

# Analogic proportional servo valves

## Flow control - Series LRWA

3/3-way directly operated servo valves for the flow control



These servo valves are equipped with a patented rotating spool system with closed loop control circuit. Their compact design makes them particularly suitable for several applications.

The LRWA0 cartridge has to be supplied with a controller that contains the electronic board and a connection cable. The valve controllers are adjusted to the corresponding cartridges. A correct function needs a cartridge and a controller with identical serial numbers. In the LRWA2 (cabinet mounting on DIN-rail) and LRWA4 (sub-base mounting, with G1/4 threaded ports) versions, the electronic board is integrated into the valve's body ready to connect.

- » Rotating spool with a metal to metal seal
- » Compact design
- » High flow rate
- » Electronic control to ensure high precision in the flow control
- » 3-way-function with 4 - 6 mm nominal diameters
- » LRWA0 version: cartridge system, optimal mounting options for different applications
- » LRWA2 version: for cabinet mounting on DIN-rail in any position
- » LRWA4 version: realized on a proper sub-base with G1/4 threaded ports for mounting in any position

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### GENERAL DATA

<b>Power supply</b>	24V DC +/- 10%, stabilized, max. 0,8 A
<b>Control signal</b>	+/- 10V 100 kohm; 0-10V 100 kohm; 0-20 mA 500 ohm; +/-5 V DC 100 ohm (LRWA4 only)
<b>Hysteresis</b>	1% FS
<b>Linearity</b>	1% FS
<b>Switching time</b>	from 0 to 100%: approx. 5 ms; +/- 100%: approx. 7 ms
<b>Working temperature</b>	from 0 to 50°C
<b>Relative humidity of air</b>	max. 90%
<b>Weight of the cartridge</b>	0.140 kg without cable; (LRWA0); 0.700 kg (LRWA2); 1 kg (LRWA4)
<b>Maximum flow rate at 6 bar ΔP 1 bar</b>	350 NI/min (LRWA4-34); 450 NI/min (LRWA0-34, LRWA2-34); 550 NI/min (LRWA4-36); 690 NI/min (LRWA0-36, LRWA2-36)
<b>Medium</b>	5 μm filtered air, non aggressive gases
<b>Supply pressure</b>	-0,9 to 10 bar
<b>Leakage</b>	< 1% of maximum flow rate
<b>Electrical connection</b>	SUB-D connector 25 poles with pre-wired cable of 0.5-1-2 m (LRWA0); male connector M12 5 poles (LRWA2); male connector M16 7 poles (LRWA4)

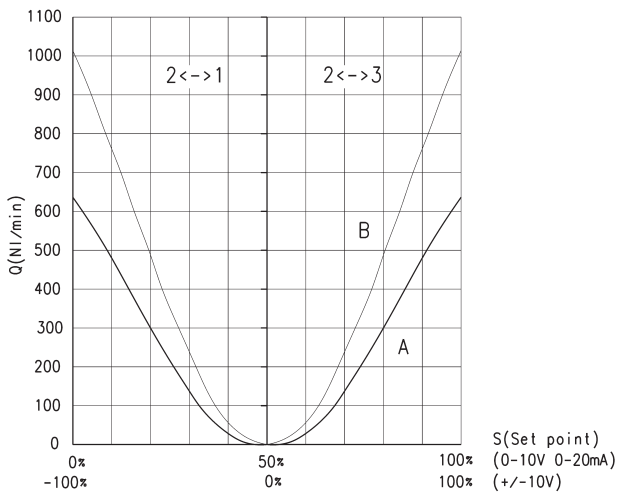
**CODING EXAMPLE**

L	R	W	A	0	-	3	4	-	1	-	A	-	05
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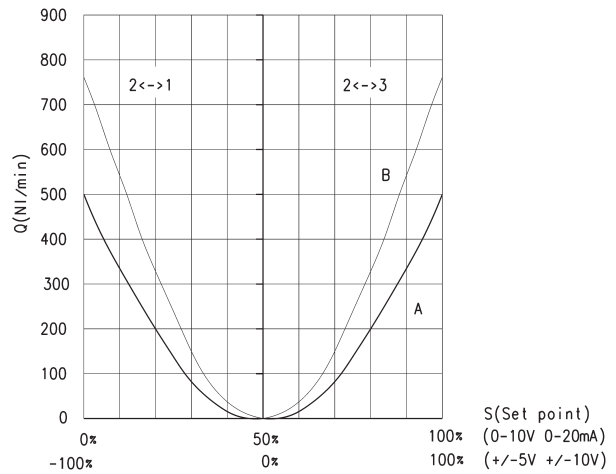
<b>L</b>	SERIES: L = proportional servo valves
<b>R</b>	TECHNOLOGY: R = rotating spool
<b>W</b>	VERSION: W = flow control
<b>A</b>	ELECTRONICS: A = analogic
<b>0</b>	MODEL: 0 = cartridge with fixation slot 2 = compact DIN-RAIL 4 = with sub-base
<b>3</b>	FUNCTION: 3 = 3-way
<b>4</b>	NOMINAL DIAMETER: 4 = 4 mm 6 = 6 mm
<b>1</b>	INPUT COMMAND SIGNAL (Setpoint): 1 = +/- 10 V 2 = 0-10 V 3 = 0-20 mA 4 = +/- 5 V
<b>A</b>	FEEDBACK SIGNAL: A = internal encoder
<b>05</b>	CABLE: 00 = no cable (LRWA2 and LRWA4) 05 = 0.5 m (LRWA0 only) 10 = 1 m (LRWA0 only) 20 = 2 m (LRWA0 only)

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**FLOW DIAGRAMS (NI/min) vs INPUT SIGNAL (%)**


A: LRWA0-34 - LRWA2-34  
 B: LRWA0-36 - LRWA2-36



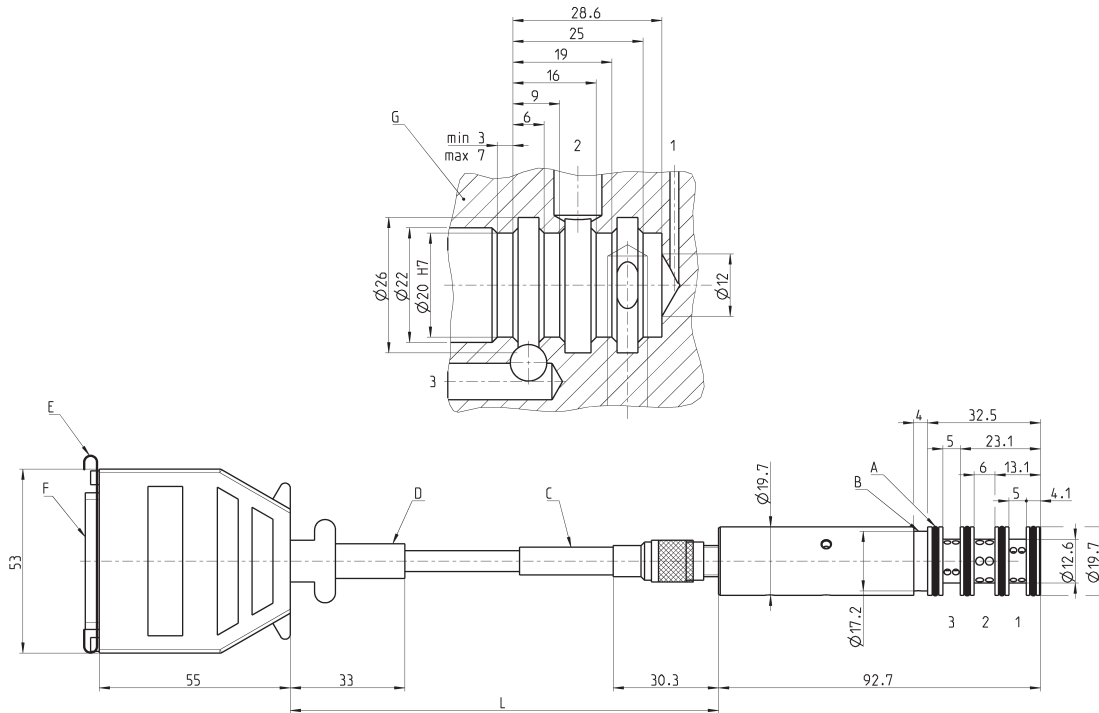
A: LRWA4-34  
 B: LRWA4-36

## LRWA0 SERVO VALVES - PNEUMATIC INSTALLATION

The servo valve works as follows: if the command signal or setpoint is lower than 50%, the valve establishes a link between connection 1 and connection 2; then the air passes between the inlet and the outlet. If the setpoint value is higher than 50%, the port 2 is connected with the exhaust 3. For a better understanding, please see the flow diagram on page 2.15.11.2.

THE LENGTH OF THE LEADS SHOULD BE AS SHORT AS POSSIBLE, BETWEEN VALVE-OUTLET AND LOAD NORMALLY NOT MORE THAN 2 mts.

- Drawing legend:
- 1 = Supply
  - 2 = Port
  - 3 = Exhaust
  - A = O-ring 17x1,5
  - B = fixation slot
  - C = bending radius >50
  - D = bending radius >25
  - F = sub-d-25 pins (male)
  - G = cartridge fitting block
  - L = cable length



ELECTRICAL CONNECTIONS		
PIN	FUNCTION	NOTES
7	power supply +24 VDC	
13	GND power supply	
14	GND Input command signal	
15	Input command signal	
6,8	Internal reference potential	never connect to other GNDs!
1	Testpoint motor voltage	+/- 10 V vs. pin 6
24	Testpoint slide position	+/- 1 V vs. pin 6

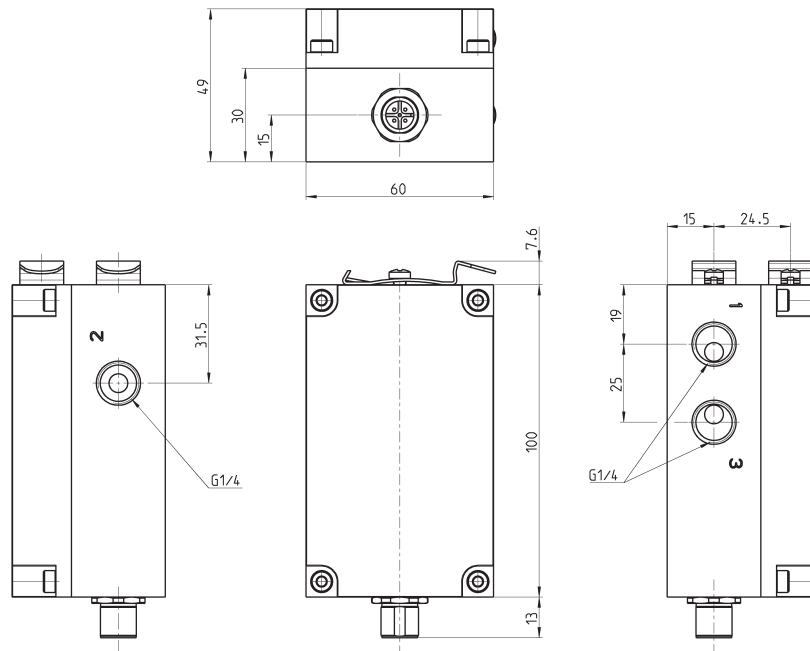
## LRWA2 SERVO VALVES - PNEUMATIC INSTALLATION

The servo valve works as follows: if the command signal or setpoint is lower than 50%, the valve establishes a link between connection 1 and connection 2; then the air passes between the inlet and the outlet. If the setpoint value is higher than 50%, the port 2 is connected with the exhaust 3. For a better understanding, please see the flow diagram on page 2.15.11.2.

THE LENGTH OF THE LEADS SHOULD BE AS SHORT AS POSSIBLE, BETWEEN VALVE-OUTLET AND LOAD NORMALLY NOT MORE THAN 2 mts.

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CONTROL



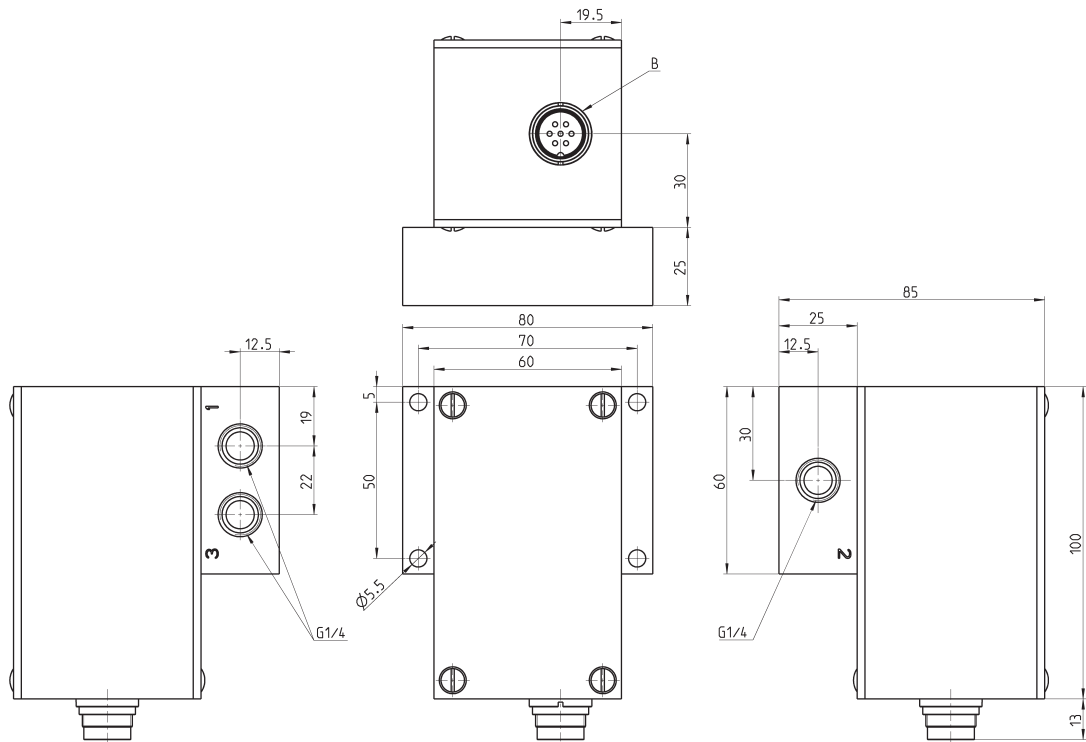
### ELECTRICAL CONNECTIONS (male connector M12 5 poles)

PIN	FUNCTION	NOTES
1	power supply +24 VDC	
4	GND power supply	
3	Input command signal (Setpoint)	
2	GND Input command signal	Pin 4 and 2 should be connected.
5	NC	

**LRWA4 SERVO VALVES - PNEUMATIC INSTALLATION**

The servo valve works as follows: if the command signal or setpoint is lower than 50% the valve establishes a link between connection 1 and connection 2; then the air passes between the inlet and the outlet. If the setpoint value is higher than 50%, the port 2 is connected with the exhaust 3. For a better understanding, please see the flow diagram on page 2.15.11.2.

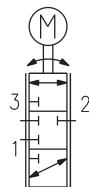
THE LENGTH OF THE LEADS SHOULD BE AS SHORT AS POSSIBLE, BETWEEN VALVE-OUTLET AND LOAD NORMALLY NOT MORE THAN 2 mts.



ELECTRICAL CONNECTIONS (male connector M16 7 poles)			
PIN	FUNCTION	NOTES	
1	power supply +24 VDC		
2	GND power supply		
3	Input command signal (Setpoint)		
4	GND Input command signal	Pin 4 and 2 should be connected.	
5	NC		
6	NC		
7	NC		

## SERIES LRWA - TECHNICAL FEATURES

For the suitable accessories see the catalogue section 2/15.35



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Mod.	Model	Nominal diameter Ø (mm)	Command signal	Cable length (m)
LRWA0-34-1-A-05	cartridge with fixation slot	4	+/- 10 V	0.5
LRWA0-34-1-A-10	cartridge with fixation slot	4	+/- 10 V	1
LRWA0-34-1-A-20	cartridge with fixation slot	4	+/- 10 V	2
LRWA0-34-2-A-05	cartridge with fixation slot	4	0-10 V	0.5
LRWA0-34-2-A-10	cartridge with fixation slot	4	0-10 V	1
LRWA0-34-2-A-20	cartridge with fixation slot	4	0-10 V	2
LRWA0-34-3-A-05	cartridge with fixation slot	4	0-20 mA	0.5
LRWA0-34-3-A-10	cartridge with fixation slot	4	0-20 mA	1
LRWA0-34-3-A-20	cartridge with fixation slot	4	0-20 mA	2
LRWA0-36-1-A-05	cartridge with fixation slot	6	+/- 10 V	0.5
LRWA0-36-1-A-10	cartridge with fixation slot	6	+/- 10 V	1
LRWA0-36-1-A-20	cartridge with fixation slot	6	+/- 10 V	2
LRWA0-36-2-A-05	cartridge with fixation slot	6	0-10 V	0.5
LRWA0-36-2-A-10	cartridge with fixation slot	6	0-10 V	1
LRWA0-36-2-A-20	cartridge with fixation slot	6	0-10 V	2
LRWA0-36-3-A-05	cartridge with fixation slot	6	0-20 mA	0.5
LRWA0-36-3-A-10	cartridge with fixation slot	6	0-20 mA	1
LRWA0-36-3-A-20	cartridge with fixation slot	6	0-20 mA	2
LRWA2-34-1-A-00	compact DIN-RAIL	4	+/- 10 V	no cable
LRWA2-34-2-A-00	compact DIN-RAIL	4	0-10 V	no cable
LRWA2-34-3-A-00	compact DIN-RAIL	4	0-20 mA	no cable
LRWA2-36-1-A-00	compact DIN-RAIL	6	+/- 10 V	no cable
LRWA2-36-2-A-00	compact DIN-RAIL	6	0-10 V	no cable
LRWA2-36-3-A-00	compact DIN-RAIL	6	0-20 mA	no cable
LRWA4-34-1-A-00	with sub-base	4	+/- 10 V	no cable
LRWA4-34-2-A-00	with sub-base	4	0-10 V	no cable
LRWA4-34-3-A-00	with sub-base	4	0-20 mA	no cable
LRWA4-34-4-A-00	with sub-base	4	+/- 5 V	no cable
LRWA4-36-1-A-00	with sub-base	6	+/- 10 V	no cable
LRWA4-36-2-A-00	with sub-base	6	0-10 V	no cable
LRWA4-36-3-A-00	with sub-base	6	0-20 mA	no cable
LRWA4-36-4-A-00	with sub-base	6	+/- 5 V	no cable