



PNEUMATIC SERVO-VALVE TECHNOLOGY

AUTOMATION

SCHUNK takes the initiative. For you.

SCHUNK AUTOMATION anticipates trends in technology and customer needs and implements them in unique products, solutions and services.

Profit from the synergy of our triple expertise as a pioneer in automation, in modular assembly automation and in modular robotics.

With a complete range that includes gripper modules, turning and rotary units, linear modules, robot accessories, modular assembly automation and vision systems, we possess a compatible basis for delivering industry-specific solutions in every periphery.

Discover SCHUNK, the partner that can strengthen your market position in your industry. Today - with the technological capacity of tomorrow.



GRIPPING MODULES



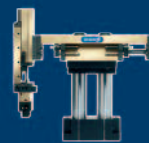
ROTARY MODULES



LINEAR MODULES



ROBOT ACCESSORIES



MODULAR ASSEMBLY
AUTOMATION



MACHINE VISION

Micro Valve Technology

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Synergies with SCHUNK

SCHUNK SYNERGY: **Toolholding/Workholding and Automation**

Visions in two technology areas

Toolholding/workholding and automation are our core competences. The resulting synergy effects make us unique. SCHUNK understands this complex world of clamping and handling like no one else. As a long-standing components specialist we know the demands and requirements of both technology areas. Moreover there's the fascination of new possibilities. With our twofold expertise we can provide you with trend-setting leading technology. From the spindle to robotics.

We call this "SCHUNK SYNERGY". Get to know us as your active "all-in-one" partner – all the services from one source to benefit you.



More innovative for you!

SCHUNK opens up new horizons

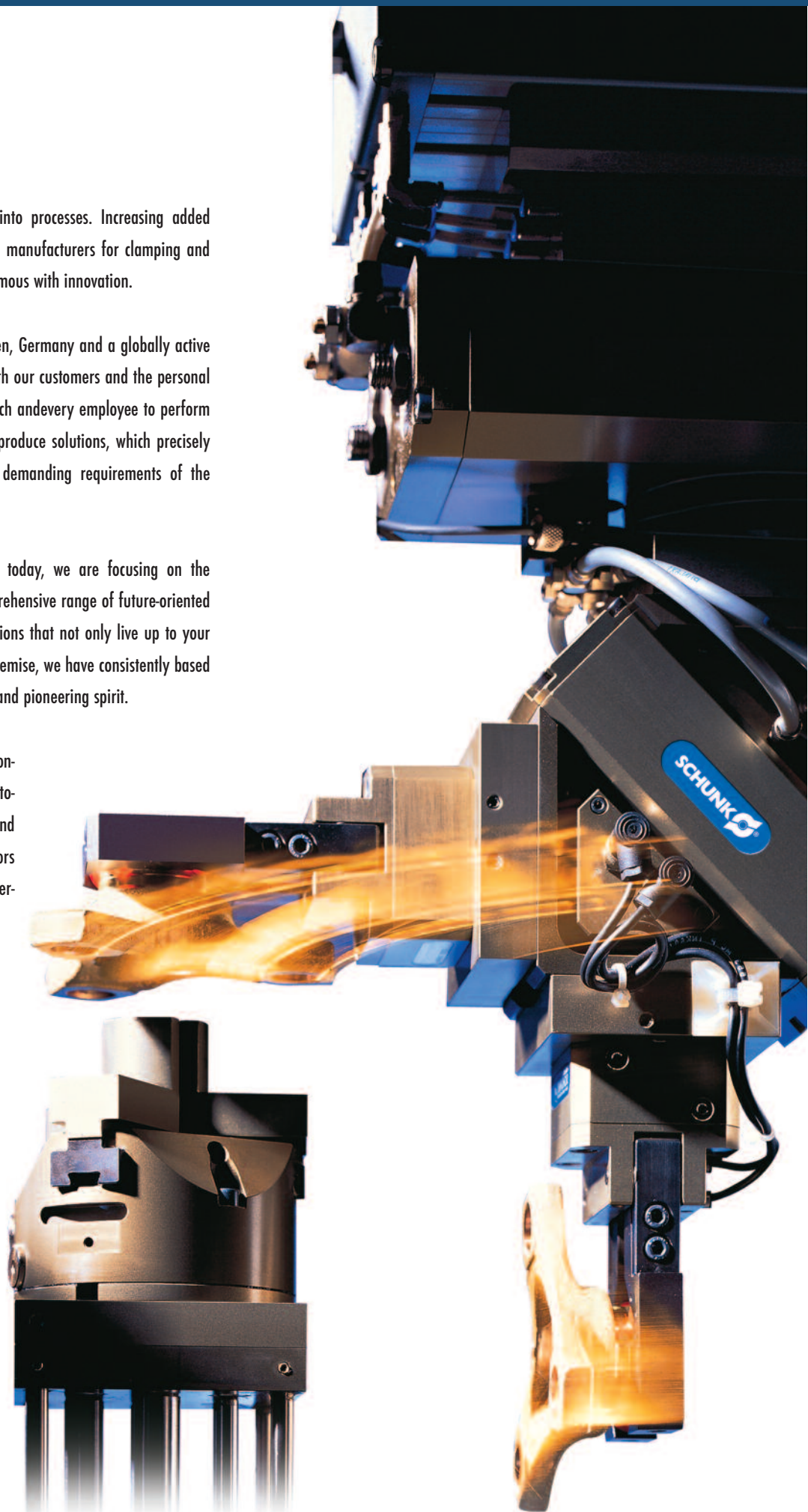
Shaping technology. Putting the dynamics into processes. Increasing added value. SCHUNK is one of the world's leading manufacturers for clamping and gripping technology, and our name is synonymous with innovation.

We are a family-run business based in Lauffen, Germany and a globally active company rolled into one. Continual dialog with our customers and the personal responsibility and individual endeavors of each and every employee to perform the work faultlessly and in the best quality produce solutions, which precisely conform to our customers' needs and the demanding requirements of the market.

SCHUNK opens up new horizons. For even today, we are focusing on the opportunities of tomorrow, and boast a comprehensive range of future-oriented technologies. Our promise: High-quality solutions that not only live up to your expectations, but exceed them! And on this premise, we have consistently based our corporate philosophy: Quality, reliability and pioneering spirit.

Through continuous development, we are constantly opening up new prospects for our customers. Technical creativity, supreme expertise and soundly based experience are the success factors we offer you in engineering, production and service.

We are thinking ahead – for you!



Partners with a System Approach

System partners

Solutions from one source

As one of the most innovative market leaders, we offer unique solutions with our gripping systems, rotary units, linear modules, robot accessories and customized applications. Our broad product range enables us to offer precisely the right solution, even for your specialized tasks. We are development partners for various industries and specialize in your handling applications.

Whenever handling tasks require maximum precision and economic efficiency, SCHUNK provides the momentum and the perfect solution for putting them into practice.

You, too, can benefit from our complete automation range from one source. From standardized and individual gripper modules to complex functional modules. Rediscover SCHUNK! Again and again.



Gripping Modules

SCHUNK currently has the most comprehensive range of universal grippers and gripper modules for small components. Pneumatic or electric. Offering all features from state-of-the-art materials and coatings employed as standard to internal media feed-through. With our high level of technical expertise, SCHUNK sets the trend for cost-efficient handling in any industry, in any field.



Rotary Modules

Technology and functionality in the most compact form. SCHUNK's range of rotary modules represents the entire spectrum of compact turning and rotary units, swivel heads and rotary fingers. In other words, it's the ideal solution for handling tasks.



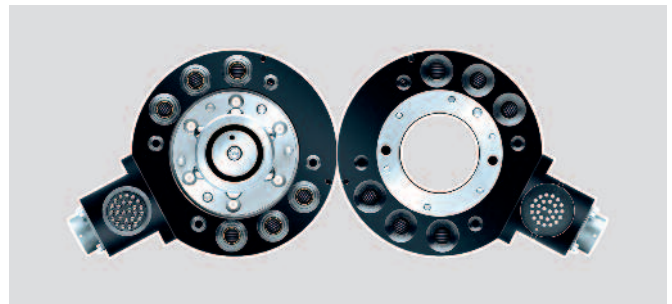
Linear Modules

Precision mini-slides, pneumatic linear modules, rigid gantry axes and axes with servo-electric linear drive – the SCHUNK product range offers linear technology for high-speed automated assembly. Compact and designed as a modular system.



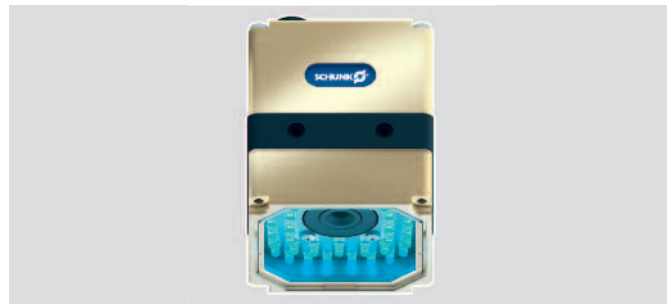
Robot Accessories

Robot accessories from SCHUNK – the complete range of modules for perfect interplay between the robot arm and the tool. Suitable for all types of robot, it is also an ideal enhancement to flexible robot applications.



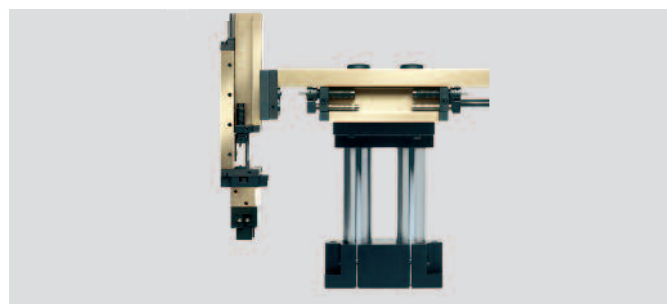
Machine Vision

In automated assembly, image processing modules from SCHUNK represent the flexible solution for manifold sensor applications. All high-quality components are perfectly phased to each other. The necessary software for object and position detection stands for 100 % process reliability.



Modular Assembly Automation

Flexible – fast – future-secure. This is the system GEMOTEC from SCHUNK. The comprehensive program of pneumatic and electric modules opens an unforeseen variety of combination possibilities. All actuators are compatible with each other. Where other companies still have to conduct design work, the system GEMOTEC is already assembled. Fast and straightforward.



Product sortation

GAS-ID

GAS-ID	SCHUNK-ID
300004	309278
300007	309269
300203	309370
300311	309339
300312	309403
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302763	309274
302765	309484
302766	309468
302767	309481
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302787	309486
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Product sortation

GAS-ID

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312357	309363
312628	309443
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312995	309356
313642	30048868
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316492	30048846
318219	30048860
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Pneumatic Servo-Valve Technology

Description

Pneumatic servo-valve technology has a number of significant advantages over conventional pneumatic control valves.

In these systems a pilot valve is used to actuate the second stage which regulates the flow or pressure. The low actuating force required by this pilot valve is applied by a correspondingly small solenoid system. Servo-valves of very light and compact design are thus possible. Pneumatic pilot control also reduces the power input to a minimum, effectively preventing the valve from overheating.

An integrated safety circuit ensures that no overvoltages arise when the servo-valve is switched off.

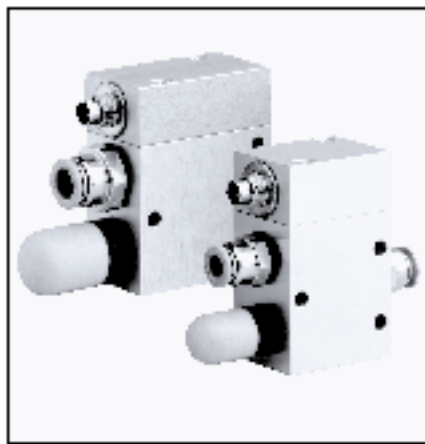
Condensate- and oil-free filtered (5 µm) compressed air in the temperature range from 0° to 50°C is needed to operate these servo-valves.

compact dimensions
modular design
high dynamics
high flow rates
easy installation

Directional valves

The 3/2-directional servo-valves are used to control the flow of gaseous media to and from consumers.

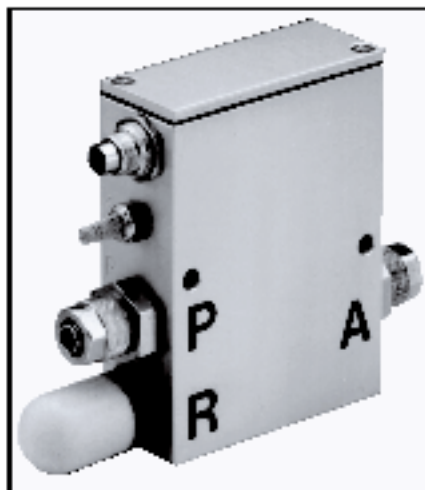
Applications include high-speed positioning as well as flow control (variable throttling). 3/2-directional servo-valves are also used in conjunction with suitable sensor systems (e.g. force sensors) as basic elements for pneumatic control tasks of many different types.



Pressure valves

The pressure servo-valves with internal pneumatic pressure feed back change the output pressure relative to the input current (pressure control). As an option it is possible to integrate an electric voltage/current converter so that the output pressure changes as a function of the input voltage (0 to 10 V).

Exact and stable positioning of actuators is possible thanks to the high stability of these pressure valves.

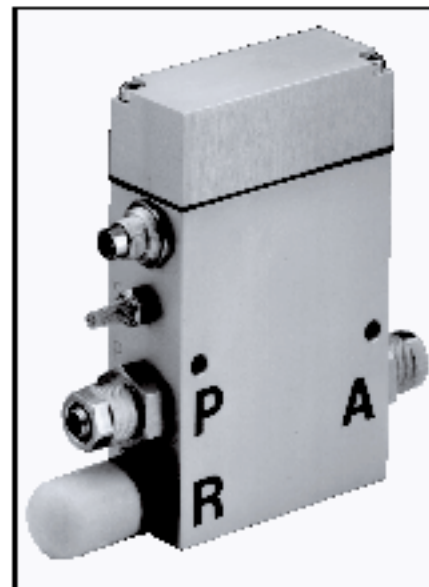


Pressure valves with pressure sensor and controller

The electric pressure valves are 3/2-directional servo-valves with an integrated pressure sensor, amplifier and controller. Valve output pressure is changed very precisely as a function of the input voltage. Although many components are integrated, the valves are still very small and light.

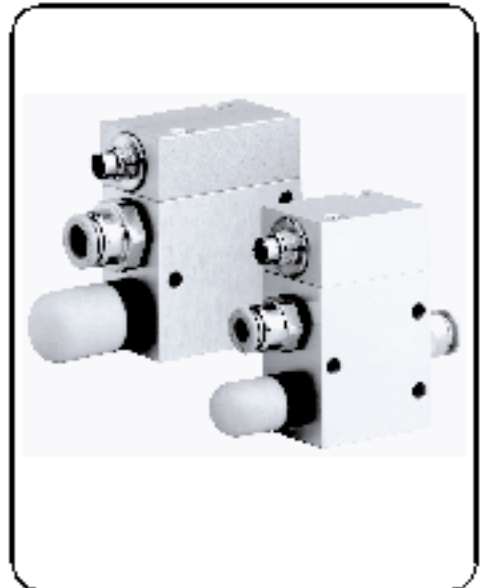
Power input is very low thanks to the valve pilot control arrangement.

The precise pressure values can also be used to control derived variables (e.g. force).



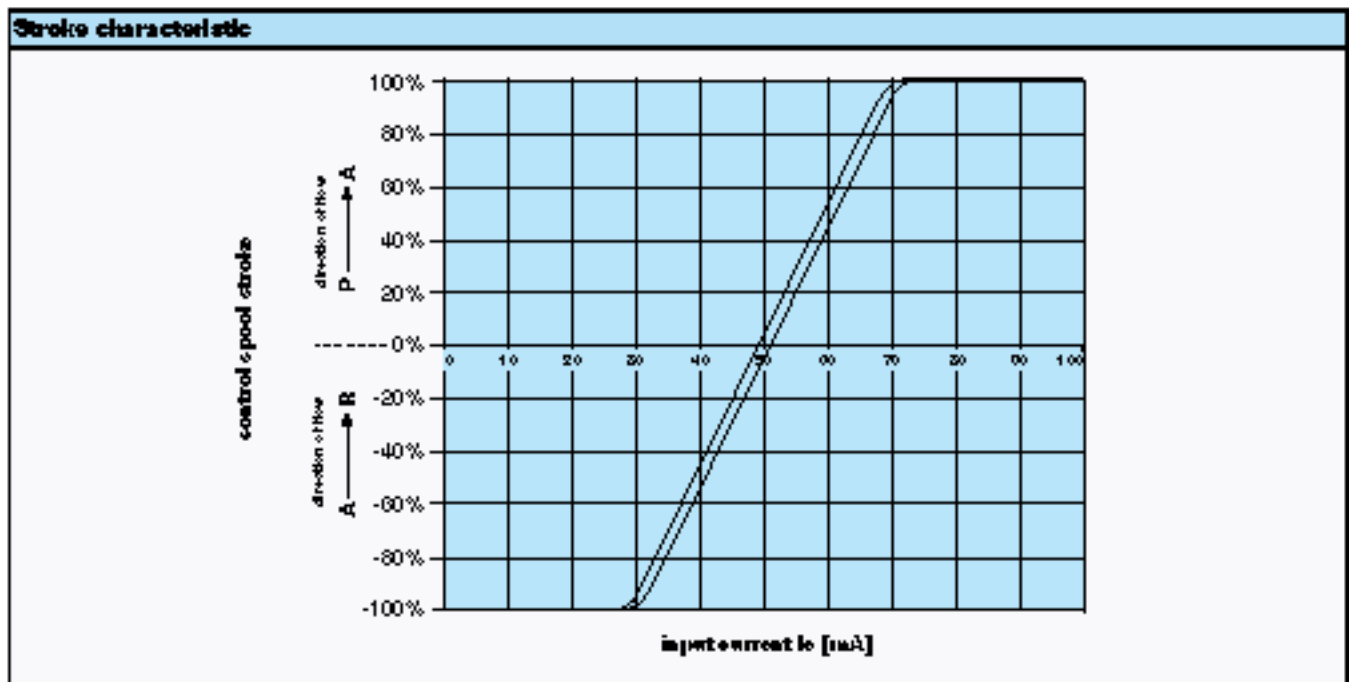
actuated by pilot control valve, DN 1.5 - 5.5

Technical data	
Type	Spool valve
Type of actuation	Control pressure (via jet/flapper plate system)
Operating pressure	4 to 8 bar, rated pressure 6 bar
Control spool stroke	-1 mm to +1 mm
Leakage	< 6 l/min
Off position (de-energized)	Max. de-pressurization of the work port
Hysteresis	6% of control slide stroke
Linearity	4% of max. control spool stroke
Temperature operating range	0°C to 50°C
Permissible medium	Condensate-free (< 5.5 g/m ³) and oil-free (< 0.1 mg/m ³) compressed air, filtered (< 5 µm) IP 65 with collected exhaust
Type of protection	
Weight	0.15 kg / 0.25 kg
Materials	Housing: Aluminium / Seals: Stainless steel
Technical information	
Valve control signal I _e	0 to 100 mA (25 to 75 mA @ -1 to +1 mm)
Pilot control coil resistor (20°)	145 Ohm
Power input P	1.6 W
Electrical connection	4-pin subminiature round connector
Connection cable	2 m long, to be ordered separately



Order numbers				
	Type	Nominal diameter	Nominal flow rate Q _N	Order number
	WS 15 G 1/8	1.5 mm	130 l/min	311 239
	WS 25 G 1/8	2.5 mm	260 l/min	311 240
	WS 50 G 1/4	5.0 mm	700 l/min	311 241
	WS 65 G 1/4	6.5 mm	1100 l/min	311 242

Accessories (order separately)		Order number
Connection cable (2 m, 4-pole, shielded) for continuous-action valves		302 402
Silencer M5 for S de-pressurization		310 885
Silencer G 1/4 for R de-pressurization		304 166

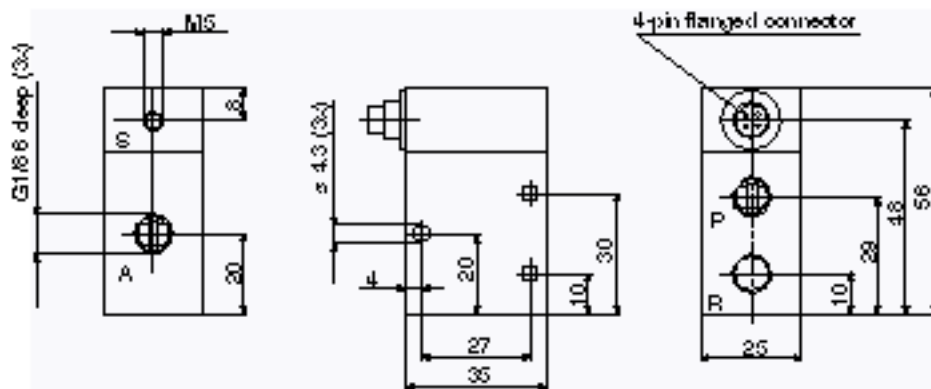


Pneumatic Servo-Valve Technology

3/2-Directional Servo-Valve WS XX G

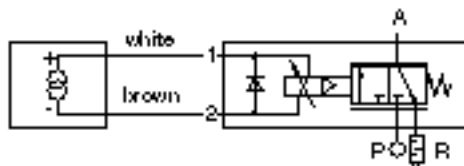
actuated by pilot control valve, DN 1.5 - 6.5

V/S 15 G 1/8 / V/S 25 G 1/8

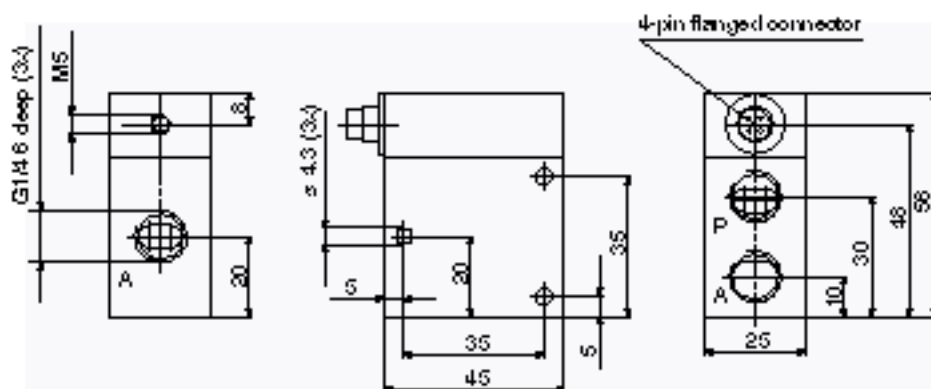


Item	
A	work port
P	compressed air input port
R	depressurization port
S	depressurization port for collecting the valve leakage air (IP 65)

Connector assignment

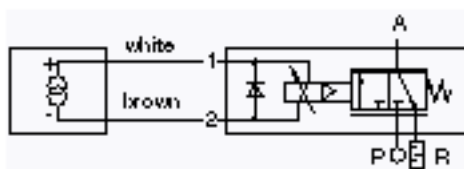


V/S 30 G 1/4 / V/S 65 G 1/4



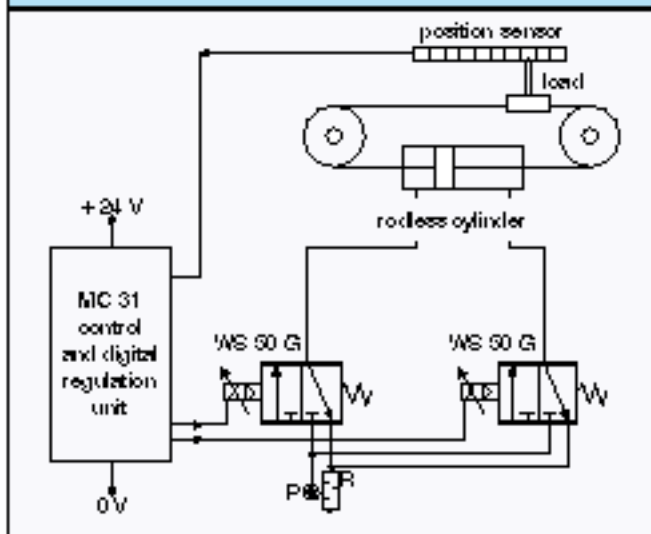
Pos.	
A	work port
P	compressed air input port
R	depressurization port
S	depressurization port for collecting the valve leakage air (IP 65)

Connector assignment

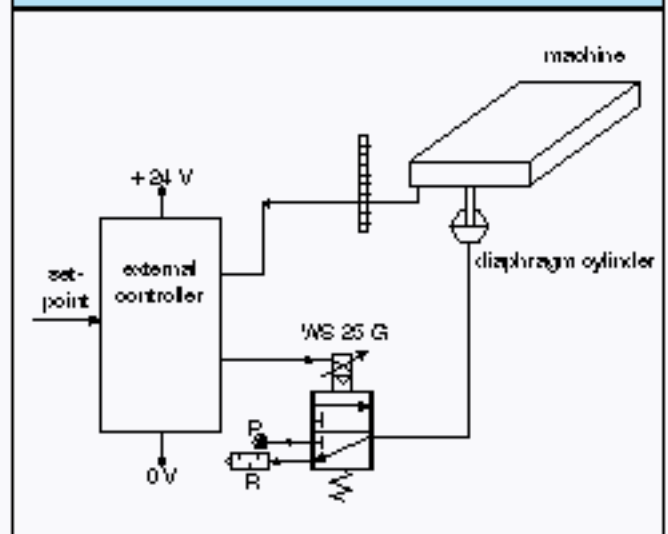


Application examples

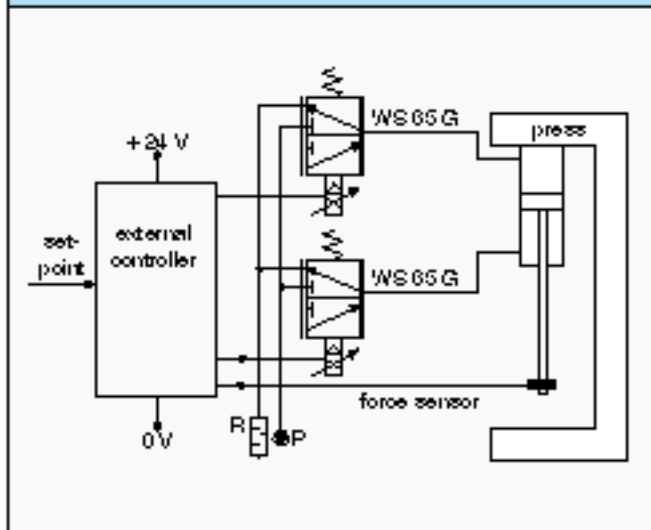
Position control



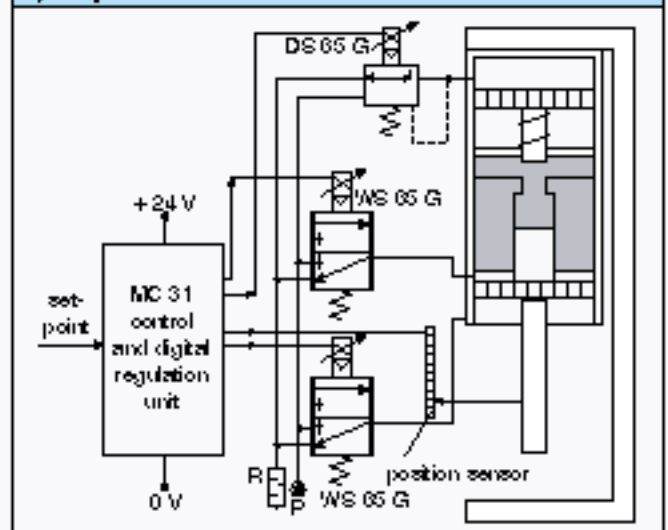
Level control



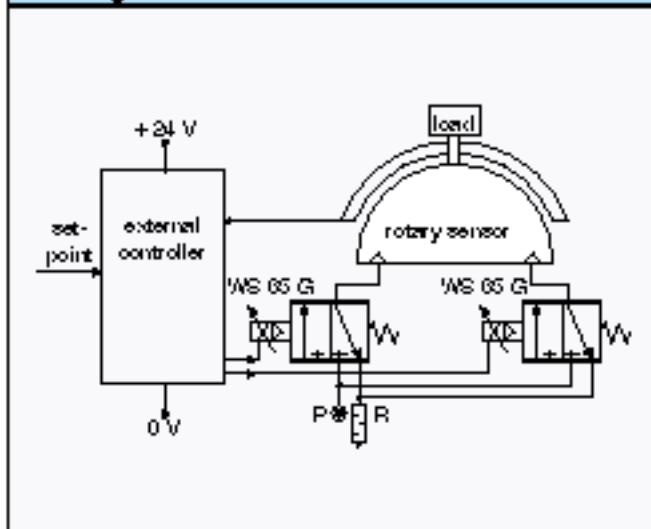
Force control



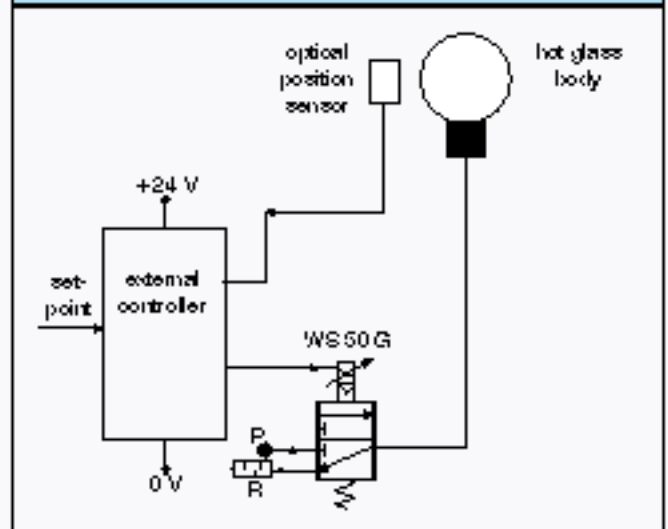
Hydro-pneumatic actuator



Swivelling motor



Flow control



Pneumatic Servo-Valve Technology

Pressure Servo-Valve DS XX G, DB 1.5 - 6.5

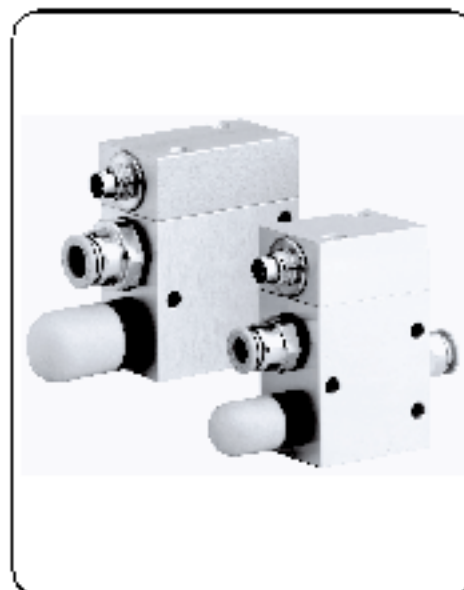
actuated by pilot control valve, controlled by fluid

Technical data

Type	Spool valve
Type of actuation	Control pressure (via jet/flapper plate system)
Operating pressure	4 to 8 bar, rated pressure 6 bar
Output pressure	0 bar up to operating pressure
Leakage	< 8 l/min
Off position (de-energized)	Max. de-pressurization of the work port
Hysteresis	4% of control spool stroke
Linearity	13% of max. control spool stroke
Temperature operating range	0°C to 50°C
Permissible medium	Condensate-free (< 5.5 g/m ³) and oil free (< 0.1 mg/m ³) compressed air, filtered (< 5 µm) IP 65 with collected exhaust
Type of protection	
Weight	0.15 kg / 0.25 kg
Materials	Housing: Aluminium / Seals: Stainless steel

Technical information

Valve control signal I _e	0 to 100 mA (25 to 75 mA, 0 to 6 bar min)
pilot control coil resistor (20°)	145 ohm
Power input P	1.6 W
Electrical connection	4-pin subminiature round connector
Connection cable	2 m long, to be ordered separately



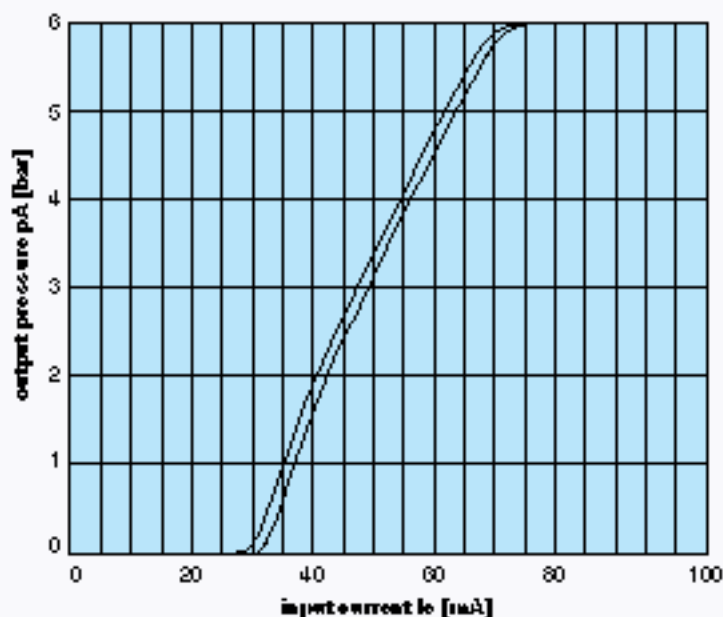
Order numbers

	Type	Nominal diameter	Nominal flow rate Q _n	Order number
	DS 15 G 1/8	1.5 mm	130 l/min	300 306
	DS 25 G 1/8	2.5 mm	250 l/min	300 345
	DS 50 G 1/4	5.0 mm	700 l/min	300 312
	DS 65 G 1/4	6.5 mm	1100 l/min	300 313

Accessories (order separately)

	Order number
Connection cable (2 m, 4-pole, shielded) for continuous-action valves	302 002
Silencer M5 for S de-pressurization	310 005
Silencer G 1/4 for R de-pressurization	301 100

Stroke characteristic

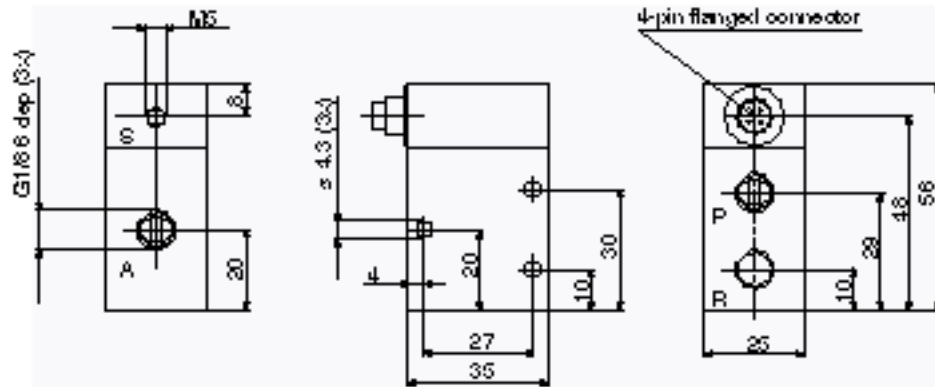


Pneumatic Servo-Valve Technology

Pressure Servo-Valve DS XX G, DN 1.5 - 6.5

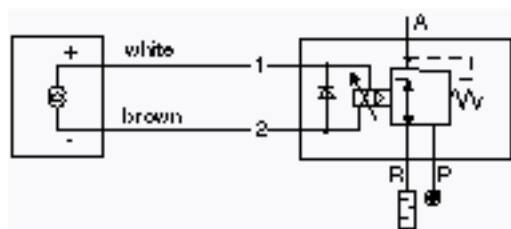
actuated by pilot control valve, controlled by fluid

DS 15 G 1/8 / DS 25 G 1/8

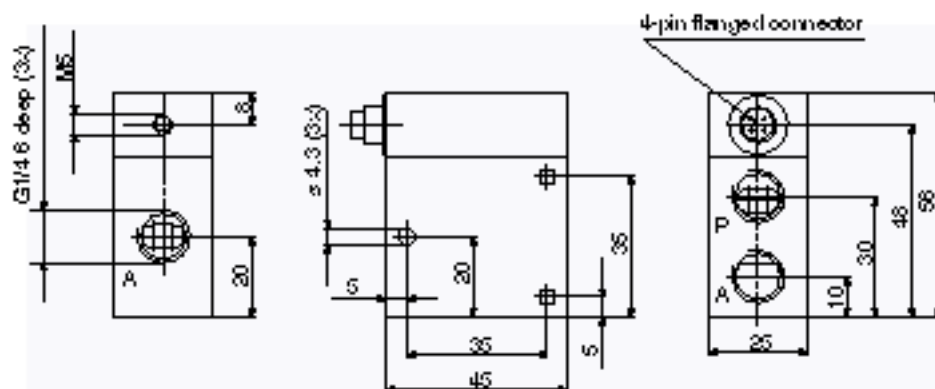


Item	
A	work port
P	compressed air input port
R	de-pressurization port
S	de-pressurization port for collecting the valve leakage air (IP 05)

Connector assignment

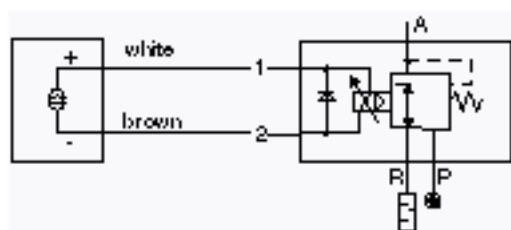


DS 50 G 1/4 / DS 65 G 1/4



Item	
A	work port
P	compressed air input port
R	de-pressurization port
S	de-pressurization port for collecting the valve leakage air (IP 05)

Connector assignment

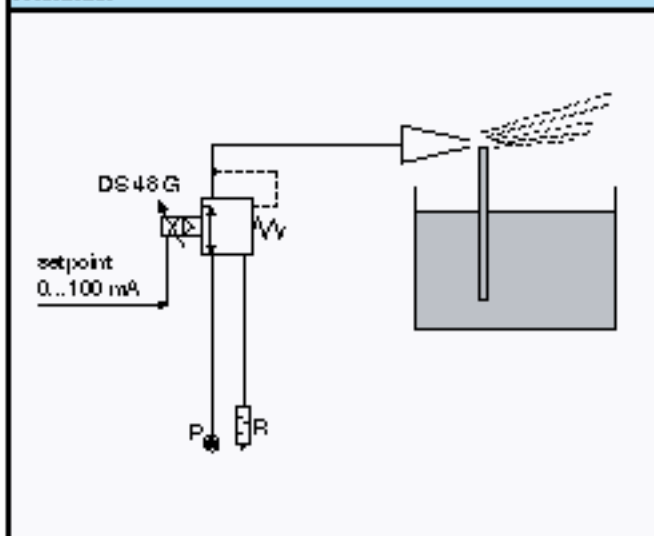


Pneumatic Servo-Valve Technology

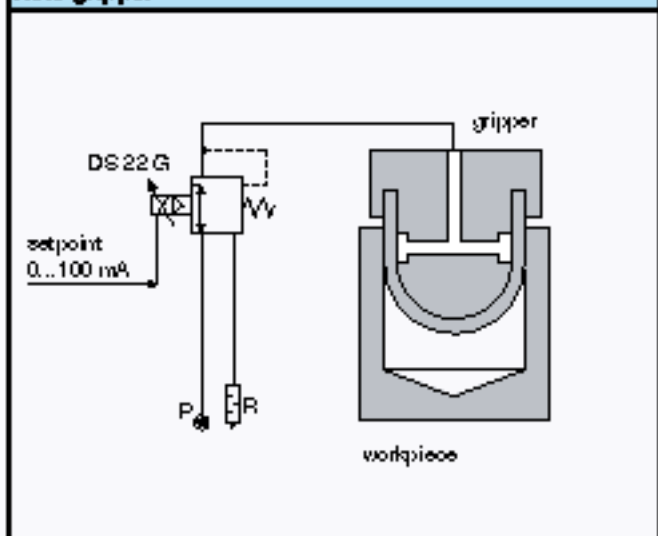
Pressure Servo-Valve DS XX G, DN 1.5 - 6.5

Application examples

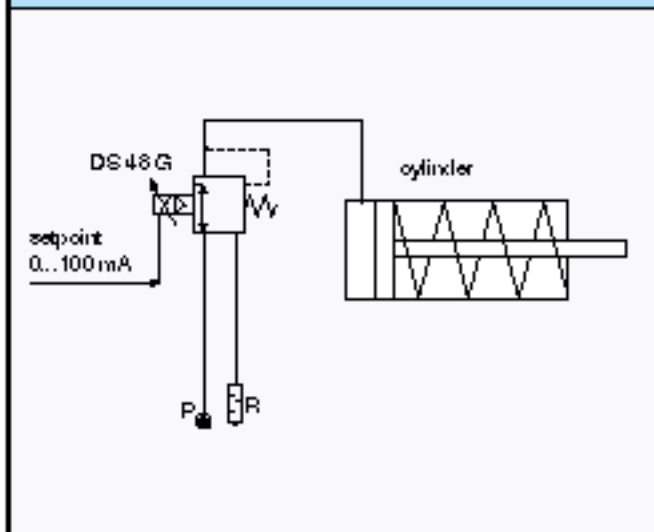
Aerator



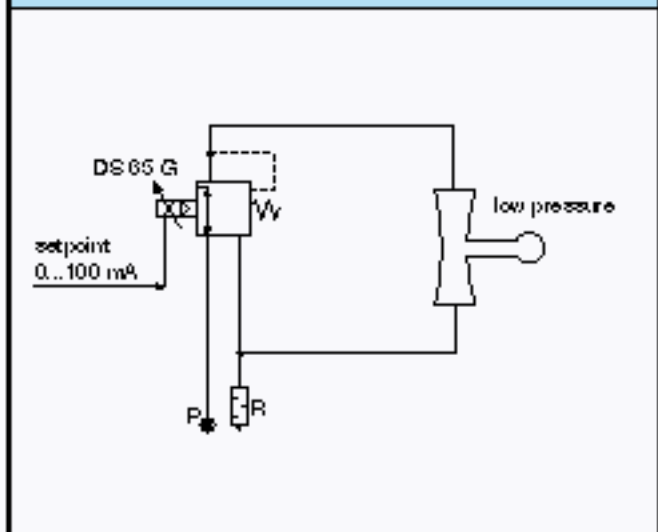
Hole gripper



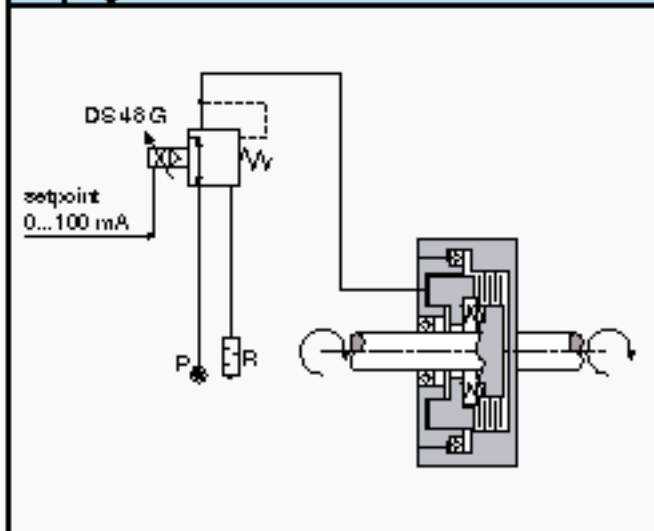
Position control



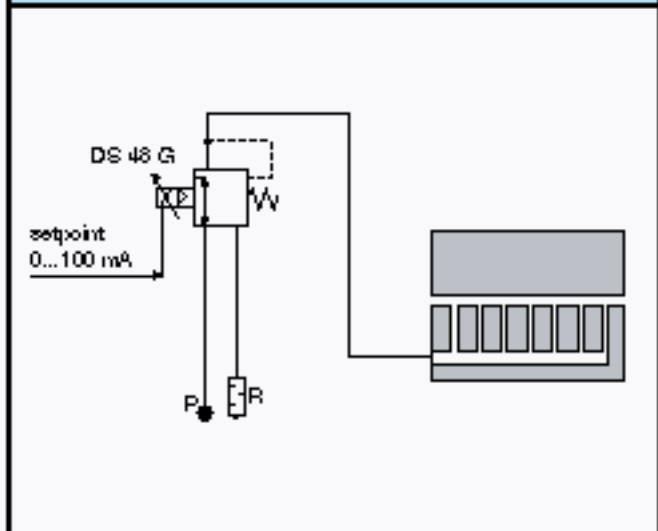
Venturi nozzle



Coupling actuator



Levitation table

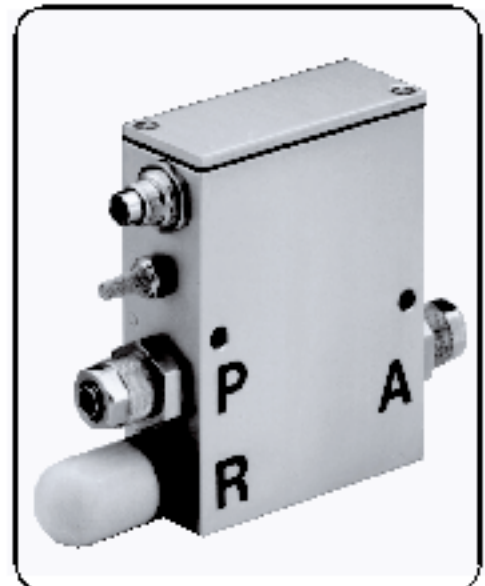


Pneumatic Servo-Valve Technology

Pressure Servo-Valve DS XX GV, DN 1.5 - 6.5

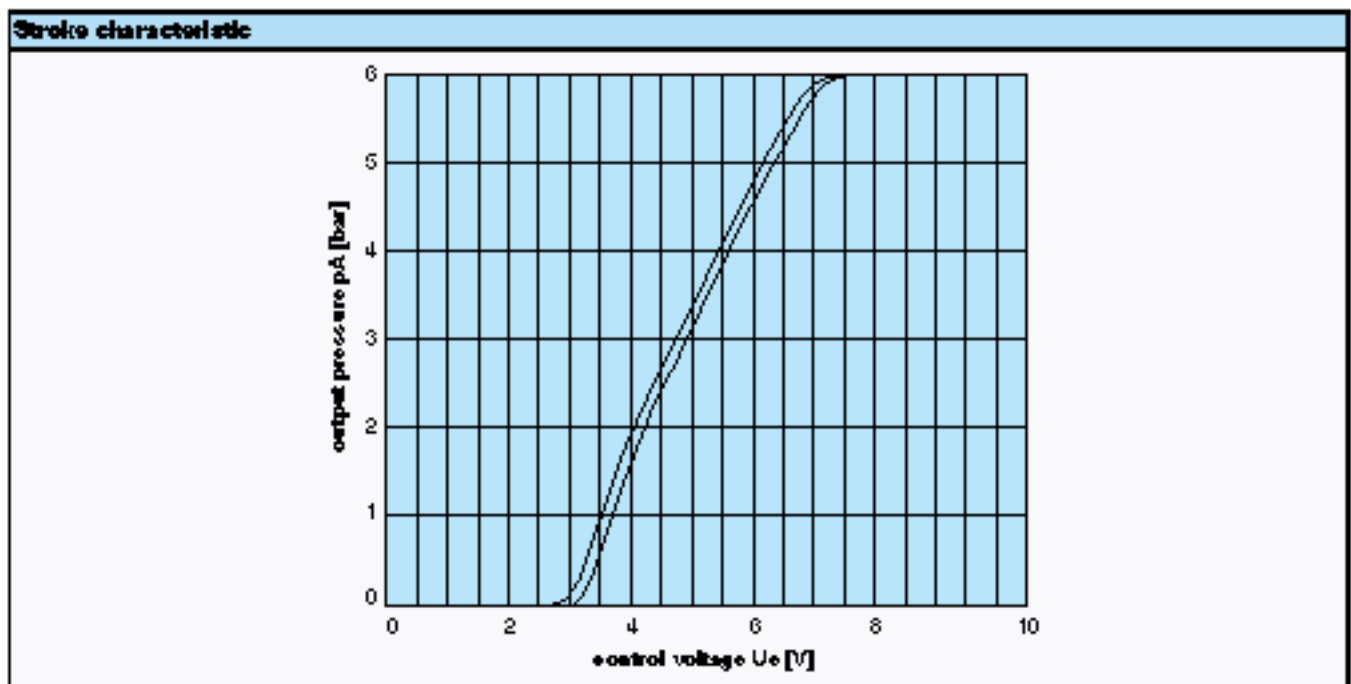
actuated by pilot control valve, controlled by fluid, with integrated electric control signal

Technical data	
Type	Spool valve
Type of actuation	Control pressure (via jet/flapper plate system)
Operating pressure	4 to 8 bar, rated pressure 6 bar
Output pressure	0 bar up to operating pressure
Leakage	< 6 l/min
Off position (de-energized)	Max. de-pressurization of the work port
Hysteresis	4% of control spool stroke
Linearity	13% of max. control spool stroke
Temperature operating range	0°C to 50°C
Permissible medium	Condensate-free (< 5.5 g/m ³) and oil-free (< 0.1 mg/m ³) compressed air, filtered (< 5 µm)
Type of protection	IP 65 with collected exhaust
Weight	0.25 kg
Materials	Housing: Aluminium / Seals: Stainless steel
Technical information	
Operating voltage	24 V DC ±15%
Control voltage	0 to 10 V (2.5 to 7.5 V ± 0 to 6 bar)
Power input P	2.6 W
Electrical connection	4-pin subminiature round connector
Connection cable	2 m long, to be ordered separately



Order numbers				
	Type	Nominal diameter	Nominal flow rate Q _n	Order number
	DS 15 GV	1.5 mm	130 l/min	311 238
	DS 25 GV	2.5 mm	290 l/min	307 506
	DS 50 GV	5.0 mm	700 l/min	307 363
	DS 65 GV	6.5 mm	1100 l/min	307 364

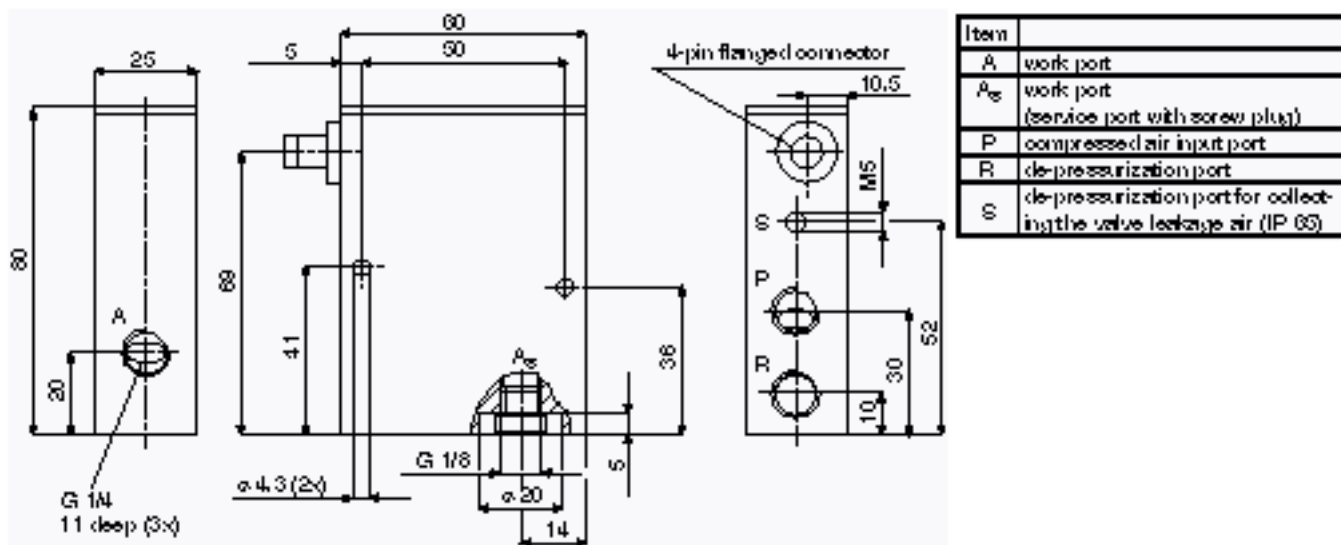
Accessories (order separately)	
Connection cable (2 m, 4-pole, shielded) for continuous-motion valves	Order number 302 402
Silencer M5 for S de-pressurization	310 885
Silencer G 1/4 for R de-pressurization	304 166



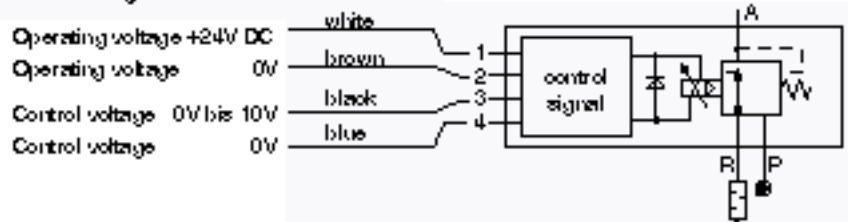
Pneumatic Servo-Valve Technology

Pressure Servo-Valve DS XX GV, DN 1.5 - 6.5

actuated by pilot control valve, controlled by fluid, with integrated electric control signal

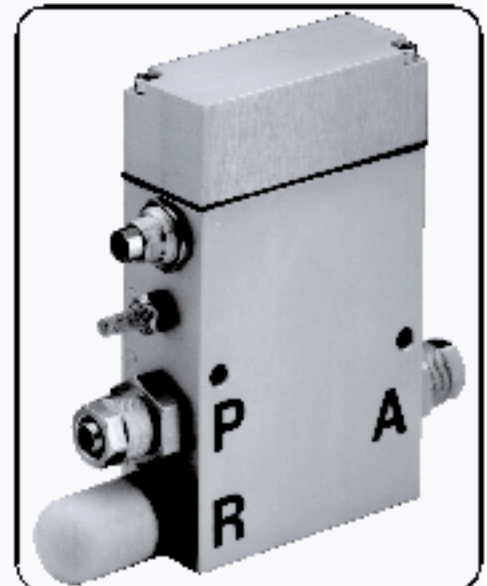


Connector assignment



actuated by pilot control valve, with integrated pressure sensor and controller, DN 1.5 - 6.5

Technical data	
Type	Spool valve
Type of actuation	Control pressure (via jet/flapper plate system)
Operating pressure	4 to 6 bar, rated pressure 6 bar
Output pressure	0.05 bar up to operating pressure - 0.05 bar
Leakage	< 6 l/min
Off position (de-energized)	Max. de-pressurization of the work port
Hysteresis	1% of control spool stroke
Linearity	1% of max. control spool stroke
Temperature operating range	0°C to 50°C
Permissible medium	Condensate-free (< 5.5 g/m ³) and oil-free (< 0.1 mg/m ³) compressed air, filtered (< 5 µm)
Weight	0.29 kg
Materials	Housing: Aluminium / Seals: Stainless steel
Technical information	
Operating voltage	24 V DC ±15%
Pressure sensor output signal	4 to 20 mA ± 0 to 6 bar, optionally up to 8 bar
External sensor	Optional
Setpoint	0 to 10 V, optionally 4 - 20 mA
Power input P	5 W
Electrical connection	4-pin subminiature round connector
Connection cable	2 m long, to be ordered separately



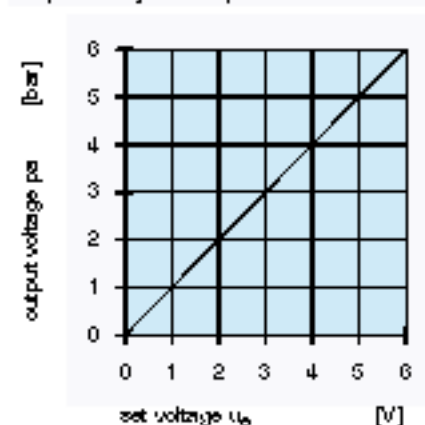
Order numbers				
	Type	Nominal diameter	Nominal flow rate Q _N	Order number
	DS 15 R	1.5 mm	130 l/min	310 463
	DS 25 R	2.5 mm	250 l/min	310 597
	DS 50 R	5.0 mm	700 l/min	310 598
	DS 65 R	6.5 mm	1100 l/min	310 599

When ordering, please indicate the set value and the pressure range required.

Accessories (order separately)	
	Order number
Connection cable (2 m, 4-pole, shielded) for continuous-action valves	302 482
Connection cable (2 m, 5-pole, shielded) for continuous-action valves with external sensor	302 484
Silencer M5 for S de-pressurization	310 885
Silencer G 1/4 for R de-pressurization	304 166

Pressure control characteristic of the pressure servo-valve DS 50 R

Static characteristic
(primary pressure $p_0 = 6$ bar,
setpoint entry 0 to 6 V)



Response times for setpoint step-change
(primary pressure $p_0 = 6$ bar)

Volume V _A connected to port A	[ml]	100	400	750
Time for pressurization from 0 to 5 bar	[ms]	40	110	190
Time for de-pressurization from 6 to 1 bar	[ms]	54	150	260

Response times for delivery and exhaust
(controlled primary pressure $p_0 = 6$ bar)

Volume V _A connected to port A	[ml]	10	100	400	750	2000
Response time for delivery	[ms]	7	40	120	240	890
Response time for exhaust	[ms]	7	60	180	320	1000

A large rectangular area filled with a fine grid of light gray lines, resembling graph paper, intended for taking notes.

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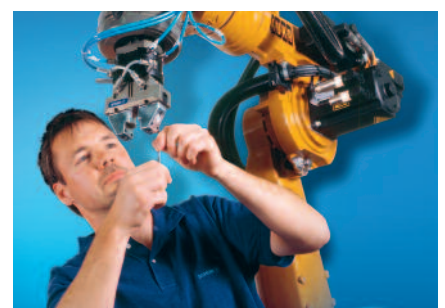
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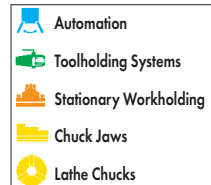
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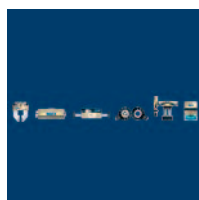
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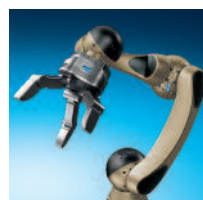
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☐ Industry Solutions



☐ Highlights New Products



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