastening of single valve: N. 6 bolts M12X60 - ISO 4762

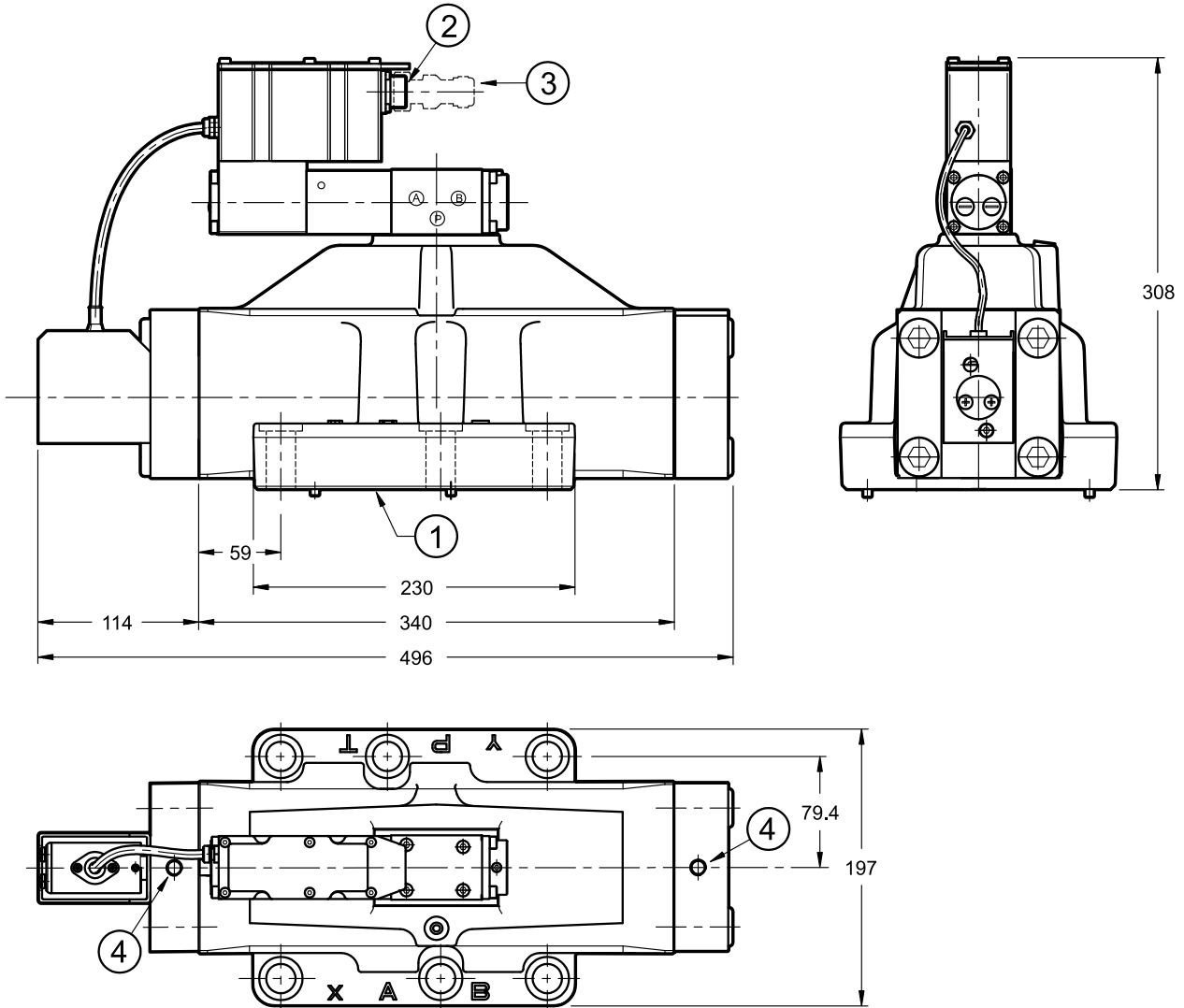
Tightening torque: 69 Nm (A8.8 screws)

Threads of mounting holes: M12X20

1	Mounting surface with sealing rings: 4 OR type 3118 (29.82x2.62) - 90 Shore 2 OR type 3081 (20.24x2.62) - 90 Shore
2	Main connection
3	Electrical connector (to be ordered separately) see paragraph 16

12 - OVERALL AND MOUNTING DIMENSIONS DXRE10J / DXRE11J

dimensions in mm



NOTES:

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

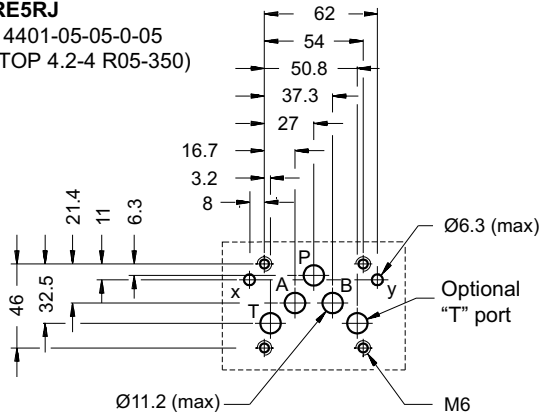
Valve fastening: 6 SHC screws ISO 4762 M20x70
Tightening torque: 330 Nm (A8.8 screws)
Threads of mounting holes: M20x40

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 (to be ordered separately) see paragraph 16
4	M12 Eyebolt seat for safe lift

13 - MOUNTING SURFACES

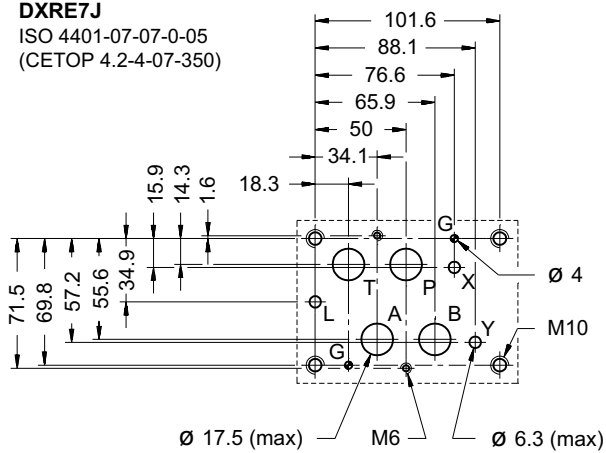
DXRE5RJ

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



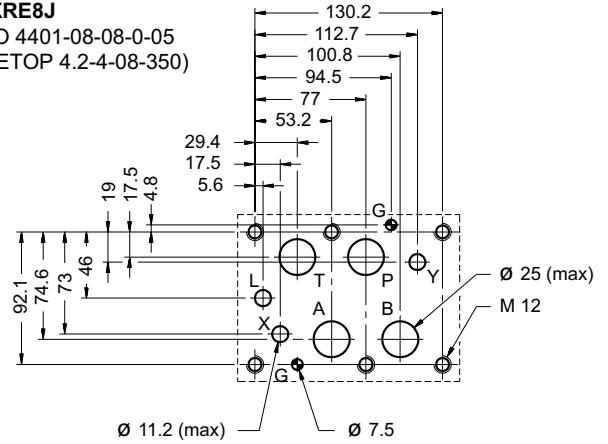
DXRE7J

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



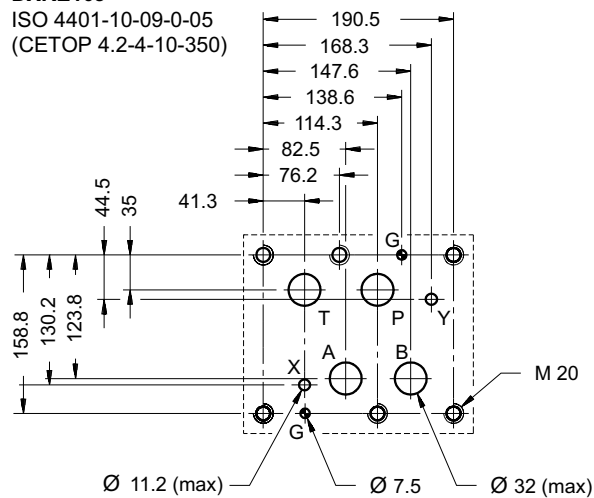
DXRE8J

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



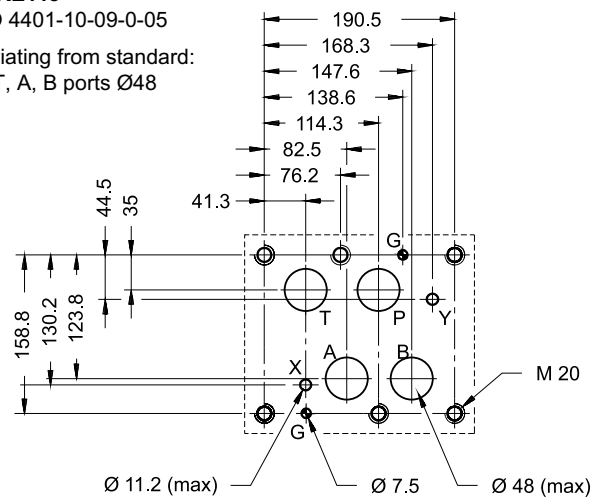
DXRE10J

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.

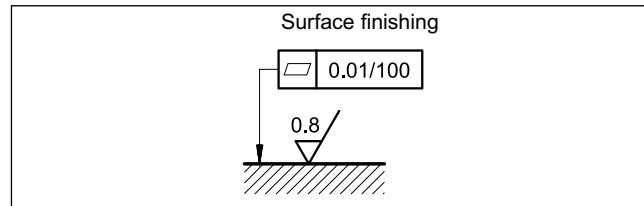
Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics. The fluid must be preserved in its physical and chemical characteristics.

15 - INSTALLATION

The valves can be installed in any position without impairing correct operation. Make sure the hydraulic circuit is free of air.

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

The 7-pin mating connector type must be ordered separately. Diplomatic offers metal connectors. See catalog 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

16.2 - 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 mm²
- up to 40 m cable length : 1.5 mm²

Cross section for signals (command, monitor): 0.50 mm²

16.3 - Kit for start-up LINPC-USB

Device for service start-up and diagnostic, see catalogue 89 850.

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