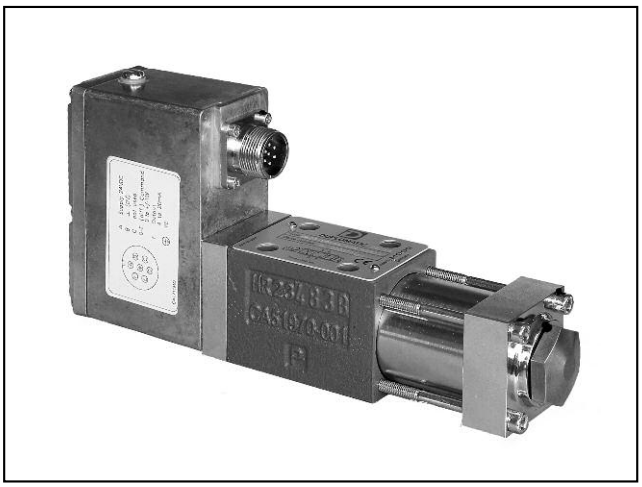


DXJ3

ELECTRO-HYDRAULIC SERVOVALVE WITH INTEGRATED ELECTRONICS

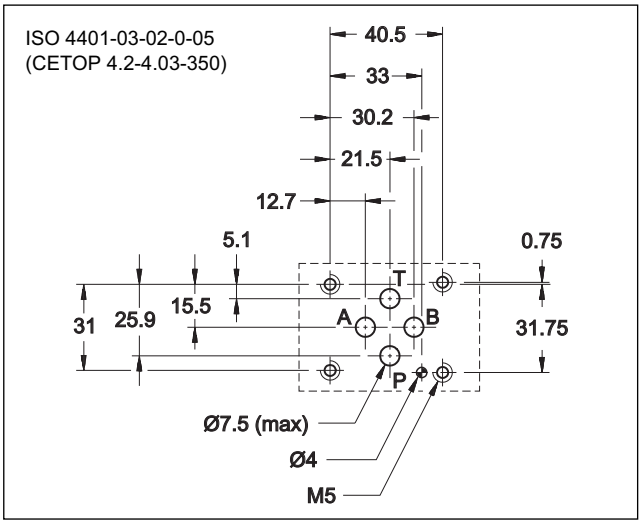
SERIES 10

SUBPLATE MOUNTING ISO 4401-03

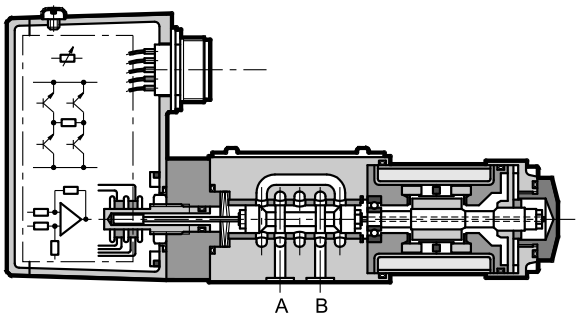
p max **350** bar

Q max (see performances table)

MOUNTING SURFACE



OPERATING PRINCIPLE



— The DXJ3 valve is a four-way servo-proportional valve where the spool moves inside a sleeve. This valve has a direct drive with a linear force motor resulting in high dynamic performances which are independent of system pressure. The spool position is controlled by a linear transducer (LVDT) with closed loop which ensures high precision and repeatability.

— It is available in four different flow rate control ranges up to 40 l/min, with spools with zero overlap and a mounting surface in compliance with ISO 4401standards.

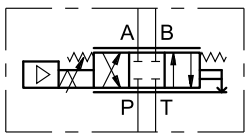
— The valve is featured by integrated electronic based on SMD technology which ensures standard regulations and simplifies the electric wiring. The unit does not require any adjustment other than the possible electronic regulation of the zero.

— Suitable for control applications with closed loop of position, velocity and pressure. With a loss of power or with a zero reference signal, the spool goes automatically at rest-position. In this position the valve has a minimum leakage, depending on the operating pressure (see the performances table).

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

Maximum operating pressure Ports P - A - B Port T	bar	 350 50
Rated flow Q nom (with Δp 70 bar P - T)	l/min	5 - 10 - 20 - 40
Null leakage flow (with p = 140 bar)	l/min	≤ 3% of Q nom
Hysteresis	% In	< 0,2
Threshold	% In	< 0,1
Thermal drift (with ΔT= 50°C)	% In	< 1,5
Response time	ms	≤ 12
Vibration on the three axes	g	30
Electric features	see paragraph 3	
Protection degree according IEC EN 60529	IP65	
Ambient temperature range	°C	-20 / +60
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	5 ÷ 400
Fluid contamination degree	according to ISO 4406:1999 class 17/15/12 (16/14/11 for longer life)	
Recommended viscosity	cSt	25
Mass	kg	2,5

HYDRAULIC SYMBOL



Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
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Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
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Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Пермь (342)205-81-47
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Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

Киргизия (996)312-96-26-47
Россия (495)268-04-70
Казахстан (772)734-952-31

https://duplomatic.nt-rt.ru/ || dcw@nt-rt.ru

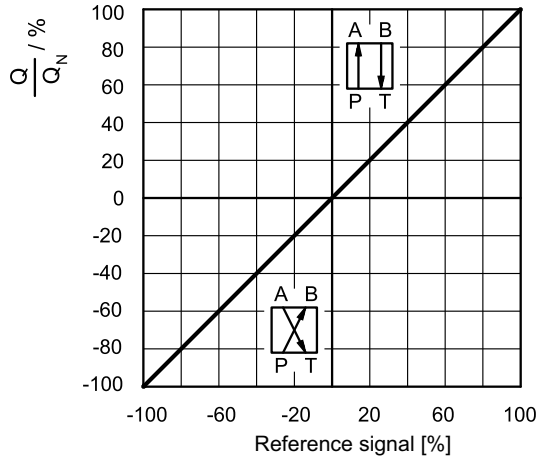
1 - IDENTIFICATION CODE

D	X	J	3	-	D	0	L		/	10		/	E0	K11

- D X: Servo-proportional valve with bushing spool
- J: Integrated electronics and position feedback
- 3: Rated size ISO 4401-03
- D: Symmetric spool
- 0: Spool with zero overlap
- L: Spool with a linear flow rate curve
- (blank): Rated flow (with p = 70 bar P - T)
  05 = 5 l/min **20** = 20 l/min
  10 = 10 l/min **40** = 40 l/min
- 10: Series No. (from 10 to 19 sizes and mounting dimensions remain unchanged)
- (blank): Seals:
  N = NBR seals for mineral oil (**standard**)
  V = FPM seals for special fluids
- E0: Reference signal:
  ±10V (other signals available on request)
- K11: 6 + PE pole connector

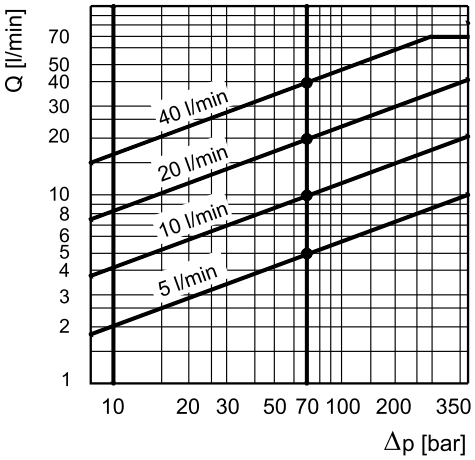
2 - CHARACTERISTIC CURVES (obtained with mineral oil with viscosity of 36 cSt at 50°C)

REFERENCE / FLOW RATE CURVE



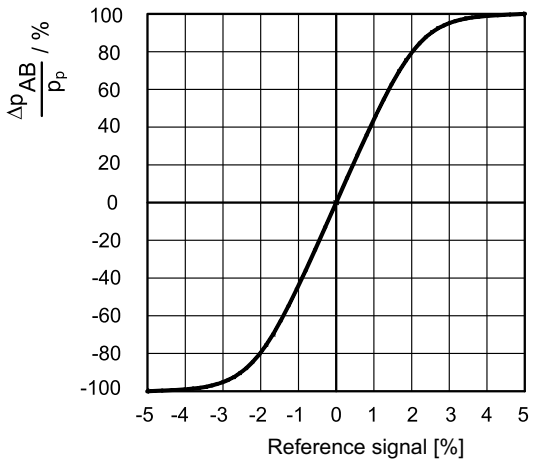
Typical flow rate curves at constant Δp = 70 bar P-T according to the reference signal.
NOTE: with positive reference signal connected to pin D the valve regulates P - A / B - T.

FLOW RATE CURVE ACCORDING TO ΔP



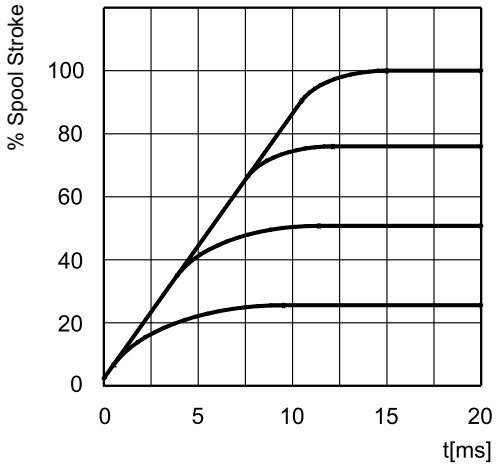
The diagram states the maximum valve controlled flow rate according to the pressure drop between the P and T ports.

PRESSURE GAIN

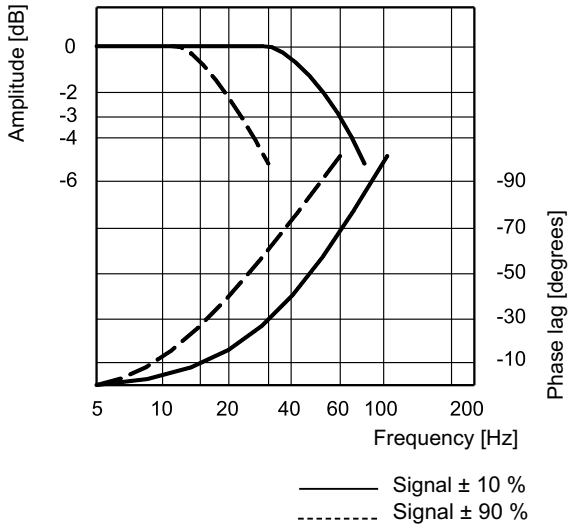


The diagram shows the valve pressure gain, expressed as % of the ratio between the port pressure variation in A or B (Δp AB) and the P system pressure, according to the reference signal. In practice, the pressure gain states the valve reaction towards external disturbances aimed at changing the actuator position.

RESPONSE TIME

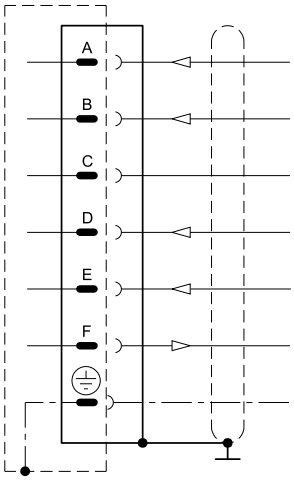


FREQUENCY RESPONSE



3 - ELECTRICAL FEATURES

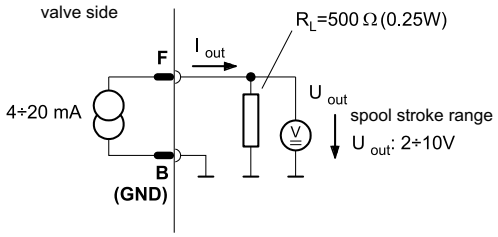
CONNECTION WIRING



Pin	Values	Function	NOTES
A	24 VDC	Supply	From 19 to 32 VDC $I_{A\ MAX}$ = 1,2 A
B	0 V	Signal ground	0 V
C	----	Not used	----
D	± 10 V	Input rated command	R_e = 10 kΩ (see **NOTE 1**)
E	0 V	Input rated command	----
F	4 ÷ 20 mA	Spool position	R_L = from 300 to 500 Ω (see **NOTE 2**)
PE	----	Protective earth	----

NOTE 1: The input stage is a differential amplifier. With positive reference signal connected to pin D, valve opening P - A e B - T is achieved. With a zero reference signal the spool is in centred position. The spool stroke is proportional to U_D - U_E. If only one command signal is available (single-end), pin E must be connected to pin B (0V ground).

NOTE 2: The spool position value can be measured at pin F (see diagram right). The position signal output goes from 4 to 20 mA. The centered position is at 12 mA, while 20 mA corresponds to 100% valve opening P - A and B - T. This monitoring allows to detect a cable break when I_F = 0V.



General requirements:

- External fuse = 1,6 A
- Minimum cross-section of all leads ≈0,75 mm²
- When making electric connections to the valve (shield, protective earth) appropriate measures must be taken to ensure that locally different earth potentials do not results in excessive ground currents.
- The differential and the spool position signal lines must be connected to the mating connector housing at valve side and to the 0V (signal ground) at cabinet side.
- **EMC**: meets the requirements of EN 55011:1998, class B, and the immunity regulation according to EN 61000-6-2:1998

4 - HYDRAULIC FLUIDS

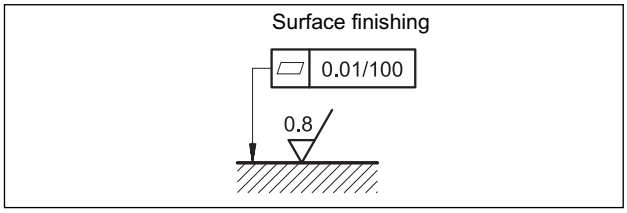
Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department. Using fluids at temperatures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

5 - INSTALLATION

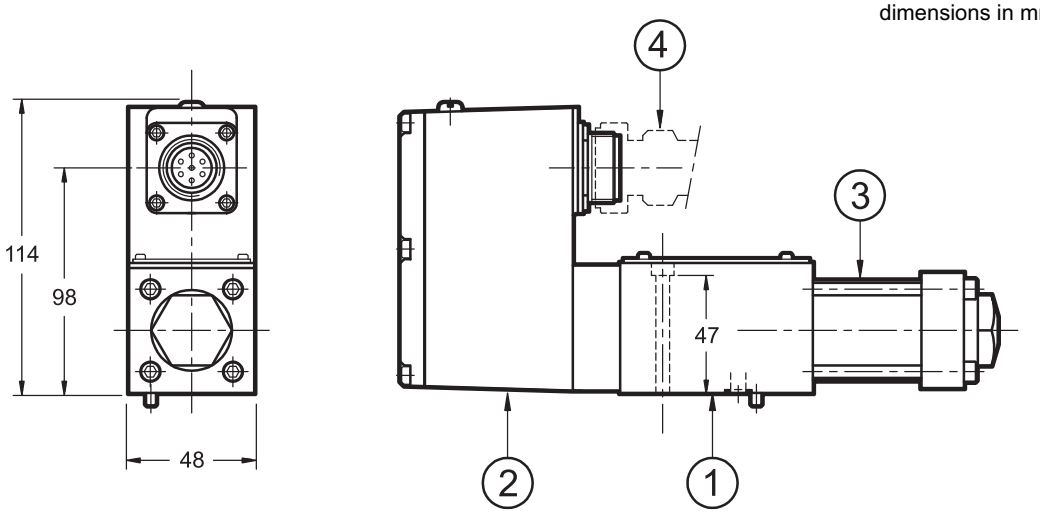
The DXJ3 valve can be installed in any position without impairing its correct operation.

The valve is fixed by means of screws on a flat surface with planarity between 0,01 mm over 100 mm and roughness R_a <0,8 µm. If the minimum values are not observed, the fluid can easily leak between the valve and the mounting surface. While mounting pay attention to the environment and valve cleanliness.

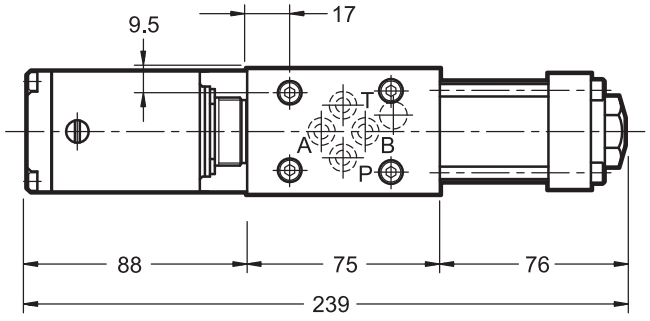


6 - OVERALL AND MOUNTING DIMENSIONS

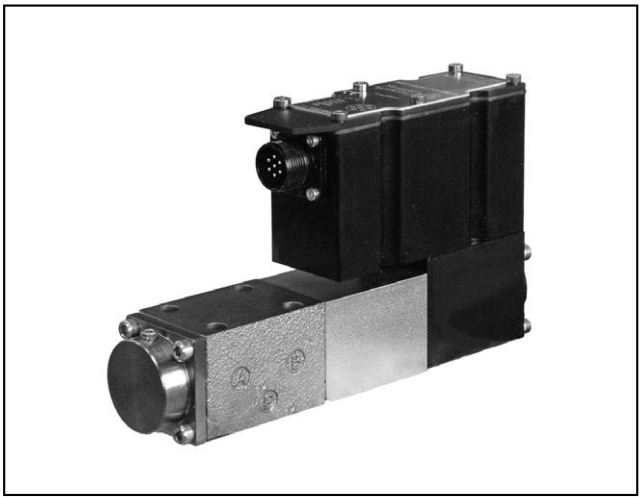
dimensions in mm



Fastening bolts: 4 bolts SHC M5 x 55 - ISO 4762
Torque: 8,5 Nm



1	Mounting surface with sealing rings: N. 4 OR type 2037 (9.25x1.78) - 90 Shore N. 1 OR type 2031 (7.66x1.78) - 90 Shore
2	Integrated electronics
3	Linear force motor
4	Electric connector 7 pins DIN 43563 - IP67 PG11 EX7S/L/10 cod. 3890000003 (**to be ordered separately**)



DXE3J

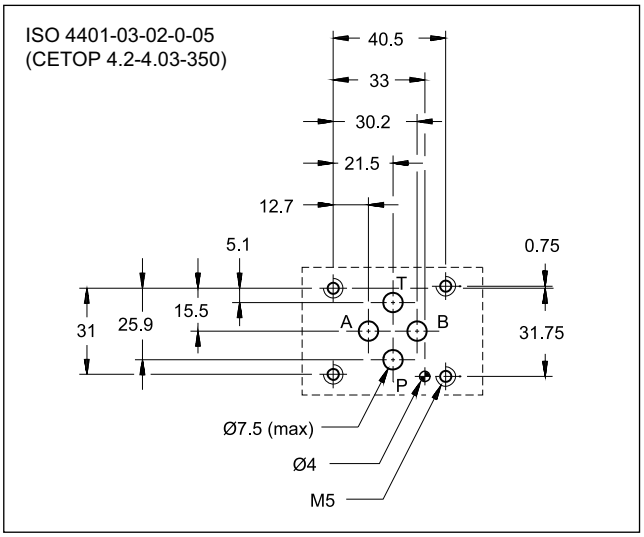
HIGH RESPONSE SERVO-PROPORTIONAL VALVE WITH INTEGRATED ELECTRONICS

SERIES 31

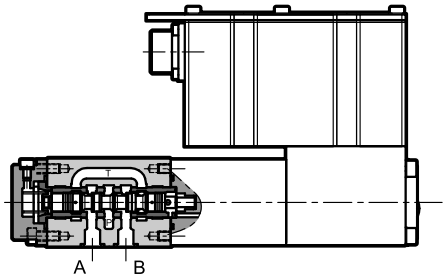
SUBPLATE MOUNTING ISO 4401-03

p max **350** bar
Q max **70** l/min

MOUNTING INTERFACE



OPERATING PRINCIPLE



— The DXE3J valve is a four-way (3 + fail-safe position) servo-proportional valve where the spool moves inside a sleeve. It is operated by a proportional solenoid highly dynamic, which achieves high performance and it not requires pilot pressure. The spool position is controlled by a linear transducer (LVDT) in closed loop which ensures high precision and repeatability.

— It is available in six different flow ranges up to 40 l/min, with spools with zero overlap.

— A version for potentially explosive atmospheres according to ATEX 2014/34/EU II 3GD is available.

— The valve is featured by integral electronic based on SMD technology which ensures standard regulations and simplifies the electric wiring. The unit doesn't require any adjustment other than the possible electronic regulation of the zero.

— Two types of integrated electronics are available, with analogue or fieldbus interfaces.

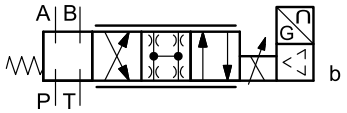
— Suitable for control applications with closed loop of position, velocity and pressure. With a power down or without the enable input, the spool moves itself at fail-safe position.

PERFORMANCES

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

Maximum operating pressure Ports P - A - B Port T	bar	 350 250
Rated flow Q nom (with Δp 70 bar P - T)	l/min	1 - 2 - 5 - 10 - 20 - 40
Hysteresis	% In	< 0.2
Threshold	% In	< 0.1
Thermal drift (with ΔT= 40 °C)	% In	< 1.0
Response time (0-100%)	ms	≤ 10
Vibration on the three axes	g	30
Ambient temperature range	°C	-20 / +60
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	5 ÷ 400
Fluid contamination degree	according to ISO 4406:1999 class 17/15/12 (16/14/11 for longer life)	
Recommended viscosity	cSt	25
Mass	kg	2.6

HYDRAULIC SYMBOL



1 - IDENTIFICATION CODE

1.1 - Standard electronics

D	X	E	3	J		-	LZ			/	31		-		K11	

Servo-proportional valve with spool in sleeve

Electric proportional control

Size ISO 4401-03

Standard electronics for closed loop

K3 = Version for potentially explosive atmospheres compliant with ATEX 2014/34/EU II 3GD (par. 2).
Omit if not required.

Spool with linear flow rate curve and zero overlap, low leakage

Rated flow (with Δp = 70 bar P - T)
01 = 1 l/min **10** = 10 l/min
02 = 2 l/min **20** = 20 l/min
05 = 5 l/min **40** = 40 l/min

Fail safe type
F1 = closed centre
F3 = float
FC = cross centre

Series No.
(from 30 to 39 sizes and mounting dimensions remain unchanged)

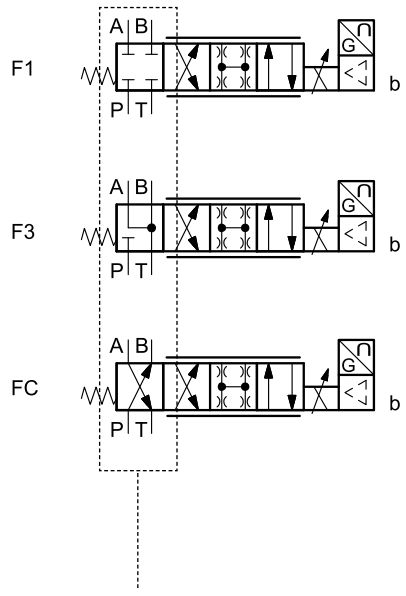
Seals:
N = NBR seals for mineral oil (**standard**)
V = FPM seals for special fluids

Command value:
E0 = voltage ±10 V
E1 = current 4 ÷ 20 mA

6 + PE pole connection

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

1.2 - Available versions



leakage flow in fail safe position at 100 bar [cm³/min]		
F1	P → A	20
	P → B	30
	A → T	30
	B → T	30
F3	P → A	20
	P → B	30

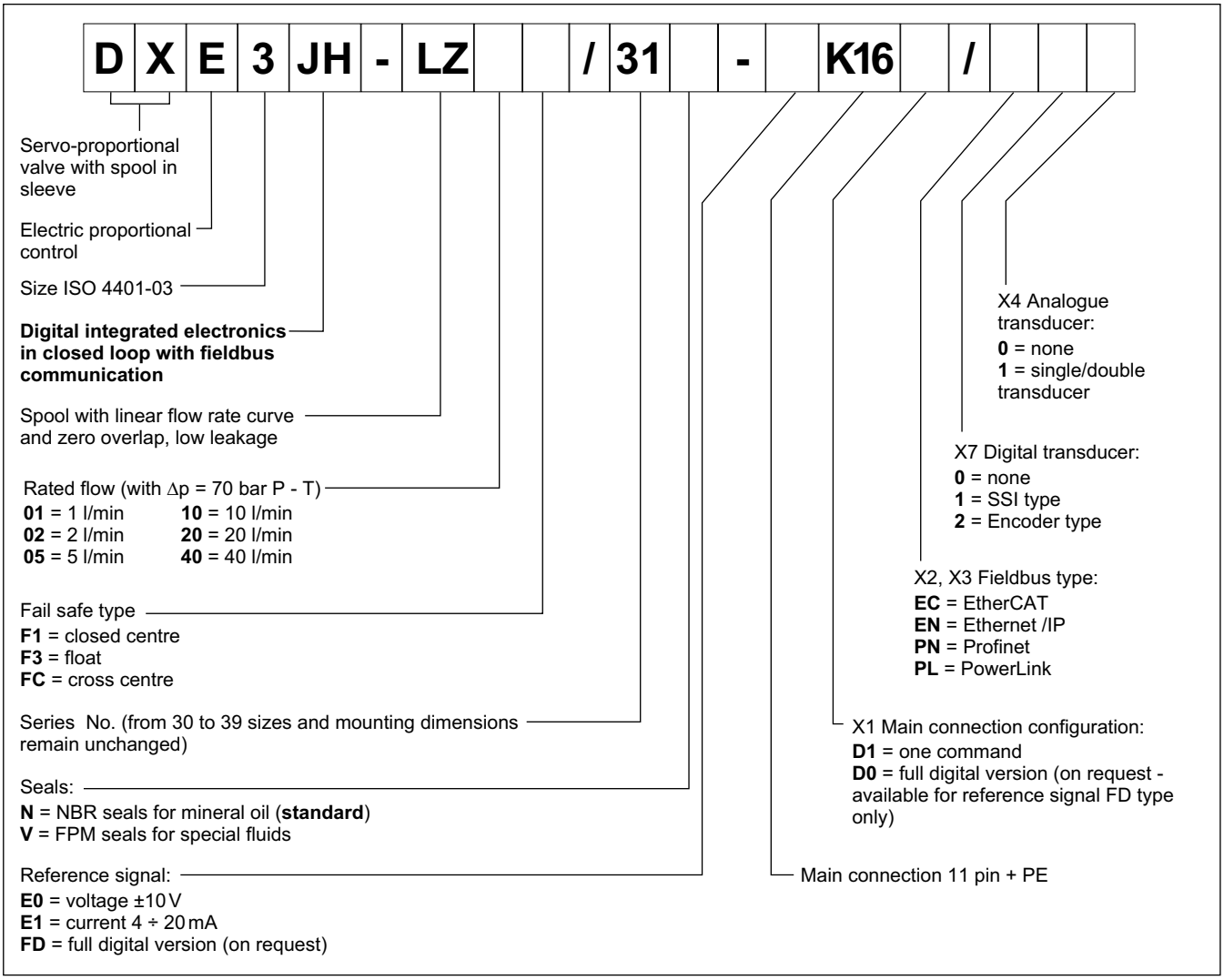
flow rate	fail safe type		
	F1	F3	FC
01	■	-	-
02	■	-	-
05	■	■	■
10	■	■	■
20	■	■	■
40	■	■	■

■ available - not available

FAIL SAFE POSITION

When a power failure occurs, the electronics de-energizes the solenoid and the spool will take the fail safe position by spring return.

1.3 - Electronics with fieldbus communication



2 - ATEX 2014/34/EU RATED VERSION

Valves suitable for use in potentially explosive atmospheres certified according to ATEX 2014/34/EU classified under ATEX II 3GD are now available.

The electrical and technical characteristics and dimensions of ATEX certified valves are identical to those of standard valves.

The supply is always delivered together with the ATEX declaration of conformity and the operating and maintenance user manual, where are described all the information for the proper use of valves in potentially explosive atmospheres.

TYPE EXAMINATION CERTIFICATE N°: **AR20ATEX046**

2.1 - Identification code

To order the ATEX-rated version, simply insert letters K3 in the initial part of the identification code. The description becomes DXE3JK3. Please use the identification code shown at par. 1.1 to order.

Example:

- DXE3J**K3**-LZ40F1/31N-E0K11A

2.2 - Classification

The valves DXE3JK3 are ATEX marked as below:

MARKING FOR GASES, VAPOURS AND MISTS:

 II 3G Ex ec IIC T4 Gc

EX: Specific marking of explosion protection as ATEX 2014/34/EU directive and related technical specification requests
II: Group II for surface plants
3: Category 3 normal protection, eligible for zone 2
G: for use in areas in which explosive atmospheres caused by gases, vapours, mists
Ex ec: "ec" protection type, increased safety
IIC: Gas group
(automatically eligible for group IIA and IIB)
T4: Temperature class (max surface temperature)
Gc: Protection level for electrical devices (EPL)
Equipment for explosive gas atmospheres, having an "enhanced' level of protection, which is not a source of ignition in normal operation and which may have some additional protection to ensure that it remains inactive as an ignition source in the case of regular expected occurrences.

MARKING FOR DUSTS:

 II 3D Ex tc IIIC T135°C Dc

EX: Specific marking of explosion protection as ATEX 2014/34/EU directive and related technical specification requests
II: Group II for surface plants
3: Category 3 normal protection, eligible for zone 22
D: for use in areas in which explosive atmospheres are caused by explosive dusts
Ex tc: "tc" protection type, protected by enclosures
IIIC: Dusts group
(automatically eligible for group IIIA and IIIB)
T135°C: Temperature class (max surface temperature)
Dc: Protection level for electrical devices (EPL)
Equipment for explosive dust atmospheres, having an "enhanced' level of protection, which is not a source of ignition in normal operation and which may have some additional protection to ensure that it remains inactive as an ignition source in the case of regular expected occurrences.

2.3 - IP protection degree

The IP protection degree of the valve is IP66/IP68 according to IEC EN 60529.

NOTE: the test carried out to reach IP68 is: duration 1 h, depth 1 m.

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

2.4 - Operating temperatures

The operating ambient temperature must be between -20 °C and +60 °C.

The fluid temperature must be between -20 °C and +80 °C.

The valves are T4 (T135 °C) class temperature classified, so they are eligible for operation also at higher class temperature (T3, T2, T1 (T200 °C).

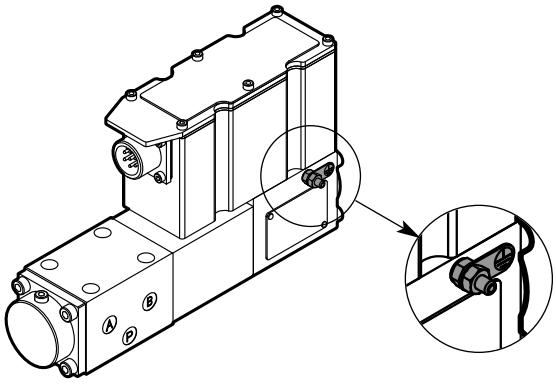
2.5 - Connectors

The connector is not supplied with the valve, but can be ordered separately. **The connector must be suitable for the intended conditions of use.**

Duplomatic can provide 7-pin connectors to wire, metal type, suitable for use with DXE3JK3 valves (see catalogue 89 000, connectors type EX7S).

2.6 - Grounding points

The ATEX certified valves are supplied with a grounding point with M4 screw.



The grounding point must always be wired with the general earthing system by means of a suitable conductive line.

3 - ELECTRONICS COMMON DATA

Duty cycle		100% (continuous operation)
Protection class according to IEC EN 60529		IP66/IP68 (**NOTE**)
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	A	(fast), max current 4A
Managed breakdowns		Overload and electronics overheating, LVDT sensor error, cable breakdown, supply voltage failures
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. Furthermore, on the JH versions it is necessary to protect with caps any unused connections The test carried out to reach IP68 is: duration 1 h, depth 1 m.

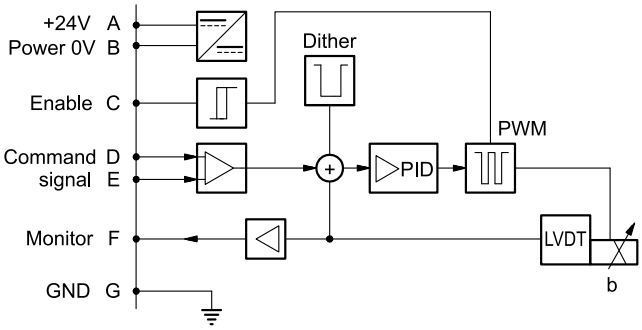
4 - DXE3J - STANDARD ELECTRONICS

4.1 - Electrical characteristics

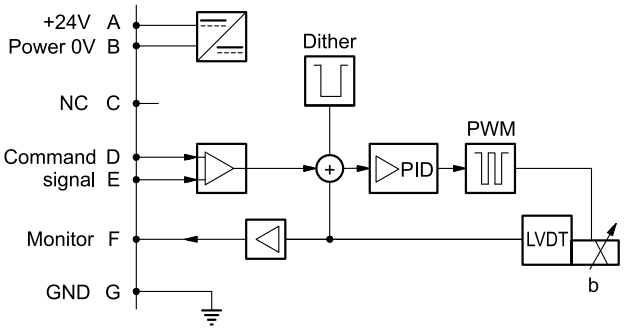
Command signal: voltage (E0) current (E1)	V DC mA	±10 (Impedance Ri = 11 kOhm) 4 ÷ 20 (Impedance Ri = 58 Ohm)
Monitor signal (current to solenoid): voltage (E0) current (E1)	 V DC mA	 ±10 (Impedance Ro > 1 kOhm) 4 ÷ 20 (Impedance Ro = 500 Ohm)
Communication for diagnostic		LIN-bus Interface (by means of the optional kit)
Connection		6 pin + PE (MIL-C-5015-G - DIN EN 175201-804)

4.2 - On-board electronics diagrams

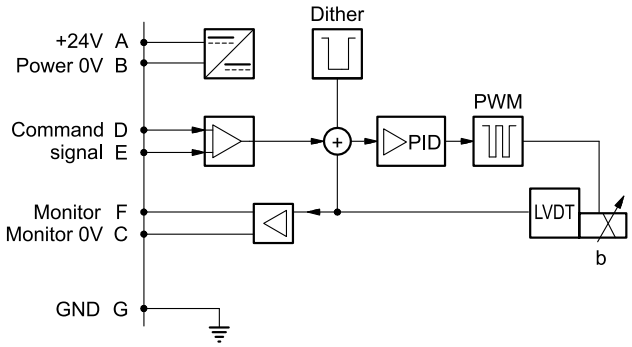
VERSION A - External Enable



VERSION B - Internal Enable

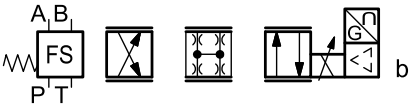


VERSION C - 0V Monitor

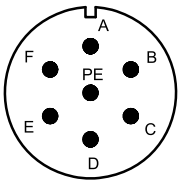


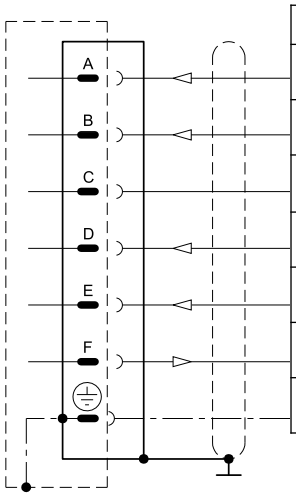
4.3 - Version with voltage command (E0)

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.



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



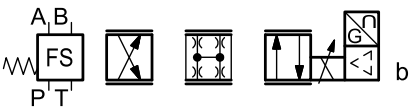


Pin	Values	version A	version B	version C
A	24 V DC	Supply Voltage		
B	0 V			
C		Enable 24 V DC	do not connect -	PIN F reference 0 V
D	± 10 V	Command (differential input)		
E	0 V	Command reference		
F	± 10 V	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

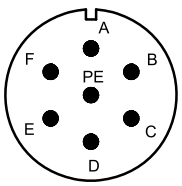
4.4 - Versions with current command (E1)

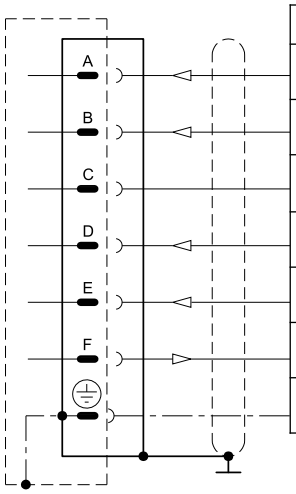
The reference signal is supplied in current 4 ÷ 20 mA. If the current for command is lower, the card shows a breakdown cable error. To reset the error is sufficient to restore the signal.

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**	**12 mA**	**20 mA**
MONITOR	**4 mA**	**12 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	do not connect -	PIN F reference 0 V
D	4 ÷ 20 mA	Command		
E	0 V	Command reference		
F	4 ÷ 20 mA	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

5 - DXE3JH - FIELDBUS ELECTRONICS

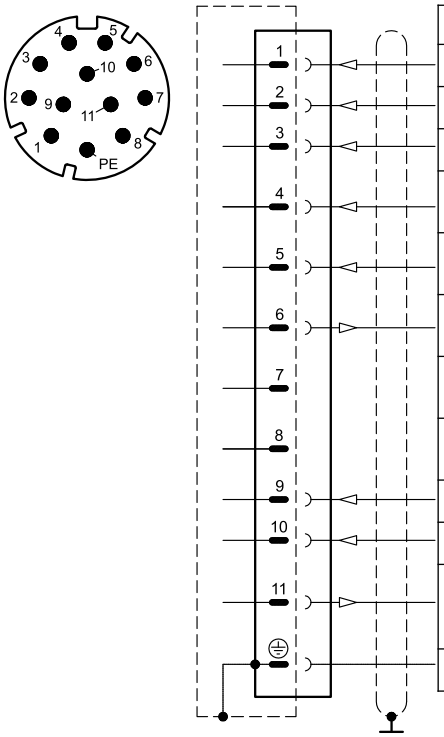
The 11+ PE pin connection allows separate supply voltage for electronics and solenoid.

Command - valve position schemes as for the standard electronics. Please refer to pictures in par. 4.3 and 4.4.

5.1 - Electrical characteristics

Command signal: voltage (E0) current (E1) digital (FD)	 V DC mA	 ±10 (Impedance Ri = 11 kOhm) 4 ÷ 20 (Impedance Ri = 58 Ohm) via fieldbus
Monitor signal (current to solenoid): voltage (E0) current (E1)	 V DC mA	 ±10 (Impedance Ro > 1 kOhm) 4 ÷ 20 (Impedance Ro = 500 Ohm)
Communication / diagnostic		via Bus register
Communication interface standards		IEC 61158
Communication physical layer		fast ethernet, insulated 100 Base TX
Power connection		11 pin + PE (DIN 43651)

5.2 - X1 Main connection pin table



D1: one command

Pin	Values	Function
1	24 V DC	Main supply voltage
2	0 V	
3	24V DC	Enable
4	± 10 V (E0) 4 ÷ 20 (E1)	Command
5	0 V	Command reference signal
6	± 10 V (E0) 4 ÷ 20 (E1)	Monitor (0V reference pin 10)
7	NC	do not connect
8	NC	do not connect
9	24 V DC	Logic and control supply
10	0 V	
11	24 V DC	Fault (0V DC) or normal working (24V DC) (0V reference pin 2)
12	GND	Ground (Earth)

D0: full digital

Pin	Values	Function
1	24 V DC	Main supply voltage
2	0 V	
3	24V DC	Enable
4	NC	do not connect
5	NC	do not connect
6	NC	do not connect
7	NC	do not connect
8	NC	do not connect
9	24 V DC	Logic and control supply
10	0 V	
11	24 V DC	Fault (0V DC) or normal working (24V DC) (0V ref. pin 2)
12	GND	Ground (Earth)

5.3 - FIELDBUS connections

Please wire following guidelines provided by the related standards communication protocol. Any connections present and not used must be protected with special caps so as not to nullify the protection against atmospheric agents.

X2 (IN) connection M12 D 4 pin female

Pin	Values	Function
1	TX+	Transmitter
2	RX+	Receiver
3	TX-	Transmitter
4	RX-	Receiver
HOUSING	shield	

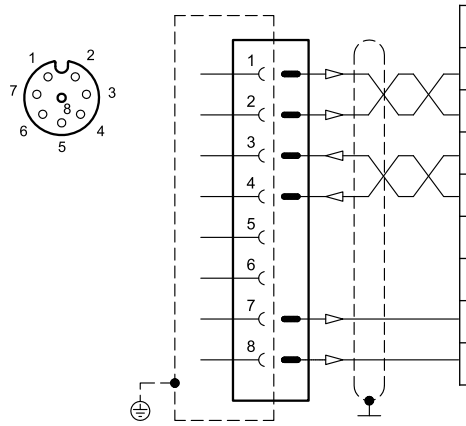
X3 (OUT) connection: M12 D 4 pin female

Pin	Values	Function
1	TX+	Transmitter
2	RX+	Receiver
3	TX-	Transmitter
4	RX-	Receiver
HOUSING	shield	

NOTE: Shield connection on connector housing is recommended.

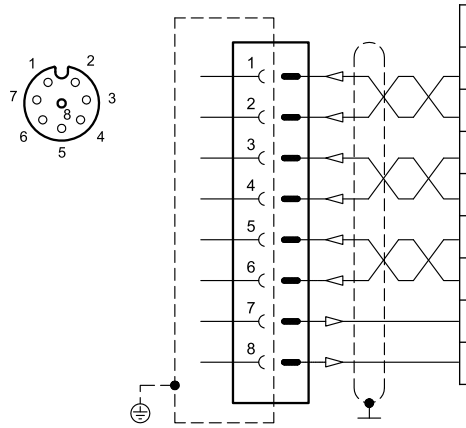
5.4 - Digital transducer connection
X7 connection: M12 A 8 pin female

VERSION 1: SSI type



Pin	SSI Values	Function	Notes
1	CLK+	Serial synchronous clock (+)	Input - digital signal
2	CLK-	Serial synchronous clock (-)	
3	MIS0+	Serial position data (+)	
4	MIS0-	Serial position data (-)	
5	NC	-	do not connect
6	NC	-	
7	+24 V	transducer power supply	Output power supply
8	0 V	-	Common GND

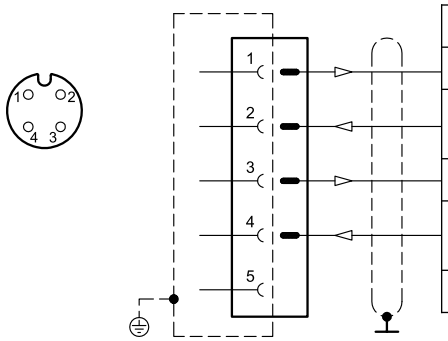
VERSION 2: ENCODER type



Pin	Values	Function	Notes
1	ENC_Z+	input channel Z+	Input - digital signal
2	ENC_Z-	input channel Z-	
3	ENC_A+	input channel A+	
4	ENC_A-	input channel A+	
5	ENC_B+	input channel B+	
6	ENC_B-	input channel B+	
7	+5 V	transducer power supply	Output power supply
8	0 V	-	Common GND

5.5 - Analogue transducer connection
X4 connection: M12 A 4 pin female

VERSION 1: single / double transducer
(single or double is a software-selectable option)

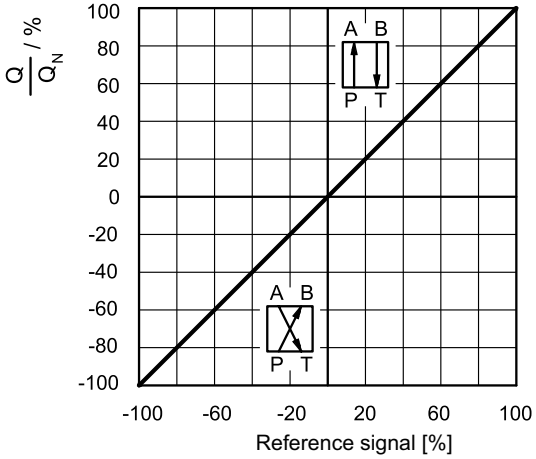


Pin	Values	Notes
1	+24 V	Remote transducer power supply (out) 100 mA
2	±10 V 4 ÷20 mA	Input signal of transducer 1 (range software selectable)
3	0 V	Common reference signal for transducer power and signals
4	±10 V 4 ÷20 mA	Input signal of transducer 2 (range software selectable)
5	-	

6 - CHARACTERISTIC CURVES

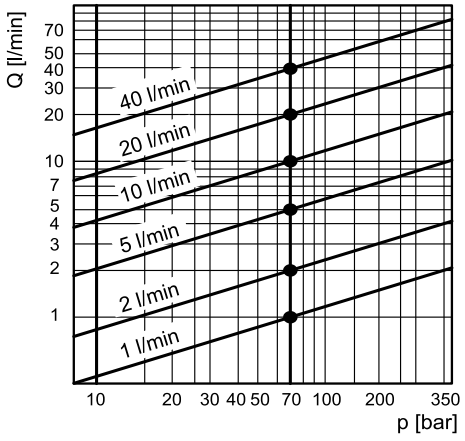
(measured with viscosity of 36 cSt at 50°C)

REFERENCE / FLOW RATE CURVE



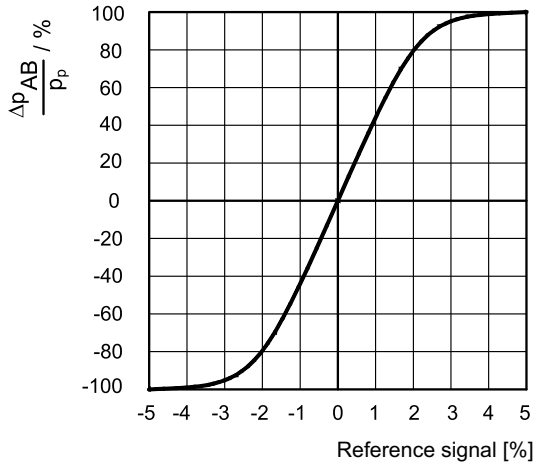
Typical flow rate curves at constant Δp = 70 bar P-T according to the reference signal.
NOTE: with positive reference signal connected to pin D the valve regulates P - A / B - T.

FLOW RATE CURVE ACCORDING TO Δp



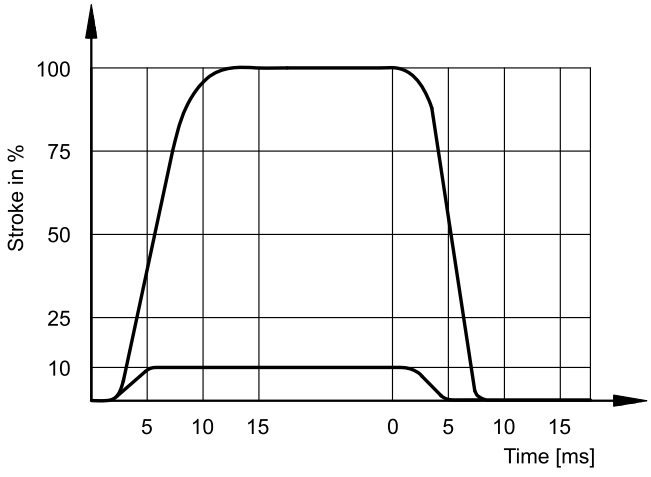
The diagram states the maximum valve controlled flow rate according to the pressure drop between the P and T ports.

PRESSURE GAIN

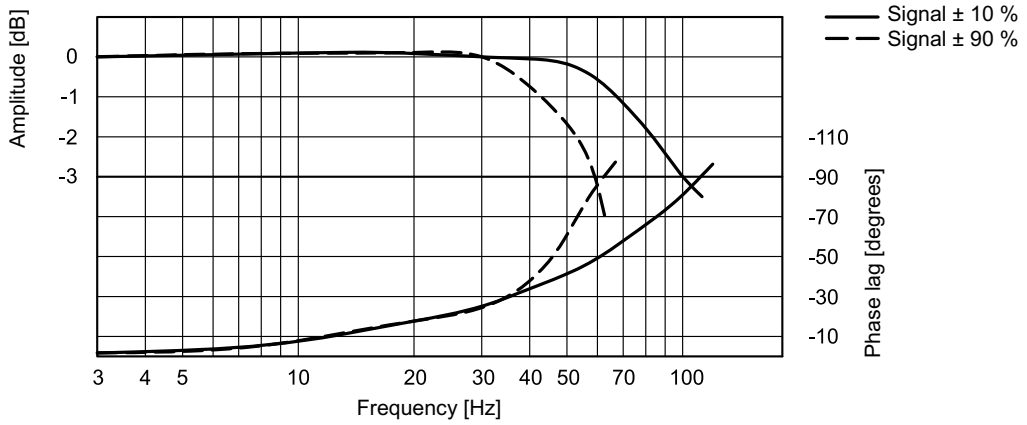


The diagram shows the valve pressure gain, expressed as % of the ratio between the port pressure variation in A or B (Δp AB) and the P system pressure, according to the reference signal. In practice, the pressure gain states the valve reaction towards external disturbances aimed at changing the actuator position.

RESPONSE TIME

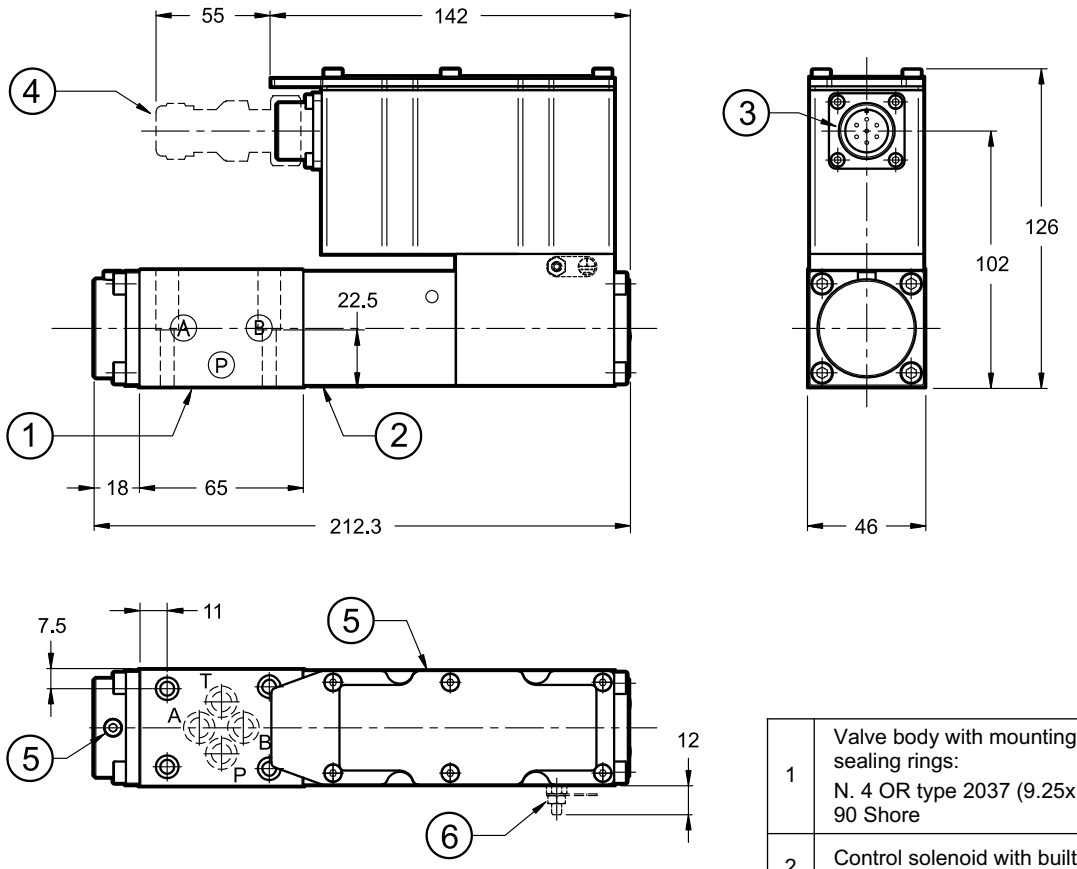


FREQUENCY RESPONSE



7 - DXE3J - OVERALL AND MOUNTING DIMENSIONS

dimensions in mm



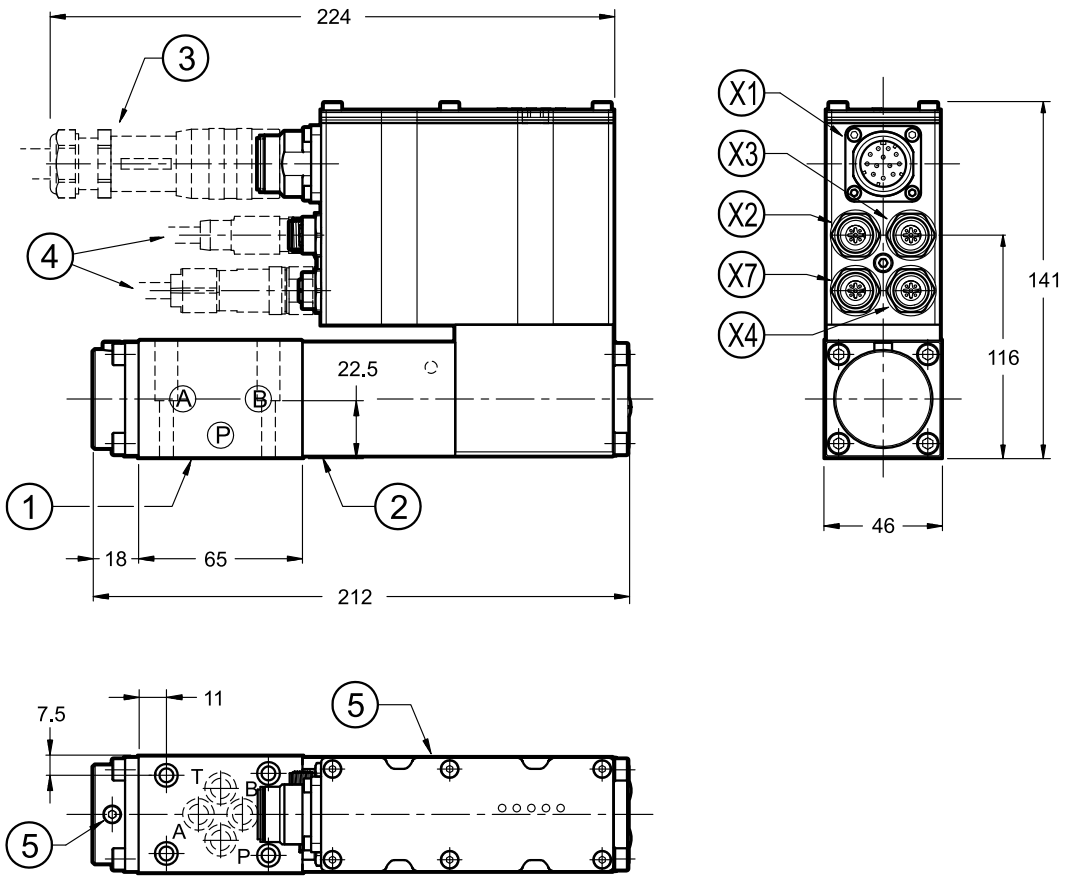
1	Valve body with mounting surface sealing rings: N. 4 OR type 2037 (9.25x1.78) 90 Shore
2	Control solenoid with built-in position transducer
3	Main connection
4	Mating connector 6 poles + PE, female type MIL-5015-G **To be ordered separately.** See catalogue 89 000
5	Air breather. Sealed at the factory (**NOTE**)
6	DXE3JK3 only: grounding point

Fastening bolts: 4 SHC screws M5x30
Torque: 5 Nm ± 10% (A8.8)
Threads of mounting holes: M5x10

NOTE: The valve is filled with mineral oil during testing, therefore the breather should not be used without specific authorization. Breaking the seals can cause the loss of the guarantee.

8 - DXE3JH - OVERALL AND MOUNTING DIMENSIONS

dimensions in mm



X1	Main connection 11 pin + PE
X2	Fieldbus communication (IN)
X3	Fieldbus communication (OUT)
X4	X4 connection for analogue transducer
X7	X7 connection for digital transducer

1	Mounting surface with sealing rings: N. 4 OR type 2037 (9.25x1.78) 90 Shore
2	Control solenoid with built-in position transducer
3	Mating connector 11 poles + PE **To be ordered separately.** See catalogue 89 000
4	Mating connectors for fieldbus communication and signals **To be ordered separately.** See catalogue 89 000
5	Air breather. Sealed at the factory (**NOTE 2**)

NOTE 1: Depending on the chosen version, X4 and X7 connections may not be present.
Please refer to section 5 for connection descriptions and pinout.

NOTE 2: The valve is filled with mineral oil during testing, therefore the breather should not be used without specific authorization. Breaking the seals can cause the loss of the guarantee.

Fastening bolts: 4 SHC screws M5x30
Torque: 5 Nm ± 10% (A8.8)
Threads of mounting holes: M5x10

9 - 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.

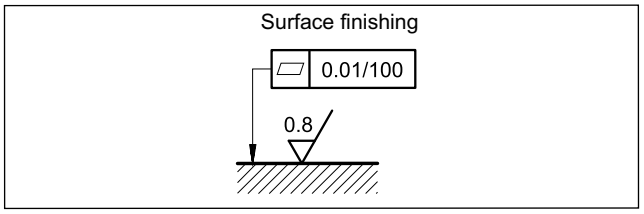
The fluid must be preserved in its physical and chemical characteristics.

10 - 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 leaks between the valve and support surface.

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



11 - ACCESSORIES

(to be ordered separately)

11.1 - 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.

11.2 - Mating connectors and caps for fieldbus communication and for sensors.

Duplomatic offers spare parts to be wired and also ready-to-use cord sets. Please refer to cat. 89 000.

11.3 - 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

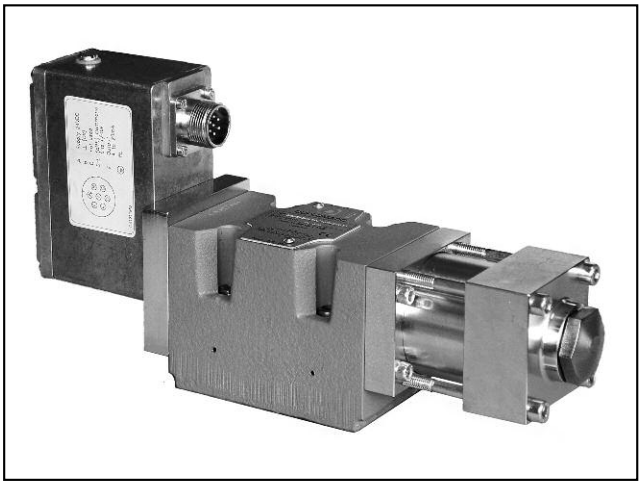
11.4 - Kit for start-up LINPC-USB

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

12 - SUBPLATES

(see catalogue 51 000)

PMMD-AI3G rear ports
PMMD-AL3G side ports
Ports dimensions: P, T, A, B: 3/8” BSP



DXJ5

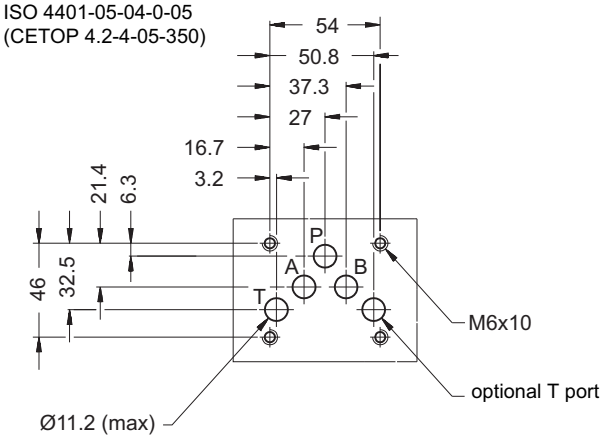
ELECTRO-HYDRAULIC SERVOVALVE WITH INTEGRATED ELECTRONICS

SERIES 10

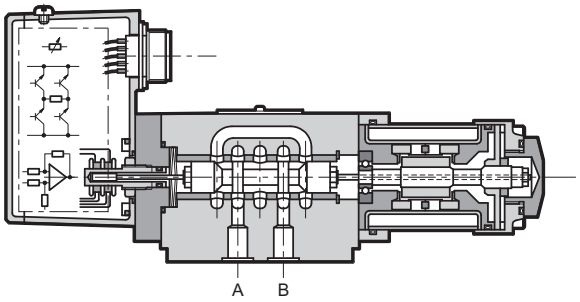
SUBPLATE MOUNTING ISO 4401-05

p max **350** bar
Q max (see performances table)

MOUNTING SURFACE



OPERATING PRINCIPLE



— The DXJ5 is a four-way servo-proportional valve where the spool moves inside a sleeve. This valve has a direct drive with a linear force motor resulting in high dynamic performances independent of system pressure. A linear transducer (LVDT) with closed loop controls the spool position, ensuring high precision and repeatability.

— It is available in four different flow rate control ranges up to 100 l/min, with spools with zero overlap and a ISO 4401 mounting surface.

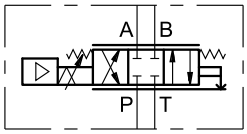
— The valve is featured by integrated electronic based on SMD technology which ensures standard regulations and simplifies the electric wiring. The unit does not require any adjustment other than the possible electronic regulation of the zero.

— Suitable for control applications with closed loop of position, velocity and pressure. With a loss of power or with a zero reference signal, the spool goes automatically at rest-position. In this position the valve has a minimum leakage, depending on the operating pressure (see the performances table).

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

Maximum operating pressure Ports P - A - B Port T	bar	 350 50
Rated flow Q nom (with Δp 70 bar P - T)	l/min	60 ÷ 100
Null leakage flow (with p=140 bar)	l/min	≤ 3% of Q nom
Hysteresis	% In	< 0,2
Threshold	% In	< 0,1
Thermal drift (with ΔT= 50°C)	% In	< 1,5
Response time	ms	≤ 20
Vibration on the three axes	g	30
Electric features	see paragraph 3	
Protection degree according IEC EN 60529	IP65	
Ambient temperature range	°C	-20 / +60
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	5 ÷ 400
Fluid contamination degree	according to ISO 4406:1999 class 17/15/12 (16/14/11 for longer life)	
Recommended viscosity	cSt	25
Mass	kg	6,3

HYDRAULIC SYMBOL



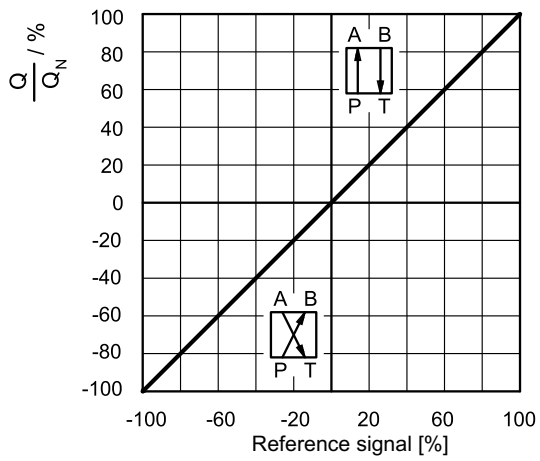
1 - IDENTIFICATION CODE

D	X	J	5	-	D	0	L		/	10		/	E0	K11

- Servo-proportional-valve with bushing spool
- Integrated electronics and position feedback
- Rated size ISO 4401-05
- Symmetric spool
- Spool with zero overlap
- Spool with a linear characteristic of flow
- Rated flow (with Δp = 70 bar P - T)
  060 = 60 l/min **100** = 100 l/min
- Series N. (from 10 to 19 sizes and mounting dimensions remain unchanged)
- Seals:
  N = NBR seals for mineral oil (**standard**)
  V = FPM seals for special fluids
- Reference signal: ±10V (other signals available on request)
- 6 + PE pole connector

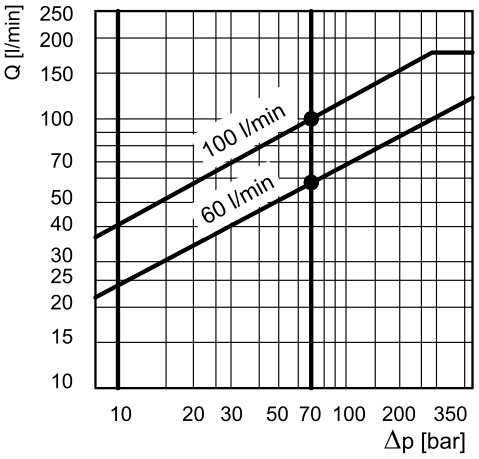
2 - CHARACTERISTIC CURVES (obtained with mineral oil with viscosity of 36 cSt at 50°C)

REFERENCE / FLOW RATE CURVE



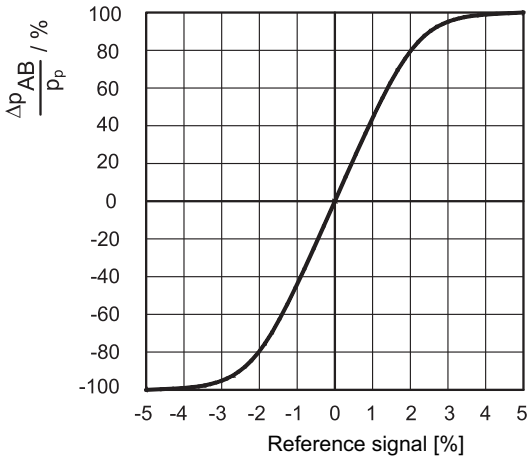
Typical flow rate curves at constant Δp = 70 bar P-T according to the reference signal.
NOTE: with positive reference signal connected to pin D the valve regulates P - A / B - T.

FLOW RATE CURVE ACCORDING TO ΔP



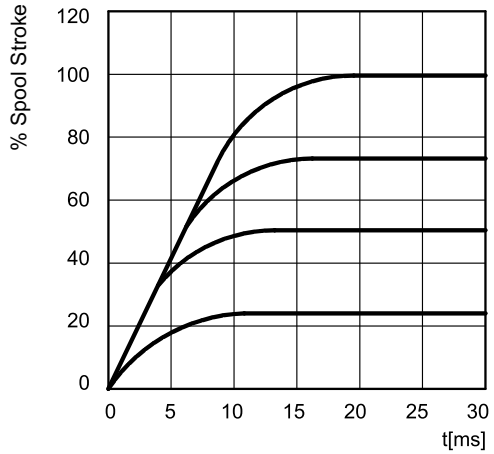
The diagram states the maximum valve controlled flow rate according to the pressure drop between the P and T ports.

PRESSURE GAIN

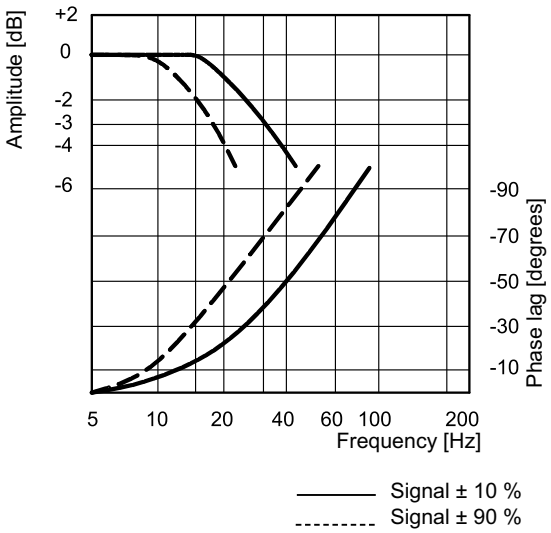


The diagram on the left shows the valve pressure gain, expressed as % of the ratio between the port pressure variation in A or B (Δp AB) and the P system pressure, according to the reference signal. Practically, the pressure gain states the valve reaction towards external disturbances aimed at changing the actuator position.

STEP RESPONSE

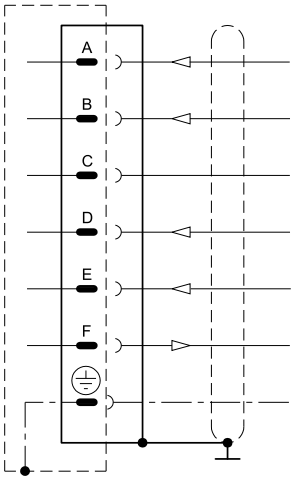


FREQUENCY RESPONSE



3 - ELECTRICAL FEATURES

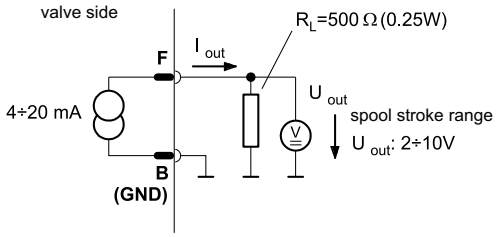
CONNECTION WIRING



Pin	Values	Function	NOTES
A	24 VDC	Supply	From 19 to 32 VDC $I_{A\ MAX.}$ = 2,2 A
B	0 V	Signal ground	0 V
C	----	Not used	----
D	± 10 V	Input rated command	R_e = 10 kΩ (see **NOTE 1**)
E	0 V	Input rated command	----
F	4 ÷ 20 mA	Spool position	R_L = from 300 to 500 Ω (see **NOTE 2**)
PE	----	Protective earth	----

NOTE 1: The input stage is a differential amplifier. With positive reference signal connected to pin D, valve opening P - A e B - T is achieved. With a zero reference signal the spool is in centred position. The spool stroke is proportional to U_D - U_E. If only one command signal is available (single-end), pin E must be connected to pin B (0V ground).

NOTE 2: The spool position value can be measured at pin F (see diagram right). The position signal output goes from 4 to 20 mA. The centered position is at 12 mA, while 20 mA, corresponds to 100% valve opening P - A and B - T. This monitoring allows to detect a cable break when I_F = 0V.



General requirements:

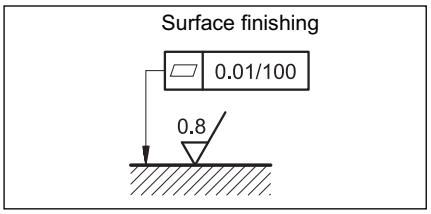
- External fuse = 2,5 A
- Minimum cross-section of all leads ≈ 0,75 mm²
- When making electric connections to the valve (shield, protective earth) appropriate measures must be taken to ensure that locally different earth potentials do not results in excessive ground currents.
- The differential and the spool position signal lines must be connected to the mating connector housing at valve side and to the 0V (signal ground) at cabinet side.
- **EMC**: meets the requirements of EN 55011:1998, class B, and the immunity regulation according to EN 61000-6-2:1998

4 - 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.

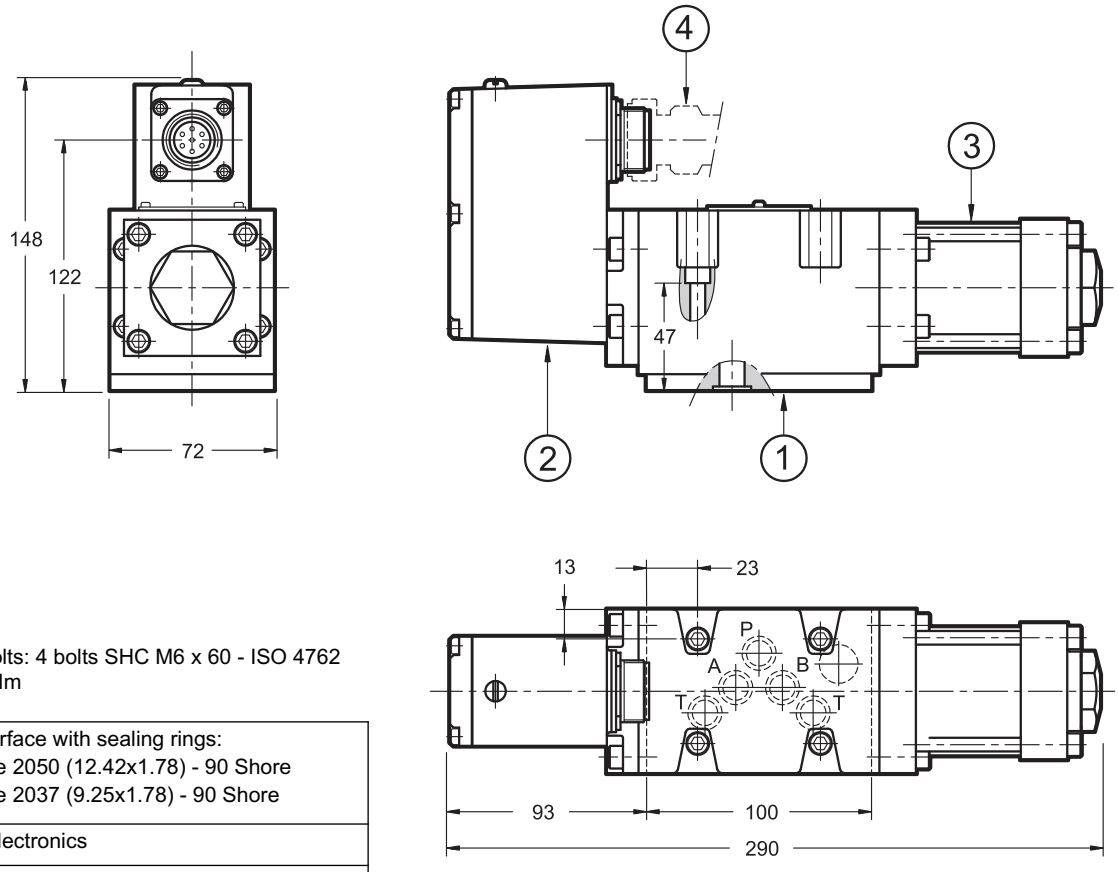
5 - INSTALLATION

The DXJ5 valve can be installed in any position without impairing its correct operation.
The valve is fixed by means of screws on a flat surface with planarity between 0,01 mm over 100 mm and roughness R_a < 0,8 µm. If the minimum values are not observed, the fluid can easily leak between the valve and the mounting surface. While mounting pay attention to the environment and valve cleanliness.



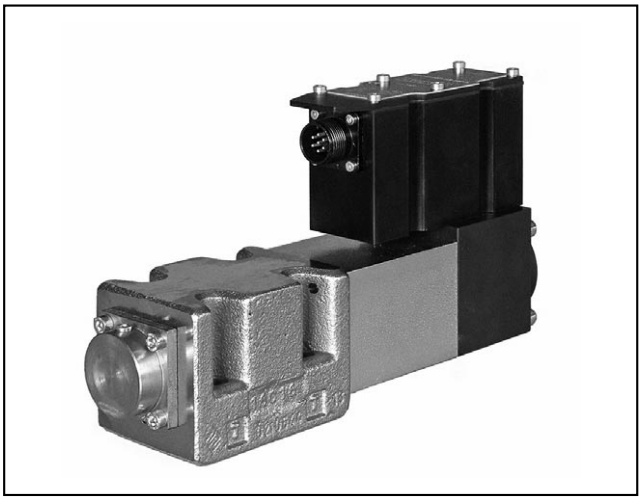
7 - OVERALL AND MOUNTING DIMENSIONS

dimensions in mm



Fastening bolts: 4 bolts SHC M6 x 60 - ISO 4762
Torque: 13 Nm

1	Mounting surface with sealing rings: N. 5 OR type 2050 (12.42x1.78) - 90 Shore N. 1 OR type 2037 (9.25x1.78) - 90 Shore
2	Integrated electronics
3	Linear force motor
4	Electric connector 7 pins DIN 43563 - IP67 PG11 EX7S/L/10 cod. 3890000003 (**to be ordered separately**)



DXE5J

HIGH RESPONSE SERVO-PROPORTIONAL VALVE WITH FEEDBACK AND INTEGRATED ELECTRONICS

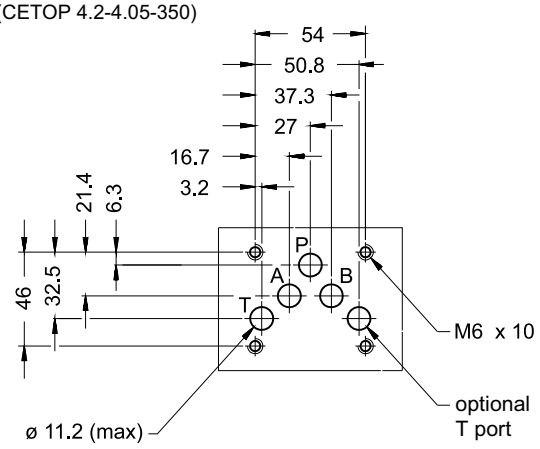
SERIES 31

SUBPLATE MOUNTING ISO 4401-05

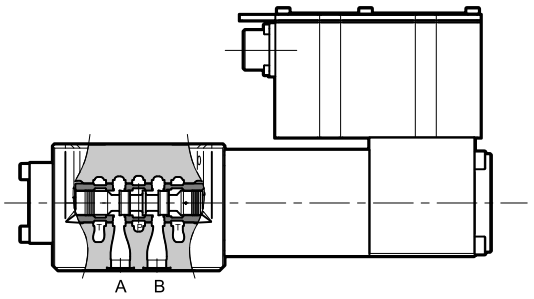
p max **350** bar
Q max **180** l/min

MOUNTING INTERFACE

ISO 4401-05-04-0-05
(CETOP 4.2-4.05-350)



OPERATING PRINCIPLE



— The DXE5J valve is a four-way (3 + fail-safe position) servo-proportional valve where the spool moves inside a sleeve. It is operated by a proportional solenoid highly dynamic, which achieves high performance and not requires pilot pressure. The spool position is controlled by a linear transducer (LVDT) in closed loop, which ensures high precision and repeatability.

— It is available with two flow ranges up to 100 l/min with spools with zero overlap.

— A version for potentially explosive atmospheres according to ATEX 2014/34/EU II 3GD is available.

— 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 other than the possible electronic regulation of the zero.

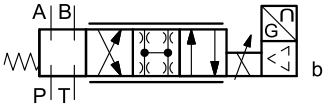
— Suitable for control applications with closed loop of position, velocity and pressure. if the valve is not powered or is without the enable input (version A only), the spool moves automatically at fail-safe position.

PERFORMANCES

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

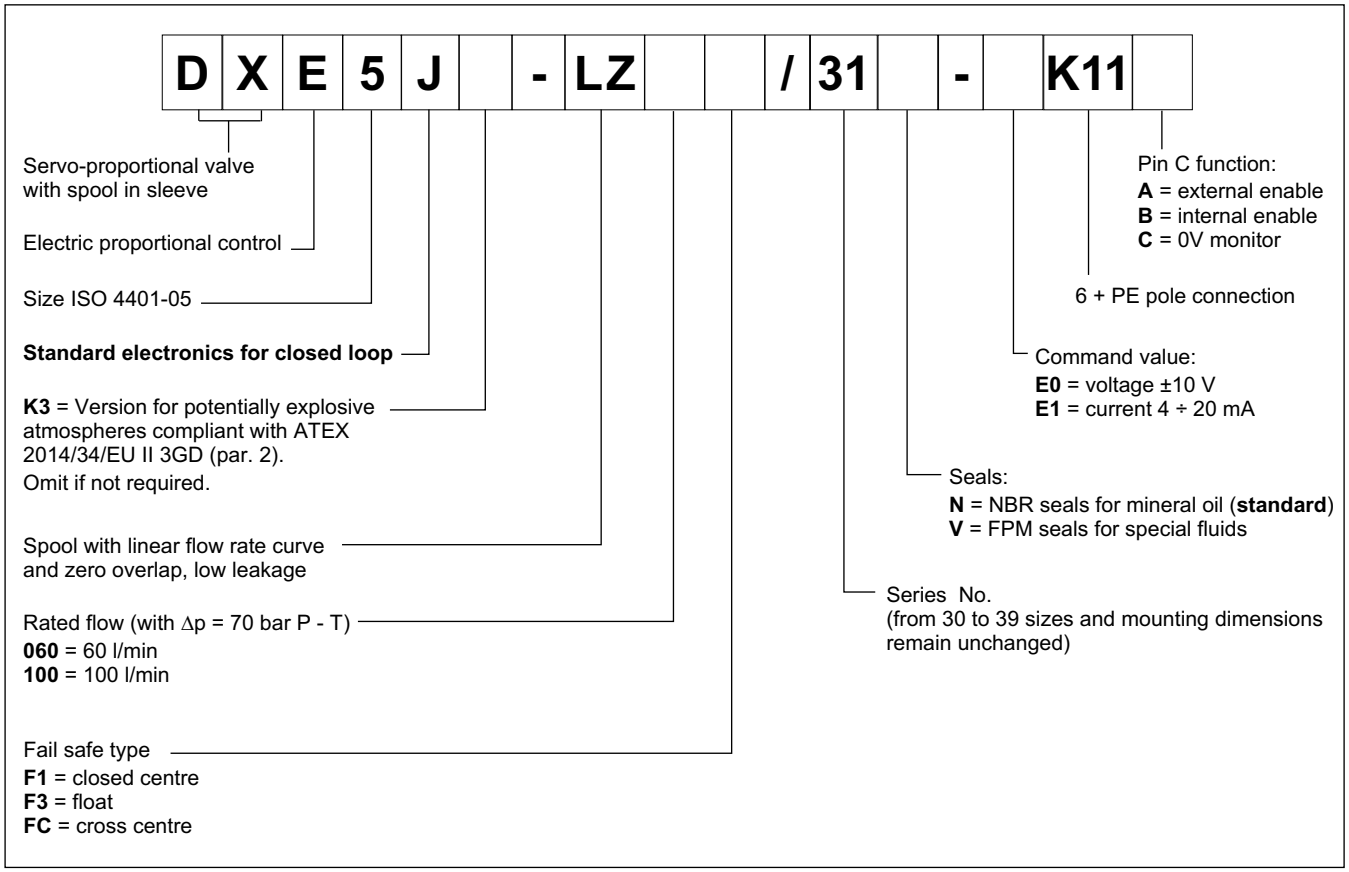
Maximum operating pressure ports P - A - B port T	bar	350 250
Rated flow Q nom (with ∆p 70 bar P - T)	l/min	60 - 100
Hysteresis	% In	< 0,2
Threshold	% In	< 0,1
Thermal drift (with ∆T= 40 °C)	% In	< 1,0
Response time (0-100%)	ms	≤ 20
Vibration on the three axes	g	30
Ambient temperature range	°C	-20 / +60
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	5 ÷ 400
Fluid contamination degree	according to ISO 4406:1999 class 17/15/12 (16/14/11 for longer life)	
Recommended viscosity	cSt	25
Mass	kg	6

HYDRAULIC SYMBOL

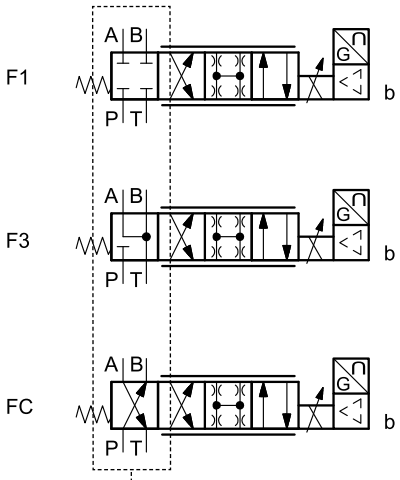


1 - IDENTIFICATION CODE

1.1 - Standard electronics



1.2 Available versions



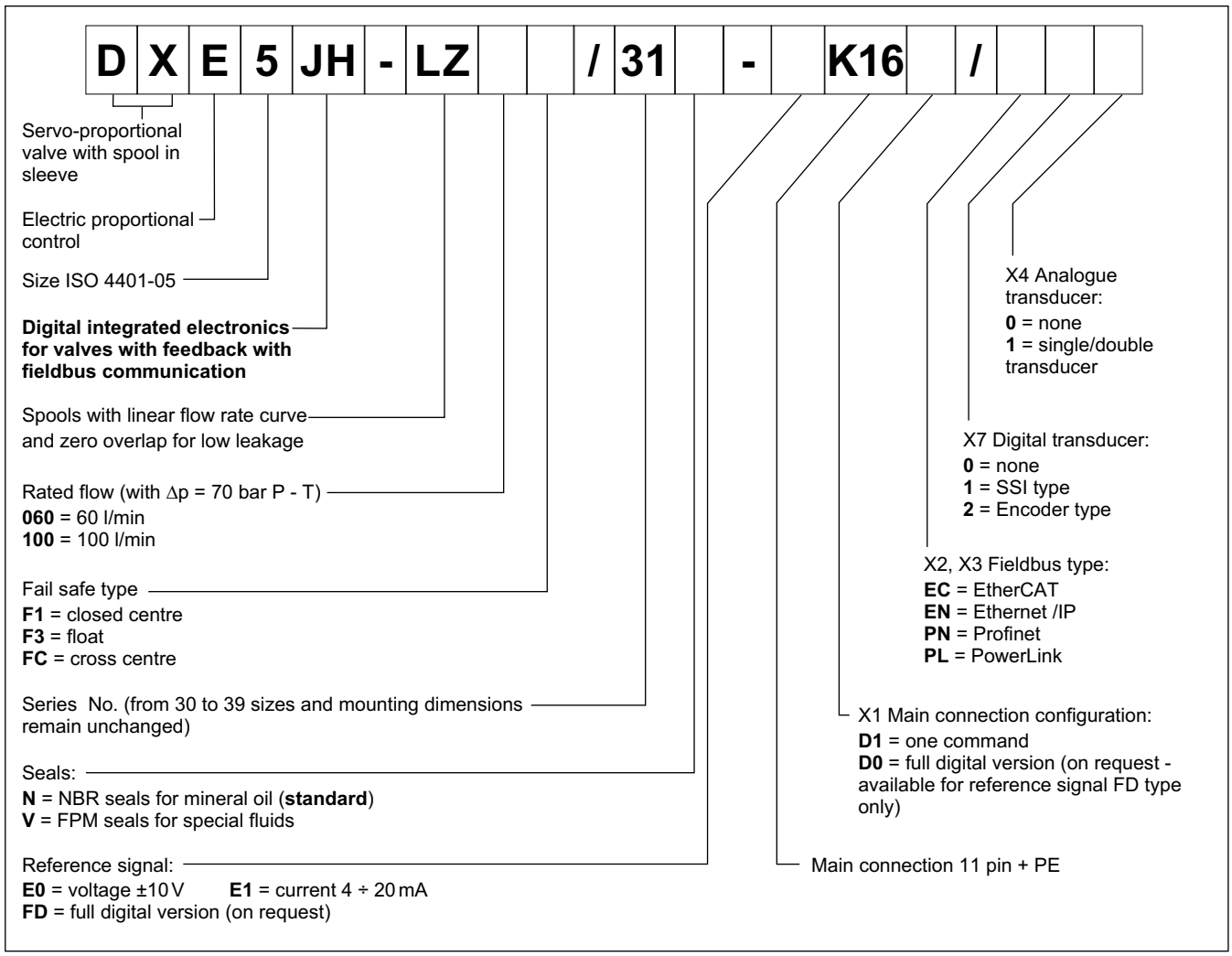
flow rate	fail safe type		
	F1	F3	FC
60	■	■	□
100	■	■	■

■ available □ on request

FAIL SAFE POSITION

When a power failure occurs, the electronics de/energize the solenoid and the spool will take the fail safe position by means of the centering springs.

1.3 - Electronics with fieldbus communication



2 - ATEX 2014/34/EU RATED VERSION

Valves suitable for use in potentially explosive atmospheres certified according to ATEX 2014/34/EU classified under ATEX II 3GD are available.

The electrical and technical characteristics and dimensions of ATEX certified valves are identical to those of standard valves.

The supply is always delivered together with the ATEX declaration of conformity and the operating and maintenance user manual, where are described all the information for the proper use of valves in potentially explosive atmospheres.

TYPE EXAMINATION CERTIFICATE N°: **AR20ATEX046**

2.1 - Identification code

To order the ATEX-rated version, simply insert letters K3 in the initial part of the identification code. The description becomes DXE5JK3. Please use the identification code shown at par. 1.1 to order.

Example:

- DXE5J**K3**-LZ60F1/31N-E0K11A

2.2 - Classification

The valves DXE5JK3 are ATEX marked as below:

MARKING FOR GASES, VAPOURS AND MISTS:

 II 3G Ex ec IIC T4 Gc

EX: Specific marking of explosion protection as ATEX 2014/34/EU directive and related technical specification requests
II: Group II for surface plants
3: Category 3 normal protection, eligible for zone 2
G: for use in areas in which explosive atmospheres caused by gases, vapours, mists
Ex ec: "ec" protection type, increased safety
IIC: Gas group
(automatically eligible for group IIA and IIB)
T4: Temperature class (max surface temperature)
Gc: Protection level for electrical devices (EPL)
Equipment for explosive gas atmospheres, having an "enhanced' level of protection, which is not a source of ignition in normal operation and which may have some additional protection to ensure that it remains inactive as an ignition source in the case of regular expected occurrences.

MARKING FOR DUSTS:

 II 3D Ex tc IIIC T135°C Dc

EX: Specific marking of explosion protection as ATEX 2014/34/EU directive and related technical specification requests
II: Group II for surface plants
3: Category 3 normal protection, eligible for zone 22
D: for use in areas in which explosive atmospheres are caused by explosive dusts
Ex tc: "tc" protection type, protected by enclosures
IIIC: Dusts group
(automatically eligible for group IIIA and IIIB)
T135°C: Temperature class (max surface temperature)
Dc: Protection level for electrical devices (EPL)
Equipment for explosive dust atmospheres, having an "enhanced' level of protection, which is not a source of ignition in normal operation and which may have some additional protection to ensure that it remains inactive as an ignition source in the case of regular expected occurrences.

2.3 - IP protection degree

The IP protection degree of the valve is IP66/IP68 according to IEC EN 60529.

NOTE: the test carried out to reach IP68 is: duration 1 h, depth 1 m.

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

2.4 - Operating temperatures

The operating ambient temperature must be between -20 °C and +60 °C.

The fluid temperature must be between -20°C and +80°C.

The valves are T4 (T135 °C) class temperature classified, so they are eligible for operation also at higher class temperature (T3, T2, T1 (T200 °C).

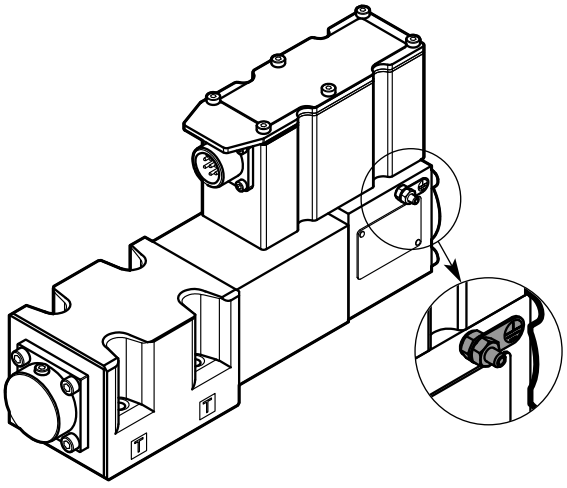
2.5 - Connectors

The connector is not supplied with the valve, but can be ordered separately. **The connector must be suitable for the intended conditions of use.**

Duplomatic can provide 7-pin connectors to wire, metal type, suitable for use with DXE5JK3 valves (see catalogue 89 000, connectors type EX7S).

2.6 - Grounding points

The ATEX certified valves are supplied with a grounding point with M4 screw.



The grounding point must always be wired with the general earthing system by means of a suitable conductive line.

3 - ELECTRONICS COMMON DATA

Duty cycle		100% (continuous operation)
Protection class according to EN 60529		IP66/IP68 (**NOTE**)
Supply voltage	V DC	24 (from 19 to 30 VDC), ripple max 3 Vpp
Power consumption	VA	60
Maximum solenoid current	A	3.7
Fuse protection, external	A	(fast), max current 6A
Managed breakdowns		Overload and electronics overheating, LVDT sensor error, cable breakdown, supply voltage failures
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. Furthermore, on the JH versions it is necessary to protect with caps any unused connections The test carried out to reach IP68 is: duration 1 h, depth 1 m.

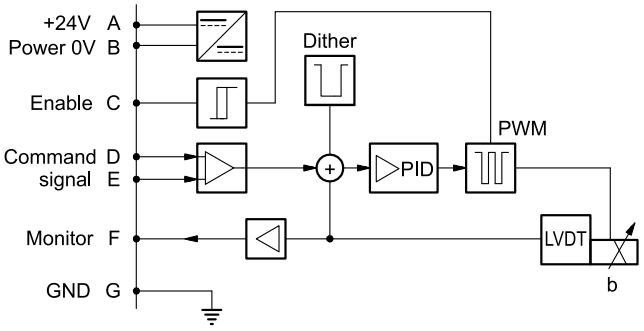
4 - DXE5J - STANDARD ELECTRONICS

4.1 - Electrical characteristics

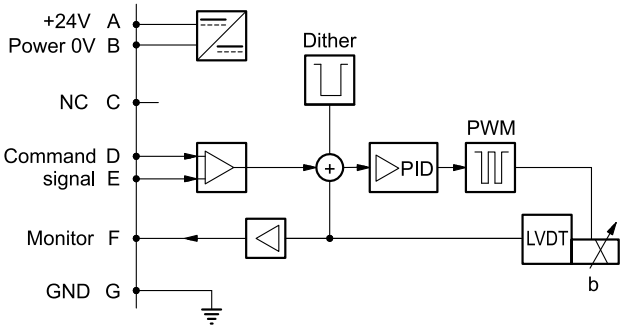
Command signal:	voltage (E0) current (E1)	V DC mA	±10 (Impedance Ri = 11 kOhm) 4 ÷ 20 (Impedance Ri = 58 Ohm)
Monitor signal (current to solenoid):	voltage (E0) current (E1)	V DC mA	±10 (Impedance Ro > 1 kOhm) 4 ÷ 20 (Impedance Ro = 500 Ohm)
Communication for diagnostic			LIN-bus Interface (by means of the optional kit)
Connection			6 pin + PE (MIL-C-5015-G - DIN EN 175201-804)

4.2 - On-board electronics diagrams

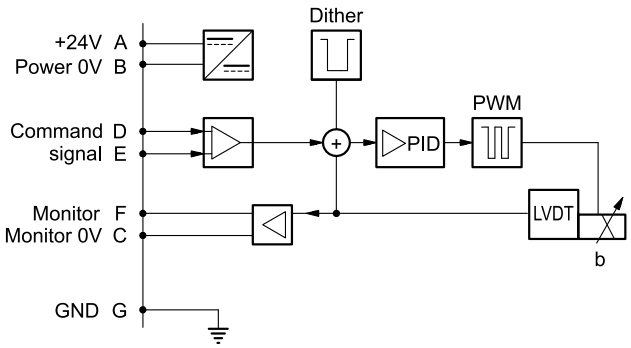
VERSION A - External Enable



VERSION B - Internal Enable

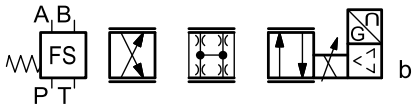


VERSION C - 0V Monitor

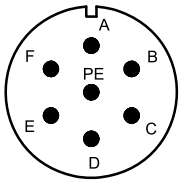


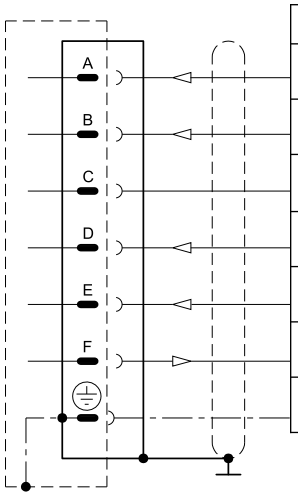
4.3 - Versions with voltage COMMAND (E0)

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.



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



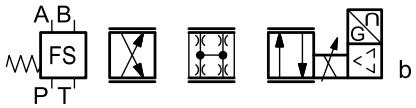


Pin	Values	version A	version B	version C
A	24 V DC	Supply Voltage		
B	0 V			
C		Enable 24 V DC	do not connect -	PIN F reference 0 V
D	± 10 V	Command (differential input)		
E	0 V	Command reference		
F	± 10 V	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

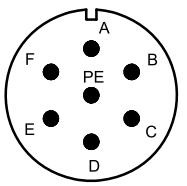
4.4 - Versions with CURRENT COMMAND (E1)

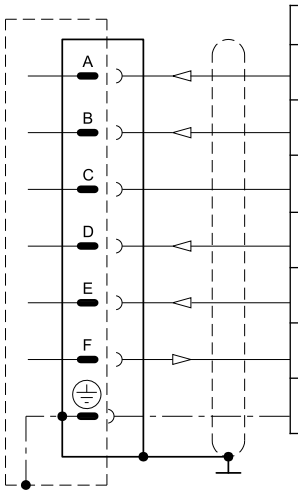
The reference signal is supplied in current 4 ÷ 20 mA. If the current for command is lower, the card shows a breakdown cable error. To reset the error is sufficient to restore the signal.

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**	**12 mA**	**20 mA**	
MONITOR	**4 mA**	**12 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	do not connect -	PIN F reference 0 V
D	4 ÷ 20 mA	Command		
E	0 V	Command reference		
F	4 ÷ 20 mA	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

5 - DXE5JH - FIELDBUS ELECTRONICS

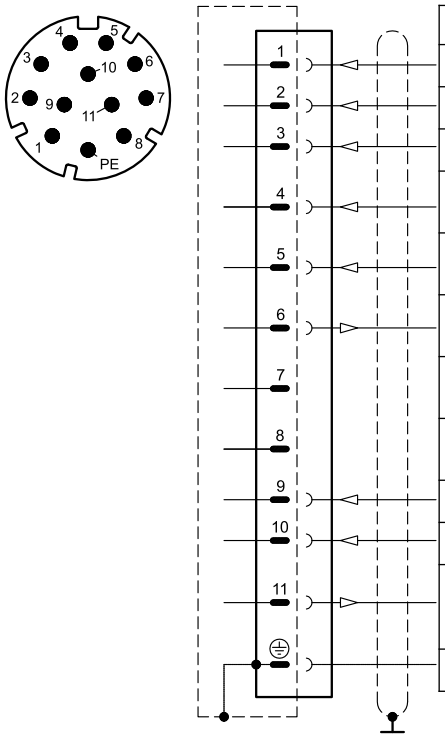
The 11+ PE pin connection allows separate supply voltage for electronics and solenoid.

Command - valve position schemes as for the standard electronics. Please refer to pictures in par. 4.3 and 4.4.

5.1 - Electrical characteristics

Command signal: voltage (E0) current (E1) digital (FD)	 V DC mA	 ±10 (Impedance Ri = 11 kOhm) 4 ÷ 20 (Impedance Ri = 58 Ohm) via fieldbus
Monitor signal (current to solenoid): voltage (E0) current (E1)	 V DC mA	 ±10 (Impedance Ro > 1 kOhm) 4 ÷ 20 (Impedance Ro = 500 Ohm)
Communication / diagnostic		via Bus register
Communication interface standards		IEC 61158
Communication physical layer		fast ethernet, insulated 100 Base TX
Power connection		11 pin + PE (DIN 43651)

5.2 - X1 Main connection pin table



D1: one command

Pin	Values	Function
1	24 V DC	Main supply voltage
2	0 V	
3	24V DC	Enable
4	± 10 V (E0) 4 ÷ 20 (E1)	Command
5	0 V	Command reference signal
6	± 10 V (E0) 4 ÷ 20 (E1)	Monitor (0V reference pin 10)
7	NC	do not connect
8	NC	do not connect
9	24 V DC	Logic and control supply
10	0 V	
11	24 V DC	Fault (0V DC) or normal working (24V DC) (0V reference pin 2)
12	GND	Ground (Earth)

D0: full digital

Pin	Values	Function
1	24 V DC	Main supply voltage
2	0 V	
3	24V DC	Enable
4	NC	do not connect
5	NC	do not connect
6	NC	do not connect
7	NC	do not connect
8	NC	do not connect
9	24 V DC	Logic and control supply
10	0 V	
11	24 V DC	Fault (0V DC) or normal working (24V DC) (0V ref. pin 2)
12	GND	Ground (Earth)

5.3 - FIELDBUS connections

Please wire following guidelines provided by the related standards communication protocol. Any connections present and not used must be protected with special caps so as not to nullify the protection against atmospheric agents.

X2 (IN) connection M12 D 4 pin female

Pin	Values	Function
1	TX+	Transmitter
2	RX+	Receiver
3	TX-	Transmitter
4	RX-	Receiver
HOUSING	shield	

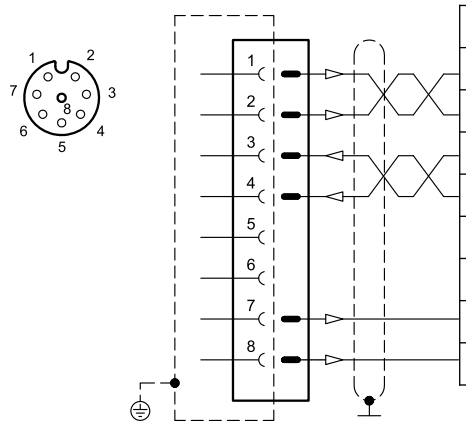
X3 (OUT) connection: M12 D 4 pin female

Pin	Values	Function
1	TX+	Transmitter
2	RX+	Receiver
3	TX-	Transmitter
4	RX-	Receiver
HOUSING	shield	

NOTE: Shield connection on connector housing is recommended.

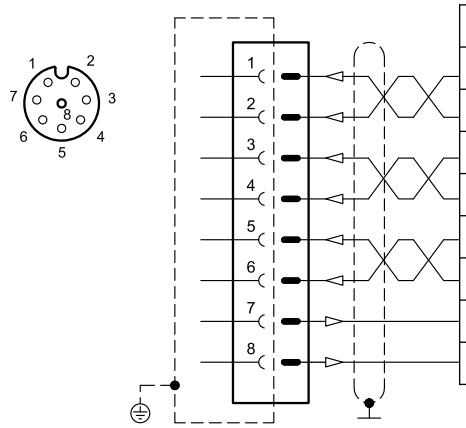
5.4 - Digital transducer connection
X7 connection: M12 A 8 pin female

VERSION 1: SSI type



Pin	SSI Values	Function	Notes
1	CLK+	Serial synchronous clock (+)	Input - digital signal
2	CLK-	Serial synchronous clock (-)	
3	MIS0+	Serial position data (+)	
4	MIS0-	Serial position data (-)	
5	NC	-	do not connect
6	NC	-	
7	+24 V	transducer power supply	Output power supply
8	0 V	-	Common GND

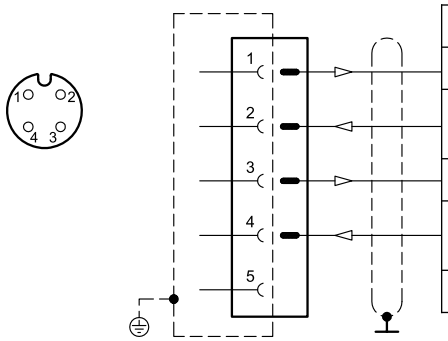
VERSION 2: ENCODER type



Pin	Values	Function	Notes
1	ENC_Z+	input channel Z+	Input - digital signal
2	ENC_Z-	input channel Z-	
3	ENC_A+	input channel A+	
4	ENC_A-	input channel A+	
5	ENC_B+	input channel B+	
6	ENC_B-	input channel B+	
7	+5 V	transducer power supply	Output power supply
8	0 V	-	Common GND

5.5 - Analogue transducer connection
X4 connection: M12 A 4 pin female

VERSION 1: single / double transducer
(single or double is a software-selectable option)

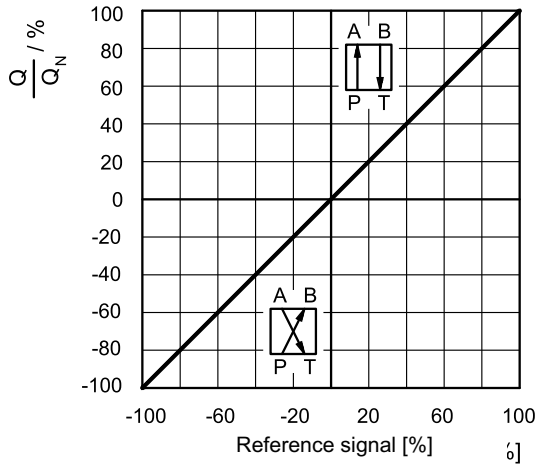


Pin	Values	Notes
1	+24 V	Remote transducer power supply (out) 100 mA
2	±10 V 4 ÷20 mA	Input signal of transducer 1 (range software selectable)
3	0 V	Common reference signal for transducer power and signals
4	±10 V 4 ÷20 mA	Input signal of transducer 2 (range software selectable)
5	-	

6 - CHARACTERISTIC CURVES

(measured with viscosity of 36 cSt at 50°C)

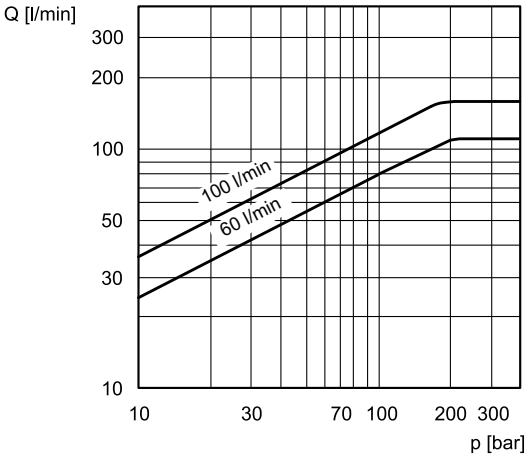
REFERENCE / FLOW RATE CURVE



Typical flow rate curves at constant Δp = 70 bar P-T according to the reference signal.

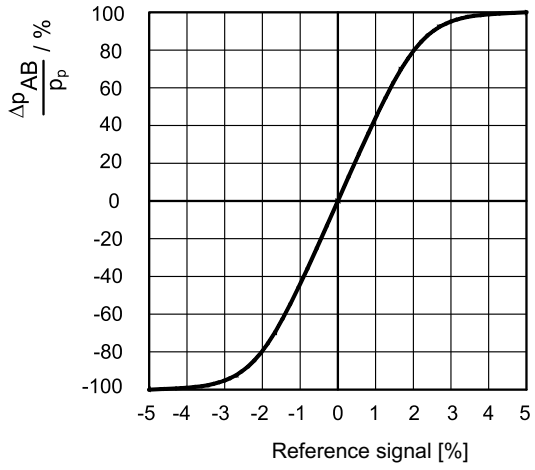
NOTE: with positive reference signal connected to pin D the valve regulates P - A / B - T.

FLOW RATE CURVE ACCORDING TO Δp



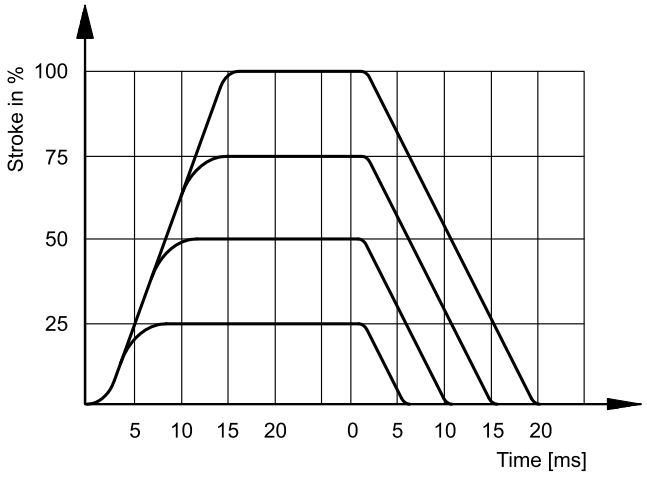
The diagram states the maximum valve controlled flow rate according to the pressure drop between the P and T ports.

PRESSURE GAIN

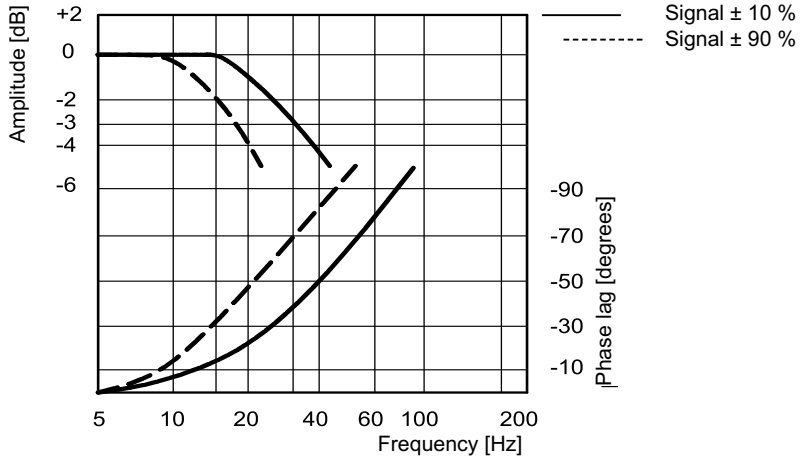


The diagram shows the valve pressure gain, expressed as % of the ratio between the port pressure variation in A or B (Δp AB) and the P system pressure, according to the reference signal. In practice, the pressure gain states the valve reaction towards external disturbances aimed at changing the actuator position.

RESPONSE TIME

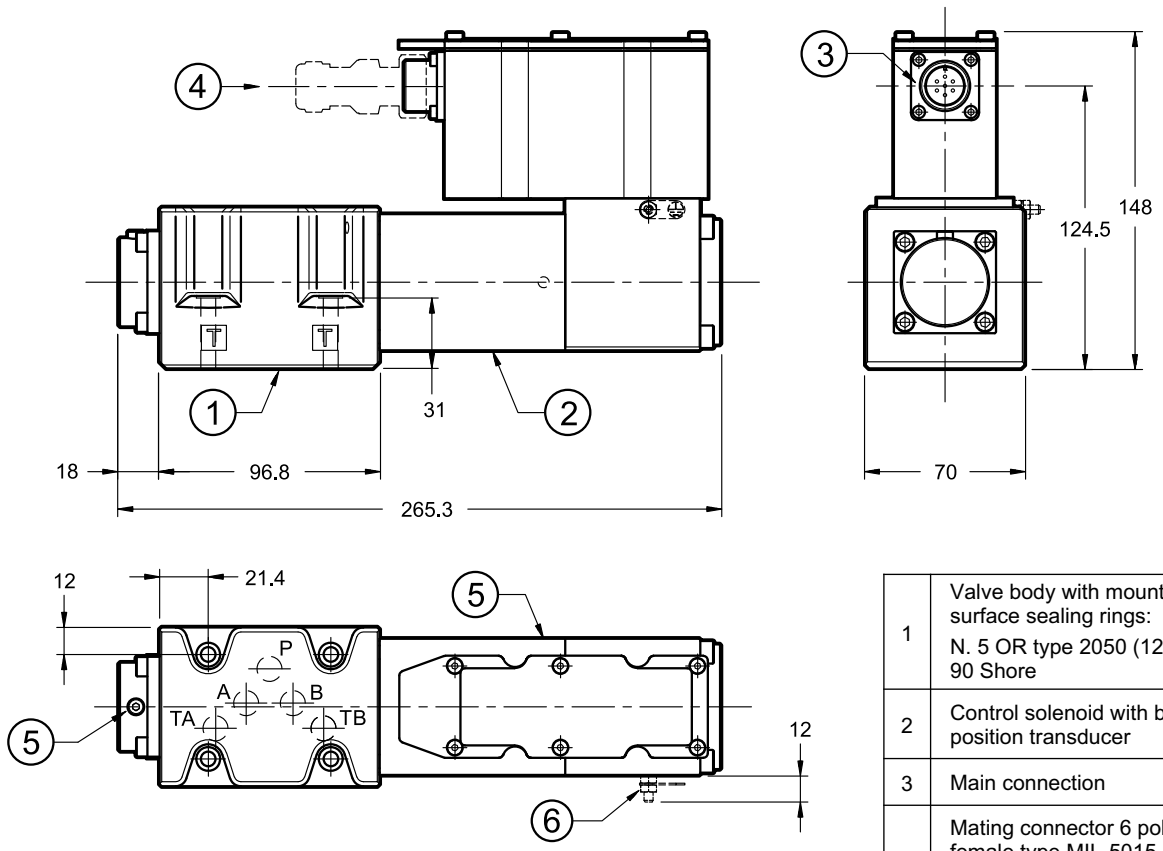


FREQUENCY RESPONSE



7 - DXE5J - OVERALL AND MOUNTING DIMENSIONS

dimensions in mm



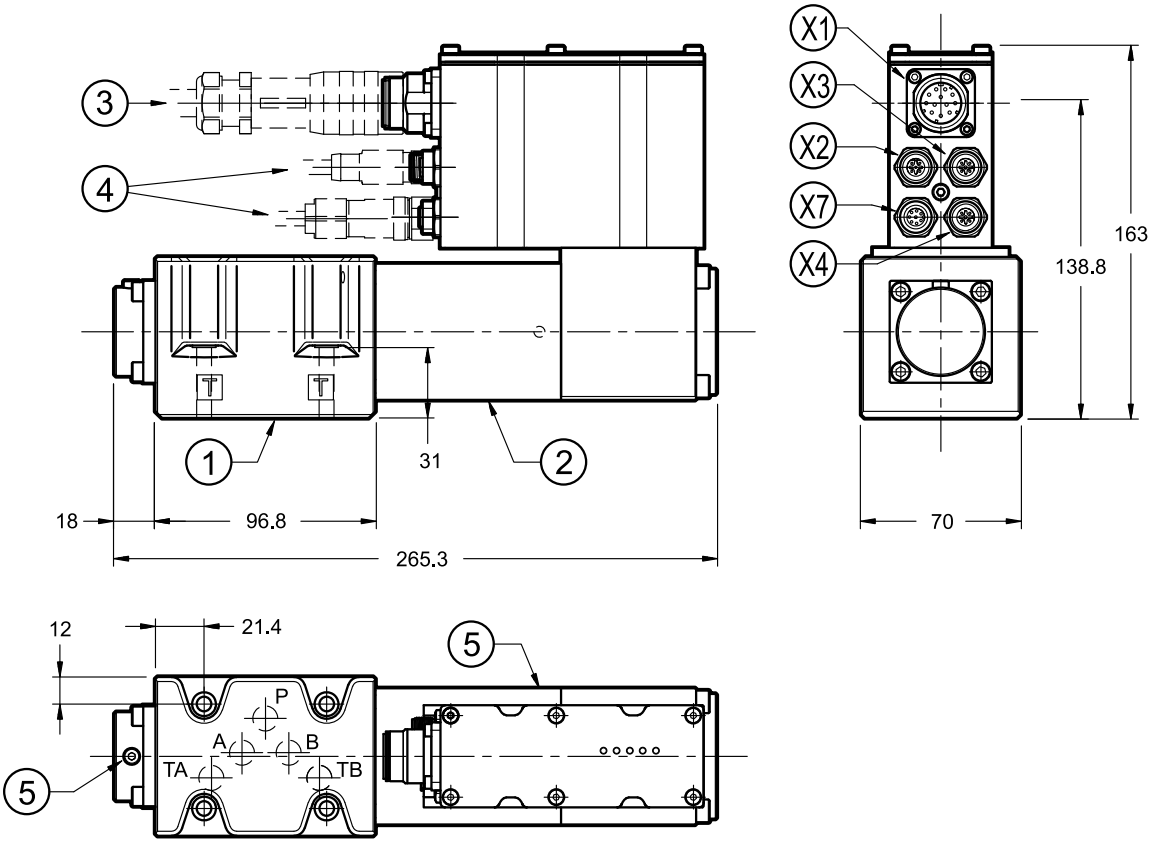
1	Valve body with mounting surface sealing rings: N. 5 OR type 2050 (12.42x1.78) 90 Shore
2	Control solenoid with built-in position transducer
3	Main connection
4	Mating connector 6 poles + PE, female type MIL-5015-G **To be ordered separately.** See catalogue 89 000
5	Air breather. Sealed at the factory (**NOTE**)
6	DXE5JK3 only: grounding point

Fastening bolts: 4 SHC screws M6x40 - ISO 4762
Torque: 8 Nm ± 10% (A8.8)
Threading holes: M6x10

NOTE: The valve is filled with mineral oil during testing, therefore the breather should not be used without specific authorization. Breaking the seals can cause the loss of the guarantee.

8 - DXE5JH - OVERALL AND MOUNTING DIMENSIONS

dimensions in mm



X1	Main connection 11 pin + PE
X2	Fieldbus communication (IN)
X3	Fieldbus communication (OUT)
X4	X4 connection for analogue transducer
X7	X7 connection for digital transducer

1	Mounting surface with sealing rings: N. 5 OR type 2050 (12.42x1.78) 90 Shore
2	Control solenoid with built-in position transducer
3	Mating connector 11 poles + PE **To be ordered separately.** See catalogue 89 000
4	Mating connectors for fieldbus communication and signals **To be ordered separately.** See catalogue 89 000
5	Air breather. Sealed at the factory (**NOTE 2**)

NOTE 1: Depending on the chosen version, X4 and X7 connections may not be present.
Please refer to section 5 for connection descriptions and pinout.

NOTE 2: The valve is filled with mineral oil during testing, therefore the breather should not be used without specific authorization. Breaking the seals can cause the loss of the guarantee.

Fastening bolts: 4 bolts M6x40 - ISO 4762
Torque: 8 Nm ± 10% (A8.8)
Threading holes: M6x10

9 - 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.

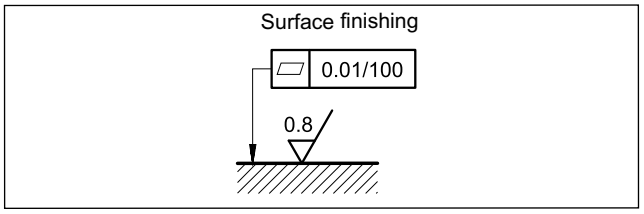
The fluid must be preserved in its physical and chemical characteristics.

10 - 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 leaks between the valve and support surface.

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



11 - ACCESSORIES

(to be ordered separately)

11.1 - 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.

11.2 - Mating connectors and caps for fieldbus communication and for sensors.

Duplomatic offers spare parts to be wired and also ready-to-use cord sets. Please refer to cat. 89 000.

11.3 - 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

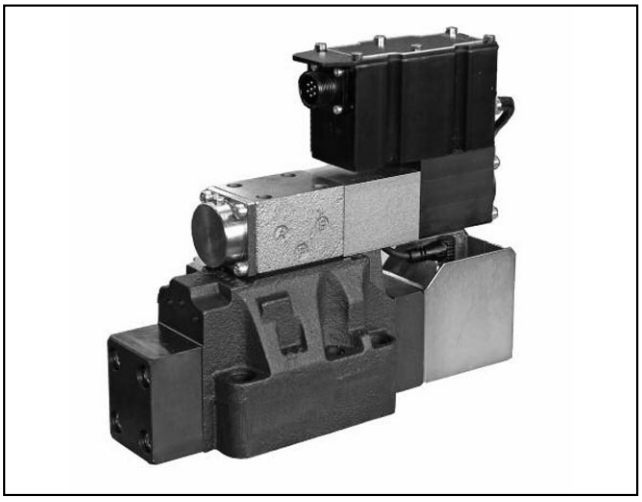
11.4 - Kit for start-up LINPC-USB

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

12 - SUBPLATES

(see catalogue 51 000)

PMD4-AI4G rear ports 3/4” BSP
PMD4-AL4G side ports 1/2” BSP



DXRE*J

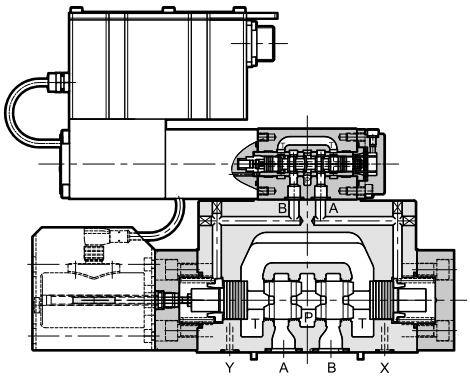
DIRECTIONAL CONTROL VALVES, PILOT OPERATED, WITH OBE AND FEEDBACK

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



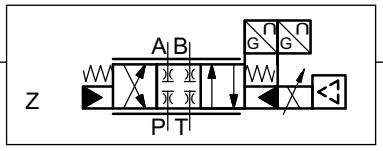
— DXRE*J are directional control valves operated by a servo-proportional pilot, with mounting surface compliant with ISO 4401 standards. The main spool position is controlled by a linear transducer LVDT in closed loop, which ensures high precision and repeatability. .

— The valve is featured by integral electronic based on SMD technology which ensures standard regulations and simplifies the electric wiring. The unit doesn't require any adjustment other than the possible electronic regulation of the zero.

— Two types of integrated electronics are available, with analogue or fieldbus interfaces.

— Suitable for control applications with closed loop of position, velocity and pressure. With a power down or without the enable input, the main spool is set to a fail-safe position by springs.

HYDRAULIC SYMBOL (typical)



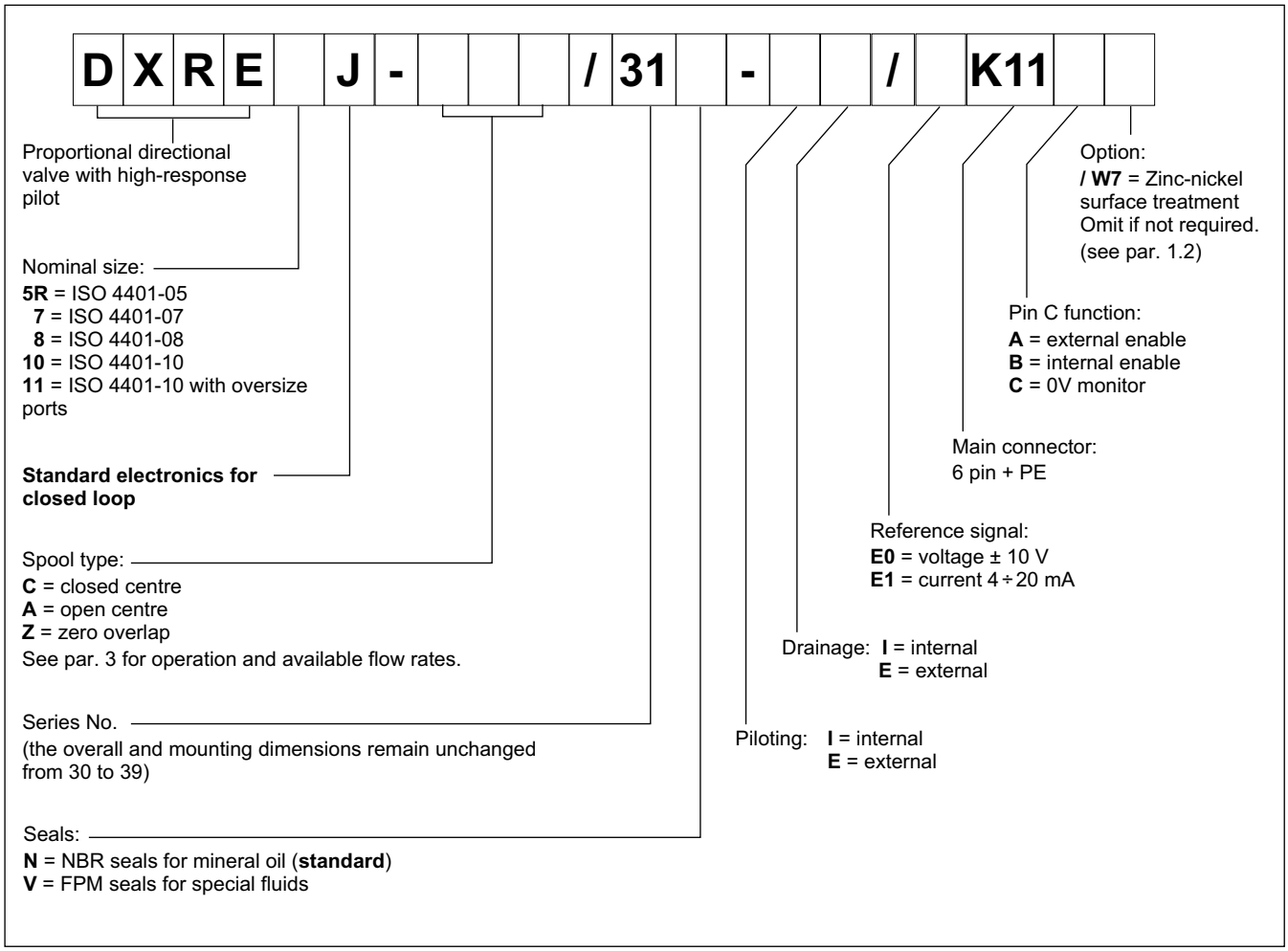
PERFORMANCES

(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 4		
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	10.2	17	56	56

1 - IDENTIFICATION CODE

1.1 - Standard electronics



1.2 - 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).

1.3 - Electronics with fieldbus communication

D	X	R	E		JH	-				/	31		-			-		K16		/				

Proportional directional valve with high-response pilot

Nominal size:
5R = ISO 4401-05
7 = ISO 4401-07
8 = ISO 4401-08
10 = ISO 4401-10
11 = ISO 4401-10 with oversize ports

Digital integrated electronics for closed loop with fieldbus communication

Spool type:
C = closed centre
A = open centre
Z = zero overlap
See par. 2 for operation and available flow rates.

Series No.
(from 30 to 39 sizes and mounting dimensions remain unchanged)

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

Drainage:
I = internal
E = external

Piloting:
I = internal
E = external

Reference signal:
E0 = voltage ±10 V
E1 = current 4 ÷ 20 mA
FD = full digital version (on request)

Main connection 11 pin + PE

X1 Main connection configuration:
D1 = one command
D0 = full digital version (on request - available for reference signal FD type only)

X2, X3 Fieldbus type:
CA = CAN Open
PD = PROFIBUS DP
EC = EtherCAT
EN = Ethernet /IP
PN = Profinet
PL = PowerLink

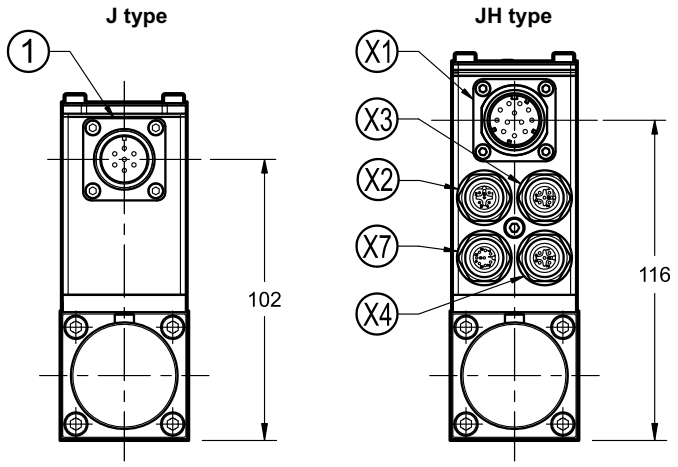
X7 Digital transducer:
0 = none
1 = version 1 (SSI type)
2 = version 2 (Encoder type)

X4 Analogue transducer:
0 = none
1 = version 1
(single /double transducer)

Option:
/ W7 = Zinc-nickel surface treatment
Omit if not required.
(see par. 1.2)

2 - COMPARISON AMONG INTEGRATED ELECTRONICS

dimensions in mm



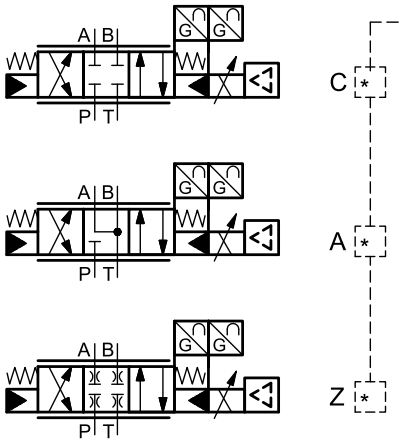
NOTE 1: Depending on the chosen version, X4 and X7 connections may not be present. Please refer to sections 5, 6 and 7 for connections descriptions and pinouts.
NOTE 2: Related mating connectors have to be ordered separately. See catalogue 89 000.

1	Connection 6 pin + PE
X1	Main connection 11 pin + PE
X2	Fieldbus communication (IN)
X3	Fieldbus communication (OUT)
X4	Connection for analogue transducer
X7	Connection for digital transducer

3 - AVAILABLE CONFIGURATIONS

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

3 positions with spring centering

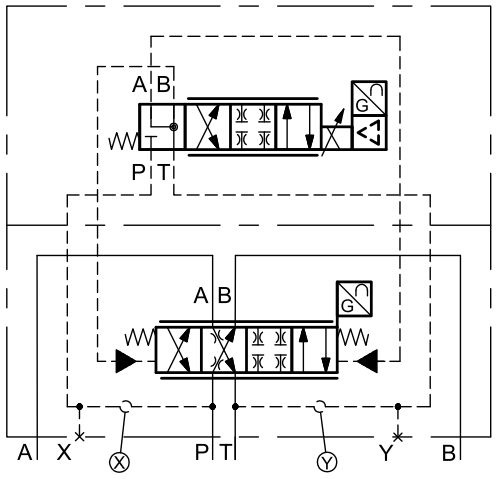


valve type	*	Controlled flow with Δp 10 bar P-T
DXRE5RJ	**100**	100 l/min
DXRE7J	**120**	120 l/min
	220	220 l/min
DXRE8J	**250**	250 l/min
	400	400 l/min
DXRE10J	**800**	800 l/min
DXRE11J	**1000**	1000 l/min

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)



4 - ELECTRONICS COMMON DATA

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	A	(fast), max current 4A
Managed breakdowns		Overload and electronics overheating, LVDT sensor error, cable breakdown, supply voltage failures
Electromagnetic compatibility (EMC) emissions EN 61000-6-4, immunity EN 61000-6-2		According to 2014/30/EU standards

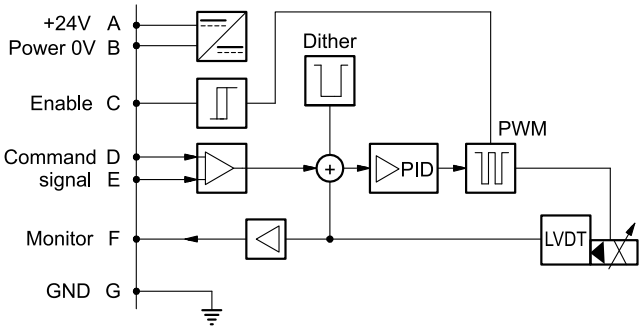
5 - DXRE*J - STANDARD ELECTRONICS

5.1 - Electrical characteristics

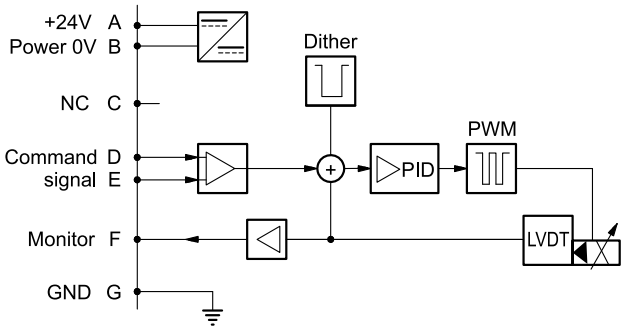
Command signal:	voltage (E0) current (E1)	V DC mA	±10 (Impedance Ri = 11 kOhm) 4 ÷ 20 (Impedance Ri = 58 Ohm)
Monitor signal (current to solenoid):	voltage (E0) current (E1)	V DC mA	±10 (Impedance Ro > 1 kOhm) 4 ÷ 20 (Impedance Ro = 500 Ohm)
Communication for diagnostic			LIN-bus Interface (by means of the optional kit)
Connection			6 pin + PE (MIL-C-5015-G - DIN EN 175201-804)

5.2 - On-board electronics diagrams

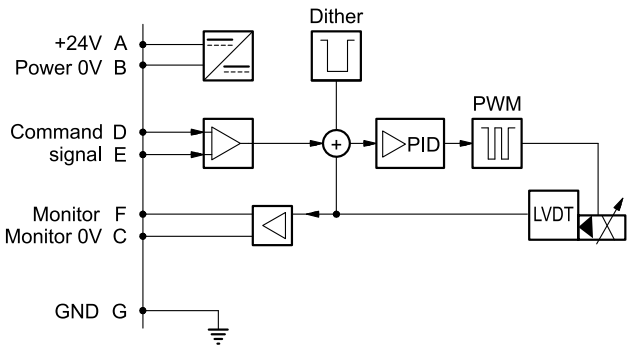
VERSION **A** - External Enable



VERSION **B** - Internal Enable

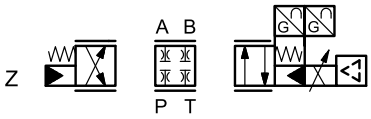


VERSION **C** - 0V Monitor

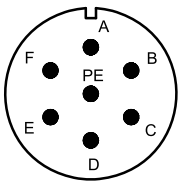


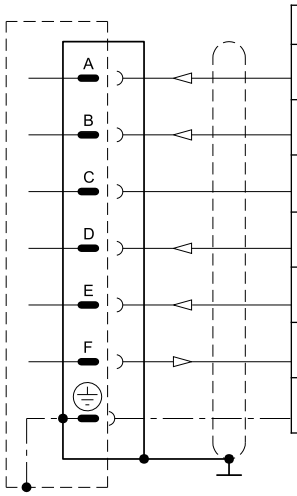
5.3 - Version with voltage command (E0)

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.



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



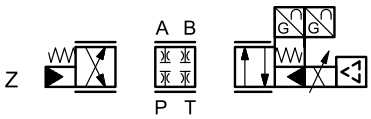


Pin	Values	version A	version B	version C
A	24 V DC	Supply Voltage		
B	0 V			
C		Enable 24 V DC	do not connect -	PIN F reference 0 V
D	± 10 V	Command (differential input)		
E	0 V	Command reference		
F	± 10 V	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

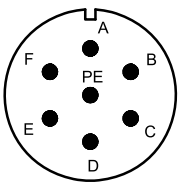
5.4 - Version with current command (E1)

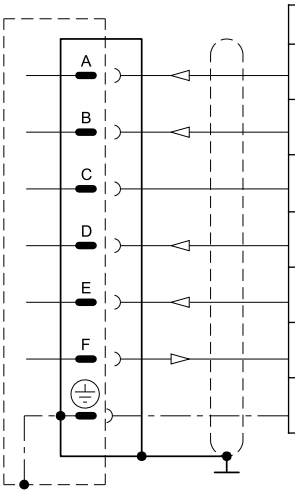
The reference signal is supplied in current 4 ÷ 20 mA. If the current for command is lower than 4 mA the card shows a breakdown cable error. To reset the error is sufficient to restore the signal.

The monitor feature of versions B and C becomes available with a delay of 0.5 sec from the power-on of the card.



COMMAND	**4 mA**	**12 mA**	**20 mA**
MONITOR	**4 mA**	**12 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	do not connect -	PIN F reference 0 V
D	4 ÷ 20 mA	Command		
E	0 V	Command reference		
F	4 ÷ 20 mA	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

6 - DXRE*JH - FIELDBUS ELECTRONICS

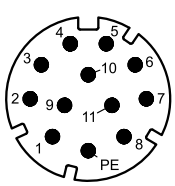
The 11+ PE pin connection allows separate supply voltage for electronics and solenoids.

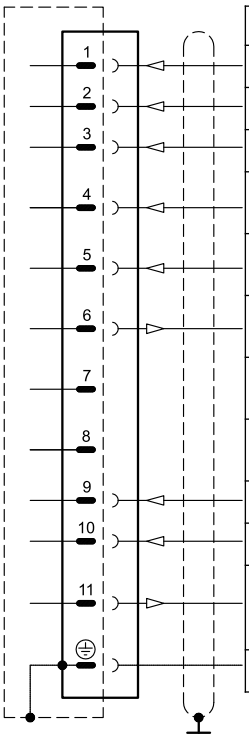
Command - valve position schemes as for the standard electronics. Please refer to pictures in par. 5.3 and 5.4.

6.1 - Electrical characteristics

Command signal: voltage (E0) current (E1) digital (FD)	 V DC mA	 ±10 (Impedance Ri = 11 kOhm) 4 ÷ 20 (Impedance Ri = 58 Ohm) via fieldbus
Monitor signal (current to solenoid): voltage (E0) current (E1)	 V DC mA	 ±10 (Impedance Ro > 1 kOhm) 4 ÷ 20 (Impedance Ro = 500 Ohm)
Communication / diagnostic		via Bus register
Communication interface standards CAN Open PROFIBUS DP EtherCAT, Ethernet /IP, Profinet, PowerLink		 EN 50325-4 + DS408 EN 50170-2 / IEC 61158 IEC 61158
Communication physical layer CAN Open PROFIBUS DP EtherCAT, Ethernet /IP, Profinet, PowerLink		 optical insulated CAN ISO 11898 optical insulated RS485 fast ethernet, insulated 100 Base TX
Power connection		11 pin + PE (DIN 43651)

6.2 - X1 Main connection pin table





D1: one command

Pin	Values	Function
1	24 V DC	Main supply voltage
2	0 V	
3	24V DC	Enable
4	± 10 V (E0) 4 ÷ 20 (E1)	Command
5	0 V	Command reference signal
6	± 10 V (E0) 4 ÷ 20 (E1)	Monitor (0V reference pin 10)
7	NC	do not connect
8	NC	do not connect
9	24 V DC	Logic and control supply
10	0 V	
11	24 V DC	Fault (0V DC) or normal working (24V DC) (0V reference pin 2)
12	GND	Ground (Earth)

D0: full digital

Pin	Values	Function
1	24 V DC	Main supply voltage
2	0 V	
3	24V DC	Enable
4	NC	do not connect
5	NC	do not connect
6	NC	do not connect
7	NC	do not connect
8	NC	do not connect
9	24 V DC	Logic and control supply
10	0 V	
11	24 V DC	Fault (0V DC) or normal working (24V DC) (0V ref. pin 2)
12	GND	Ground (Earth)

6.3 - FIELDBUS connections

Please wire following guidelines provided by the relative standards communication protocol.

6.3.1 - Communication connection CA (CAN Open)

X2 (IN) connection: M12 A 5 pin female

Pin	Values	Function
1	CAN_SH	Shield
2	NC	Do not connect
3	GND	Signal zero data line
4	CAN_H	Bus line (high)
5	CAN_L	Bus line (low)

X3 (OUT) connection: M12 A 5 pin male

Pin	Values	Function
1	CAN_SH	Shield
2	NC	Do not connect
3	GND	Signal zero data line
4	CAN_H	Bus line (high)
5	CAN_L	Bus line (low)

6.3.2 - Communication connection PD (PROFIBUS DP)

X2 (IN) connection: M12 B 5 pin male (IN)

Pin	Values	Function
1	+5 V	Termination supply signal
2	PB_A	Bus line (high)
3	0 V	Data line and termination signal 0
4	PB_B	Bus line (low)
5	SHIELD	

X3 (OUT) connection: M12 B 5 pin female

Pin	Values	Function
1	+5 V	Termination supply signal
2	PB_A	Bus line (high)
3	0 V	Data line and termination signal 0
4	PB_B	Bus line (low)
5	SHIELD	

6.3.3 - Communication connections: EC (EtherCat), EN (Ethernet/IP), PN (PROFINET), PL (POWERLINK)

X2 (IN) connection M12 D 4 pin female

Pin	Values	Function
1	TX+	Transmitter
2	RX+	Receiver
3	TX-	Transmitter
4	RX-	Receiver
HOUSING	shield	

NOTE: Shield connection on connector housing is recommended.

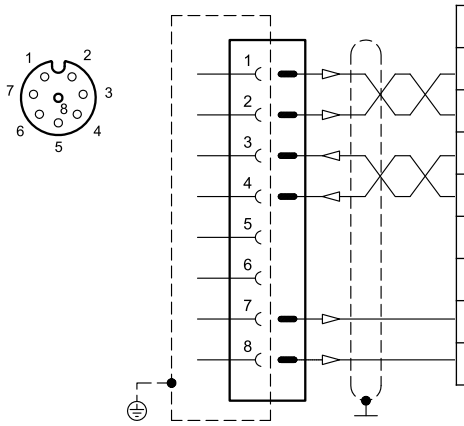
X3 (OUT) connection: M12 D 4 pin female

Pin	Values	Function
1	TX+	Transmitter
2	RX+	Receiver
3	TX-	Transmitter
4	RX-	Receiver
HOUSING	shield	

6.4 - Digital transducer connection

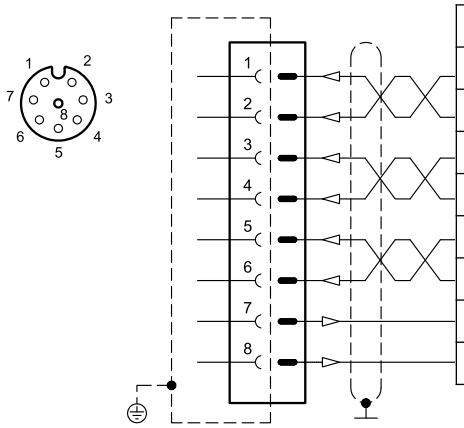
X7 connection: M12 A 8 pin female

VERSION 1: SSI type



Pin	SSI Values	Function	Notes
1	CLK+	Serial synchronous clock (+)	Input - digital signal
2	CLK-	Serial synchronous clock (-)	
3	MIS0+	Serial position data (+)	
4	MIS0-	Serial position data (-)	
5	NC	-	do not connect
6	NC	-	
7	+24 V	transducer power supply	Output power supply
8	0 V	-	Common GND

VERSION 2: ENCODER type



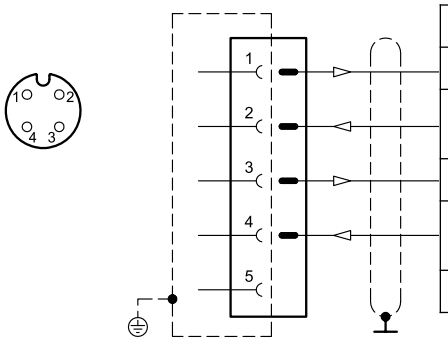
Pin	Values	Function	Notes
1	ENC_Z+	input channel Z+	Input - digital signal
2	ENC_Z-	input channel Z-	
3	ENC_A+	input channel A+	
4	ENC_A-	input channel A+	
5	ENC_B+	input channel B+	
6	ENC_B-	input channel B+	
7	+5 V	transducer power supply	Output power supply
8	0 V	-	Common GND

6.5 - Analogue transducer connection

X4 connection: M12 A 4 pin female

VERSION 1: single / double transducer

(single or double is a software-selectable option)



Pin	Values	Notes
1	+24 V	Remote transducer power supply (out) 100 mA
2	±10 V 4 ÷20 mA	Input signal of transducer 1 (range software selectable)
3	0 V	Common reference signal for transducer power and signals
4	±10 V 4 ÷20 mA	Input signal of transducer 2 (range software selectable)
5	-	

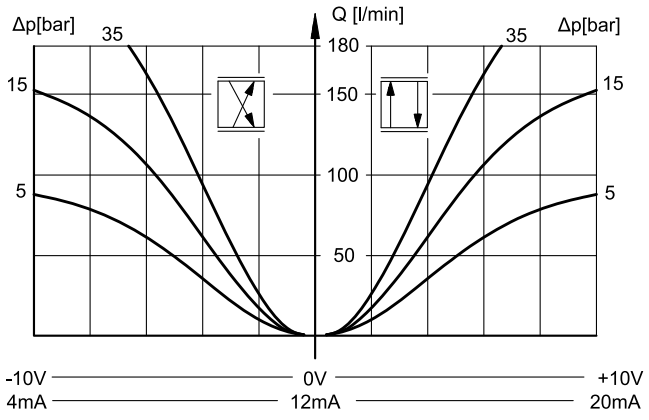
7 - CHARACTERISTIC CURVES

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

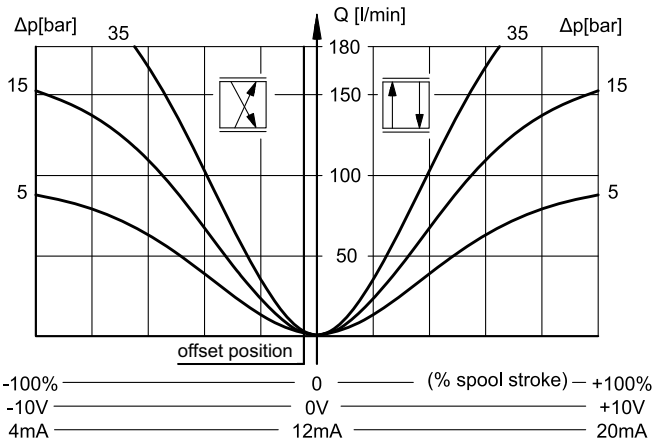
Typical flow rate curves at constant Δp related to the reference signal and measured for the available spools.
The Δp values are measured per land.

7.1 - Characteristic curves DXRE5RJ

SPOOL C100 / A100

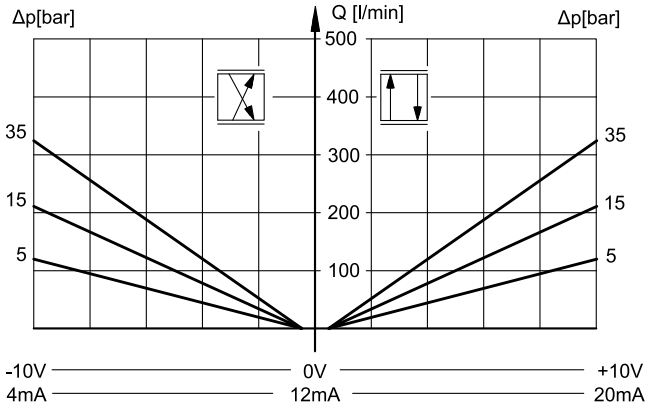


SPOOL Z100

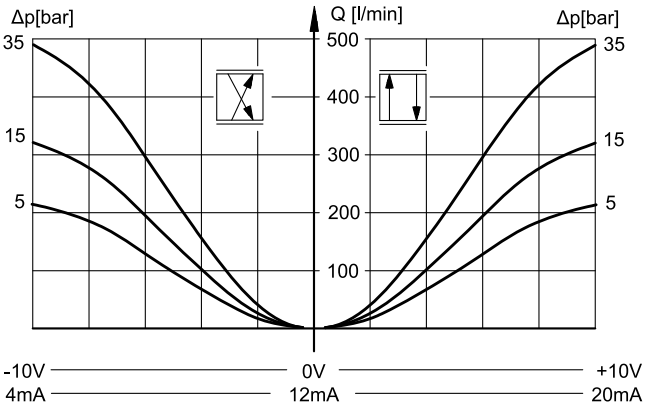


7.2 - Characteristic curves DXRE7J

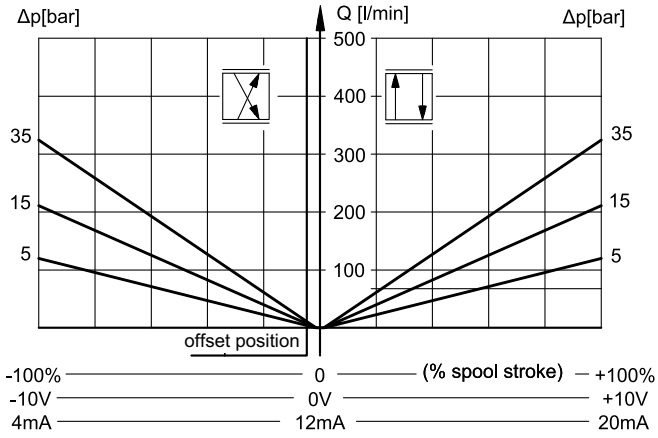
SPOOL C120 / A120



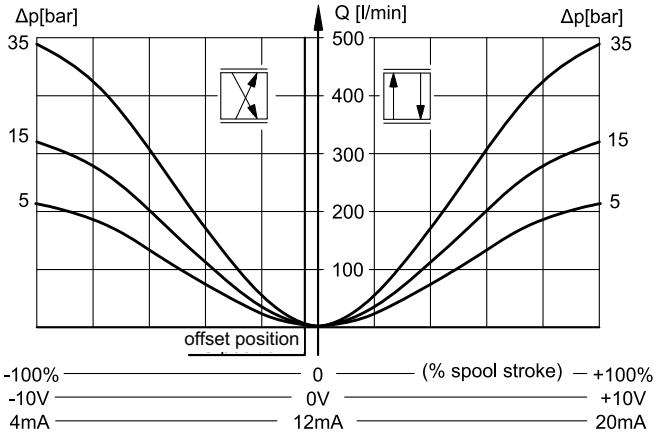
SPOOL C220 / A220



SPOOL Z120

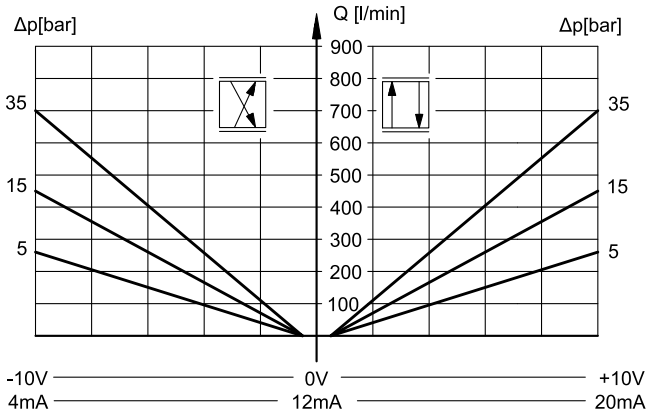


SPOOL Z220

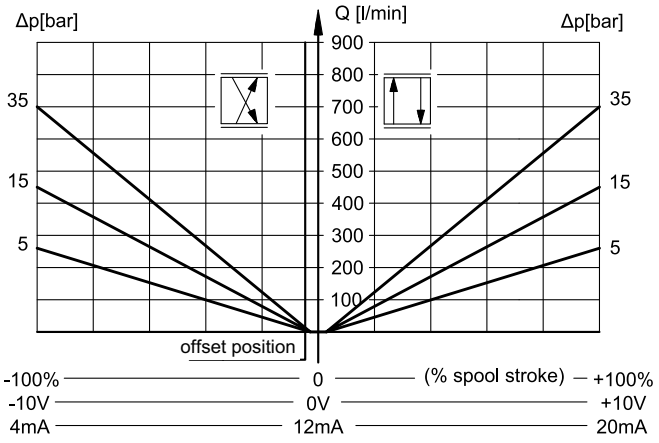


7.3 - Characteristic curves DXRE8J

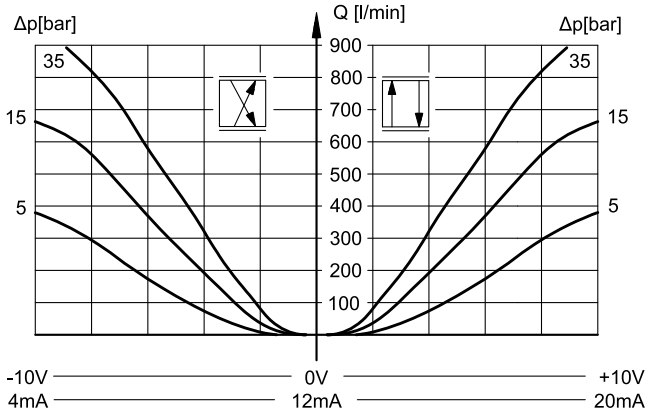
SPOOL C250 / A250



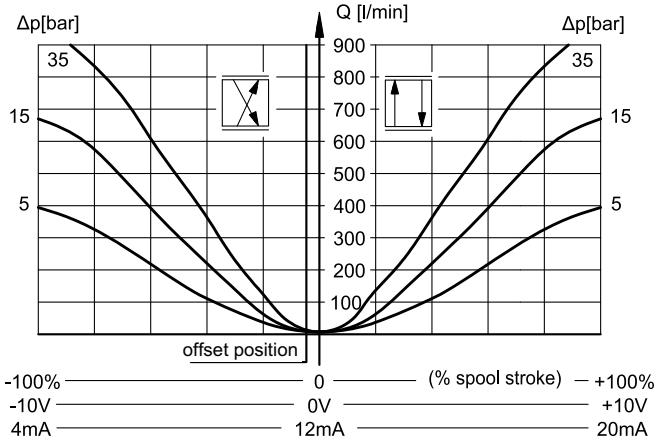
SPOOL Z250



SPOOL C400 / A400

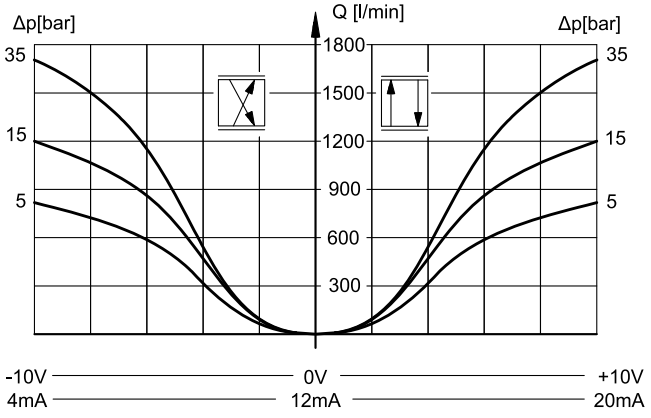


SPOOL Z400

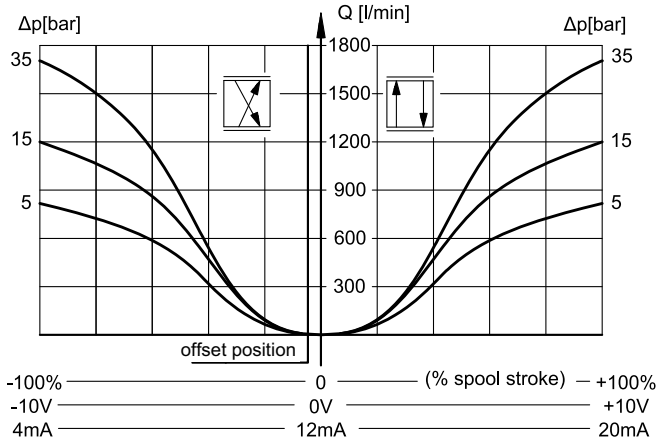


7.4 - Characteristic curves DXRE10J*

SPOOL C800

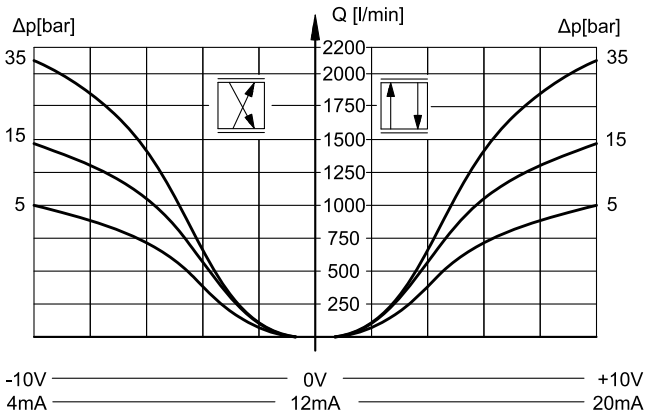


SPOOL Z800

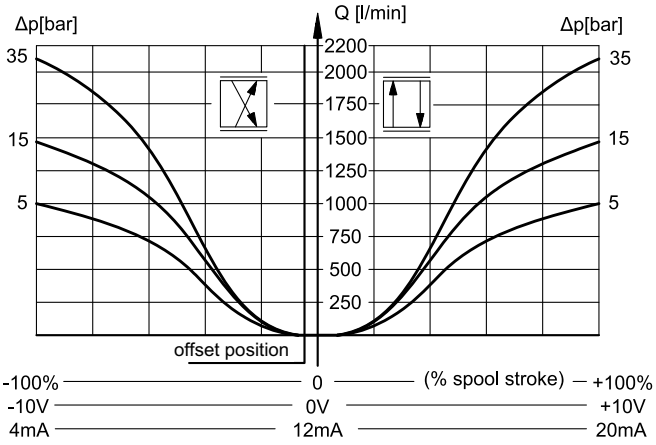


7.5 - Characteristic curves DXRE11J

SPOOL C1000 / A1000



SPOOL Z1000



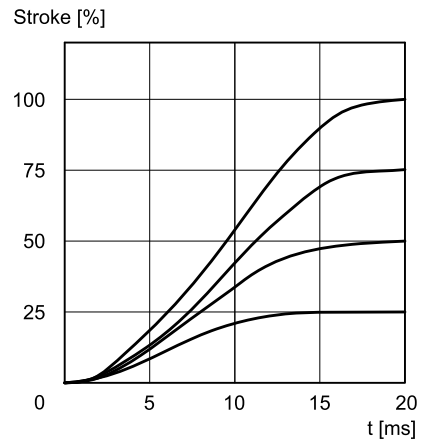
8 - RESPONSE TIMES

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

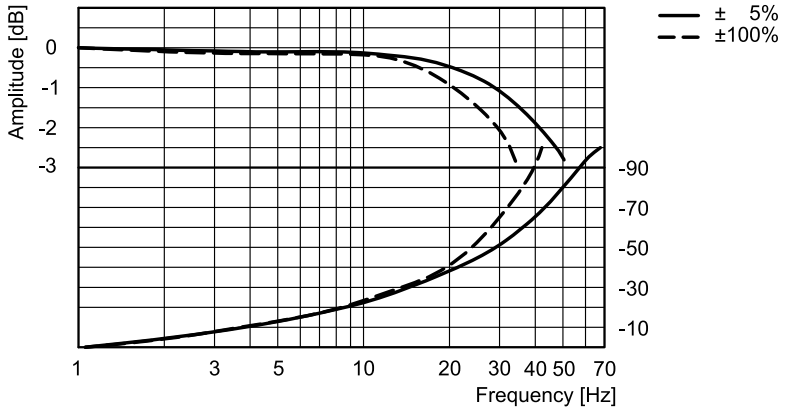
The tables shows the typical step response tested with static pressure 100 bar.

8.1 - DXRE5RJ

RESPONSE TIME

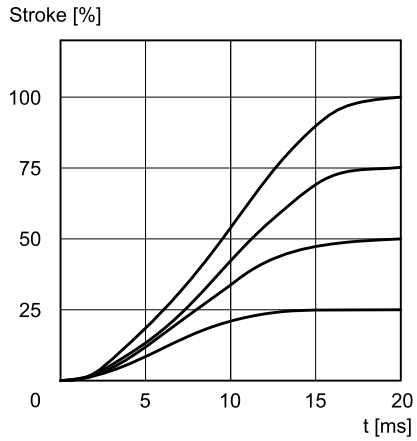


FREQUENCY RESPONSE (spools type Z)

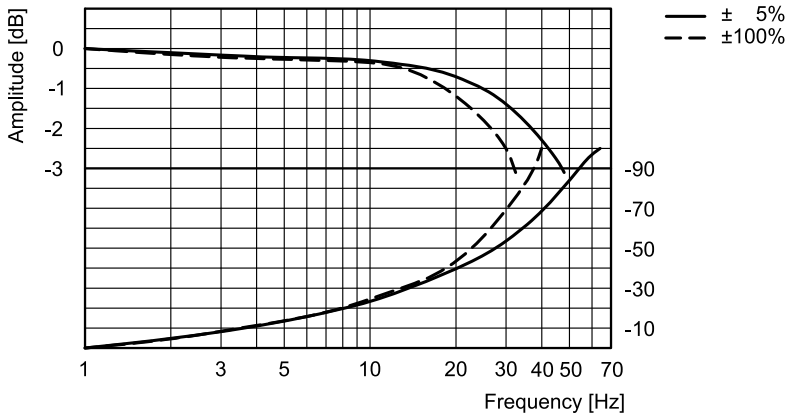


8.2 - DXRE7J

RESPONSE TIME

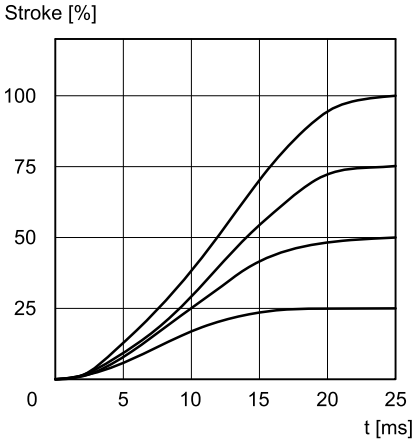


FREQUENCY RESPONSE (spools type Z)

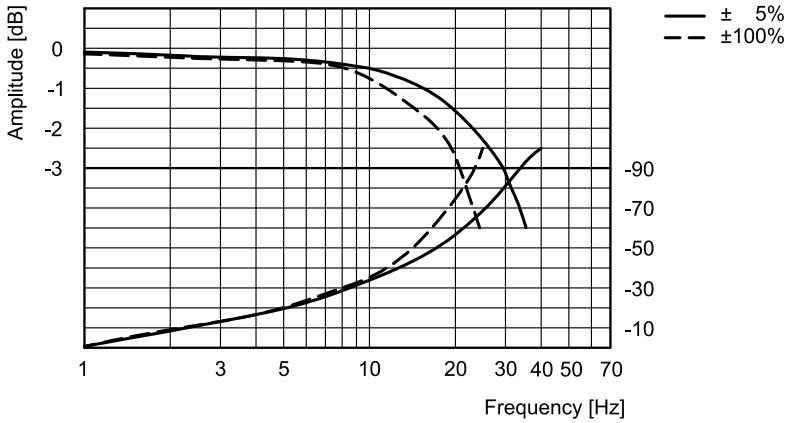


8.3 - DXRE8J

RESPONSE TIME

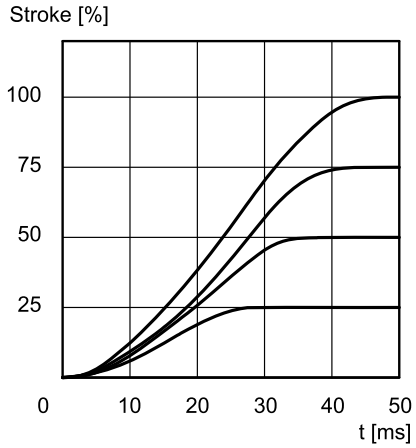


FREQUENCY RESPONSE (spools type Z)

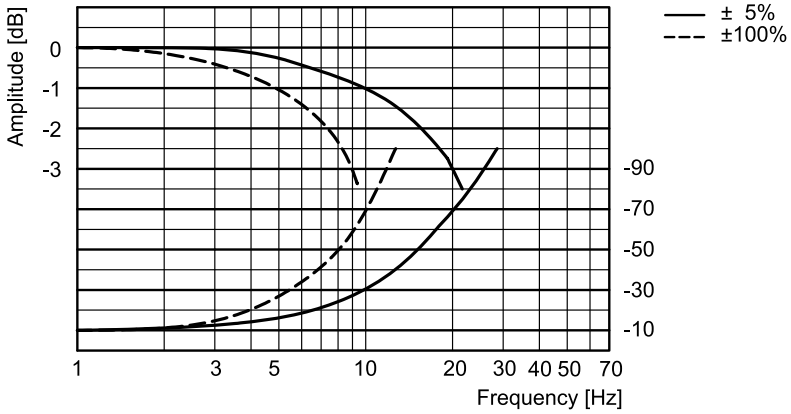


8.4 - DXRE10J and DXRE11J

RESPONSE TIME



FREQUENCY RESPONSE (spools type Z)



9 - 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

9.1 - 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.

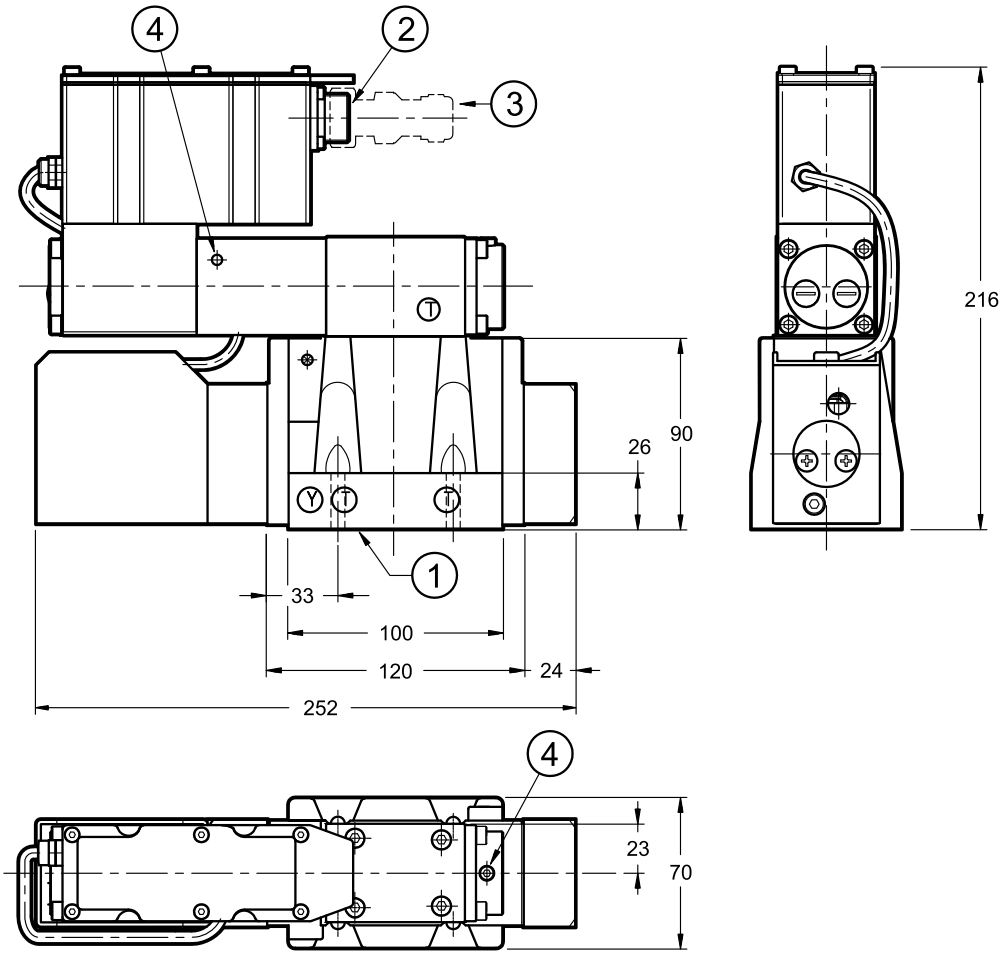
PRESSURES (bar)

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

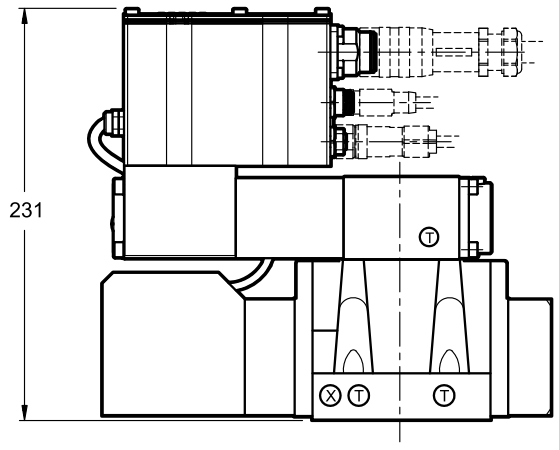
	TYPE OF VALVE	Plug assembly X	Plug assembly Y
IE	INTERNAL PILOT AND EXTERNAL DRAIN	NO	YES
II	INTERNAL PILOT AND INTERNAL DRAIN	NO	NO
EE	EXTERNAL PILOT AND EXTERNAL DRAIN	YES	YES
EI	EXTERNAL PILOT AND INTERNAL DRAIN	YES	NO

10 - OVERALL AND MOUNTING DIMENSIONS DXRE5RJ

dimensions in mm



DXRE5RJH



NOTES:

See mounting surface at section 14.

- Do not dismantle the transducer.

- The valve is filled with mineral oil during testing. the breathers on the pilot stage must not be opened without specific authorization.

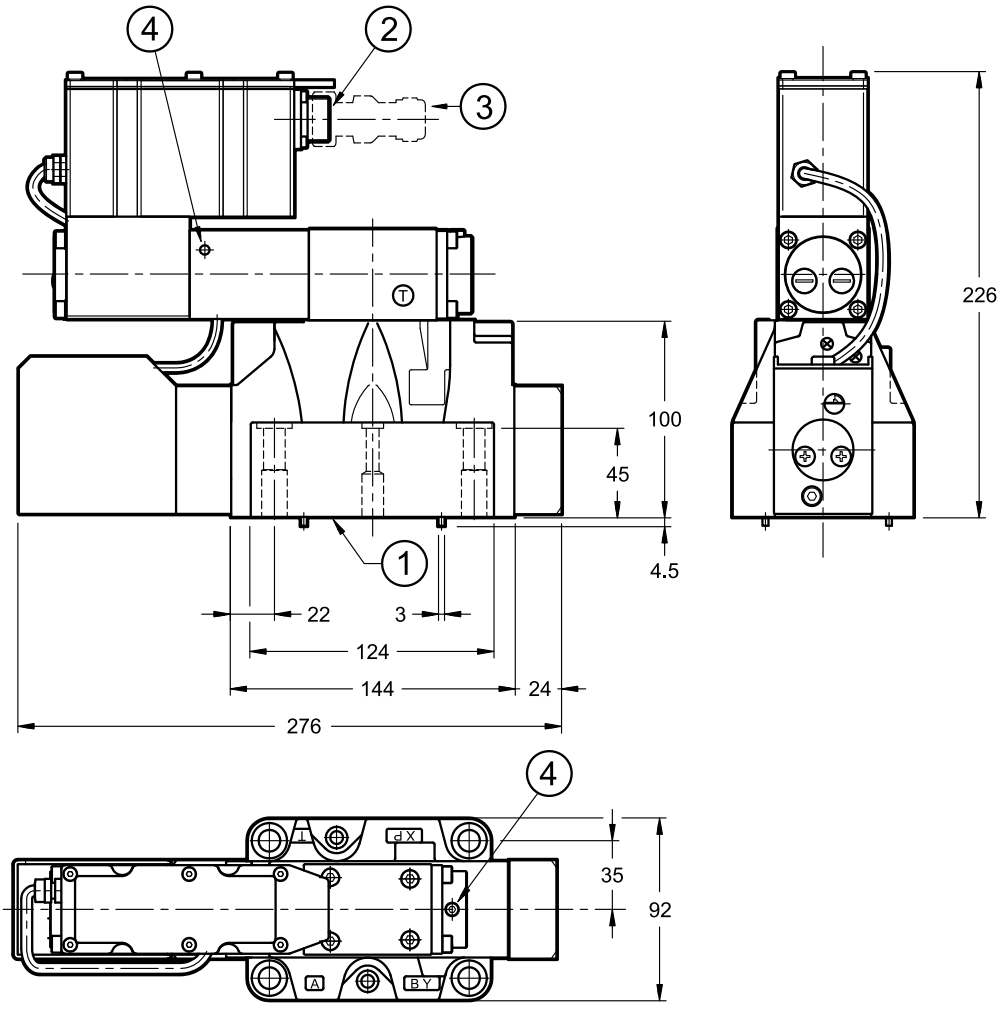
Breaking the seals may cause the loss of the guarantee.

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 17
4	Air breather. Sealed at the factory (**NOTES**)

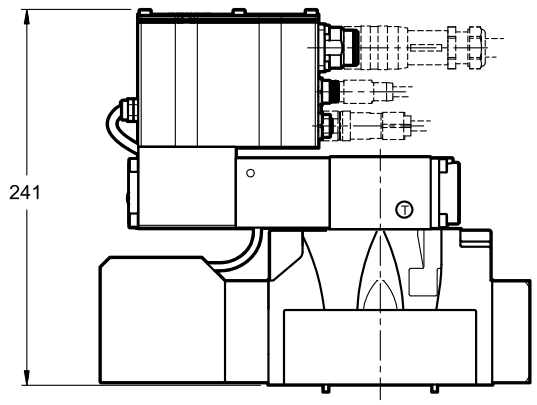
Valve fastening: N. 4 bolts M6x35 - ISO 4762
Tightening torque: 8 Nm (A8.8 screws)
Threads of mounting holes: M6x10

11 - OVERALL AND MOUNTING DIMENSIONS DXRE7J

dimensions in mm



DXRE7JH



NOTES:

See mounting surface at section 14.

- Do not dismantle the transducer.

- The valve is filled with mineral oil during testing. the breathers on the pilot stage must not be opened without specific authorization.

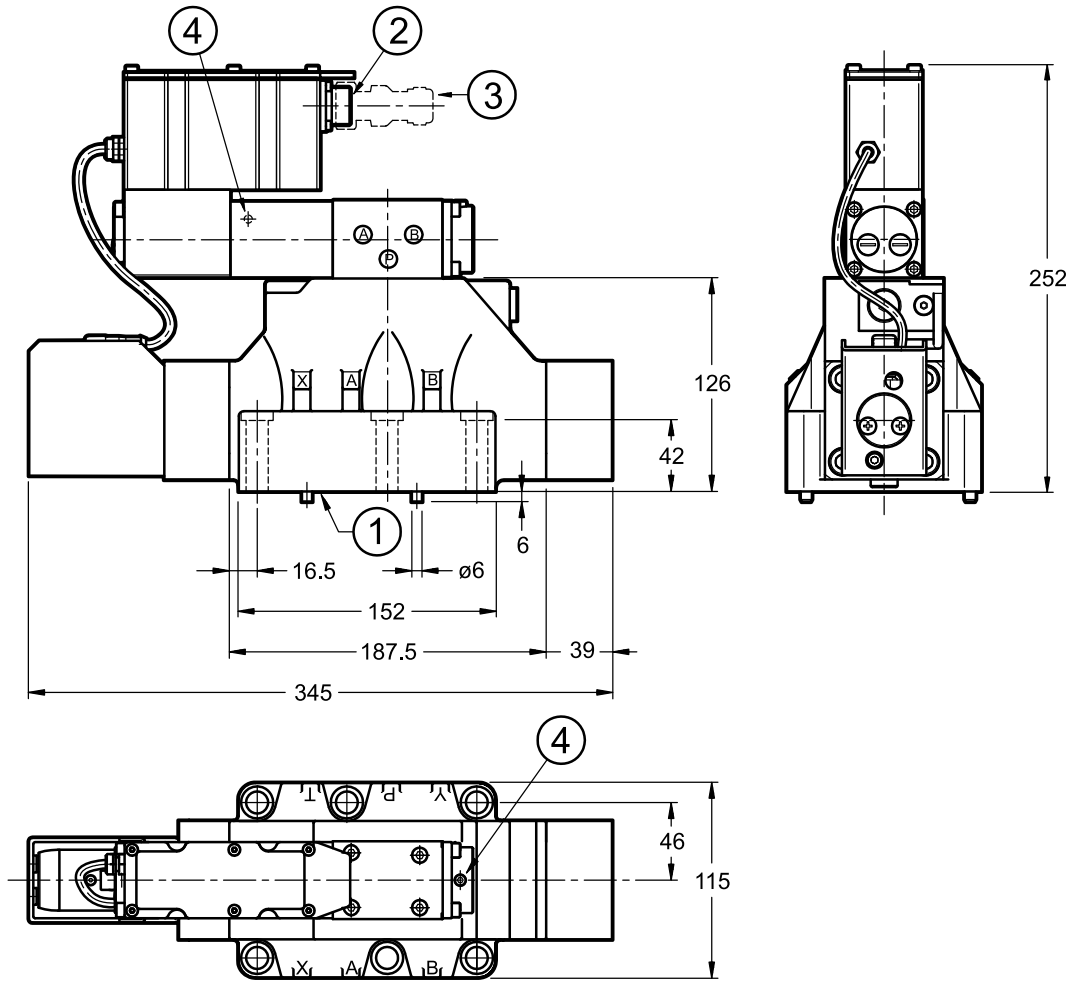
Breaking the seals may cause the loss of the guarantee.

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 (**to be ordered separately**) see paragraph 17
4	Air breather. Sealed at the factory (**NOTE**)

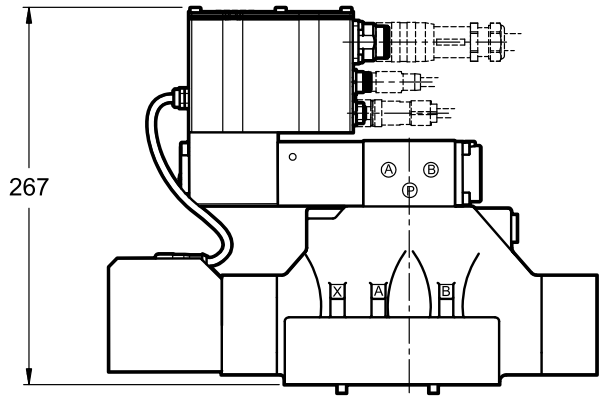
Valve fastening:	N. 4 bolts M10x60 - ISO 4762 N. 2 bolts M6x60 - ISO 4762
Tightening torque	M10x60: 40 Nm (A8.8 screws) M6x60: 8 Nm (A8.8 screws)
Threads of mounting holes: M6x18; M10x18	

12 - OVERALL AND MOUNTING DIMENSIONS DXRE8J

dimensions in mm



DXRE8JH



NOTES:

See mounting surface at section 14.

- Do not dismantle the transducer.

- The valve is filled with mineral oil during testing. the breathers on the pilot stage must not be opened without specific authorization.

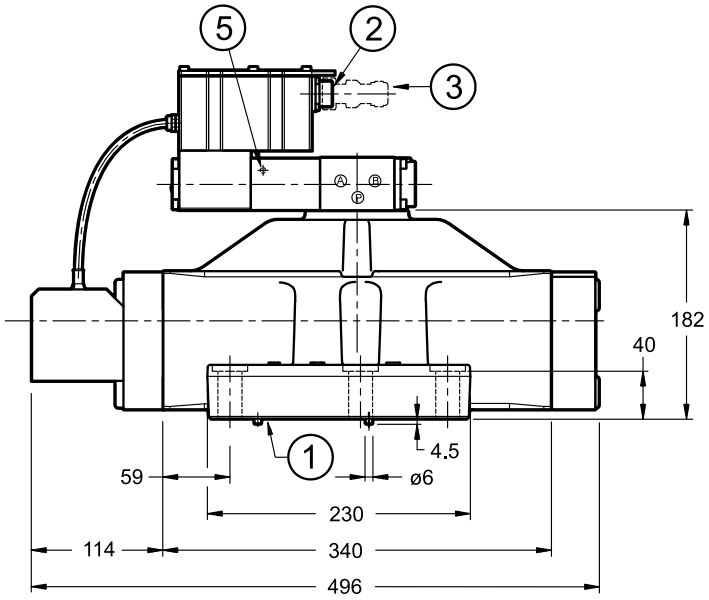
Breaking the seals may cause the loss of the guarantee.

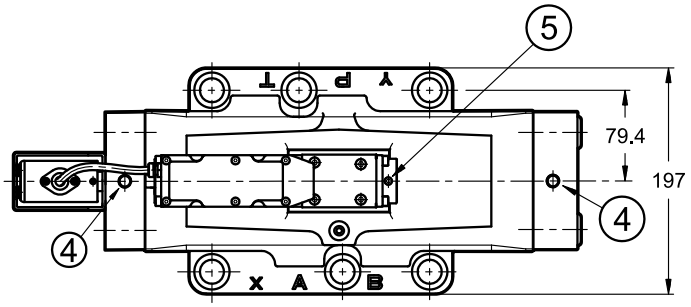
1	Mounting surface with sealing rings: 4 OR type 3118 (29.82x2.62) - 90 Shore 2 OR type 3081 (20.24x2.62) - 90 Shore
2	Main connection
3	Electrical connector (**to be ordered separately**) see paragraph 17
4	Air breather. Sealed at the factory (**NOTE**)

Fastening of single valve: N. 6 bolts M12X60 - ISO 4762
Tightening torque: 69 Nm (A8.8 screws)
Threads of mounting holes: M12X20

13 - OVERALL AND MOUNTING DIMENSIONS DXRE10J / DXRE11J

dimensions in mm





NOTES:

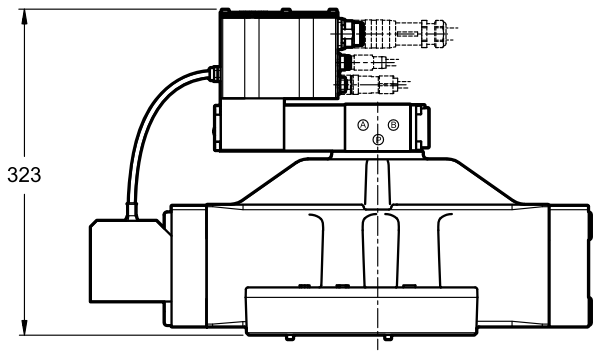
See mounting surface at section 14.

- Do not dismantle the transducer.

- The valve is filled with mineral oil during testing. the breathers on the pilot stage must not be opened without specific authorization.

Breaking the seals may cause the loss of the guarantee.

DXRE10JH

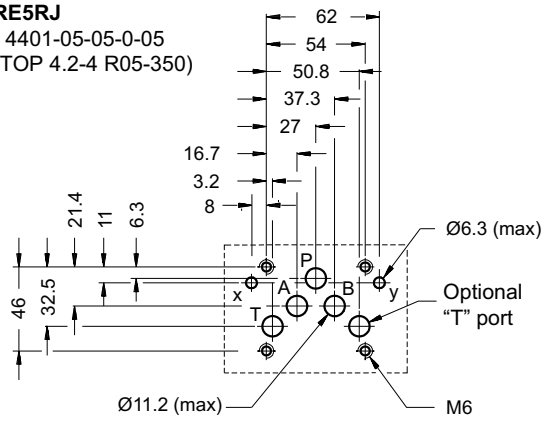


1	Mounting surface with sealing rings: **DXRE10J** 4 OR type 4150 (37.59x3.53) - 90 Shore 2 OR type 3081 (20.24x2.62) - 90 Shore **DXRE11J** 4 OR type 4212 (53.57x3.53) - 90 Shore 2 OR type 3081 (20.24x2.62) - 90 Shore
2	Main connection
3	Electrical connector (**to be ordered separately**) see paragraph 17
4	M12 eyebolt seat for safe lift
5	Air breather. Sealed at the factory (**NOTE**)

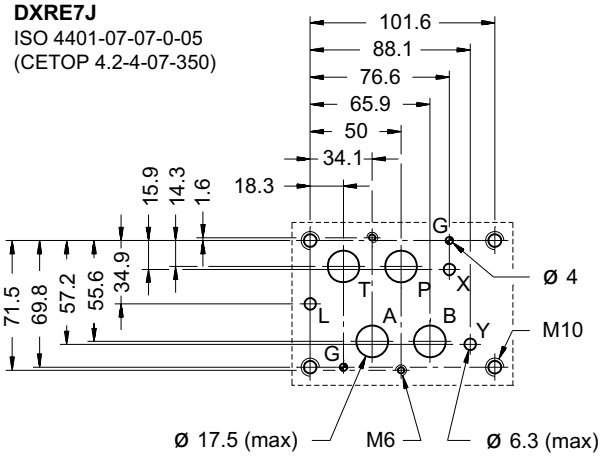
Valve fastening: 6 SHC screws ISO 4762 M20x70
Tightening torque: 330 Nm (A8.8 screws)
Threads of mounting holes: M20x40

14 - MOUNTING SURFACES

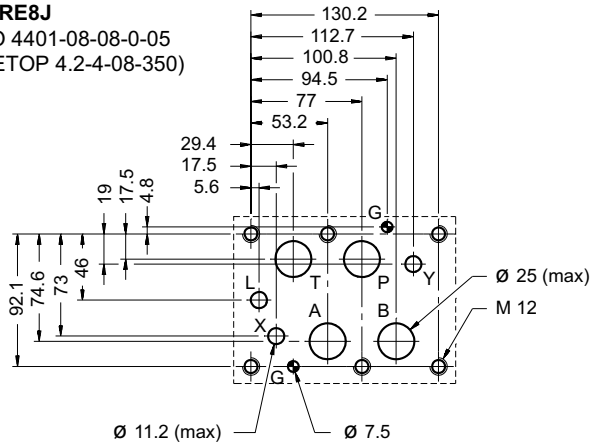
DXRE5RJ
ISO 4401-05-05-0-05
(CETOP 4.2-4 R05-350)



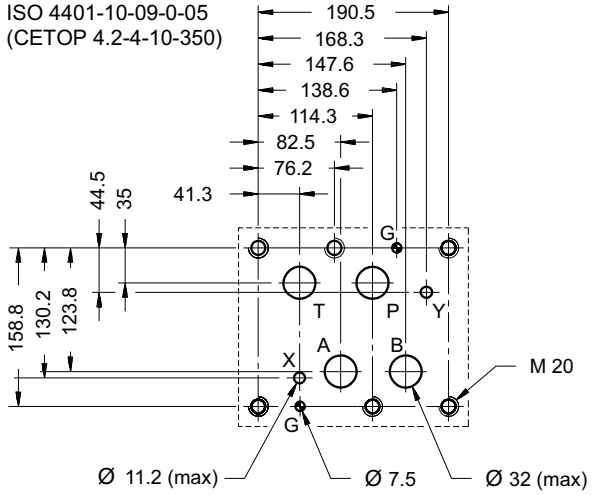
DXRE7J
ISO 4401-07-07-0-05
(CETOP 4.2-4-07-350)



DXRE8J
ISO 4401-08-08-0-05
(CETOP 4.2-4-08-350)

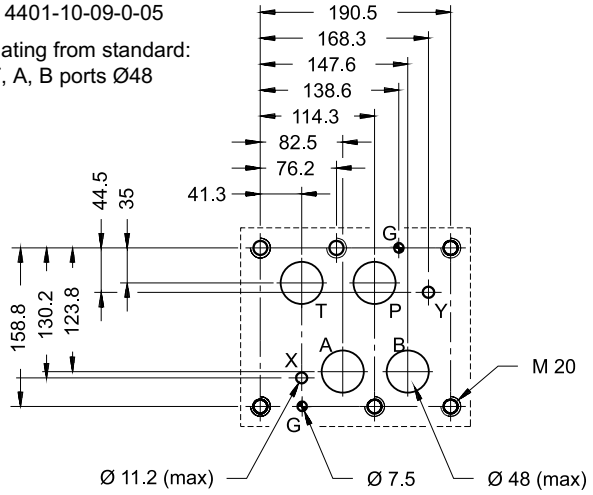


DXRE10J
ISO 4401-10-09-0-05
(CETOP 4.2-4-10-350)



DXRE11J
ISO 4401-10-09-0-05

deviating from standard:
P, T, A, B ports Ø48



15 - 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.

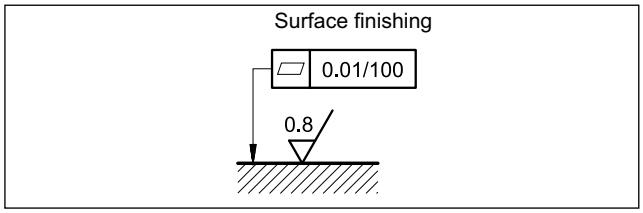
Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics. The fluid must be preserved in its physical and chemical characteristics.

16 - 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.



17 - ACCESSORIES

(to be ordered separately)

17.1 - 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.

17.2 - Mating connectors for fieldbus communication and for sensors.

Duplomatic offers spare parts to be wired and also ready-to-use cord sets. Please refer to cat. 89 000.

17.3 - 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

17.4 - Kit for start-up LINPC-USB

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

18 - SUBPLATES

(see catalogue 51 000)

Subplates are not available for DXRE5RJ, DXRE10J and DXRE11J.

		DXRE7J	DXRE8J
with rear ports		PME07-AI6G	-
with side ports		PME07-AL6G	PME5-AL8G
thread of ports:	P - T - A - B X - Y	1” BSP 1/4” BSP	1½” BSP 1/4” BSP

Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
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