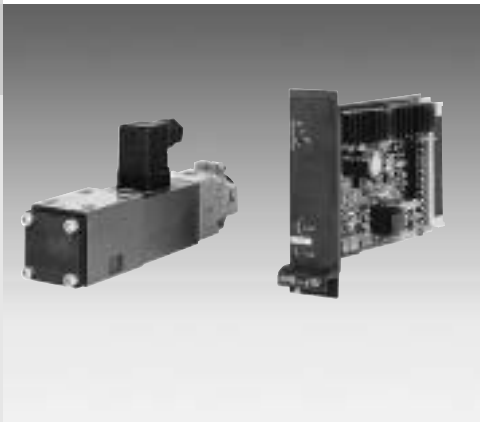
Servo solenoid valves with electrical position feedback (Lvdt AC/AC)

RE 29030/01.05 1/8
Replaces: 09.03

Type 4WRPH 6



Size 6
Unit series 1X
Maximum working pressure 250 bar
Nominal flow rate 4...40 l/min (Δp 70 bar)

List of contents

Features

- Directly operated servo solenoid valve NG6, with control piston and sleeve in servo quality
- Actuated on one side, 4/4 fail-safe position when switched off
- Control solenoid with passive position feedback (Lvdt (AC/AC)
- Suitable for steering axles, systems in the iron and steel industry and in tougher ambient conditions
- For subplate attachment, mounting hole configuration to ISO 4401-03-02-0-94
- Subplates as per catalogue section RE 45053 (order separately)
- Line sockets to DIN 43650-AM2
  Solenoid 2P+PE/M16 x 1.5, position transducer 3P/Pg7 in scope of delivery, see catalogue section RE 08008
- External trigger electronics (order separately)
  - Electric amplifier for standard curve “L” 0 811 405 148 and 0 811 405 123, see catalogue section RE 30042

Ordering data and scope of delivery

4WRP		H	6		B		L	–	1X	/	G24	Z4	/	M	*

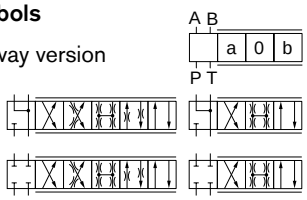
For **external** trigger electronics **= no desig.**

Control piston/sleeve **= H**

Size 6 **= 6**

Symbols

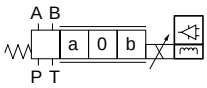
4/4-way version



= C3

= C4

Side of inductive position transducer



(Standard) **= B**

Further information in plain text

M = NBR seals, suitable for mineral oils (HL, HLP) to DIN 51524

Electrical connection

Z4 = with line socket, with plug to DIN 43650-AM2

Line socket included in scope of delivery

Voltage supply of trigger electronics

G24 = +24 V DC

1X = Unit series 10 to 19 (installation and connection dimensions unchanged)

Flow characteristic

L = Linear

Nominal flow rate at 70 bar valve pressure difference (35 bar/metering notch)

Size 6

04 = 4 l/min

12 = 12 l/min

24 = 24 l/min

40 = 40 l/min

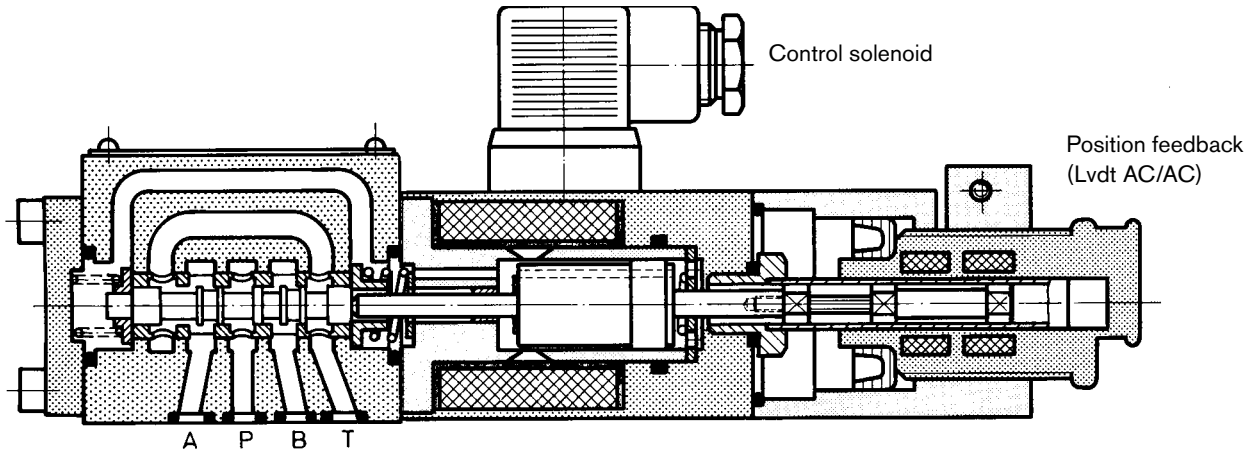
Preferred types (available at short notice)

Type 4WRPH 6	Material No.
C3	
4WRPH 6 C3B04L –1X/G24Z4 /M	**0 811 404 122**
4WRPH 6 C3B12L –1X/G24Z4 /M	**0 811 404 111**
4WRPH 6 C3B24L –1X/G24Z4 /M	**0 811 404 106**
4WRPH 6 C3B40L –1X/G24Z4 /M	**0 811 404 113**

Type 4WRPH 6	Material No.
C4	
4WRPH 6 C4B12L –1X/G24Z4 /M	**0 811 404 112**
4WRPH 6 C4B24L –1X/G24Z4 /M	**0 811 404 118**

Function, sectional diagram

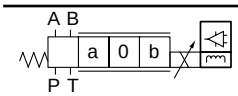
Servo solenoid valve 4WRPH 6



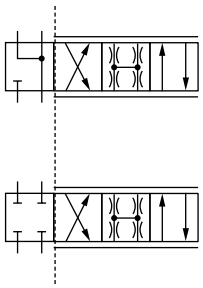
Valve body

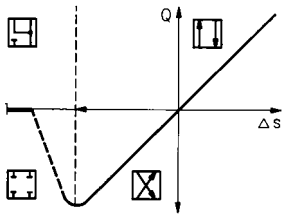
Control solenoid with position transducer

Symbols



Linear





C3, C4

Accessories, not included in scope of delivery

(4 x) M5 x 30 DIN 912–10.9	Fastening screws	**2910151166**
	VT-VRRA1-527-10/V0/RV, see RE 30042	**0811405148**
	VT-VRRA1-527-10/V0, see RE 30042	**0811405123**
	Line sockets 2P+PE (M16 x 1.5) and 3P (Pg7) included in scope of delivery, see also RE 08008	

Testing and service equipment

– Test box type VT-PE-TB1, see RE 30063.
– Test adapter type VT-PA-3, see RE 30070.

Technical data

General

Construction		Spool type valve, operated directly, with steel sleeve
Actuation		Proportional solenoid with position control, external amplifier
Type of mounting		Subplate, mounting hole configuration NG6 (ISO 4401-03-02-0-94)
Installation position		Optional
Ambient temperature range	°C	–20 … +50
Weight	kg	2.2
Vibration resistance, test condition		Max. 25 g, shaken in 3 dimensions (24 h)

Hydraulic (measured with HLP 46, $\vartheta_{oil} = 40\,°C \pm 5\,°C$)

Pressure fluid			Hydraulic oil to DIN 51524 … 535, other fluids after prior consultation			
Viscosity range	recommended	mm²/s	20 … 100			
	max. permitted	mm²/s	10 … 800			
Pressure fluid temperature range		°C	–20 … +80			
Maximum permissible degree of contamination of pressure fluid Purity class to ISO 4406 (c)			Class 18/16/13 [1]			
Flow direction			See symbol			
Nominal flow at $\Delta p = 35$ bar per notch [2]		l/min	4	12	24	40
Max. working pressure		bar	Port P, A, B: 250			
Max. pressure		bar	Port T: 250			
Operating limits at Δp Pressure drop at valve		bar	250	200	120	70
Leakage at 100 bar		cm³/min	<180	<350	<700	<1,000

Electrical

Cyclic duration factor	%	100
Power supply		24 V_{nom} (external amplifier)
Degree of protection		IP 65 to DIN 40050
Solenoid connector		Connector DIN 43650/ISO 4400 M16 x 1.5 (2P+PE)
Position transducer connector		Special connector Pg7 (3P)
Max. solenoid current	A	2.7
Coil restistance R_{20}	Ω	2.5
Max. power consumption at 100 % load and operational temperature	VA	35
Position transducer AC/AC technology		$U_{OSC.}$ ~10 V_{eff}/7 kHz

Static/Dynamic

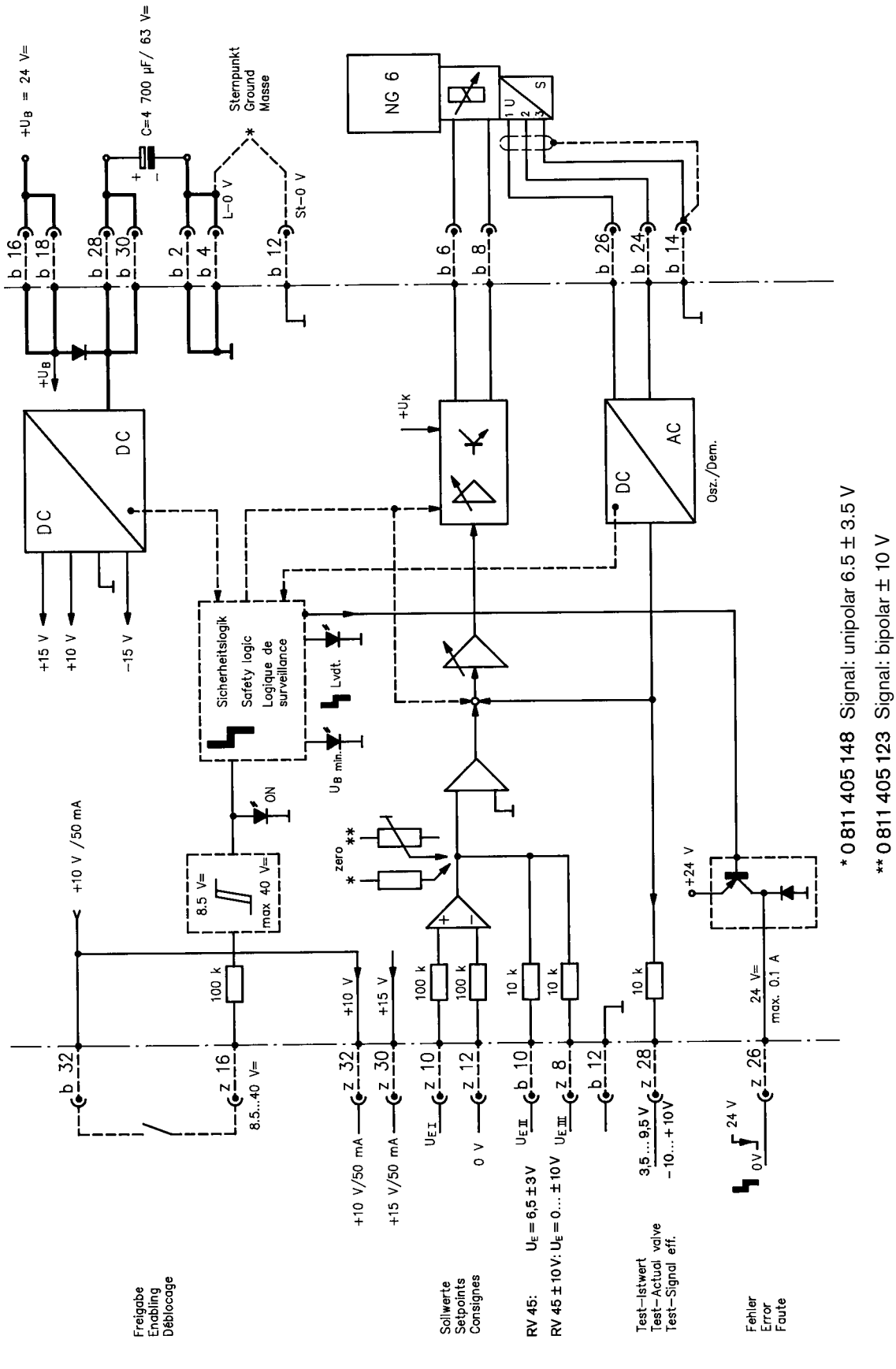
Hysteresis	%	≦ 0.5
Manufacturing tolerance for $q_{max.}$	%	< 10
Response time for signal change 0 … 100 %	ms	< 12
Thermal drift		Zero point displacement <1 % at $\Delta T = 40\,°C$

[1] The purity classes stated for the components must be complied with in hydraulic systems.
Effective filtration prevents problems and also extends the service life of components.
For a selection of filters, see catalogue sections RE 50070, RE 50076 and RE 50081.

[2] Flow rate at a different Δp $\quad q_x = q_{nom} \cdot \sqrt{\frac{\Delta p_x}{35}}$

Valve with external trigger electronics (standard linear curve: L)

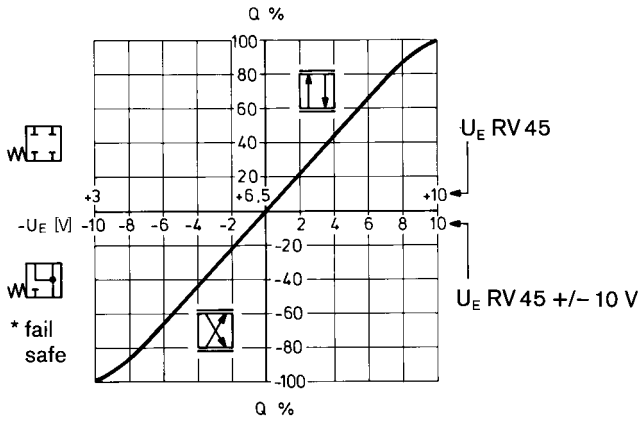
Block diagram/pin assignment



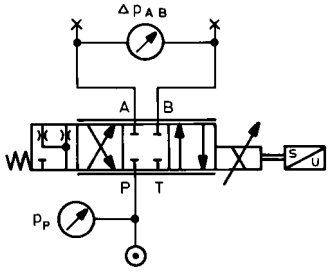
Performance curves (measured with HLP 46, $\vartheta_{oil} = 40\,°C \pm 5\,°C$)

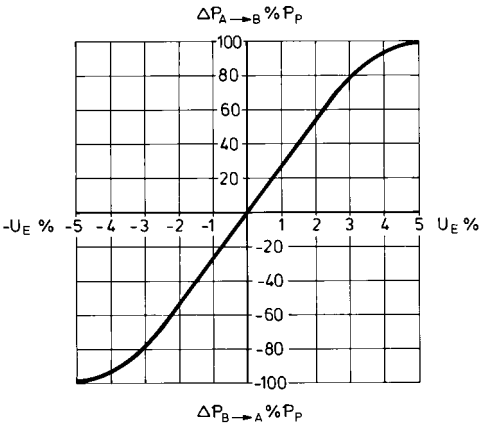
Flow rate/Signal function $Q = f(U_E)$

* Fail-safe: when enabling is not released

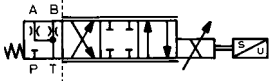


Pressure gain





Fail-safe position



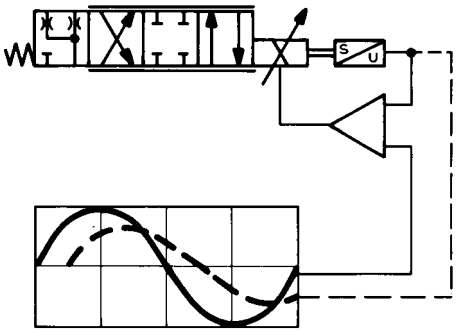
Leakage at	100 bar	P–A	50 cm³/min
		P–B	70 cm³/min
Flow at	$\Delta p = 35$ bar	A–T	10 … 20 l/min
		B–T	7 … 20 l/min

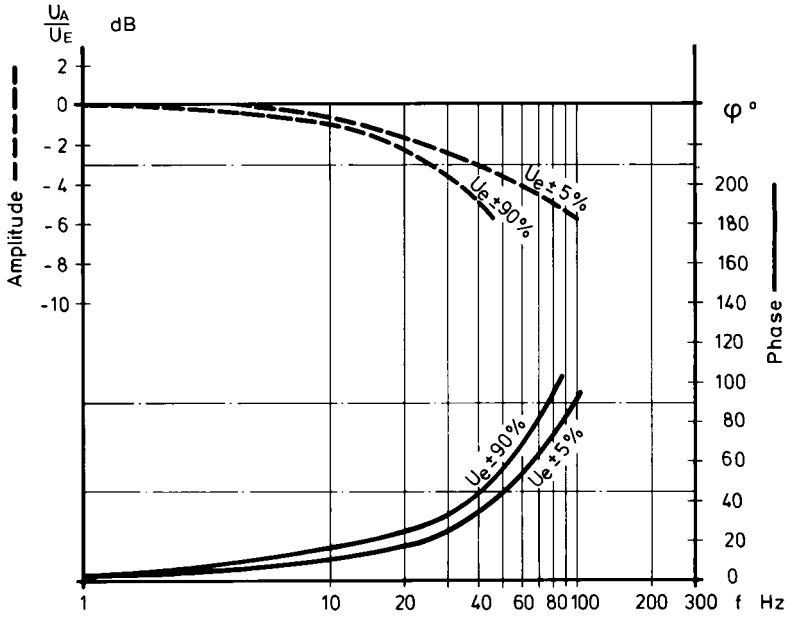
Leakage at	100 bar	P–A	50 cm³/min
		P–B	70 cm³/min
		A–T	70 cm³/min
		B–T	50 cm³/min

Fail-safe	$p =$ 0 bar → 7 ms	Enable off
	$p =$ 100 bar → 10 ms	

Performance curves (measured with HLP 46, $\vartheta_{oil} = 40\,°C \pm 5\,°C$)

Bode diagram



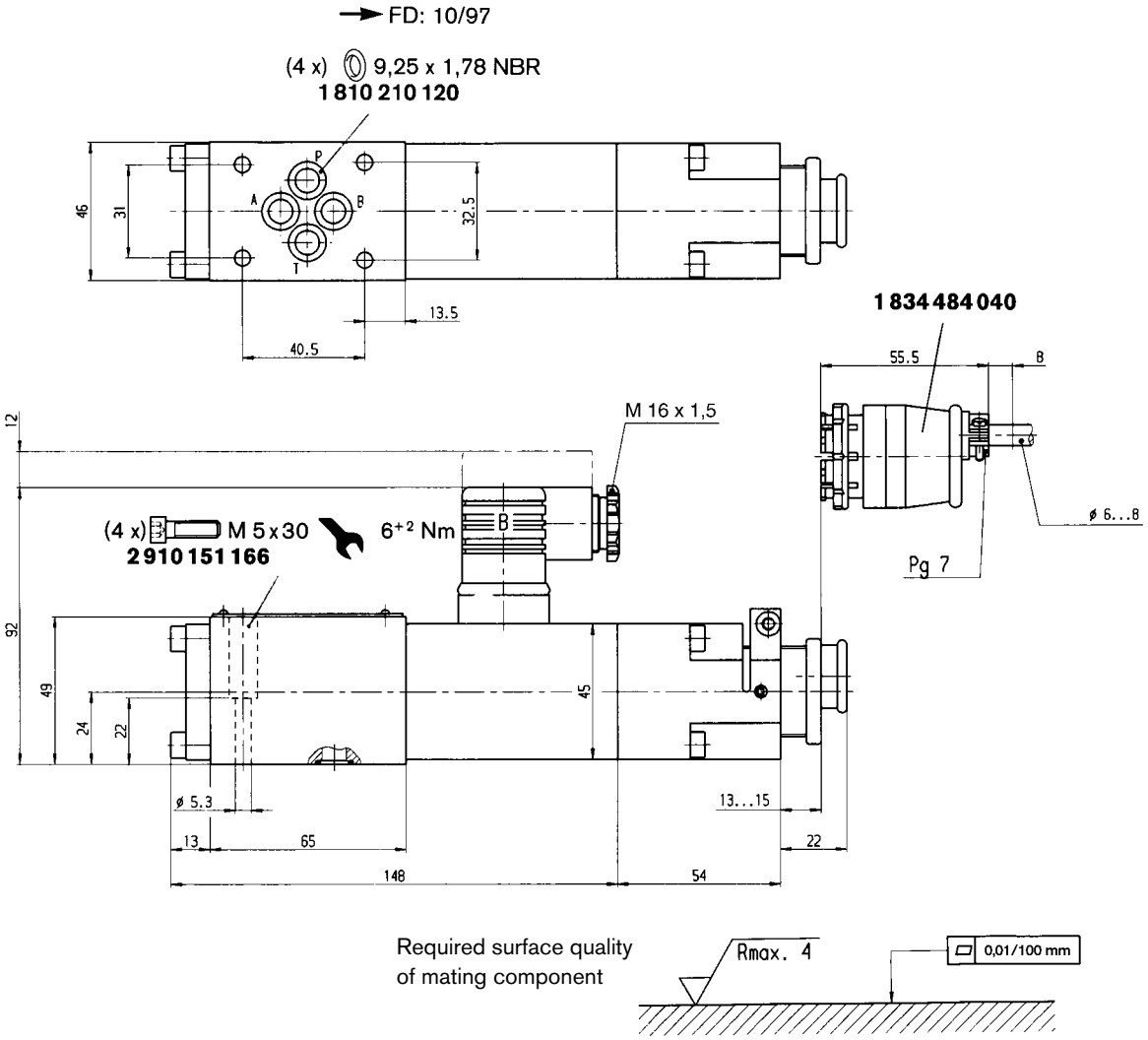


Important

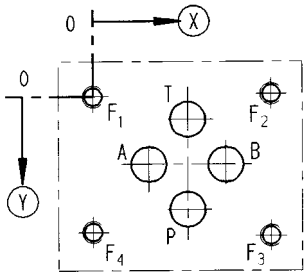
Servo solenoid valves type 4WRPH6 are equivalent to NG6 proportional valves with AC/AC position transducer in terms of their solenoid and position transducer technology, and represent a sturdy alternative.

For more demanding requirements where dynamics are concerned (Bode diagram), we recommend NG6 servo solenoid valves type 4WRP(E)H 6 with integral position transducer.

Unit dimensions (nominal dimensions in mm)



Mounting hole configuration: NG6 (ISO 4401-03-02-0-94)
For subplates, see catalogue section RE 45053



[1] Deviates from standard
[2] Thread depth:
Ferrous metal 1.5 x Ø,
Non-ferrous 2 x Ø

	P	A	T	B	F_1	F_2	F_3	F_4
Ⓧ	21.5	12.5	21.5	30.2	0	40.5	40.5	0
Ⓨ	25.9	15.5	5.1	15.5	0	–0.75	31.75	31
Ø	8 [1]	8 [1]	8 [1]	8 [1]	M5 [2]	M5 [2]	M5 [2]	M5 [2]

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