

RT-TDP

Two-way two-position cartridge proportional servo directional valve
 Driven by VCD voice coil motor
 With electrical position feedback
 With integrated amplifier

Nominal size: 25 ~ 100

Maximum operating pressure: 350bar

Rated flow: 20000L/min Document number: RD A1X101_2309a



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Features

- 1 - Pilot - operated 2 - way proportional servo directional valve with electrical position feedback on the main spool.
- 3 - The pilot valve adopts a spool-sleeve structure with servo-class performance
- 4 - Driven by VCD voice coil motor
- 6 - Fast step response
- 7 - Fluid flow directions are from B to A and from A to B
- 8 - The dimensions of mounting holes and mounting surface comply with ISO 7368
- 13 - Equipped with an integrated digital controller
- 14 - Interchangeable with similar products from Europe and the United States
- Remains in the fail - safe position in case of power loss or hydraulic power failure

Ordering details

RT-	TDP	032	E	H	9	9	C	2	N	B	0	*
01	02	03	04	05	06	07	08	09	10	11	12	13

01	RT-	Rebo Tech
02	TDP	High-dynamic-performance two-way two-position proportional servo directional valve
03	025	Nominal size 25
	032	Nominal size 32
	040	Nominal size 40
	050	Nominal size 50
	063	Nominal size 63
	080	Nominal size 80
	100	Nominal size 100
04	E	Cartridge slide valve
05	H	Driven by VCD voice coil motor with electrical position feedback and integrated digital amplifier
Flow characteristics		
06	7	Progressive flow characteristic
	9	Linear flow characteristic
07	9	Rated flow rate

RT-	TDP	032	E	H	9	9	C	2	N	B	0	*
01	02	03	04	05	06	07	08	09	10	11	12	13

08	C	Bidirectional flow, A→B,B→A
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Pilot Oil Supply and Drain

09	2	External supply and external drain
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Sealing Material

10	N	NBR seals
	V	FKM seals

Amplifier Command

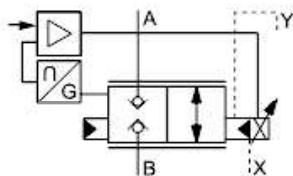
11	B	Control input signal 0...+10V, actual value feedback ±10V
	E	Control input signal 0...+20mA, actual value feedback ±10V
	S	Control input signal 4...+20mA, actual value feedback ±10V

Connector Type

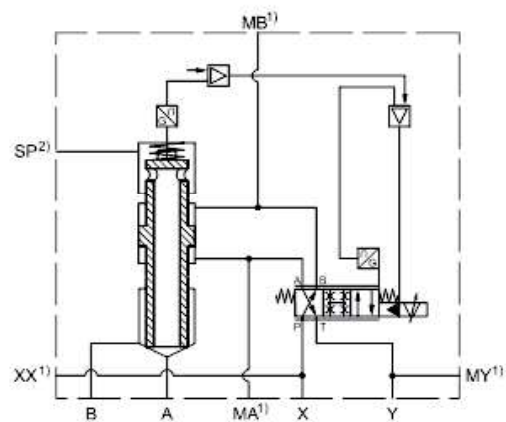
12	0	6 + PE, seven-pin socket with enable function, compliant with DIN EN 175201 - 804 standard (ordered separately)
13	*	Other information descriptions

Hydraulic Symbols

Simplified symbols:



Detailed symbols:



- Valves with nominal diameters of 25 and 32 have no external accumulator port XX, and no pressure measurement ports MA, MB, and MY.
- Valves with a nominal diameter of 25 have no air bleed port SP.

Function, section

This valve is a pilot-operated proportional servo slide valve with cartridge connection, equipped with spool position feedback and an integrated amplifier.

Composition of the valve:

1. VPilot servo valve with a spool and sleeve structure driven by VCD (1)
2. Main valve with a return spring and position feedback (2)
3. Main valve displacement sensor (3)

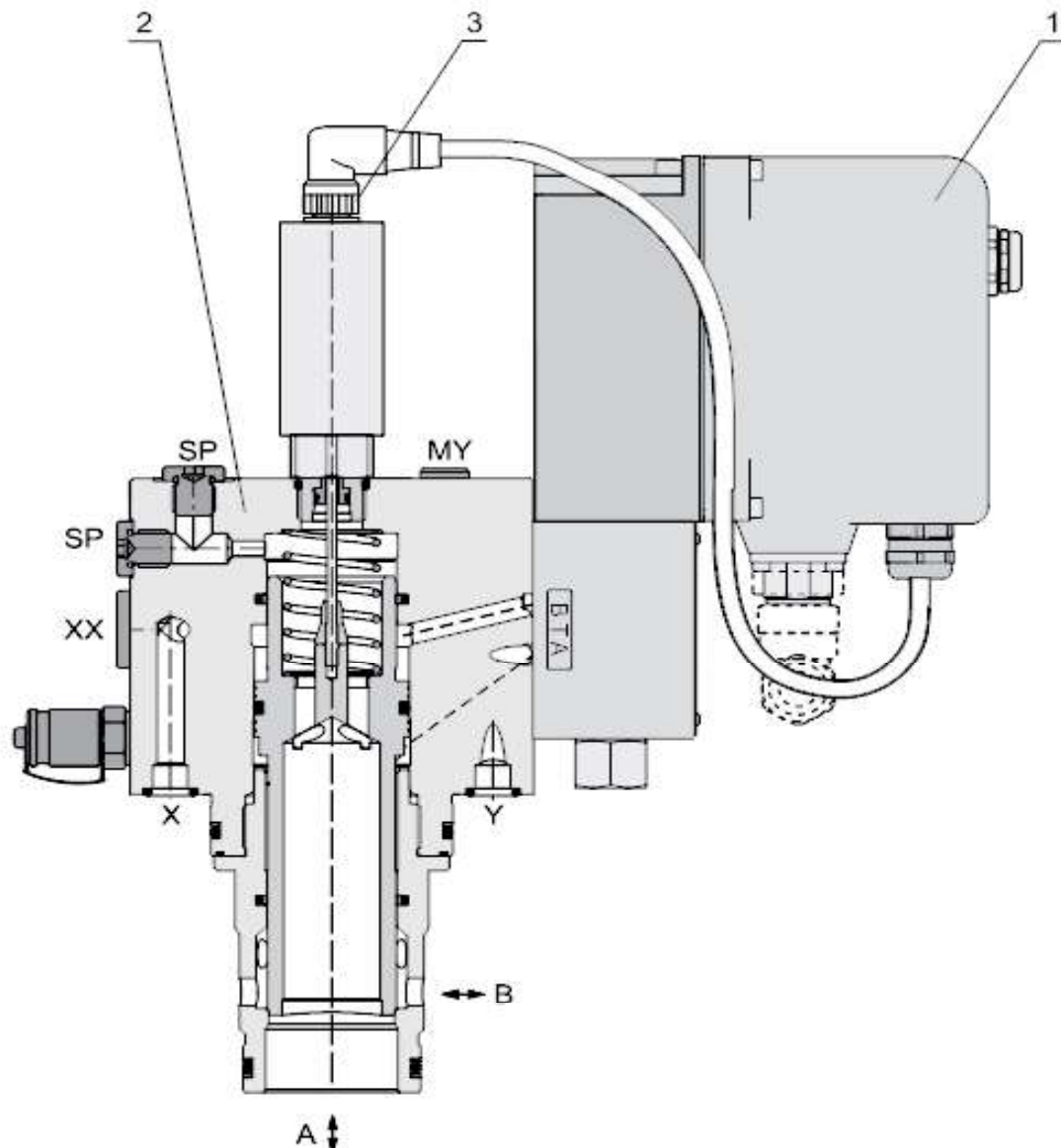
Working principle:

This valve adopts a two-stage control design, consisting of a pilot servo valve and a poppet-type main stage with an LVDT spool position sensor. Due to the use of a voice coil motor as the pilot valve driver, this valve has an extremely fast response speed. Its response time ranges from 10.5 ms (NG25) to 28 ms (NG100), and the control accuracy is < 0.1% of the rated flow rate.

The stroke of the main spool is actively controlled by the pilot servo valve, regardless of the pressure conditions of the main circuit ports. As a basic working condition, the pilot pressure of this valve should be greater than the system pressure. In the case of a low system pressure, if the valve is required to still have a high dynamic response, the pilot pressure should be ensured to be no less than 140 bar.

A digital integrated electronic controller with two closed-loop control circuits is installed on the pilot servo valve of this valve to control the positions of its main spool and pilot valve spool.

RT-TDP 040



Technical data (for applications outside these parameters, please consult us!)

General

Nominal size		25	32	40	50	63	80	100
Installation		Optional, preferably horizontal						
Storage temperature range	°C	-20.....+80						
Ambient temperature range	°C	-20.....+50						
Weight	Kg	11	13	15	26	52	105	157

Hydraulic

Maximum operating pressure	Pilot Oil Supply Pressure X	bar	350bar					
	ports A, B, SP	bar	350bar					
	port Y	bar	35bar					
Nominal flow $q_{V nom}$, (Flow Characteristic: 7) at $\Delta p=5bar$ ¹⁾	L/min	380	750	1300	1700	3200	3900	6800
Max. permissible flow	L/min	700	1750	2600	4000	7000	11250	17000
Nominal flow $q_{V nom}$, at $\Delta p=5bar$ ¹⁾	L/min	420	850	1500	1900	3600	4500	8000
Max. permissible flow	L/min	800	2000	3000	4500	8000	13000	20000
Flow direction		A→B or B→A						
Pilot valve pressure ²⁾	bar	Must be greater than the system pressure						
Pilot valve specification		D1FP, NG6				D3FP, NG10		
Maximum pilot control flow rate, $P_x=140bar$	L/min	23	30	40	40	70	80	100
Pilot valve leakage at 100 bar	mL/min	≤400						
Oil temperature range	°C	-20 to +80 (preferably +40 to +50)						
Viscosity	mm ² /s	20 to 380 (preferably 30 to 80)						
Oil cleanliness ³⁾ (minimum requirement)	Pilot valve	ISO4406 18/16/13						
	Main valve	ISO4406 20/18/15						

Dynamic/Static Performance

Step response when pilot pressure $P_x > 140 bar$	ms	10.5	12	14	20	17	23	28
Frequency response when pilot pressure $P_x > 140 bar$								
Amplitude ratio -3dB; 10%±5%	Hz	95	80	74	66	52	46	41
Phase shift 90°; 10%±5%	Hz	85	63	59	52	56	51	47
Hysteresis	%	< 0.1						
Sensitivity	%	< 0.05						
Temperature drift	%/K	< 0.025						

1) Flow rate at other pressure differences $q_x = q_{V nom} \cdot \sqrt{\frac{\Delta P_x}{5}}$

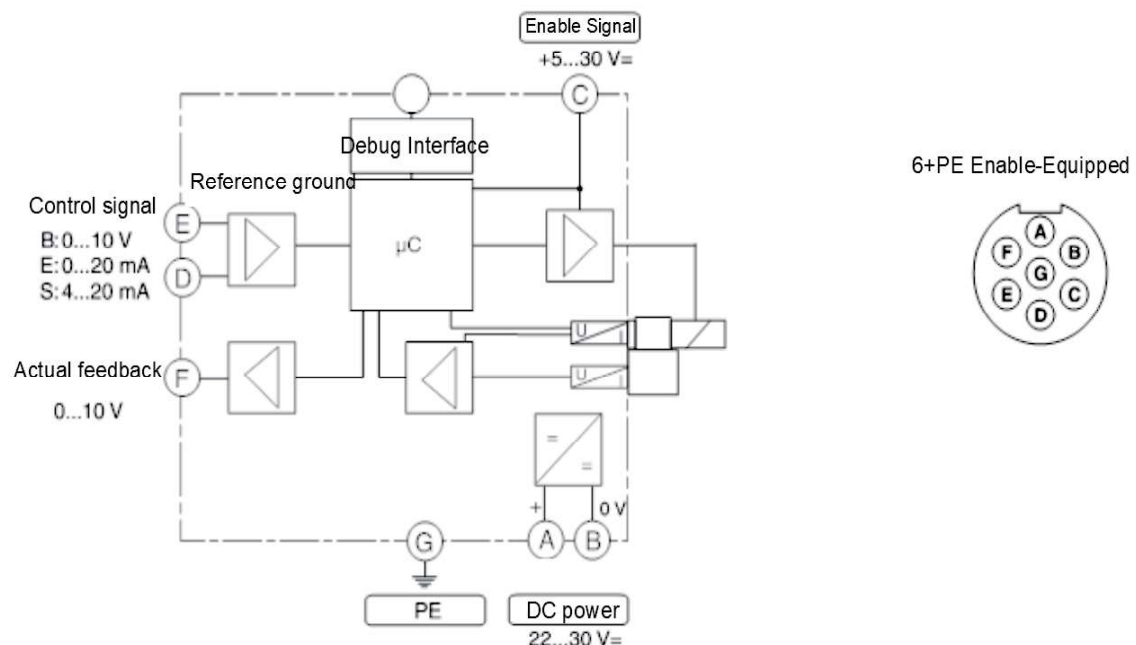
2) To ensure the best dynamic performance, the minimum pilot pressure should be greater than 140 Bar.

3) In the hydraulic system, the oil cleanliness must meet the requirements of the components. Effective filtration can prevent malfunctions in the hydraulic system and extend the service life of the components.

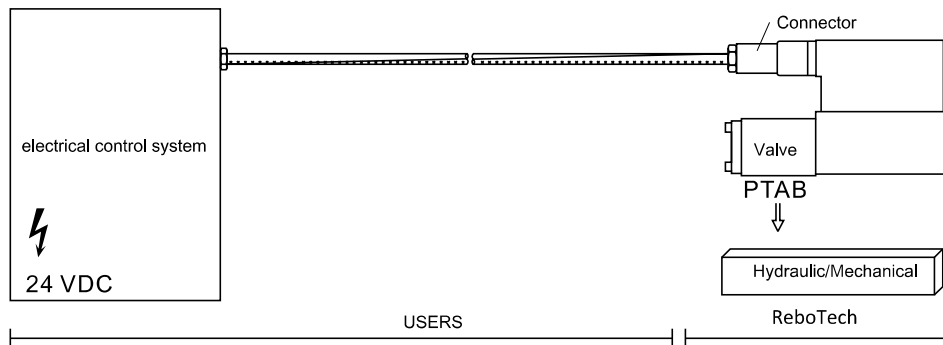
Technical data (for applications outside these parameters, please consult us!)

Electrical			
Duty	%		100
Valve protection			IP65
Power supply	VDC		24
	Power +	VDC	Min. 22 / Max. 30
	Power -	VDC	0 (Maximum ripple voltage 2)
Maximum power current	A		3.5
External fuse	A		4.0, medium lag
Shielded grounding			See the "Pin Arrangement" diagram, conforming to CE requirements
Electromagnetic compatibility			Conforming to EN61000-6-2:2005-08 and EN61000-6-3:2007-01
Command type: B	Voltage	V	0...+10, fluctuation < 0.01% RMS, no shock
	Impedance	k Ω	>50
Command type: E	Current	mA	0...+20, fluctuation < 0.01% RMS, no shock
	Impedance	Ω	< 250
Command type: S	Current	mA	+4...20, fluctuation < 0.01% RMS, no shock < 3.6mA= Off, > 3.8mA=Enable
	Impedance	Ω	< 250
Position feedback	Voltage	V	0...+10, Maximum load 5mA
Enable signal	V		Enable input 24 VDC (Enable $\geq$ 11 VDC, Disable $\leq$ 5 VDC)
Electrical Connection interface			6+ PE, seven - pin socket compliant with DIN EN 175201 - 804

Electrical Block Diagram



Electrical connection



Type: LiYCY flexible shielded data transmission wire
 Wire number: Determined by the valve's signal, plug model, and plug pin assignment

Cable diameter Φ : 0.75mm^2 , length up to 20m;

1mm^2 , length up to 40m

Outer diameter Φ : 12...14mm

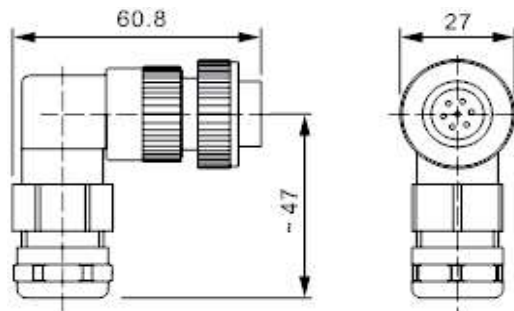
Note:

- Nominal supply voltage is 24 VDC.
- If the voltage drops below 18 VDC, an internal quick - off occurs, similar to an "enable switch".
- For Type S:
 Command signal $I_{D-E} \geq 3\text{mA}$, the valve operates.
 Command signal $I_{D-E} \leq 2\text{mA}$, the valve does not operate.
- Electrical signals generated by the integrated controller (e.g., LVDT feedback signal) are not allowed to be used as functional signals related to equipment safety!

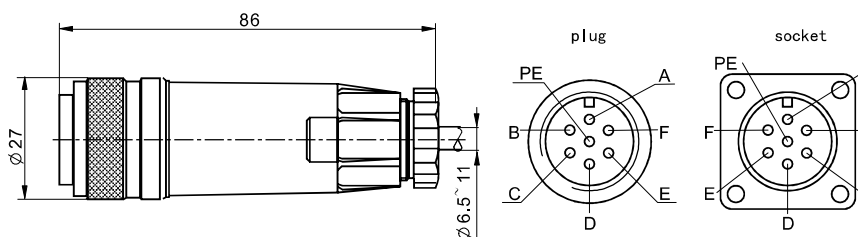
Seven - pin plug compliant with DIN EN

175201 - 804 (ordered separately)

dimensions: mm



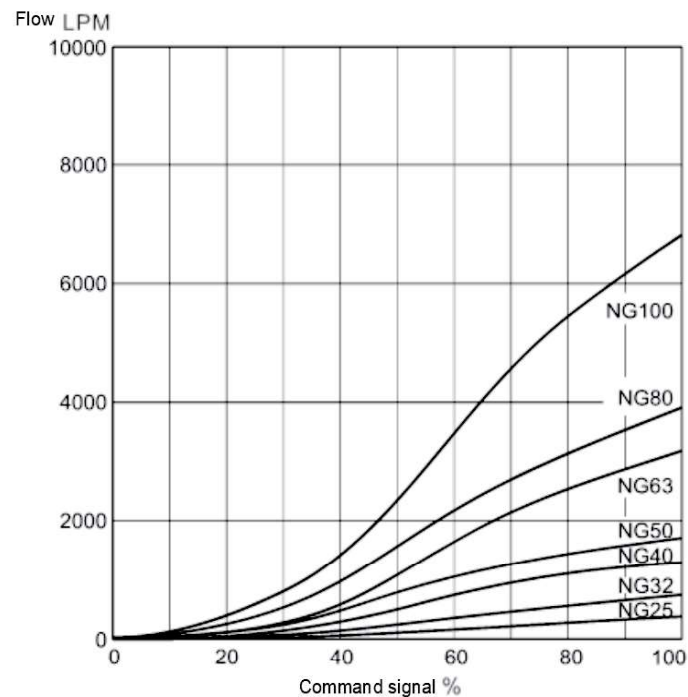
Elbow - type seven - pin plug;
 Suitable for specifications above 25 nominal diameter
 Metal nut structure (preferred model)
 Order separately
 Order No.: R00050381



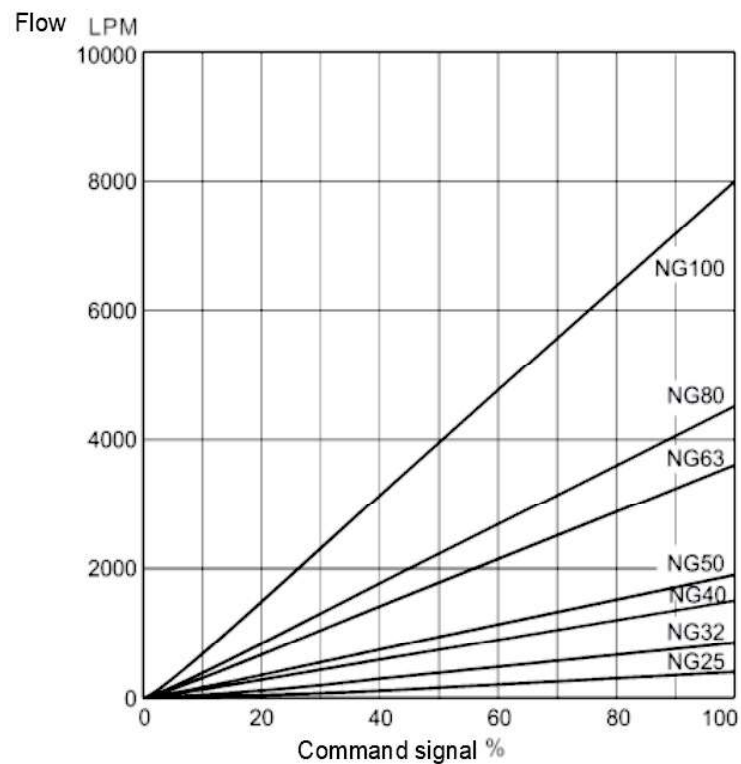
Straight - type seven - pin plug;
 Suitable for specifications above 63 nominal diameter
 Metal nut structure (preferred model), order separately
 Order No.: R00050406
 Plastic nut structure, order separately
 Order No.: R00050408
 All - metal structure, order separately,
 Order No.: R00050407

Characteristic curves (46# Anti - wear Hydraulic Oil, oil temperature $\pm 40 \pm 5^\circ\text{C}$)

Flow Characteristic Code 7: Progressive Flow Characteristic (Pressure Drop $\Delta p = 5\text{bar}$)



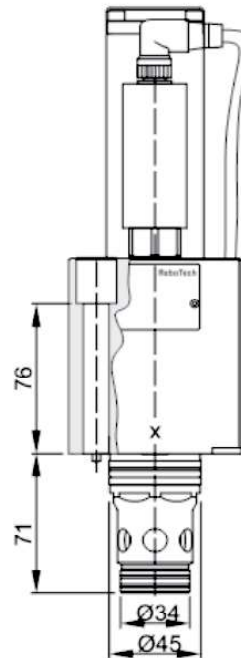
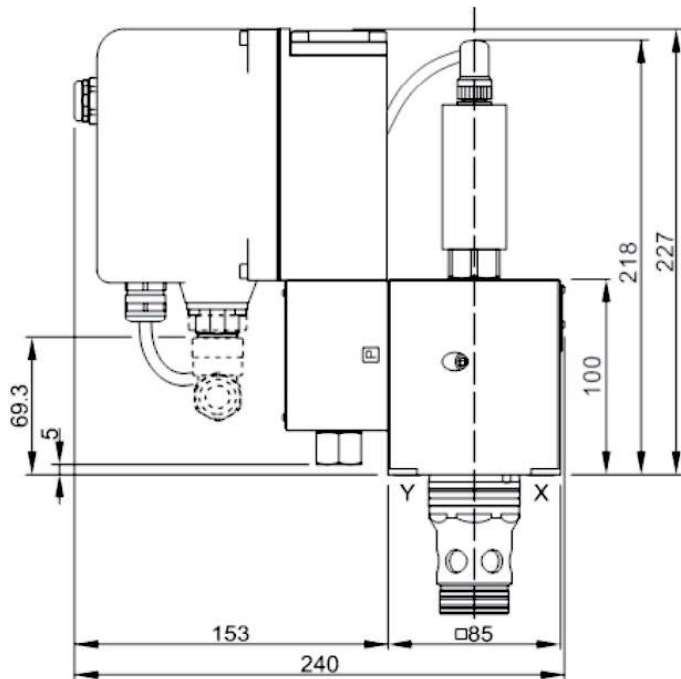
Flow Characteristic Code 9: Linear Flow Characteristic (Pressure Drop $\Delta p = 5\text{bar}$)



Unit dimensions NS 25 and NS 32

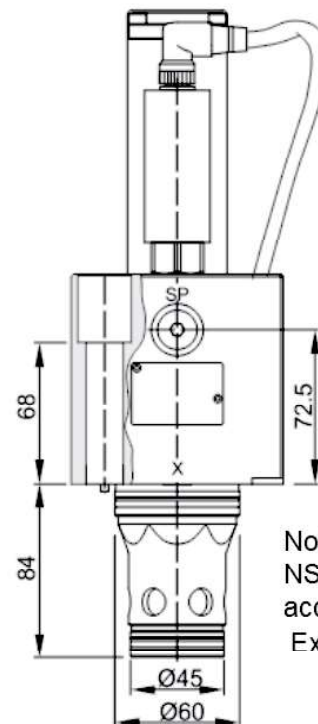
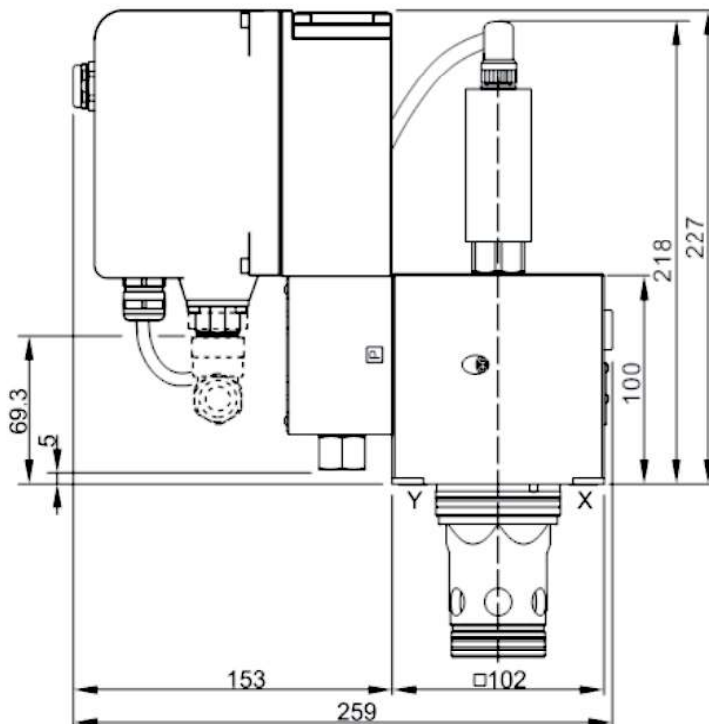
Dimensions in mm

NS 25



Notes
 NS25 without external
 accumulator XX port
 Without exhaust port SP

NS 32



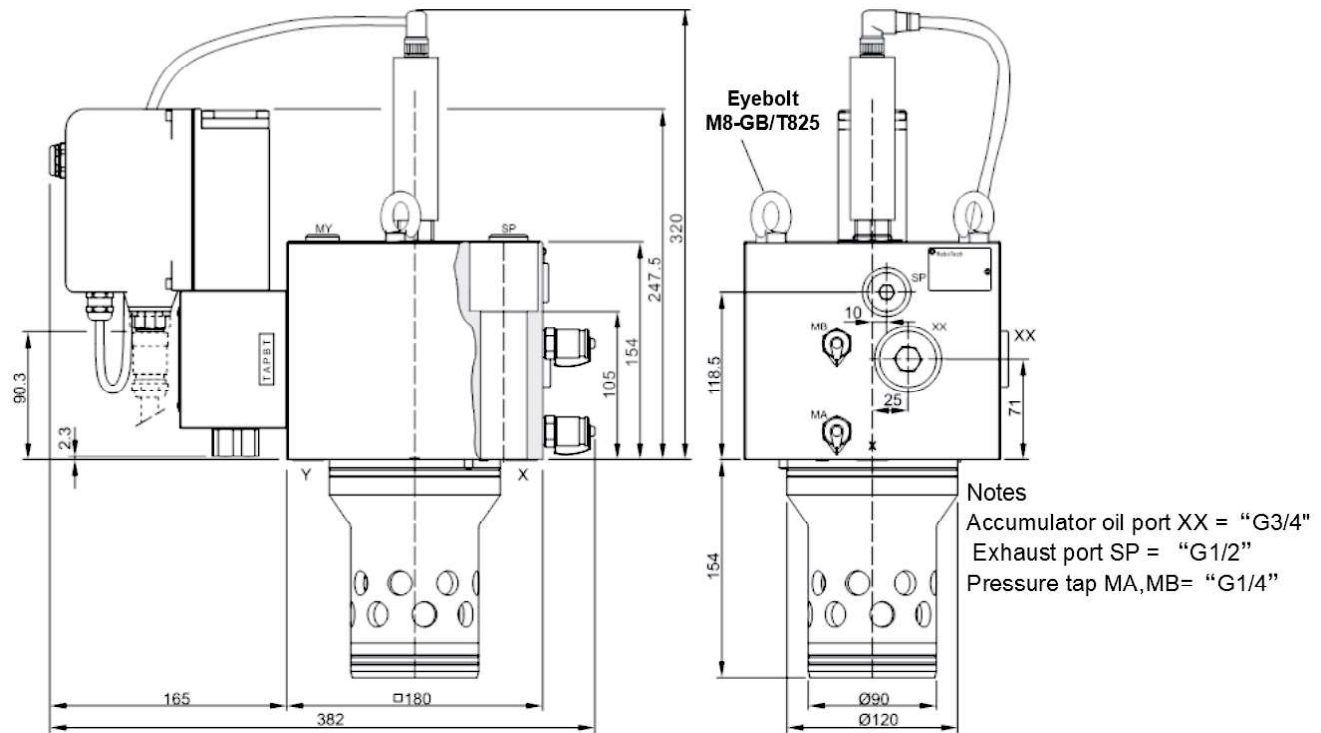
Notes
 NS 32 without external
 accumulator XX port
 Exhaust port SP = "G1/4"

NS	Installation Screw Specifications	Numbers	Torque Nm
25	GB/T 70.1-M12X100-12.9	4	108±10%
32	GB/T 70.1-M16X100-12.9	4	264±10%

Unit dimensions NS 63

Dimensions in mm

NS 63

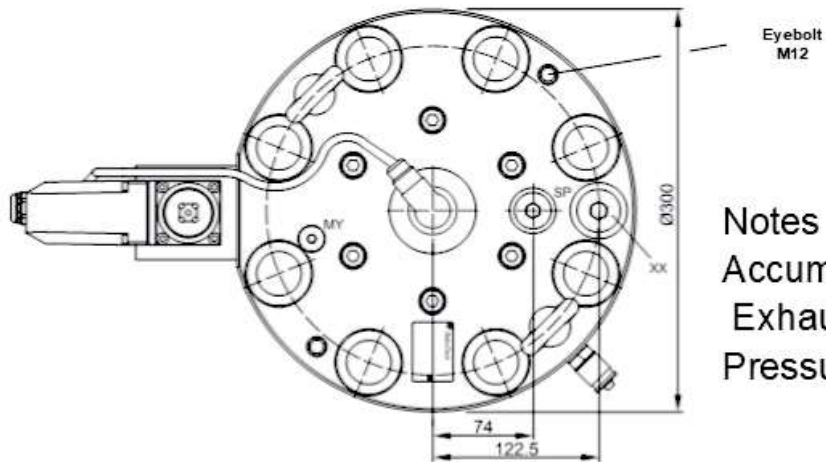


NS	Installation Screw Specifications	Numbers	Torque Nm
63	GB/T 70.1-M30X160-12.9	4	1775±10%

Unit dimensions NS 100

Dimensions in mm

NS 100

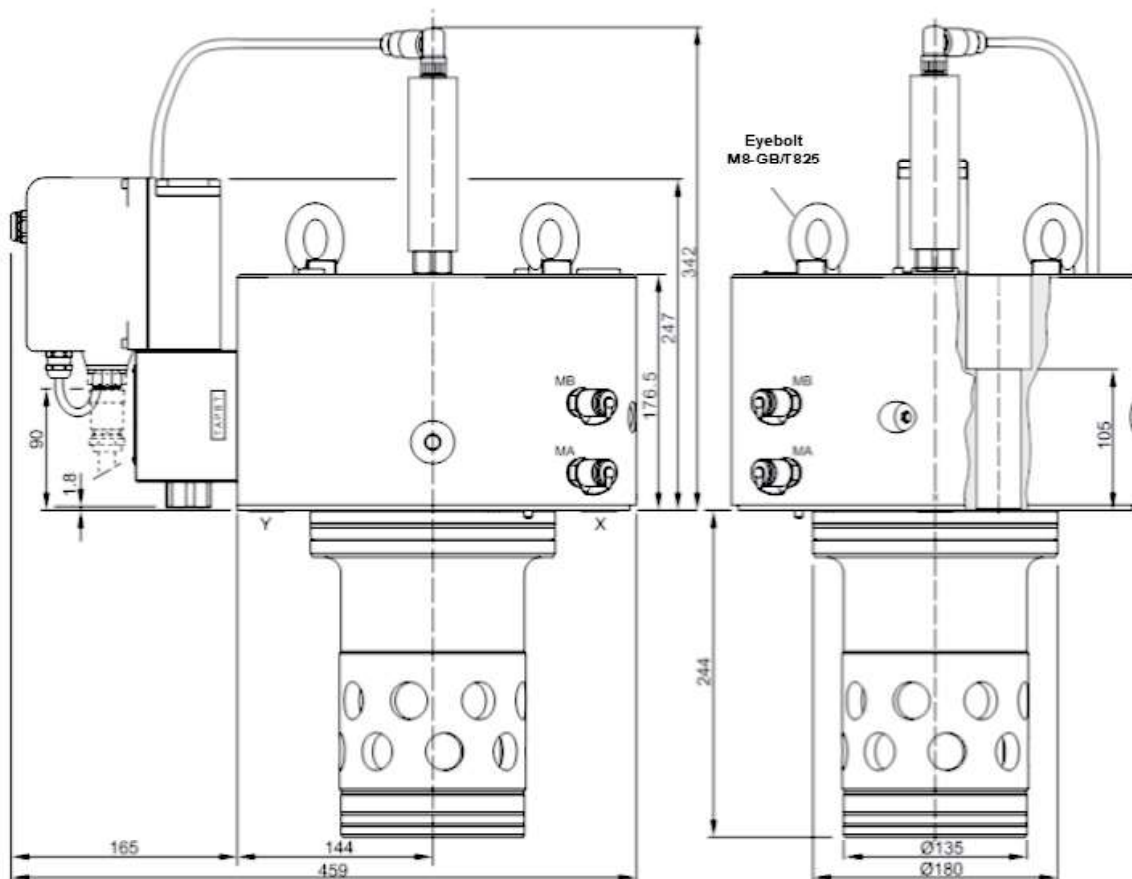


Notes

Accumulator oil port XX = "G3/4"

Exhaust port SP = "G1/2"

Pressure tap MA, MB = "G1/4"



NS	Installation screw specifications	Numbers	Torque Nm
100	GB/T 70.1-M30X150-12.9 级	8	1775 $\pm$ 10%

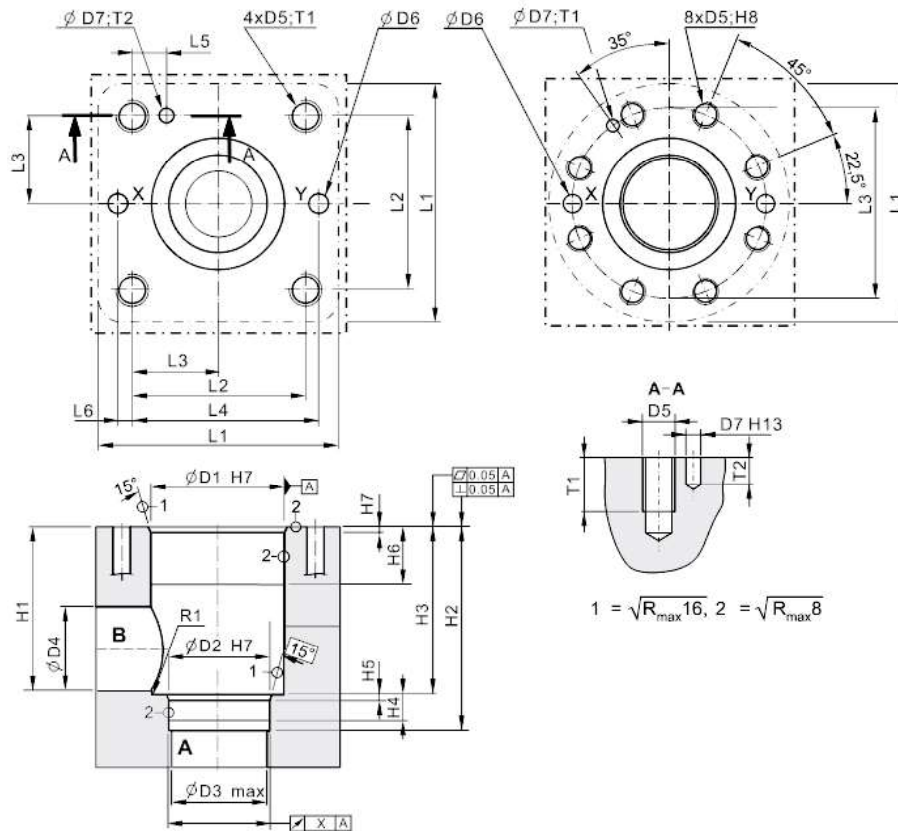
Socket dimensions

Dimensions in mm

Socket standard **ISO 73682**

NS: 5~63

NS: 80 and 100



1, The socket sizes comply with ISO 7368 standard. Offset standards: D3 and D4.

2, H6 is the minimum fit depth dimension.

3, Port B can be located at any position between H6 min and H1 max.

NS	D1 H7	D2 H7	D3 max	D4 max	D5	D6 max	D7 H13	H1 max	H2 ⁺¹	H3 ^{+0.5}	H4 min	H5
25	45	34	27	32	M12	6	4	55.5	72	58	12	2
32	60	45	44	48	M16	8	6	68.5	85	70	13	2.5
40	75	55	54	58	M20	10	6	84.5	105	87	15	3
50	90	68	67	70	M20	10	8	97.5	122	100	17	3
63	120	90	89	80	M30	12	8	127	155	130	20	4
80	145	110	109	110	M24	16	10	170.5	205	175	25	5
100	180	135	134	125	M30	20	10	205.5	245	210	29	5

NS	H6 min	H7	L1	L2 ±0.2	L3 ±0.2	L4 ±0.2	L5 ±0.2	L6 ±0.2	X	R1 max	T1	T2 min
25	30	2	85	58	29	62	13	4	0.03	2	35	10
32	20	2.5	102	70	35	76	18	6	0.03	4	35	10
40	20	3	125	85	42.5	92.5	19.5	7.5	0.05	4	45	10
50	27	3	140	100	50	108	20	8	0.05	4	45	10
63	40	4	180	125	62.5	137.5	24.5	12.5	0.05	4	65	10
80	40	5	250	-	200	-	-	-	0.05	4	50	10
100	50	5	300	-	245	-	-	-	0.05	4	53	10