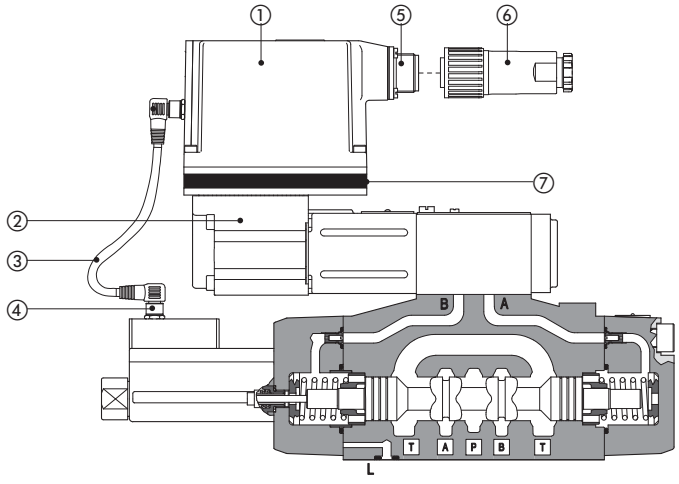
Rugged proportional valves with LVDT position transducer

direct and pilot operated, ISO 4401 size 06, 10, 16 and 25

obsolete components - availability on request



DPZO-RLE-271

① Metal electronic housing and SMD electronics
② Strenghthened LVDT housing
③ Shielded cable
④ M8 LVDT connector
⑤ Military style, 7 pin metal connector
⑥ Power supply connector
⑦ Shock absorber plate

Proportional directional valves in rugged execution with integral electronics and spool position transducer.
These valves are derived from the relevant standard servoproportional versions, specially modified in order to withstand high vibration levels and mechanical shocks typical of heavy duty applications like wood industry.

Technical characteristics

- DHZO and DKZOR, size 06 and 10 are direct operated proportional valves, with LVDT position transducer.
- DLHZO and DLKZOR, size 06 and 10 are high dynamic, direct operated proportional valves, with zero overlapped spool coupled with an hardened sleeve for the best mechanical accuracy. The LVDT position transducer ensures high linearity and repeatability.
- DPZO are size 10, 16 and 25 pilot operated proportional valves with single or double LVDT position transducer.
- Ruggedized design tested under severe conditions, see section 12
  -Vibration test up to 55 Hz, amplitude 1mm and acceleration 6 g
  -Shock test at 50 g

1 MODEL CODE OF DIRECT OPERATED PROPORTIONAL VALVES

DHZO - RTE - 0 7 1 - S 5 / * / ** / *

DHZO = size 06
DKZOR = size 10

RUGGED executions:
RTE = with position transducer and integral analog electronics

Valve size
0 = ISO 4401 size 06
1 = ISO 4401 size 10

Configuration, see section 3
5 = external plus central position, spring centered
7 = 3 position, spring centered

Spool overlapping in central position, see section 3
0 = zero overlapping (0 to 5 % spool stroke) (1)
1 = P,A,B,T positive overlapping (20% of spool stroke)
2 = P,A,B,T positive overlapping with A-B draining (2)
3 = P positive overlapping (20% of spool stroke); A, B, T, negative

Spool type (regulating characteristics)
L = linear;
S = progressive;
D = differential-progressive (as **S**, but with P-A = Q, P-B = Q/2)

Spool size: **14, 1, 2, 3, 5** = see section 3

Electronics options (3)
F = fault signal
I = current reference input and monitor (4÷20 mA)
Q = enable signal
K = with logic state signals
Z = enable, fault and monitor signals (12 pin connector)

Hydraulic options
B = solenoid, integral electronics and position transducer at side of port A
Y = external drain

Series number

Seals material:
omit for NBR (mineral oil & water glycol)
PE = FPM

Notes:

(1) For zero overlapping spool **0L3**, **0L5**, **0D5**, the valve offset position (with switch-off power supply) is 1 ÷ 6% P-B/A-T
(2) Only for **DKZOR-*-S5** the spool overlapping type 2 provides the same characteristic of type 1, but in central position the internal leakages from P to A and B are drained to tank, avoiding the drift of cylinders with differential areas.
(3) For complete description of available options, consult the technical tables (KT catalog) of electronic drivers indicated in section 2

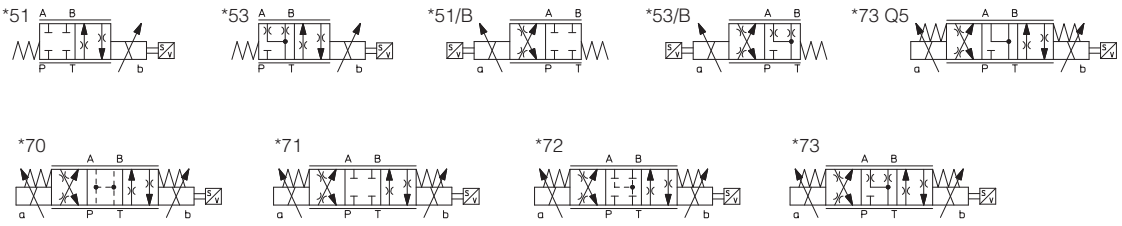
2 ELECTRONIC DRIVERS

Valve model	**-RTE**	**-RLE**
Drivers model	E-RI-TE	E-RI-LE
Data sheet	G200	G200

Note: For power supply and communication connector see section 18

3 HYDRAULIC CHARACTERISTICS OF DHZO AND DKZOR (based on mineral oil ISO VG 46 at 50 °C)

Hydraulic symbols



Valve model		DHZO-RTE*							DKZOR-RTE*				
Spool overlapping		1, 3	1, 3	1, 3	1, 3	0	0	1, 3	1, 3	0	0	2	1, 3
Spool type and size		L14	L1	S2	S3, L3, D3	L3	L5, D5	S5, L5, D5	S3, L3, D3	L3	L5, D5	S5	S5, L5, D5
Pressure limits	[bar]	ports P, A, B = 350; T = 210 (250 with external drain /Y)							ports P, A, B = 315; T = 210 (250 with external drain /Y)				
Max flow (1)	[l/min]												
at Δp = 10 bar (P-T)		1	4,5	8	17		28		45		75		
at Δp = 30 bar (P-T)		2	8	14	30		50		80		130		
at Δp = 70 bar (P-T)		3	12	21	45		74		120		170		
Response time	[ms]	< 15							< 20				
Hysteresis	[%]	≤ 0,2%							≤ 0,2%				
Repeatability	[%]	± 0,1%							± 0,1%				
Thermal drift		zero point displacement < 1% at ΔT = 40°C											

Notes:
- Above performance data refer to valves coupled with Atos electronic drivers, see sections [2].
- The flow regulated by the directional proportional valves is not pressure compensated, thus it is affected by the load variations.To keep costant the regulated flow under different load conditions, modular pressure compensators are available (see tab. D150).

(1) For different Δp, the max flow is in accordance to the diagrams in sections 13.4 and 14.3

4 MODEL CODE OF DIRECT OPERATED SERVOPROPORTIONAL VALVES

DLHZO - RTE - 0 4 0 - L 7 3 / * / ** / *

DLHZO = size 06
DLKZOR = size 10

RUGGED executions:
RTE = with position transducer and integral analog electronics

Valve size
0 = ISO 4401 size 06 **1** = ISO 4401 size 10

Valve configuration, see section [5]
4 = 2 external position, spring offset, fail safe
6 = 2 external position, spring offset

0 = zero overlapping

Spool type (regulating characteristics)
L = linear;
D = differential-linear (as **L**, but with P-A = Q, P-B = Q/2) (1)
DT = as **D**, but with non linear regulation (1)
T = not linear regulation (1)
V = progressive

0, 1, 3, 5, 7 = spool size, see section [5]

Fail safe configuration (de-energized solenoid):
1 = A, B, P, T with positive overlapping (20% of spool stroke)
3 = P positive overlapping (20% of spool stroke); A, B, T negative

Hydraulic options:
B = solenoid, integral electronics and position transducer at side of port A
Y = external drain

Electronics options (2):
F = fault signal
I = current reference input and monitor (4÷20 mA)
Q = enable signal
Z = enable, fault and monitor signals (12 pin connector)

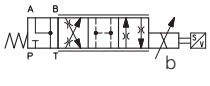
Series number

Seals material:
omit for NBR (mineral oil & water glycol)
PE = FPM

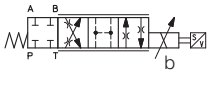
Note:
(1) Spool type **D, DT** and **T** are available only for valve configuration with fail safe position DLHZO-*-040 and DLKZOR-*-140
(2) For complete description of available options, consult the technical tables (KT catalog) of electronic drivers indicated in section [2]

5 HYDRAULIC CHARACTERISTICS OF DLHZO AND DLKZOR (based on mineral oil ISO VG 46 at 50 °C)

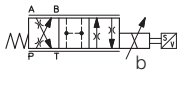
Hydraulic symbols



*40-L*3
*40-D*3
*40-DT*3
*40-T*3
*40-V*3



*40-L*1
*40-D*1
*40-DT*1
*40-T*1
*40-V*1

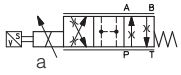


*60-L*1
*60-V*1

*40-L*3/B
*40-D*3/B
*40-DT*3/B
*40-T*3/B
*40-V*3/B

*40-L*1/B
*40-D*1/B
*40-DT*1/B
*40-T*1/B
*40-V*1/B

*60-L*1/B
*60-V*1/B



Valve model		DLHZO-RT*											DLKZOR-RT*					
Pressure limits	[bar]	ports P, A, B = 350; T = 210 (250 with external drain /Y)											ports P, A, B = 315; T = 210 (250 with external drain /Y)					
Spool		**L0**	**L1**	**V1**	**L3**	**V3**	**L5**	**T5**	**L7**	**T7**	**V7**	**D7**	**DT7**	**L3**	**L7**	**T7**	**V7**	**D7**	**DT7**
Max flow	[l/min]																		
at Δp = 30 bar		2,5	4,5	5	9	13	18		26			26÷13		40	60			60÷33	
at Δp = 70 bar		4	7	8	14	20	28		40			40÷20		60	100			100÷50	
max permissible flow		10	18	18	32	40	50		70			70÷40		90	160			160÷80	
Leakage [cm³/min] at P = 100 bar (1)		<100	<200	<100	<300	<150	<500	<200	<900	<200	<200	<700	<200	<1000	<1500	<400	<400	<1200	<400
Response time	[ms]	≤≤ 10												≤ ≤ 15					
Hysteresis	[%]	≤ 0,1%												≤ ≤ 0,1%					
Thermal drift		zero point displacement < 1% at ΔT = 40°C																	

Notes:

- Above performance data refer to valves coupled with Atos electronic drivers, see sections 2.
- The flow regulated by the directional proportional valves is not pressure compensated, thus it is affected by the load variations.To keep costant the regulated flow under different load conditions, modular pressure compensators are available (see tab. D150).

(1) Referred to spool in neutral position and 50°C oil temperature.

6 MODEL CODE OF PILOT OPERATED VALVE

DPZO – RLE – 2 7 1 – L 5 / * / ** / *

Piloted proportional directional valve

RUGGED executions:
RTE = with one integral position transducer and integral electronics
RLE = with two integral position t5randucers and integral electronics

Valve size: **1** = 10; **2** = 16; **3** = 25

Configuration, see section 7
5 = external plus central position, spring centered
6 = 2 external position, spring offset (only for spool overlapping **0** type **L**)
7 = 3 position, spring centered

Spool overlapping in central position, see section 7
0 = zero overlapping (only for spool type L, and DL) (1)
1 = P, A, B, T with positive overlapping (2)
3 = P positive overlapping (2); A, B, T, negative overlapping

Spool size: **3, 5** see section 7

Spool type (regulating characteristics):
L = linear;
S = progressive;
D = differential-progressive (as **S**, but with P-A = Q, P-B = Q/2)
DL = differential-linear (as **L**, but with P-A = Q, P-B = Q/2)

Hydraulic options:
B = solenoid, integral electronics and position transducer at side of port B of the main stage
G = pressure reducing valve for piloting -standard for DPZO-RL*-1
E = external pilot (through port X)
D = internal drain

Electronic options (3):
F = fault signal
I = current reference input and monitor (4÷20 mA)
Q = enable signal
Z = enable, fault and monitor signal (12 pin connector)

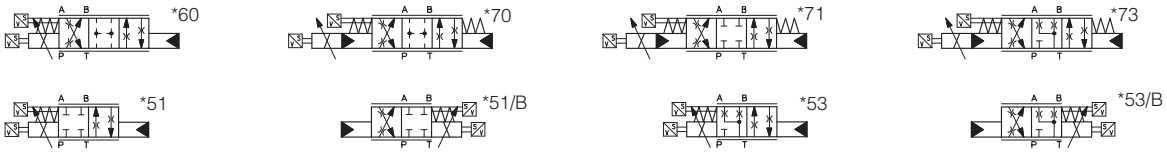
Series number

Seals material:
omit for NBR (mineral oil & water glycol)
PE = FPM

Notes:
(1) For zero overlapping spool **0L3**, **0L5**, **0DL5**, the valve offset position (with switch-off power supply) is 1 ÷ 6% P-B/A-T
(2) Overlapping = 20% of spool stroke for type **S, D**; 10% of spool stroke for type **L** and **DL**
(3) For complete description of available options, consult the technical tables (KT catalog) of electronic drivers indicated in section 2

7 HYDRAULIC CHARACTERISTICS OF PILOT OPERATED VALVES (based on mineral oil ISO VG 46 at 50 °C) (3)

Standard spools - hydraulic symbols



Valve model	DPZO-1				DPZO-2							DPZO-3			
Spool overlapping	0, 1, 3	1, 3		0, 1, 3	0, 1, 3	1, 3		0, 1, 3	1, 3		0, 1, 3	0, 1, 3	1, 3		0, 1, 3
Spool type and size	L5	S5	D5	DL5	L3	S3	D3	L5	S5	D5	DL5	L5	S5	D5	DL5
Max flow (1): [l/min]															
at Δp = 10 bar	100		100:60		130		130:80	200	180	180:130	200:145	390	360	360:220	390:240
at Δp = 30 bar	160		160:100		225		225:130	340	310	310:225	340:250	680	620	620:380	680:410
max permissible flow	180		180:110		550		550:300	760	640	640:460	680:500	1450	1350	1350:820	1450:880
Pressure limits [bar]	ports P, A, B, X = 350; T = 250 (10 for option /D); Y = 10														
Response time [ms] spool overlapping 0	< 25				< 25							< 30			
Response time [ms] spool overlapping 1-3	< 50				< 70							< 75			
Hysteresis [%]	≤ 0,1%														
Repeatability	± 0,1%														
Thermal drift	zero point displacement < 1% at ΔT = 40°C														

Notes:
- Above performance data refer to valves coupled with Atos electronic drivers, see section 2.
- In case of long interruption of the hydraulic supply to the pilot valve, the driver has to be switched off to avoid its overheating.

(1) For different Δp, the max flow is in accordance to the diagrams in section 16.2

9 ELECTRONIC CONNECTIONS - 7 & 12 PIN MAIN CONNECTORS

Standard 7pin	/Z option 12pin	SIGNAL	TECHNICAL SPECIFICATIONS	NOTES
A	1	V+	Power supply 24 VDC for solenoid power stage and driver logic	Input - power supply
B	2	V0	Power supply 0 VDC for solenoid power stage and driver logic	Gnd - power supply
C (1)	7	AGND	Ground - signal zero for MONITOR signal (for standard and /Z options)	Gnd - analog signal
	3	ENABLE	Enable (24 VDC) or disable (0 VDC) the driver (for /Q and /Z options)	Input - on/off signal
D	4	INPUT+	Reference analog differential input: ±10 VDC maximum range (4 ÷ 20 mA for /I option)	Input - analog signal
E	5	INPUT -		
F (2)	6	MONITOR	Monitor analog output: ±10 VDC maximum range (4 ÷ 20 mA for /I option)	Output - analog signal
	11	FAULT	Fault (0V) or normal working (24V) (for F and /Z options)	Output - on/off signal
-	8	R_ENABLE	Repeat Enable - output repetition of Enable input	Output - on/off signal
-	9	NC	do not connect	Output - on/off signal
-	10	NC	do not connect	Output - on/off signal
G	PE	EARTH	Internally connected to the driver housing	

Notes (1) with /Q option ENABLE signal replaces AGND on pin C; MONITOR signal is reffered to pin B

(2) with /F option FAULT signal replaces MONITOR on pin F.

A minimum time of 50ms to 100ms have be considered between the driver energizing with the 24 VDC power supply and when the valve is ready to operate. During this time the current to the valve coils is switched to zero.

12 MAIN CHARACTERISTICS OF RUGGED PROPORTIONAL DIRECTIONAL VALVES

Assembly position	Any position
Subplate surface finishing	Roughness index Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)
Ambient temperature	-20°C ÷ +60°C
Fluid	Hydraulic oil as per DIN 51524 ... 535 for other fluids see the rispective model code
Recommended viscosity	15 ÷100 mm²/s at 40°C (ISO VG 15÷100)
Fluid contamination class	ISO 4406 class 20/18/15 NAS 1638 class 9, in line filters of 10 μm ($\beta_{10} \geq 75$ recommended)
Fluid temperature	-20°C +60°C (standard seals) -20°C +80°C (/PE seals)
Vibration resistance	22 Hz, amplitude 4mm, acceleration 0,7g 55 Hz, amplitude 1mm, acceleration 6g — Tested on 3 axes (24h for each frequency level)
Shock resistance	50g max, tested on 3 axes (24 h for axes)

12.1 Coils characteristics

Valve model	DHZO-RTE DLHZO-RTE DPZO-RTE, RLE	DKZOR-RTE DLKZOR-RTE
Coil resistance R at 20°C	3 ÷ 3,3	3,8 ÷ 4,1 Ω
Max. solenoid current	2,6 A	3 A
Max. power	35 Watt	40 Watt
Protection degree (CEI EN-60529)	IP67	
Duty factor	Continuous rating (ED=100%)	

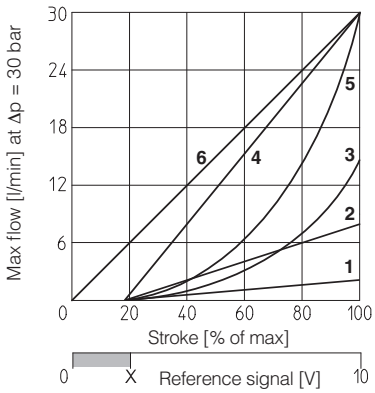
13 DIAGRAMS FOR DHZO (based on mineral oil ISO VG 46 at 50 °C)

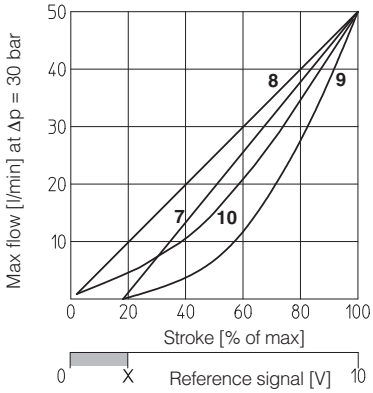
13.1 Regulation diagrams

1 = linear spool L14
2 = linear spool L1
3 = progressive spool S2
4 = linear spool L3
5 = progressive spool S3, D3
6 = linear spool, zero overlapping 0L3
7 = linear spool L5
8 = linear spool, zero overlapping 0L5
9 = progressive spool S5, D5
10= progressive spool, zero overlapping 0D5

Note:
Hydraulic configuration vs. reference signal for double solenoid valves (also for option /B)

Reference signal 0 ÷ +10 V / 12 ÷ 20 mA P → A / B → T
Reference signal 0 ÷ -10 V / 4 ÷ 12 mA P → B / A → T

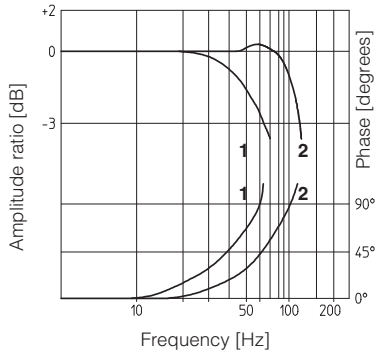




X = Threshold for bias activation depending to the valve type and amplifier type

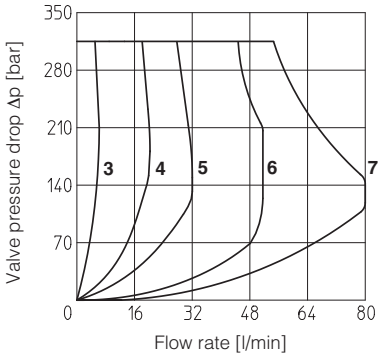
13.2 Bode diagrams

1 = 10% ⟷ 90% nominal stroke
2 = 50% ± 5% nominal stroke



13.3 Operating limits

3 = spool L14
4 = spool L1
5 = spool S2
6 = spool L3, S3, D3
7 = spool L5, S5, D5



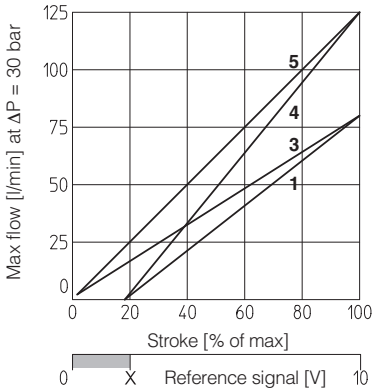
14 DIAGRAMS FOR DKZOR (based on mineral oil ISO VG 46 at 50 °C)

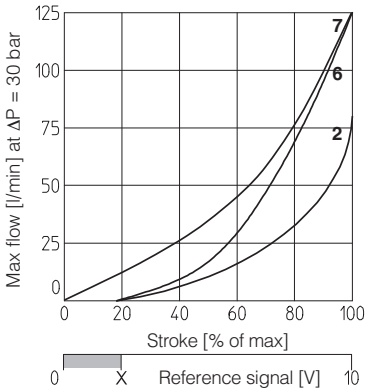
14.1 Regulation diagrams

1 = linear spool L3
2 = progressive spool S3, D3
3 = linear spool, zero overlapping 0L3
4 = linear spool L5
5 = linear spool, zero overlapping 0L5
6 = progressive spool S5, D5
7 = progressive spool, zero overlapping 0D5

Note:
Hydraulic configuration vs. reference signal for double solenoid valves (also for option /B)

Reference signal 0 ÷ +10 V / 12 ÷ 20 mA P → A / B → T
Reference signal 0 ÷ -10 V / 4 ÷ 12 mA P → B / A → T

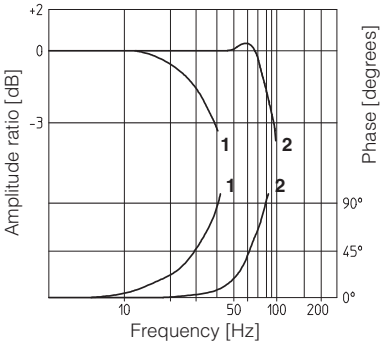




X = Threshold for bias activation depending to the valve type and amplifier type

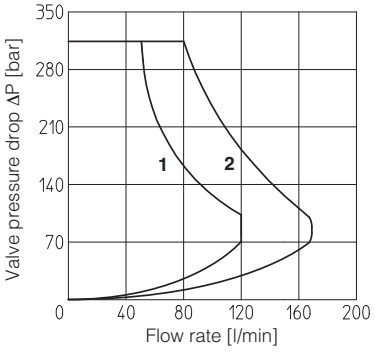
14.2 Bode diagrams

1 = 10% ⟷ 90% nominal stroke
2 = 50% ± 5% nominal stroke



14.3 Operating limits

1 = spool L3, S3, D3
2 = spool L5, S5, D5



14.4 Dynamic response

The response times in section 3 and frequency responses in the bode diagrams have to be considered as average values.
For the valves with digital electronics the dynamics performances can be optimized by setting the internal software parameters.

15 DIAGRAMS of DLHZO and DLKZOR (based on mineral oil ISO VG 46 at 50 °C)

15.1 Regulation diagrams

1 = Linear spools L
2 = Differential - linear spool D7
3 = Differential non linear spool DT7
4 = Non linear spool T5 (only for DLHZO)
5 = Non linear spool T7
6 = Progressive spool V
7 = Pressure gain

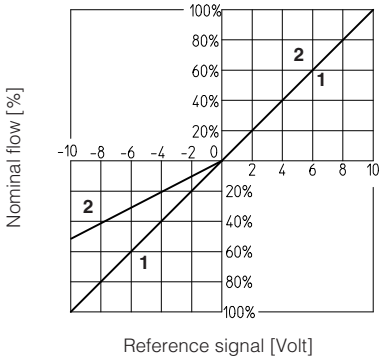
T5 and T7 spool types are specific for fine low flow control in the range from 0 to 60% (T5) and 0 to 40% (T7) of max spool stroke.
The non linear characteristics of the spool is compensated by the electronic driver, so the final valve regulation is resulting linear respect the reference signal (dotted line).

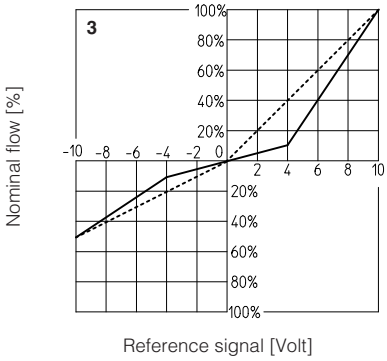
DT7 has the same characteristic of T7 but it is specific for applications with cylinders with area ratio 1:2

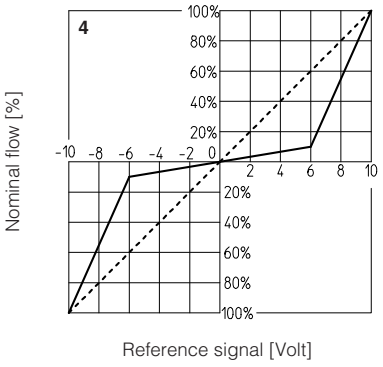
Note:
Hydraulic configuration vs. reference signal:

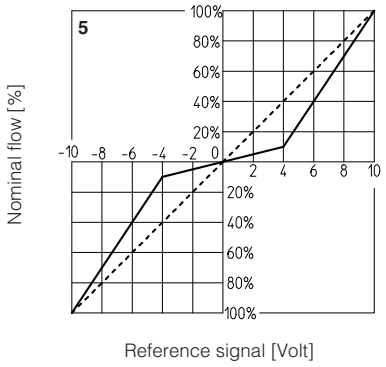
Standard:
Reference signal 0 ÷+10 V / 12÷20 mA } P → A / B → T
Reference signal 0 ÷-10 V / 4÷12 mA } P → B / A → T

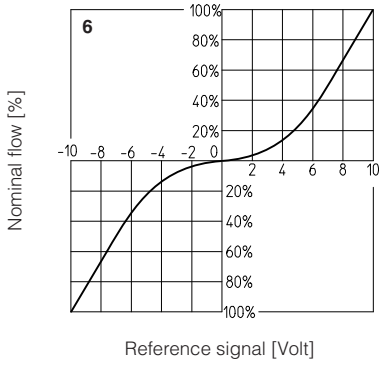
option /B:
Reference signal 0 ÷+10 V / 12÷20 mA } P → B / A → T
Reference signal 0 ÷-10 V / 4÷12 mA } P → A / B → T

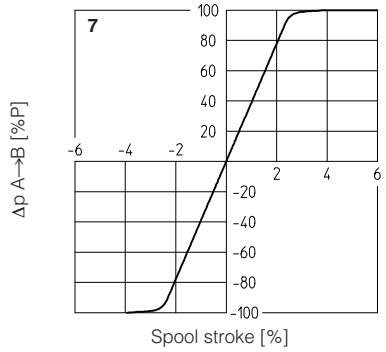










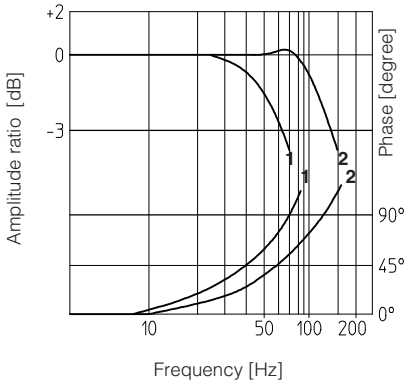


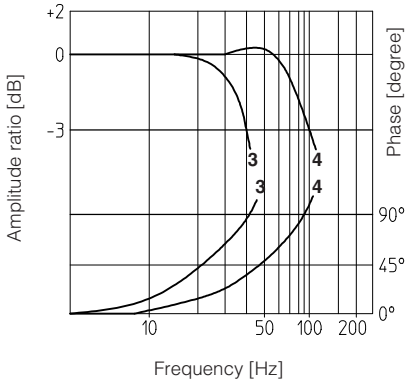
15.2 Bode diagrams

Stated at nominal hydraulic conditions

DLHZO:
1 = ± 100% nominal stroke
2 = ± 5% nominal stroke

DLKZOR:
3 = ± 100% nominal stroke
4 = ± 5% nominal stroke





15.3 Dynamic response

The response times in section 5 and the frequency response in bode diagram have to be considered as average values.
For the valves with digital electronics the dynamics performances can be optimized by setting the internal software parameters.

16 DIAGRAMS of DPZO (based on mineral oil ISO VG 46 at 50 °C)

16.1 Regulation diagrams

DPZO-1:
1 = 0L5, 0DL5
2 = 1L5, 1DL5, 3L5, 3DL5
3 = 1S5, 1D5, 3S5, 3D5

DPZO-2:
4 = 1L5, 3L5
5 = 1S5, 1D5, 1DL5, 3S5, 3D5, 3DL5
6 = 1L3, 3L3
7 = 1S3, 1D3, 3S3, 3D3
8 = 0L5, 0DL5
9 = 0L3

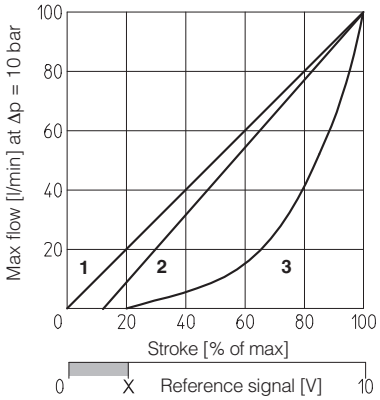
DPZO-3:
10 = 0L5, 0DL5
11 = 1L5, 1DL5, 3L5, 3DL5
12 = 1S5, 1D5, 3S5, 3D5

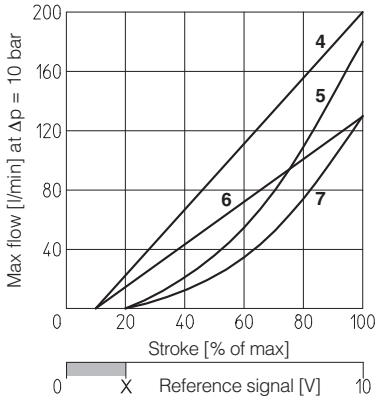
Note:
Hydraulic configuration vs. reference signal:

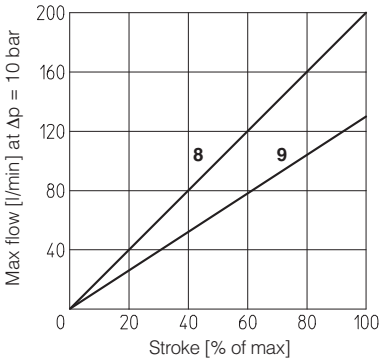
Reference signal 0 ÷+10 V / 12÷20 mA P → A / B → T

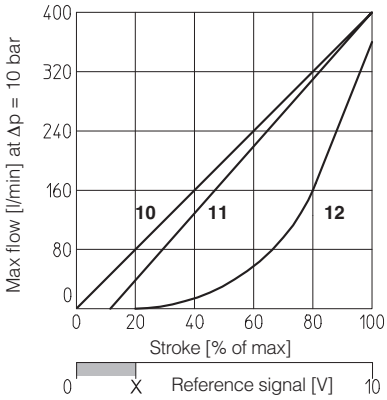
Reference signal 0 ÷-10 V / 4÷12 mA P → B / A → T

X = Threshold for bias activation depending to the valve type and amplifier type









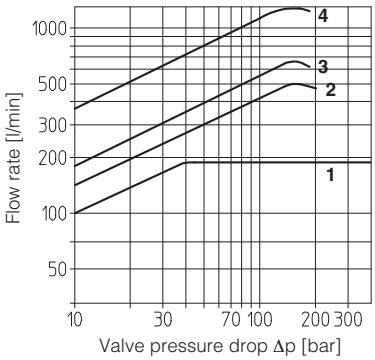
16.2 Operating diagrams

Flow /Δp diagram
stated at 100% of spool stroke

DPZO-1:
1 = spools L5, S5, D5, DL5

DPZO-2:
2 = spool L3, S3, D3
3 = spools L5, S5, D5, DL5

DPZO-3:
4 = spools L5, S5, D5, DL5



16.3 Bode diagrams

Stated at nominal hydraulic conditions.

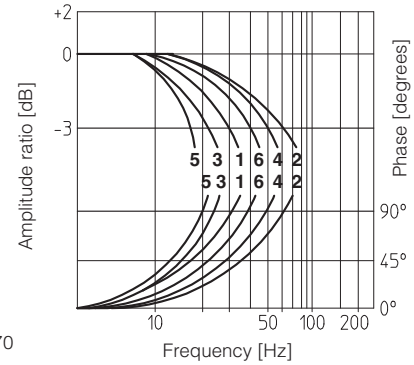
DPZO-1:
1 = 160 and 170 ± 100%
2 = 160 and 170 ± 5%

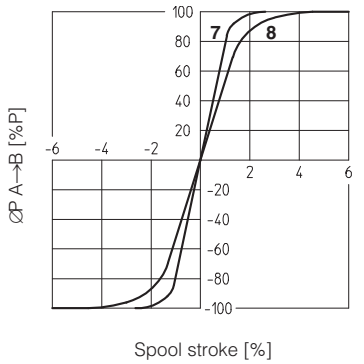
DPZO-2:
3 = 260 and 270 ± 100%
4 = 260 and 270 ± 5%

DPZO-3:
5 = 360 and 370 ± 100%
6 = 360 and 370 ± 5%

16.4 Pressure gain

7 = for DPZO-RL(*)-1 *60 and *70
8 = for DPZO-RL(*)-2 and DPZO-RL(*)-3 *60 and *70





16.5 Dynamic response

The response times in section 7 and the response in bode diagrams have to be considered as average values.
For the valves with digital electronics the dynamics performances can be optimized by setting the internal software parameters.

16.6 Oil ports configuration

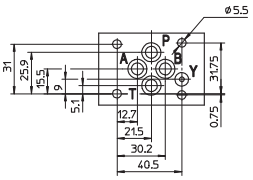
The standard configuration is internal pilot through port P and external drain through port Y. If the working pressure is over 100 bar, select option /G to reduce the piloting pressure or select the external pilot (option /E). The minimum piloting pressure is 30 bar. In case the system pressure could drops at values lower than 30 bar, select the external pilot (option /E). The internal drain, option /D, can be selected only if the backpressure on port T is < 1 bar.

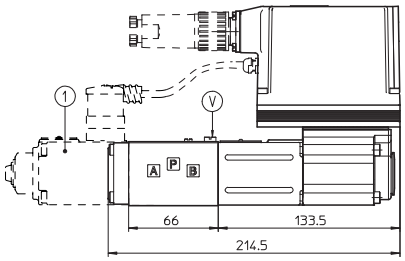
DHZO-RTE, DLHZO-RTE

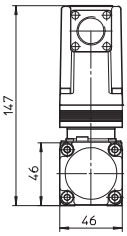
Mounting surface: 4401-03-02-0-05
(4401-03-03-0-05 without X port, for version /Y)

Fastening bolts: 4 socket head screws M5 x 50 class 12.9
Tightening torque = 8 Nm
Seals: 4 OR 108; 1 OR 2025
Diameter of ports A, B, P, T: Ø 7,5 mm (max)
Diameter of port Y: Ø = 3,2 mm (only for /Y option)

P = PRESSURE PORT
A, B = USE PORT
T = TANK PORT
Y = DRAIN PORT (see note)







① = Double solenoid version, only for DHZO-RTE
Ⓥ = Air bleed off

Mass: 2,8 kg

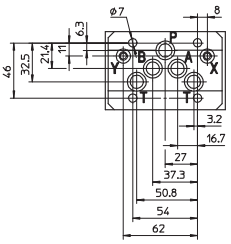
DHZO-RTE, DLHZO-RTE

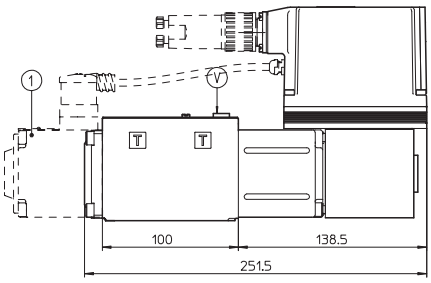
DKZOR-RTE, DLKZOR-RTE

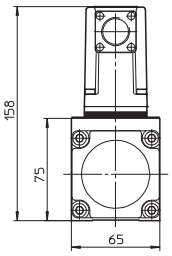
Mounting surface: 4401-05-04-0-05
(4401-05-05-0-05 without X port, for version /Y)

Fastening bolts: 4 socket head screws M6 x 40 class 12.9
Seals: 5 OR 2050; 1 OR 108
Diameter of ports A, B, P, T: Ø 11,2 mm (max)
Diameter of port Y: Ø = 5 mm (only for /Y option)

P = PRESSURE PORT
A,B = USE PORT
T = TANK PORT
X = EXTERNAL PILOT PORT
(only for DPZO-L*-1)
Y = DRAIN PORT







① = Double solenoid version, only for DKZOR-RTE
Ⓥ = Air bleed off

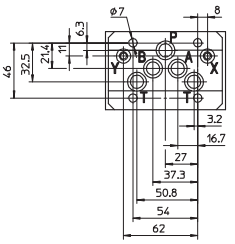
Mass: 4,7 kg

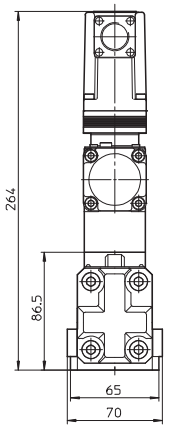
DKZOR-RTE, DLKZOR-RTE

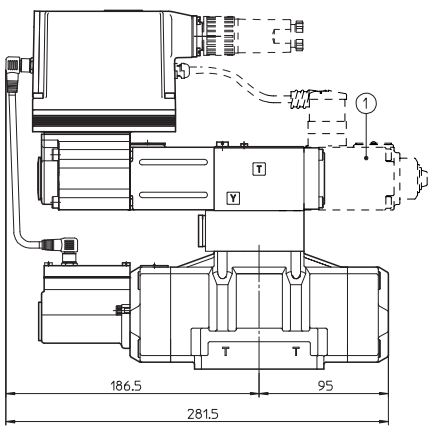
DPZO-RL*-1*, DPZO-RT*-1*

Mounting surface: 4401-05-05-0-05
Fastening bolts:
4 socket head screws M6x40 class 12.9
Seals: 5 OR 2050; 2 OR 108
Diameter of ports A, B, P, T: Ø = 11 mm;
Diameter of ports X, Y: Ø = 5 mm;

P = PRESSURE PORT
A,B = USE PORT
T = TANK PORT
X = EXTERNAL PILOT PORT
(only for DPZO-L*-1)
Y = DRAIN PORT







① = Double solenoid version, only for DPZO-RTE

Mass: 9,7 kg

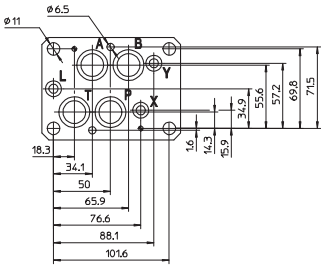
DPZO-RTE-1
DPZO-RLE-1

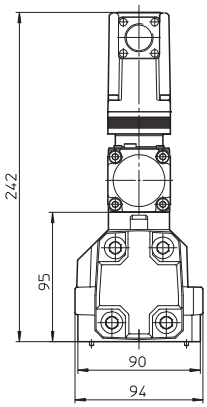
DPZO-RLE-2*, DPZO-RTE-2*

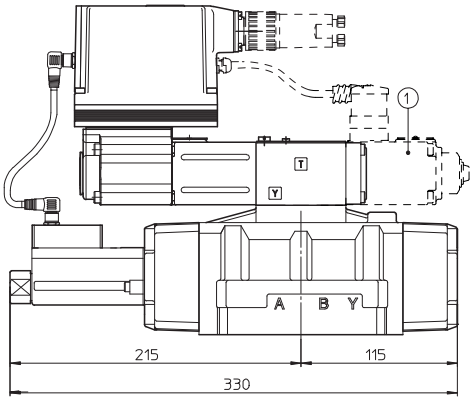
Mounting surface: 4401-07-07-0-05
Fastening bolts:
4 socket head screws M10x50 class 12.9
2 socket head screws M6x40 class 12.9
Seals: 4 OR 130; 3 OR 109
Diameter of ports A, B, P, T: Ø = 20 mm;
Diameter of ports X, Y: Ø = 7 mm;

① = Double solenoid version, only for DPZO-RTE

P = PRESSURE PORT
A,**B** = USE PORT
T = TANK PORT
X = EXTERNAL PILOT PORT
Y = DRAIN PORT







Mass: 14,2 kg

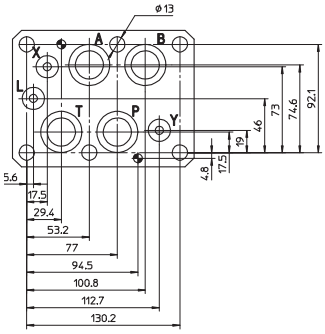
DPZO-RTE-2
DPZO-RLE-2

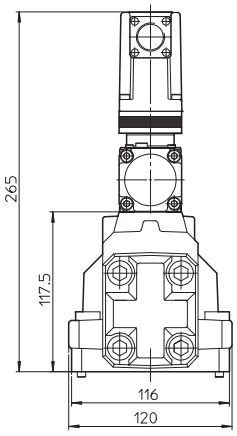
DPZO-RL*-3*, DPZO-RT*-3*

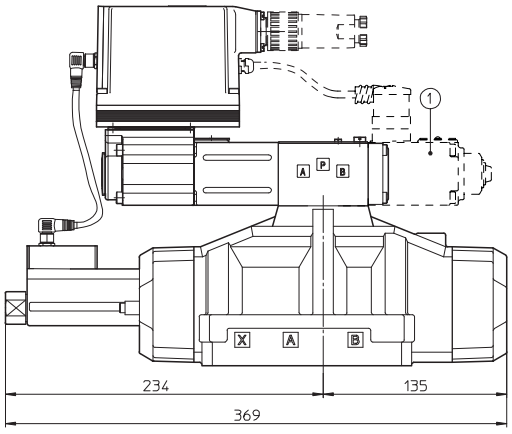
Mounting surface: 4401-08-08-0-05
Fastening bolts:
6 socket head screws M12x50 class 12.9
Seals: 4 OR 4112; 3 OR 3056
Diameter of ports A, B, P, T: Ø = 24 mm;
Diameter of ports X, Y: Ø = 7 mm;

① = Double solenoid version, only for DPZO-RTE

P = PRESSURE PORT
A,**B** = USE PORT
T = TANK PORT
X = EXTERNAL PILOT PORT
Y = DRAIN PORT







Mass: 19,1 kg

DPZO-RTE-3
DPZO-RLE-3

18 MODEL CODES OF POWER SUPPLY AND COMMUNICATION CONNECTORS (to be ordered separately)

VALVE VERSION	**-RTE** **-RLE**	
CONNECTOR CODE	ZH-7P	ZM-7P
PROTECTION DEGREE	IP67	IP67
DATA SHEET	G200, G210, K500	