



Запорно-регулирующая арматура ARCA

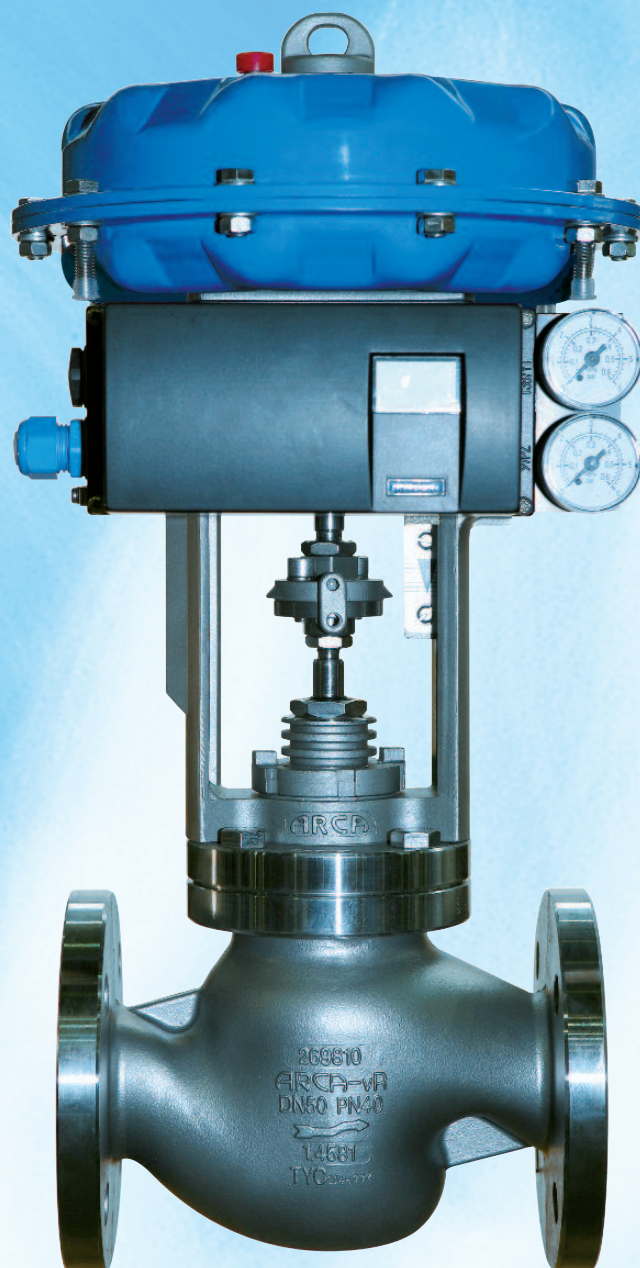
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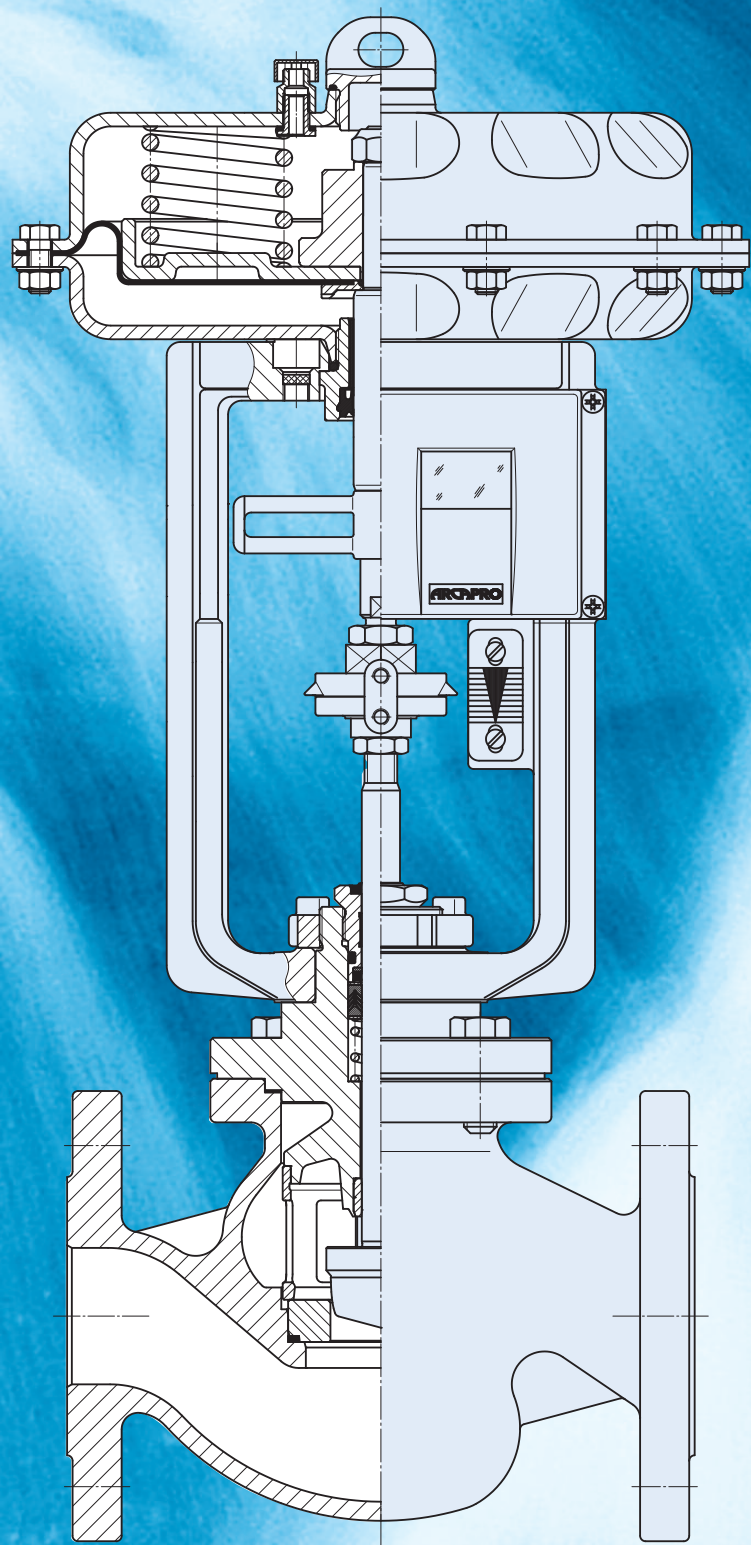
ECOTROL®

control valve



ARCA
VALVES
*quality engineered
control valves*

ECOTROL® control valve



Committed to perfection in every detail

Powerful valve actuator

The pneumatic multi-spring 812 series actuator shown here is deployed in many applications as a standard actuator. Not only is it robust and explosion proof, it also provides short stroking times, a constant seating force, and is cost effective. The actuator is available in different sizes optimized in line with required actuating force. ECOTROL® control valves are also available with optional electric or electrohydraulic actuators. For more details, see the ARCA actuators brochure.

Multi-functional positioner

The ARCAPRO® digital positioner is a multi-functional interface with the controller or process control system and operates as standard with 4–20 mA. HART, Profibus (PA), and Foundation Fieldbus communication are used to establish a digital interface with bidirectional data exchange (including status messages). It can be parameterized on site or via the communications system. An open mechanical interface concept that we helped elaborate complies with VDI/VDE 3847 and is used for mounting and mechanically connecting the positioner to the actuator. For more details about this and the optional analog positioners, see the ARCA positioners brochure.

Reliable stem seal

Depending on the process fluid, pressure and temperature, we can advise you on the most suitable stem seal – from the stuffing box to the hermetically-tight bellows sealing – so that your system remains completely leak proof. The stem surfaces, packing material, and design complement each other perfectly, which means that friction, corrosion, and emission limit values are not an issue.

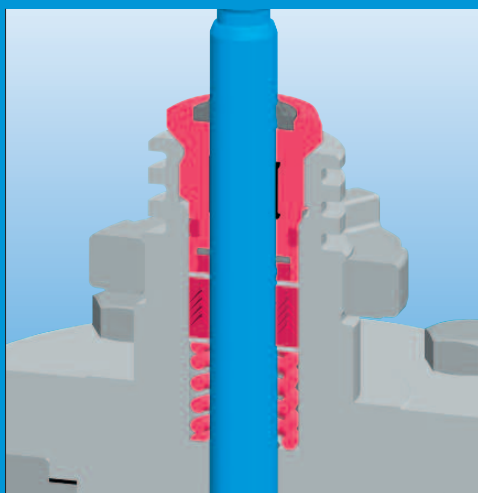
Fixed-form housing seal

The connection between the valve housing and the bonnet is established in the force bypass. This helps prevent mistakes during assembly and ensures that the housing seal is fully enclosed, thereby preventing it from yielding. This housing/bonnet design also ensures that the valve seat and plug are not subject to any lateral forces, which helps prevent leakage.

Robust, high-precision inner parts

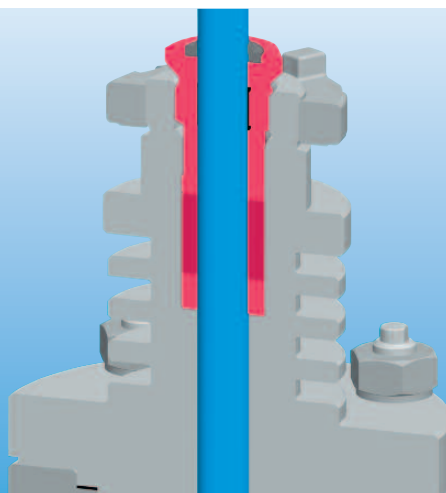
The ECOTROL® control valves are equipped with inner parts specially designed for the prevailing flow conditions in your plant. The shapes of the closure members and valve seats as well as the material from which they are made are optimized in line with your requirements. A key technical feature here is the unique quick-exchange system that enables your service personnel to replace the clamped valve seat without the need for special tools. The metal or compressible seal for the valve seat and the float-mounted seat ring ensures long-life seat tightness. As an option a symmetrical seat ring, which can be used on both sides, is available. This cuts costs dramatically not only with the ceramic version for abrasive media.

Stem seals



Maintenance-free PTFE V-ring packing with precision sealing element

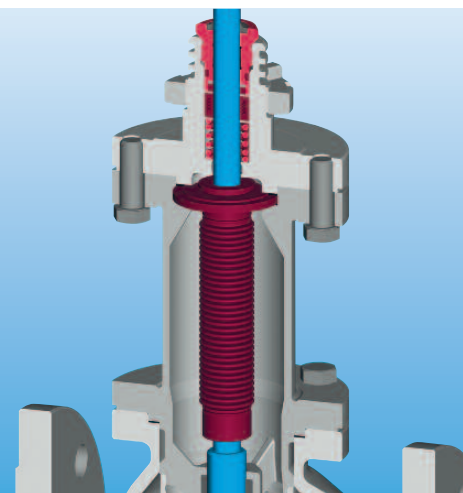
This packing system comprises graphite reinforced and virgin PTFE V-rings, which makes them immune to strongly fluctuating operating temperatures. The corrosion-resistant preload spring located under the packing allows the stem seal to adjust itself automatically and ensures sufficient sealing force even at low pressures. An elastomer precision sealing element seals the device up to the stuffing box, while a wiper ring protects against the ingress of dirt.



Adjustable stuffing box with packing rings

Different packing materials are available for the adjustable stem seal. The required sealing force can only be ensured over the long term, however, when the individual packing rings or cords are pressed with equal load. Thanks to the patented ARCA-OPTIPRESS® preloading device, the packing rings are all compressed with constant preload, with the result that the sealing effect is properly distributed over the packing length.

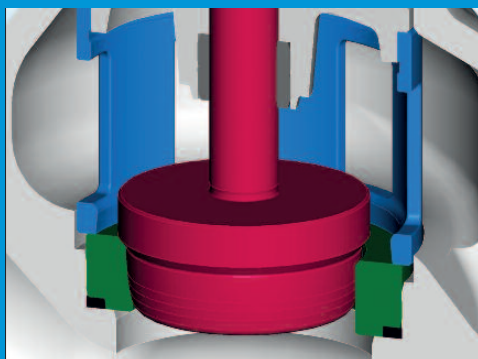
ECOTROL® control valve



Bellows seal

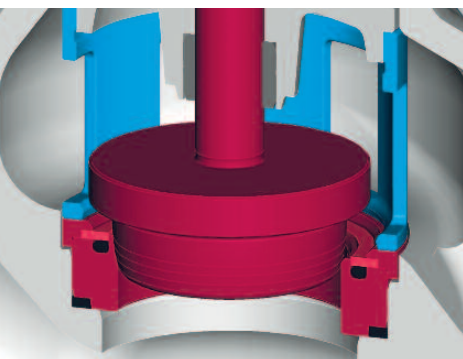
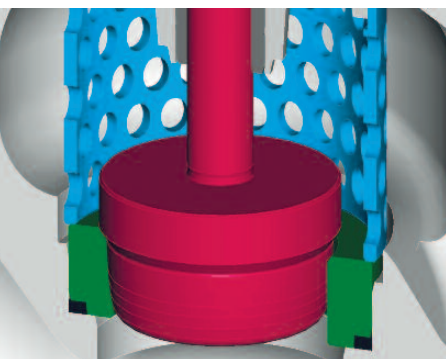
If hermetic sealing is required, our specially developed bellows seal is the perfect solution. The stainless steel bellows is welded on the bottom with the valve stem and on the top with the bellows plate so that it is hermetically tight. For safety reasons, an additional stuffing box with standard life loading packing is provided. An optional control connection for alarm, flushing, or siphoning equipment can also be installed between the metal bellows and safety packing to ensure maximum operational reliability even if the metal bellows fail.

Valve trims



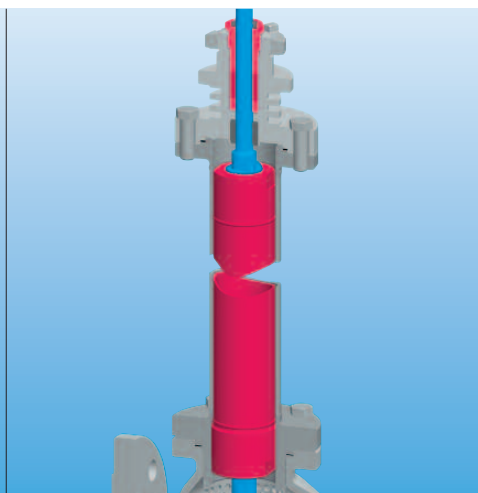
Standard contoured plug

For a laminar or turbulent flow, the single-stage, dirt-resistant contoured plug is the ideal solution. The characteristic of the contoured plug can be adjusted as required. The standard trim is metal-seated. The seat ring is rotationally symmetric and can be supplied as an option with two seating surfaces. This means that when one of the seat faces has worn, you can simply turn the seat ring around. This can be easily carried out on site and without the need for special tools. To prevent corrosion due to cavitation and high pressures, the (single or multi-stage) contoured plug and the seat ring can also be made from highly wear-resistant ceramic materials. A low-noise perforated cage can help reduce noise.



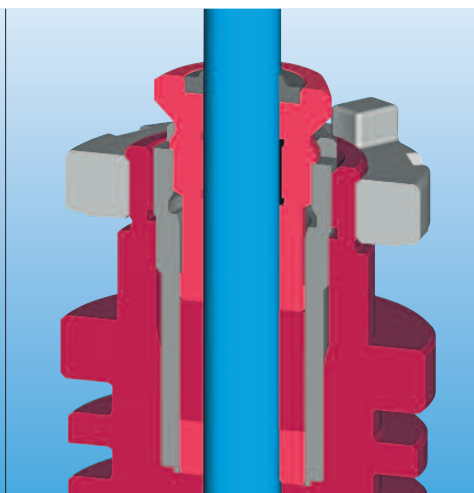
Soft seat with metal support

To ensure that even with oversized actuators the soft seal remains tight over long periods of operation, we have developed the patented ECOTROL® soft seal with an additional metal seal between the seat and plug. This ensures that the surface pressure of the PTFE soft sealing element remains at a permissible level and protects the PTFE sealing element against «cold flow». The defined pretension of the sealing element is achieved by means of an O-ring spring suspension. With over 1 million operating cycles, this soft seal design has proved to be highly reliable.



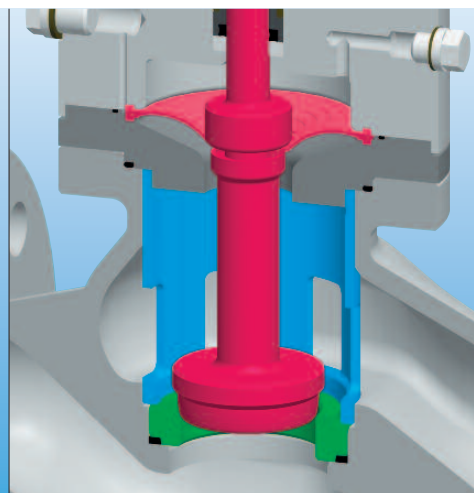
Low temperature extension

At low temperatures, sufficient distance must be maintained between the valve actuator and the valve itself. To provide protection against these icy conditions, we offer a special stem extension housed in a thin-walled insulation column. The stem extension is filled with an insulator, which minimizes loss caused by thermal conduction and radiation. The length of the extension can be adapted in line with your specific plant requirements.



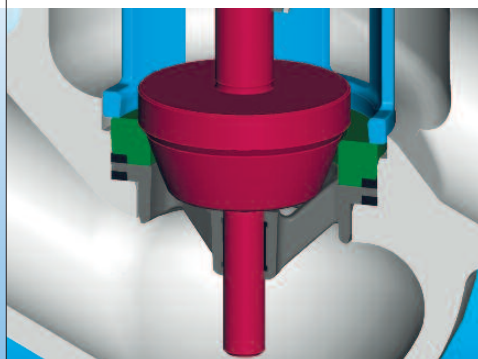
Cooling fins for high temperatures

At operating temperatures of above 250 °C, multiple cooling fin sets can be used in conjunction with graphite packing. These allow heat to escape, thereby ensuring that the packing does not overheat. At operating temperature of above 450 °C, the customized design of the cooling fin set ensures that, in a worst case scenario, the temperature within the packing does not exceed 450 °C.



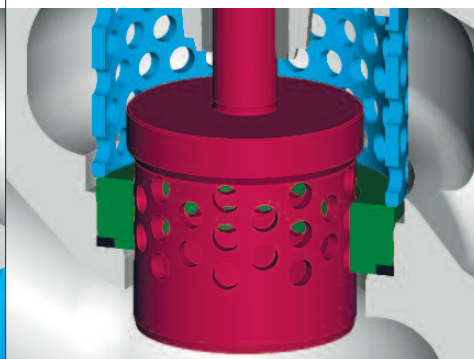
OPTISEAL® diaphragm seal for hazardous media

The OPTISEAL® diaphragm seal with additional safety stuffing box prevents hazardous media from escaping. This is the ideal solution if metal bellows can potentially be destroyed in critical applications by particles which become lodged in the bellows winding. OPTISEAL® fixes a hydraulically-supported diaphragm between the valve housing and bonnet, and between the stem and plug. Thanks to the hydraulic support, the diaphragm can withstand operating pressures of up to 100 bar.



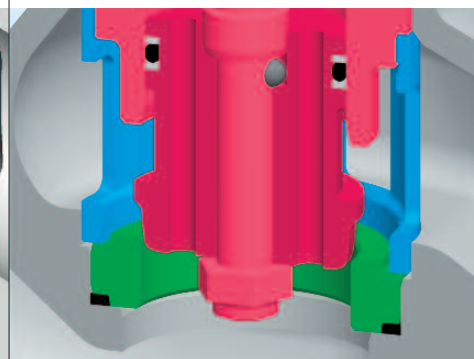
Double guided contoured plug

Due to the Bernoulli Effect, liquids with a high differential pressure can cause the valve plug to vibrate. This can be counteracted, however, by means of an integrated bottom guide. This innovative design ensures that there is no additional sealing area on the outside. The bottom guide is open and, therefore, completely dirt resistant. Thanks to the ECOTROL® quick-exchange system, this component is also retrofitted to each standard valve.



Perforated plug and cage

For liquid and compressible media, perforated plugs and cages have proved to be the ideal solution for preventing noise and cavitation damage. Cavitation downstream of the perforation caused by gas bubbles imploding occurs in the center of the perforated plug without damaging the trim or housing. This increases the service life and, in turn, the cost-effectiveness of control valves which are designed for high differential pressures and subject to harsh conditions. This also results in lower noise emissions, which can be reduced even further by means of a low-noise perforated cage.



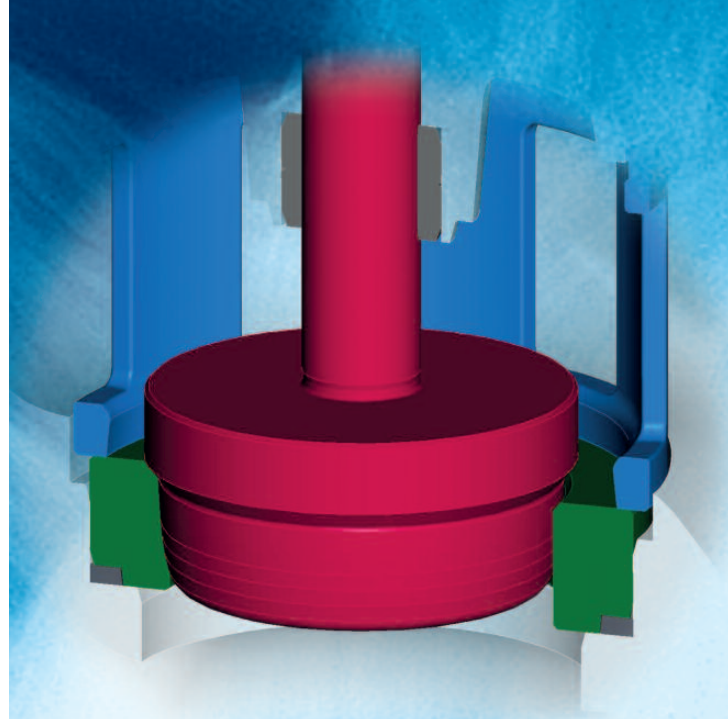
Pressure-balanced valve plug

Pressure-balanced valve trims are optimized for minimal actuating forces. The plug surface facing away from the valve seat is under the same pressure as the surface facing the valve seat. This is achieved by bores in the plug and dynamic piston sealing. An ECOTROL® control valve with a pressure-relieved plug can be operated even by very small actuators. Depending on the process conditions, the plug relief device is sealed by metal piston or elastomer rings.

Ensuring precision and efficiency

ARCA ECOTROL® offers a wide range of innovative solutions designed to fulfill all your control task requirements. Whether housing, inner valves, valve seats, stem seals, actuators, or positioners, every detail benefits from the know-how of expert engineers with many years' experience in a wide range of applications. Factors such as efficiency, control precision, price/performance ratio, weight, and lifecycle costs are optimized to suit your requirements. Our commitment to innovation in valve technology ensures that you benefit from high control precision and lower operating costs. Why not see for yourself!

ECOTROL® control valve



Our innovations

- 1** Patented valve seat with PTFE soft seal and metal secondary seal
- 2** Seat rings made from a wide variety of materials
- 3** PTFE V-ring packing with additional precision sealing element
- 4** Quick exchange system for seat rings and plugs
- 5** Wide variety of valve trims optimized for all applications
- 6** Stainless steel stuffing box area
- 7** Flow-optimized valve housing
- 8** Compact, robust design

How you benefit

- ✓ Absolute seat tightness
- ✓ Defined preload
- ✓ Long service life
- ✓ Reproducible seat tightness due to self-centering
- ✓ Low wear and tear minimizes cost of spare parts
- ✓ Safety and hermetic sealing
- ✓ Low maintenance
- ✓ Maintenance without special tools
- ✓ Maximum process flexibility with high control quality
- ✓ Low noise emissions
- ✓ No galvanic corrosion
- ✓ High flow coefficients
- ✓ Low noise emission
- ✓ Minimum mounting space required
- ✓ Low weight

ECOTROL® control valve

ECOTROL® general specifications

Series	8C	6N	6H	
DN	15–100 / ½"–4"	125–800 / 5"–32"	15–400 / 1"–16"	
PN / ANSI class	10–63 / class 150–600	10–63 / class 150–600	100–250 / class 900–2500	
Body material	EN	for temperatures	ASTM	for temperatures
	1.0619 GP240GH	–10 °C to 400 °C	A 216 WCB	–29 °C to 425 °C
	1.4408 GX5CrNiMo19-11-2	–29 °C to 400 °C	A 351 CF8M	–196 °C to 400 °C
	1.6220 G20Mn5	–50 °C to 345 °C	A 352 LCC	–50 °C to 345 °C
	1.6982 GX3CrNi13-4	–120 °C to 400 °C	–	–
	1.7357 G17CrMo5-5	–10 °C to 530 °C	A 217 WC6	–29 °C to 530 °C
Bonnet Material	≤ DN 65 made of 1.4408 (A351CF8M)			
	≥ DN 80 made from the same material as the housing but with a stuffing box sleeve made of 1.4571 (ANSI TP316TI)			
Plug characteristic	Standard: equal percentage or linear			
	Optional: modified linear			
Rangeability	50 : 1			
Double guide	Optional: integrated bottom guide for sizes DN 40 – DN 600, Kvs > 25			
Seat leakage	Metal sealing: leakage rate class IV (<0.01 % Kvs); optional leakage rate class V			
	Soft sealing: leakage rate class VI			
Bellows seal	Double walled, made of 1.4571 or (optional) Hastelloy® (for ANSI 150 and ANSI 300, other rated pressures available on request)			
Heating jacket	Connections DN 15 or DN 25 PN 40 (½" or 1" ANSI 300) screwed joints or flanges			

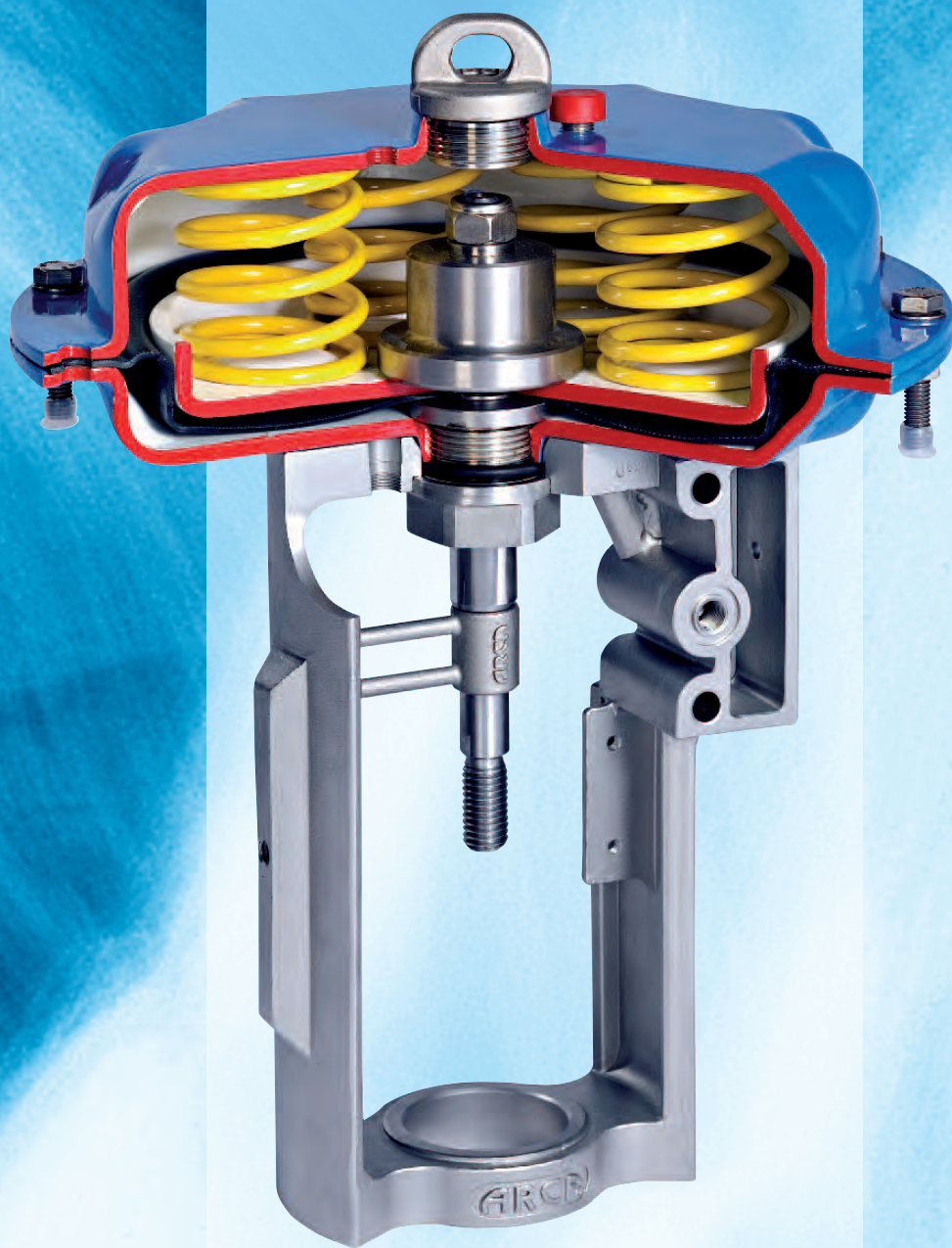
ECOTROL® standard inner valves

Material no.	Contoured plug P1	Contoured plug P1 with integrated bottom guide*	Perforated plug L1	Seat	Seat seal	max. permissible medium temperature
1	1.4571	1.4571	–	1.4571	Metal	In acc. with stem seal
2	–	–	1.4571	1.4571 nitrited	Metal	In acc. with stem seal
3	1.4122	1.4122	–	1.4021	Metal	In acc. with stem seal
4	–	–	1.4122	1.4021 nitrited	Metal	In acc. with stem seal
5	1.4112 hardened	1.4112 hardened	1.4112 hardened	1.4112 hardened	Metal	In acc. with stem seal
6	1.4571	–	–	1.4571	PTFE/FKM	–20 °C ~ 180 °C
7	1.4571	–	–	1.4571	PTFE/EPDM	–29 °C ~ 140 °C
8	1.4571	–	–	1.4571	PTFE	–196 °C ~ 180 °C

* only as of ≥ 40 (1 ½") KVs ≥ 25 (Cvs ≥ 29)

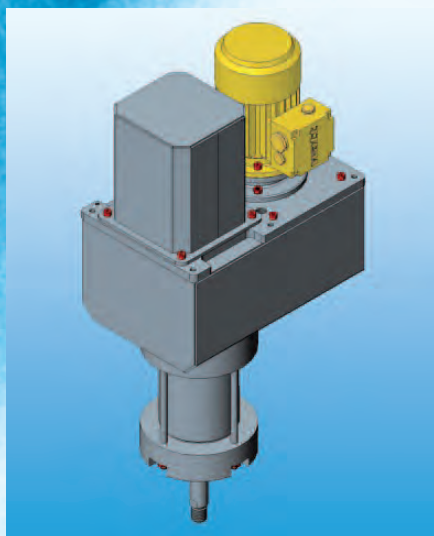
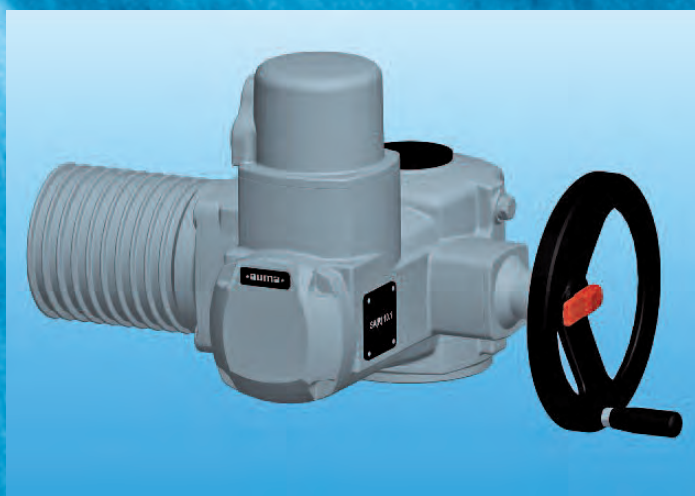


Diaphragm Actuators



ARCA
VALVES
*quality engineered
control valves*

Diaphragm Actuators



Favorable Variety

Whether rotary or linear – with pneumatic, electric, and hydraulic valve actuators from ARCA Regler GmbH, you always have the right solution at hand. ARCA's comprehensive product portfolio offers a choice of valve actuators ranging from low to very high actuating forces and torques. If requested, we can also develop and manufacture actuators that are optimized for safety-oriented applications or have extremely short actuating times. Low lifecycle costs are a feature shared by all our actuators.

Pneumatic Diaphragm Actuators

The simple design of our pneumatic diaphragm actuators with a robust rolling diaphragm makes them universal in application while ensuring hysteresis-free control across the entire actuating range. These pneumatic valve actuators can be opened or closed using spring force or control air – an option that is field-reversible, making the devices very versatile and providing security for your investments. The integrated compression springs ensure that the pneumatic control actuator always adopts a defined fail position. This is accomplished with very short actuating times meaning that alongside their control tasks, ARCA diaphragm actuators also play a key role in safeguarding the plant. Explosion protection is not an issue when configuring pneumatic diaphragm actuators. If required, a manual emergency override can be adapted.

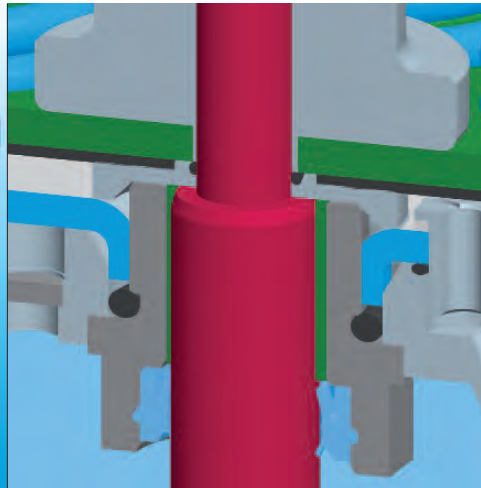
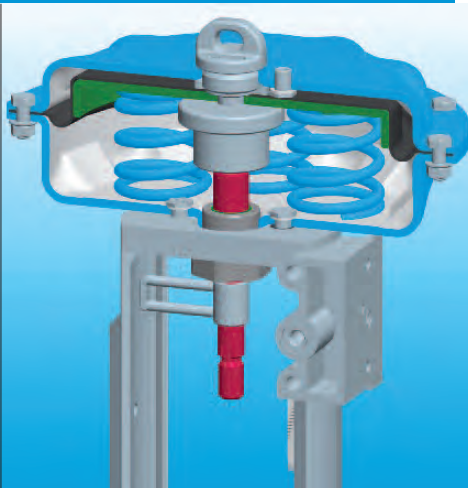
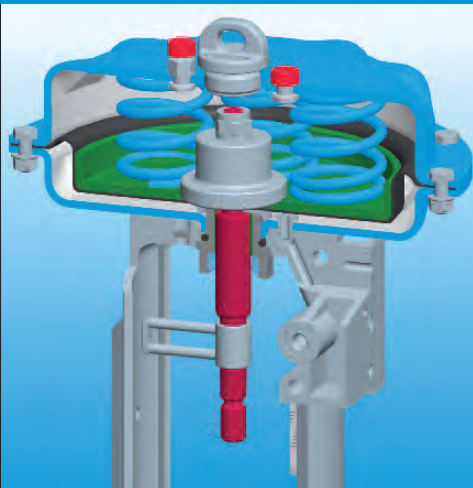
Electric Actuators

Actuating and control forces are transferred to the valve using geared motors to ensure that the forces are always available on demand. Suitable gear reductions guarantee that even extremely high actuating forces are transferred safely and reliably. Electric actuators are normally equipped with a handwheel. End positions are adjusted via configurable torque or travel limit switches. Explosion protection and an emergency control function can be realized as an option. A standardized interface allows the actuators to be used for all common applications.

Hydraulic Actuators

These are characterized by their high actuating forces and speeds. Because of the double piping for the inflow and outflow of media, hydraulic actuators are only specified for high-end technical applications. In conjunction with leading manufacturers, we can offer you the correct make to suit your specific requirements.

Pneumatic Multi-Spring Actuator Type 812



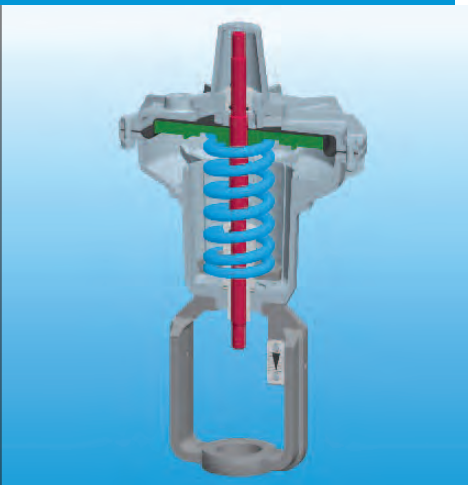
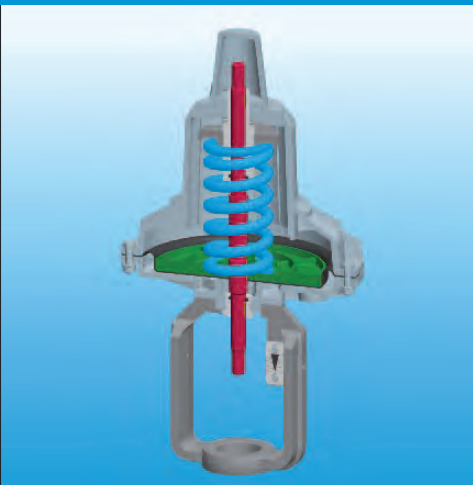
The Benefits of Our Standard Version

This pneumatic actuator is identical as regards the «air to open» (Fig. 1) and «air to close» (Fig. 2) functions, which allows you to reverse the actuator on site, as installed, with minimal manual intervention and without opening the actuator housing. This design prevents internal parts from being lost and the powder-coated actuator shells are not damaged at the contact points with the bolts and nuts. With this the rolling diaphragm, which has proven itself thousands of times over, is also protected from damage. Special plugs for aerating and bleeding ensure the highest possible protection against spray water and other environmental influences. The multi-spring design enables very compact dimensions. A stainless steel variant is available for demanding process conditions as encountered in the food industry.

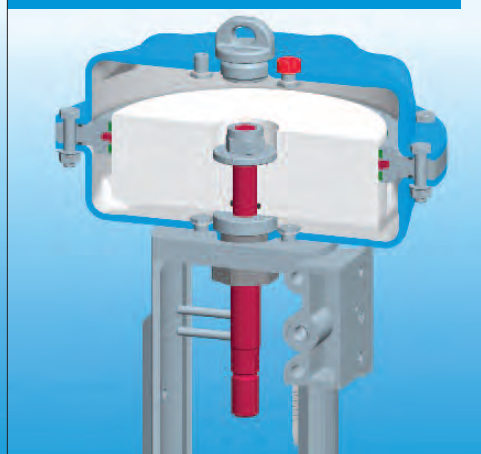
Special Protection for the Actuator Stem

The stem lead-through is designed to be maintenance-free, even when used in harsh, dusty environments. Dirt particles are reliably deflected upstream of the guide and sealing element to prevent damage from occurring in these areas near the super finished and finish-rolled stems for ultra-high operating reliability.

Universal Diaphragm Actuator Type 811



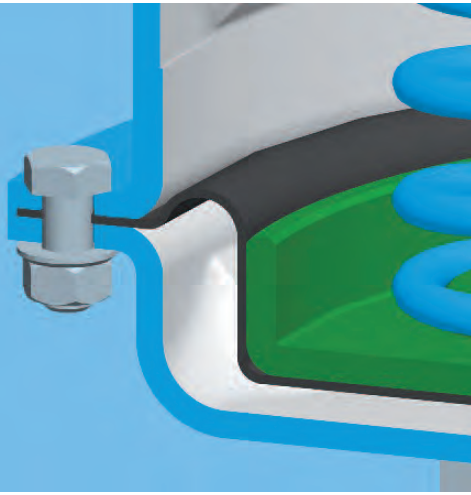
Double-Acting Piston Actuator



The universal diaphragm actuator, type UMA 811, is a product line comprising four sizes of actuator. The stem features a twin design and both interfaces for adapting to the valve are identical to facilitate toggling between the two directions. Instrumentation can be added by way of standardized NAMUR ribbing. An emergency override facility is available as an option.

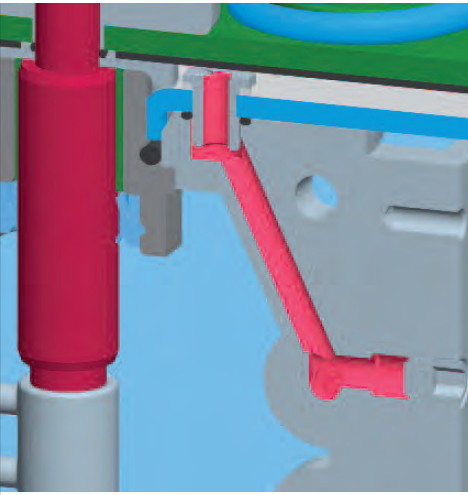
A tensioning screw as commonly used in pneumatic regulation is used to adapt the spring preload to the actuating forces required with pinpoint accuracy. This, in conjunction with different-sized centric springs, enables a very broad range of actuating forces to be optimally set. High accuracy is achieved by making adjustments at the outward-facing side, in the installed state, with further fine-tuning possible during operation.

Internal development of the double-acting piston actuator, type 812.MFI-DWK, allows us to accommodate the special requirements associated with large driving forces in both directions as well as very short actuating times for extremely high switching frequency. The basis for this is proven control actuator technology and the combination of compact design, long service life, and high availability. The interfaces have also been retained so that the integrated positioner assembly can be used with the integrated air ducting as has the valve interface, allowing accessories to be retrofitted at any time.



Diaphragm and Diaphragm Clamping with Enclosure

The rolling diaphragm used by ARCA is maintenance-free thanks to a super finished housing and diaphragm plate. The diaphragm clamping system has proven to be crucial in terms of service life, however. Our diaphragm clamping system with force bypass further extends the service life of the diaphragm significantly. The force bypass design prevents the maximum permissible surface pressure from being exceeded which, in turn, prevents the diaphragm from being installed incorrectly as is otherwise evidenced in seepage at the actuator shells.



Integrated Air Ducting

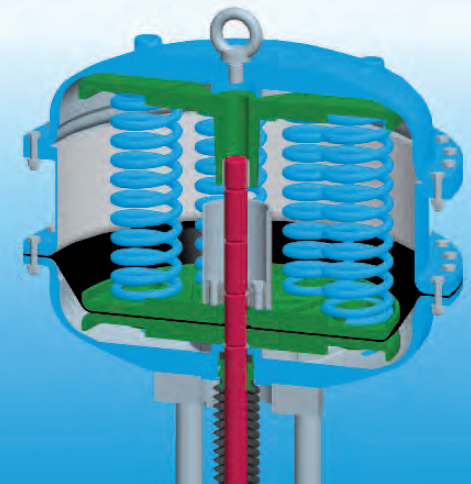
ARCA is known for its integrated air ducting and backlash-free stroke feedback. This makes it possible to easily integrate accessories such as positioners or solenoid valves with the actuator. The actuating pressure can thus be channeled from the positioner through the actuator yoke to the actuator without the need for additional piping. Elaborate, vulnerable external piping is therefore not required, which rules out leakage and provides for very high operating reliability and exceptional serviceability.



Manual Emergency Override (Option)

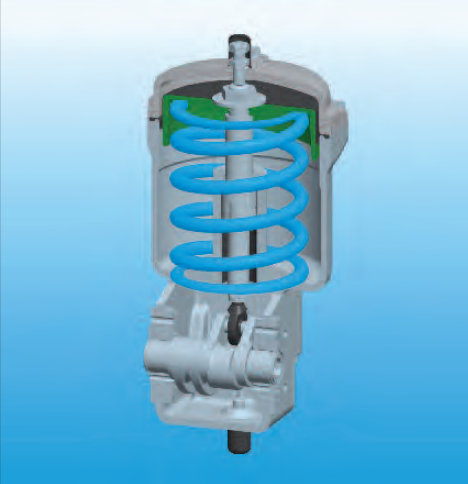
The pneumatic diaphragm actuator can be easily equipped or retrofitted with an emergency override so that the actuator stem can be moved to the desired position against the spring force. The enclosed design meets all common safety requirements.

Diaphragm Actuator MA



This line not only includes a single-acting model that «opens» or «closes» with air pressure increase, but a double-acting variant as well, whereby air pressure is effective in both directions onto the same double side coated diaphragm. The latter can thus be used for control and on/off applications. Instrument air is a common control medium. Clean water can also be used, however, as arranged. The housing shells are made from coated sheet steel, coated cast shells, or stainless steel. Adjustable limiters and emergency overrides are optional.

ARCAtorque 840 Rotary Actuator



The ARCAtorque 840 targets rotary actuators designed quarter-turn movements. Four sizes are available, each of which has a double-sided connecting flange compliant with DIN/ISO requirements. The «spring to open» and «spring to close» safety functions are easy to realize with this rotary actuator. Instrumentation can be added using the same DIN/ISO connection flange.



The ARCA-specific diaphragm enclosure and integrated air ducting have been integrated as a design feature. Characteristic for this pneumatic rotary actuator is the rolling diaphragm, which operates very uniformly with hysteresis-free torque output throughout the entire range. An emergency override can also be ordered or retrofitted.

Ultra-High-Precision Regulation

The pneumatically activated multi-spring diaphragm actuator Series 812 can perform key control tasks in almost all industrial areas. Not only have all current guidelines on occupational safety been considered; ARCA has also focused on environmental compatibility, durability, and impact on human health.

The unique possibility of installing the positioner with integrated air ducting and optional spring chamber purge means that your plant never needs to be maintained. Instrument air is used to operate the actuator and subsequently fill its spring chamber. This protects your control actuator from aggressive and corrosive ambient or sea air and allows us to offer actuators with above-average durability while keeping costs as low as possible.

Diaphragm Actuators



Our innovations

- 1 Reliable rolling diaphragm
- 2 Reversible actuator
- 3 Integrated air supply
- 4 Compact design
- 5 Low dead volume
- 6 Special ventilation system
- 7 Extensive choice of materials

How you benefit

- ✓ High level of availability
- ✓ Broad range of actuating force
- ✓ Short actuating times
- ✓ No hysteresis
- ✓ Easy to maintain
- ✓ One version for several applications
- ✓ Ultra-high operational reliability
- ✓ Compact design
- ✓ Clear, easy-to-read instrumentation
- ✓ Minimal space required
- ✓ Compliant with accident prevention regulations
- ✓ Quick response
- ✓ Splash-proof in every installation position
- ✓ Wide range of applications

Diaphragm Actuators

Pneumatic Actuators

General Data

Air supply, max.	6 bar
Ambient temperature	–20 to +80 °C (–40 to +90 °C)

Actuator Series 812

Size	MF I		MF III	
Stroke, max.	20 mm	30 mm	30 mm	60 mm
Diaphragm effective area	320 cm ²	320 cm ²	720 cm ²	720 cm ²
No. of springs	6 (7)	6	12	12
Actuating force, spring return, max.	6.4 (7.4) kN	4.8 kN	16 kN	14 kN
Actuating force, air, max.	14.4 kN	14.4 kN	32.4 kN	32.4 kN

Actuator Series 811

Size	UMA 0	UMA I	UMA III	UMA V
Stroke, max.	20 mm	30 mm	60 mm	120 mm
Diaphragm effective area	210 cm ²	320 cm ²	720 cm ²	1440 cm ²
No. of springs	1	1	1	1
Actuating force, spring return, max.	4.5 kN	7.7 kN	17.3 kN	33.1 kN
Actuating force, air, max.	11.6 kN	17.8 kN	39.5 kN	81.2 kN

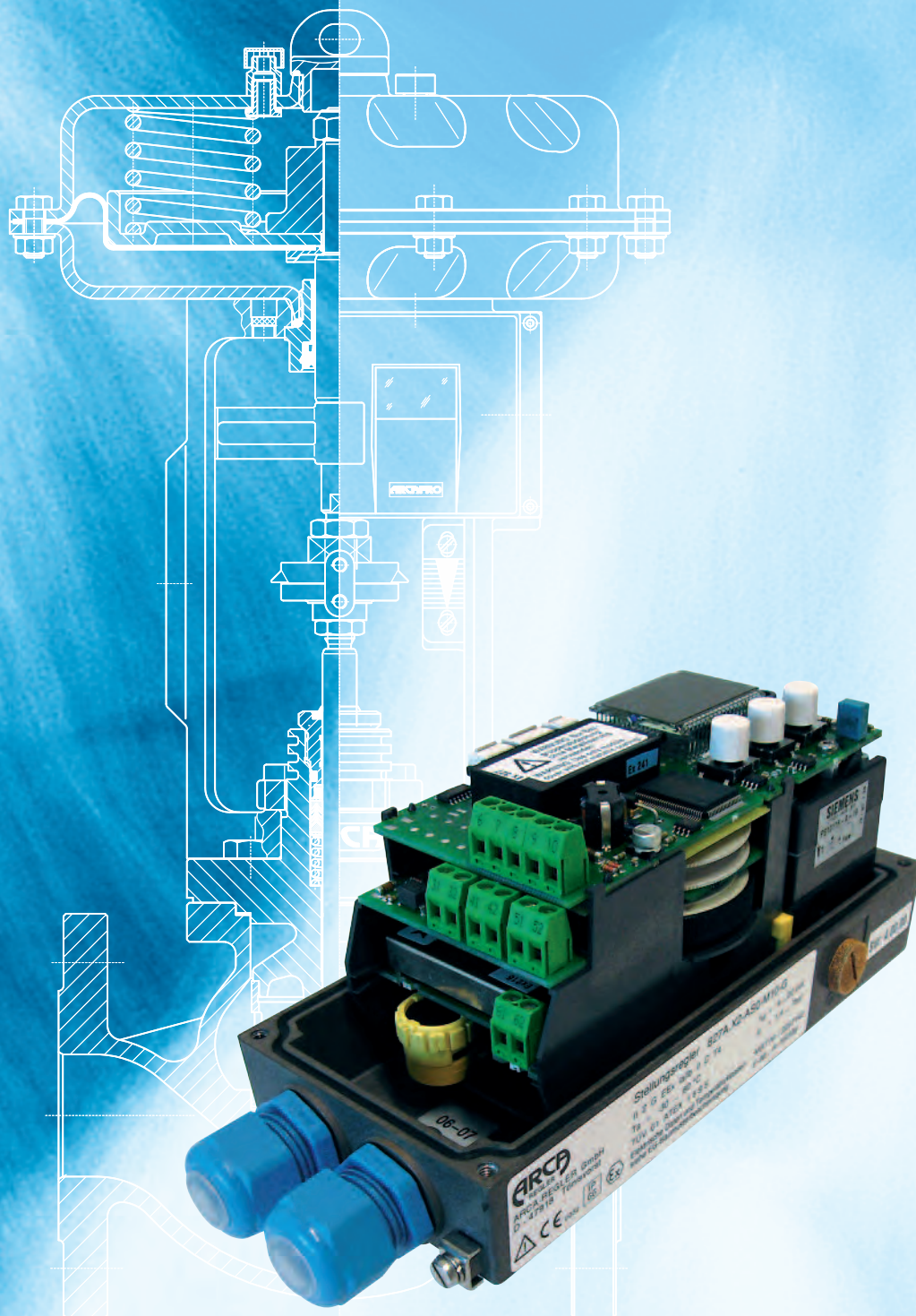
Actuator Series MA

Size	16	21	31	41	60
Stroke, max.	20 mm	35 mm	59 mm	118 mm	136 mm
Diaphragm effective area	85–110 cm ²	150–240 cm ²	355–550 cm ²	600–1135 cm ²	1500–2185 cm ²
No. of springs	7	7	7	14	16
Actuating force, spring return, max.	2.6 kN	4.3 kN	8.4 kN	25.2 kN	45 kN
Actuating force, air, max.	4.6 kN	8.5 kN	22.4 kN	40.5 kN	87 kN

Quarter-turn actuator Series 840

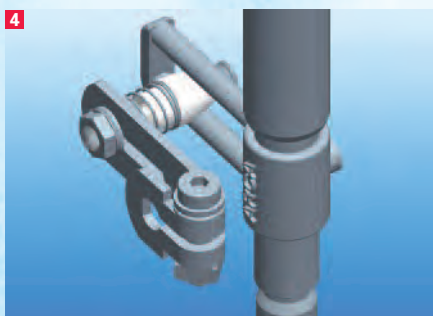
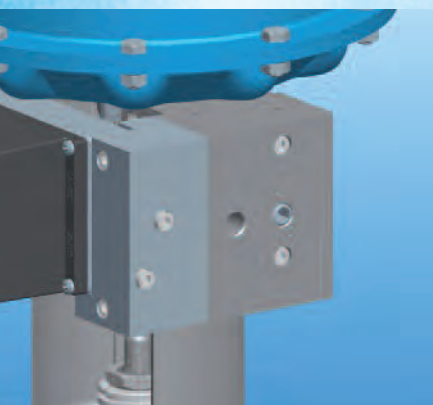
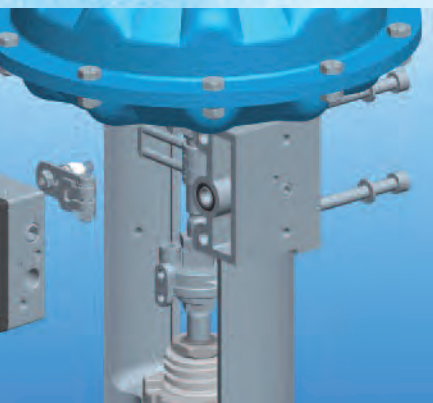
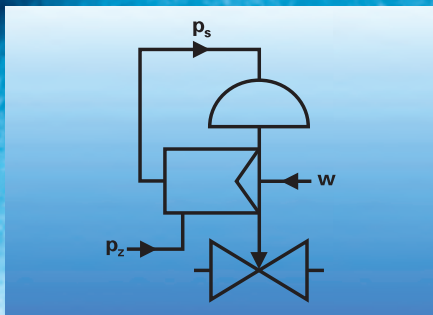
Size	841	842	843	844
Valve opening angle	0–60° / 0–90° / 30–90°			
Diaphragm effective area	104 cm ²	360 cm ²	470 cm ²	780 cm ²
No. of springs	1	1	1	1
Actuating torque, spring return, max.	46 Nm	253 Nm	715 Nm	1630 Nm
Actuating torque, air, max.	87 Nm	460 Nm	1345 Nm	2295 Nm

ARCAPRO® positioner



ARCA
VALVES
*quality engineered
control valves*

ARCAPRO® positioner



Positioner customized for specific tasks

A linear function between the input signal and stroke is the best way to ensure maximum control precision. Control valves with pneumatic actuators, however, are subject to friction, media pressure, and high flow forces, which means that this linearity is not intrinsic in the system. Only a positioner can eliminate positioning errors. To do so, it compares the input signal (reference variable w) with the actual stroke (control variable x). Depending on the control deviation (x_w), the positioner uses the intake air pressure (p_z) to yield the actuating pressure (p_s) for the actuator (actuating variable y). Either 0.2...1 bar, 4...20 mA or digital signals can be used as input signals.

1 Positioner mounting to IEC 534 (NAMUR)

The standard mounting method to IEC 534 is based on manufacturer-neutral mechanical interfaces with the actuator yoke and stem. A bracket is normally used to secure the positioner, while the feedback lever comprises a lever with a spring element. The inlet air is connected to the positioner, while the pneumatic connection with the actuator is realized by means of a pipe or hose.

2 Direct integrated mounting

The positioner can be easily mounted on the actuator yoke by means of two screws to ensure that it is robust and protected against vibrations. The feedback lever is located within the yoke, which offers better protection than the NAMUR mounting method. The actuating pressure is channeled from the positioner through the actuator yoke to the actuator without the need for additional piping, thereby preventing any leakage. The inlet air is connected directly to the positioner.

3 Integrated mounting to VDI/VDE 3847

As with the NAMUR mounting method, this method uses standardized mechanical interfaces with the actuator yoke and stem. The actuator interface, however, is also a pneumatic interface, which means that, as with the direct mounting method, the actuating pressure is channeled to the actuator through the actuator yoke. In addition, the rear of the yoke is equipped with an interface for a solenoid valve, which is pneumatically connected between the positioner and actuator, thereby enabling a safety shutdown of the unit. The inlet air is connected directly to the yoke, which means that no work needs to be carried out on the piping if the positioner is replaced.

4 ARCAPLUG® stroke pick-up

The patented ARCAPLUG® stroke pick-up connects the valve stem and the stroke scanning lever. The tapered roller, which is made of wear-resistant plastic, grips between two pins on the stem. The spring mechanism for the tapered roller is self-adjusting, which means that the stroke is always detected without any zero backlash and without hysteresis. Even strong vibrations or heavy impacts do not cause any wear and tear, and the spacing tolerances of the pins are optimal equalized.

The classic design: analog positioner type 824

Functional principle

Positioner type 824 functions according to the tried-and-tested force-balance principle. The pneumatic setpoint standardized signal issued by a pneumatic controller or I/p converter module generates a force on the diaphragm that is balanced with the spring force on the feedback shaft. The resulting difference in force moves the gate valve, which connects the actuator with the intake air or atmosphere, thereby controlling the movement of the valve.

Modular design

Pneumatic positioner type 824 is modular in design and can be expanded with a range of additional modules, thereby allowing it to be easily customized for specific tasks.

I/p converter module

The I/p converter module converts electrical 0/4...20 mA input signals to pneumatic standardized signals with 0.2...1 bar for controlling the positioner.

Limit switch module

Two adjustable inductive switches enable checkback signals for limit positions to be sent to the control system (e. g. as NAMUR signal).

Feedback potentiometer

The feedback potentiometer generates a message containing the actual position for evaluation in the control system.

The intelligent design: ARCAPRO® digital positioner type 827A

Functional principle

ARCAPRO® is an intelligent, second-generation positioner. It not only offers a wider range of functions and higher level of reliability, but also features an advanced online diagnostics system and optional maintenance display. The position of the stem is sent to a potentiometer whose output signal is then compared with the setpoint by the microprocessor. Using a special control algorithm, the controller activates the two piezo valves, which connect the actuator with the inlet air or atmosphere.

The ARCAPRO® positioner can be operated locally or from the control room.

Optimized operating modes

The ARCAPRO® positioner supports the following operating modes:

- Automatic or manual mode
- Initialization
- Parameterization
- Diagnostics

Modular design

The ARCAPRO® positioner is compact and modular.

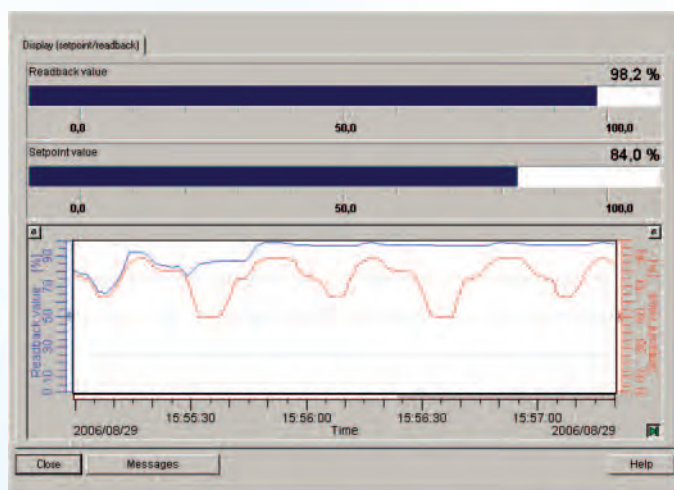
Additional modules increase your range of options:

- **Analog module:** Position transmitter for signaling the actual position as a current signal of 4...20 mA
- **Binary module:** Two adjustable software limit switches, fault signaling switch, binary input
- **Slot initiator module:** Two variable inductive limit switches, fault signaling switch
- **Contact module:** Two adjustable mechanical limit switches

Automatic commissioning

The automatic initialization function allows you to commission the positioner quickly and easily. The parameters can be set on the device or by means of HART, PROFIBUS or Foundation Fieldbus communication. The following parameters can be set:

- Setpoint direction, characteristic
- Split-range mode
- Tight closing function
- Function for position and fault signaling outputs and the binary inputs



Additional modules increase your range of options

Position transmitter

The position transmitter comprises the feedback potentiometer and an R/I converter. It is used for signaling the actual position as a 0/4...20 mA signal.

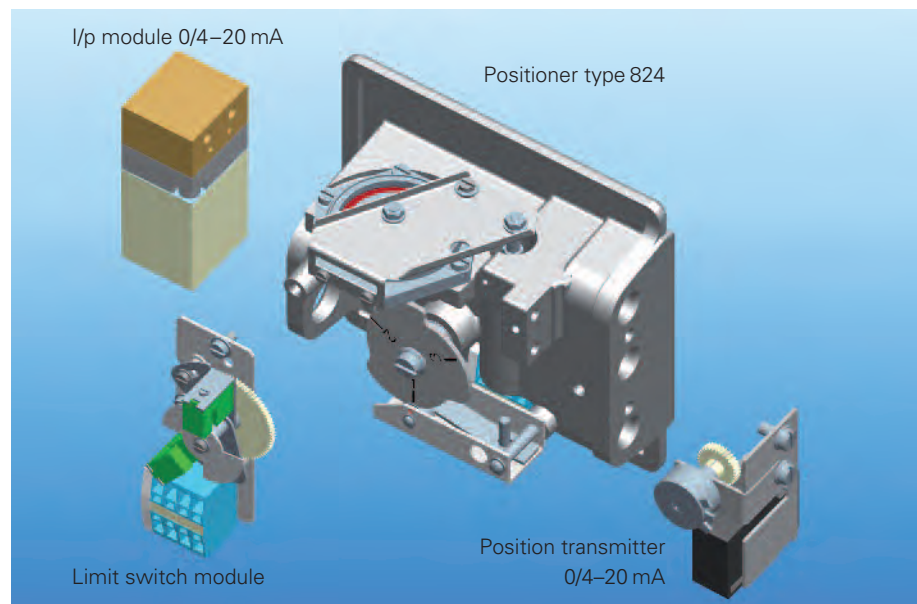
Gauge group

The gauge group displays the inlet air pressure, setpoint air pressure and actuating pressure. It also allows you to check whether or not the positioner is functioning properly.

Explosion-protected designs

(for type 827A too)

- Intrinsically safe (EEx ia and EEx ia/ib)
- Explosion-proof (EEx d)
- Non-sparking (EEx n)



Communication

Depending on the version, the ARCAPRO® positioner enables communication with other field devices or process control systems via:

- HART
- PROFIBUS PA
- Foundation Fieldbus

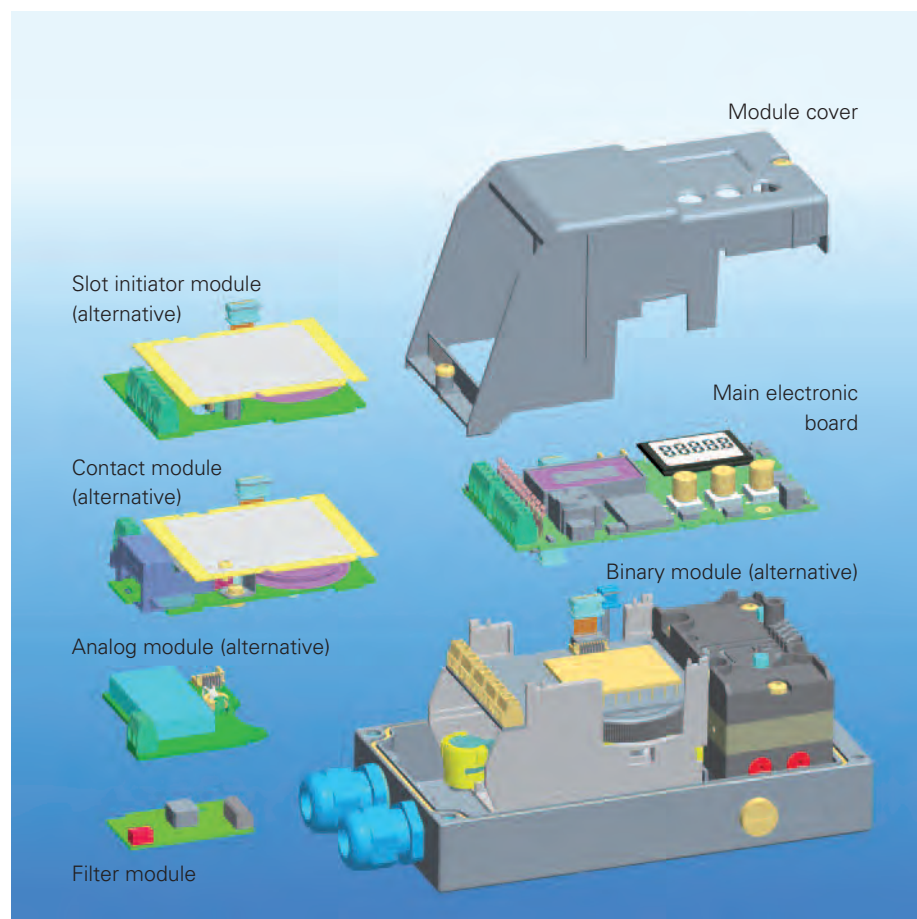
Advanced online diagnostics to NE 91

The advanced online diagnostics function allows you to evaluate the status of the positioner. The diagnostics values can be displayed locally or queried via the communications cable. A range of additional functions that enable even more accurate status analyses are also available:

- Partial stroke test
- Leak measurement
- Limit temperature monitoring
- Mean position value calculation

Maintenance data to NE 107

Three-stage limit value signaling to NE 107 can be carried out for the parameters acquired by means of the advanced online diagnostics function.



To enable this, the relevant limit values that trigger the signals must be defined for the following statuses:

- Medium-term need for maintenance
- Urgent need for maintenance
- Failure

The data is displayed on the device and can be sent to higher-level systems via the binary outputs or via HART or bus communication. The data is normally evaluated in the process control system.

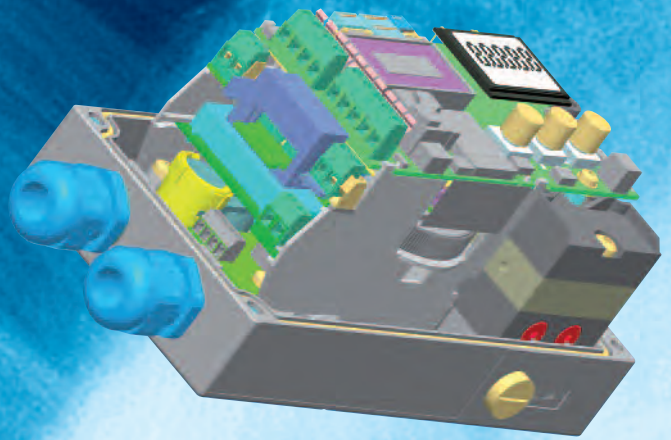
Analog and digital – precision through innovation

Since 1917 when it released its patented nozzle-flapper system, ARCA has been at the forefront of the industry for control valves with positioners. Our advances over the years have helped make modern positioner technology what it is today – and our state-of-the-art digital positioner ARCAPRO® is just the latest in a long line of innovations.

Thanks to automatic adjustment in line with the control valve and user-friendly parameterization (e. g. direction of action, split range or stroke limitation), the system is easy to commission and operate. In addition, a range of variable diagnostics parameters allow preventive maintenance measures to be specially planned to avoid plant downtime.

Modern communication options (e. g. HART, PROFIBUS, or Foundation Fieldbus) enable function and diagnosis parameters to be sent to process control systems for evaluation.

ARCAPRO® positioner



Our innovation

- 1 Classic or intelligent digital positioners tried-and-tested over many years
- 2 Modular, retrofittable accessory and option modules
- 3 Integrated, pipe-free mounting
- 4 Patented ARCAPLUG feedback lever
- 5 Minimal air consumption
- 6 Universal communication
- 7 Advanced online diagnostics

How you benefit

- ✓ Long service life
- ✓ Low lifecycle costs
- ✓ Optimal adaption to specific applications and control systems
- ✓ Compact design
- ✓ High mechanical resistance
- ✓ No sensitive piping
- ✓ Self-adjusting
- ✓ No hysteresis
- ✓ Minimal wear and tear
- ✓ Low operating costs
- ✓ Easy adjustment in line with existing plant communication systems
- ✓ All diagnostics data can be read on the device or in the control room
- ✓ Self-monitoring of the complete valve
- ✓ Precise planning of maintenance measures

ARCAPRO® positioner

Positioner type 824

General data	Enclosure material	Anodized aluminum / Glass-fiber-reinforced polyester
	Temperature range	-40...+80 °C
	Steady-state deviation	< 0,5 %
	Linearity error	< 2 %
	Hysteresis	< 0,7 %
Explosion protection		without / intrinsically safe / explosion-proof
Input signal		0,2...1 bar or 0/4...20 mA 2 wire connection
Option modules	Position transmitter	4...20 mA, passive, 2/3 wire connection (not explosion proof)
	Limit switch	2 NAMUR sensors
Pneumatic data	Inlet air pressure	1.4...6 bar
	Continuous air consumption	< 500 Ndm³/h
Mounting	Linear actuators	ARCA-integrated or to IEC 534; range of stroke 10...120 mm
	Quarter turn actuators	To VDI/VDE 3845; angle of rotation 90°

ARCAPRO® positioner type 827A

General data	Enclosure material	Anodized aluminum, stainless steel, polycarbonate
	Temperature range	-30...+80 °C
	Steady-state deviation	Typically < 0,3 %
	Linearity error	Typically < 0,5 %
	Dead zone	Self-adjusting (typically 0.3 %) or adjustable (0.1 % to 10 %)
Explosion protection		without / intrinsically safe / non-sparking / explosion-proof
Communication / input signal	Standard / HART	4...20 mA 2 wire connection, 0/4...20 mA 3/4 wire connection
	Profibus PA	Profibus PA, profile B, version 3.0
	Foundation Fieldbus	H1 communication
Binary inputs		Switching or voltage inputs, parameterizable (e. g. «Move valve to CLOSED»)
Option modules	Analog module	4...20 mA position transmitter, passive
	Binary module	2 NAMUR limit switches, 1 NAMUR fault switch, 1 binary input
	Slot initiator module	2 inductive NAMUR limit switches, 1 NAMUR fault switch
	Contact module	2 mechanical limit switches
Pneumatic data	Inlet air pressure	1.4...7 bar
	Continuous air consumption	< 36 Ndm³/h
Mounting	Linear actuators	ARCA-integrated, integrated to VDI/VDE 3847 or to IEC 534; range of stroke 3...130 mm
	Quarter turn actuators	Integrated to VDI/VDE 3847 or VDI/VDE 3845; angle of rotation 30...100°

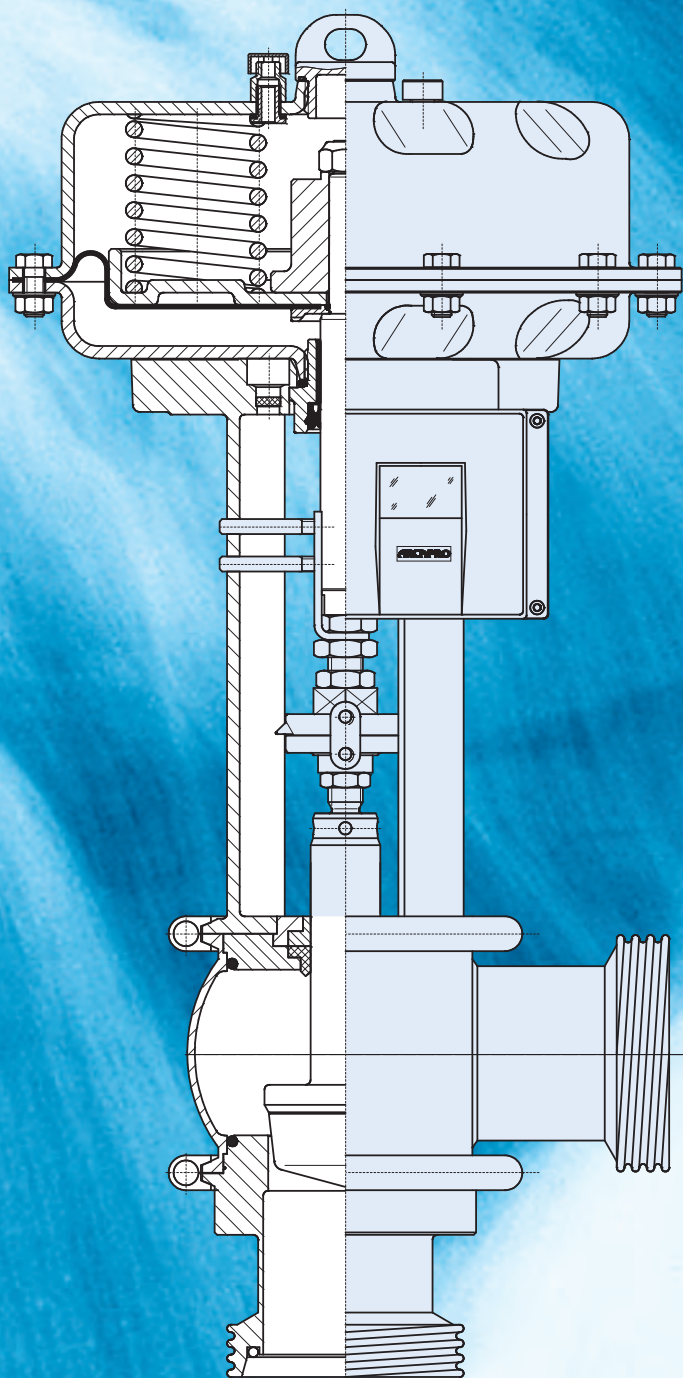
BIOVENT®

Hygienic Valve



ARCA
VALVES
*quality engineered
control valves*

BIOVENT® Hygienic Valve



Committed to perfection in every detail

Powerful valve actuator

BIOVENT® control valves are usually combined with pneumatic multi-spring ARCAPAQ actuator type 813. Not only is it cost effective, robust, and explosion proof, but also provides short stroking times and a constant seating force. The actuator is available in different sizes optimized in line with the required actuating force. BIOVENT® control valves are also available with optional electric actuators. For more details, please see the ARCA actuators brochure.

Multi-functional positioner

Thanks to the digital ARCAPRO® positioner, BIOVENT® control valves are equipped with a multifunctional interface with the controller or process control system and operate as standard with 4–20 mA. HART, Profibus (PA), and Foundation Fieldbus, for example, are used to establish a digital interface with bidirectional data exchange (including status messages). For more details, please refer to the ARCA positioners brochure.

Flexible hygienic housing

The stainless steel spherical housing with zero dead space offers the ideal flow conditions. The internal height of the housing matches the internal diameter of the connection pipe. The hygiene-committed design of BIOVENT® control valves is CIP capable and ensures that any residue is drained. This makes the valves easy to clean and prevents damage caused by oxidation as well as media from settling. The housing components are connected by means of stainless steel clamping rings, which facilitates maintenance and allows different housing and connection types to be used.

Hygienic housing and stem seals

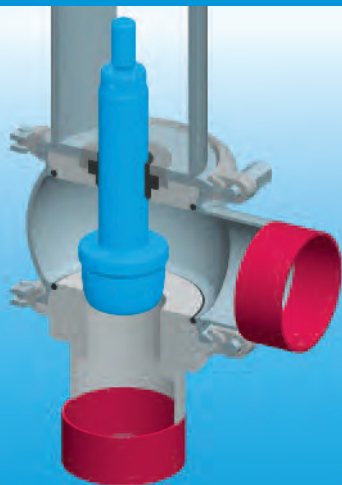
EPDM O-rings, which are shaped to a defined size in a form-fit installation space, are used as standard to ensure that the housing components are sealed in line with FDA requirements. The O-ring is pre-tensioned so that it is flush with the wall of the housing and secures the seals. Optimum CIP conditions are ensured. A special combination sealing element with wiper ring is used on the dynamic seal of the valve stems. Purge liquid and/or particles are removed upstream of the sealing element and bearing, thereby preventing them from settling or being crushed between the stem and bearing.

High-precision valve trims

The BIOVENT® control valves are equipped with valve trims specially designed for the prevailing flow conditions in your plant. The shapes of the closure members and valve seats as well as the material from which they are made (1.4571 superfinished, roller burnished, 1.4404) are optimized in line with your requirements. The replaceable plug and clamped valve seat allow the system to be easily adapted to different operating conditions. Various Kvs values can be selected for each nominal diameter, which means that the valve can be optimized to meet the actual service conditions.

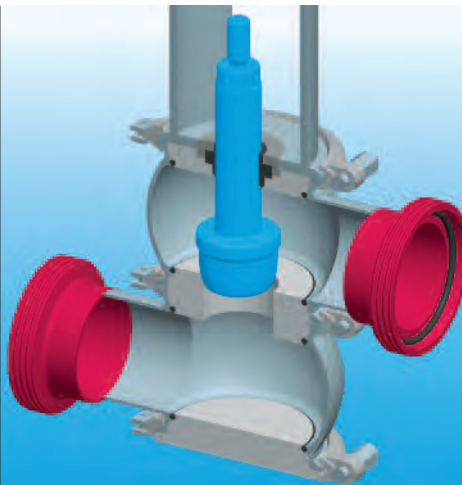
Housing styles/connections

BIOVENT® Hygienic Valve



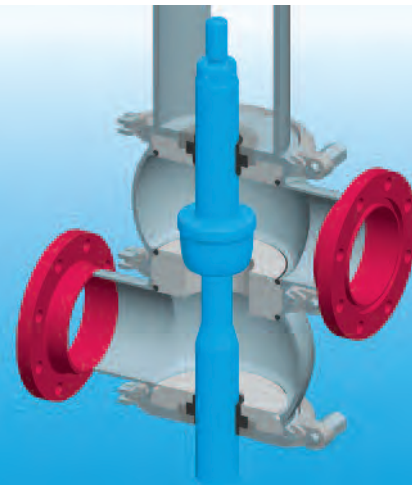
Angular valve with welding stubs (type 391-P1-L)

This design is a cost-effective standard version of the BIOVENT® hygiene valve. It comprises a spherical housing with a pipe connection and a vertical valve inlet with an integrated valve seat. The flow direction is always against the direction closing of the plug.



Straight-way valve with knuckle thread (type 391-P1-BO)

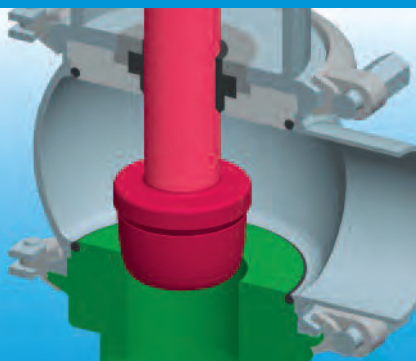
This design comprises two spherical housings, each with one connection. The valve seat is secured as a separate component between the two halves of the housing, which means that it can be quickly and easily replaced. The clamping ring connections allow the two pipe connections to be aligned as required. The knuckle threads are manufactured in accordance with DIN 11851.



Straight-way valve with flanged connection (type 391-P1-BM)

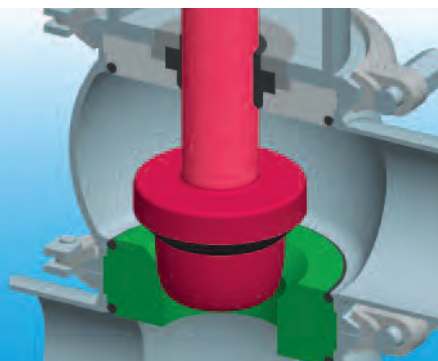
This design also comprises two spherical housings, each with one connection and with a clamped and easily exchangeable seat ring. With larger nominal diameters or Kvs values, a second, lower guide for the plug is recommended to prevent vibrations of the stem.

Valve trims



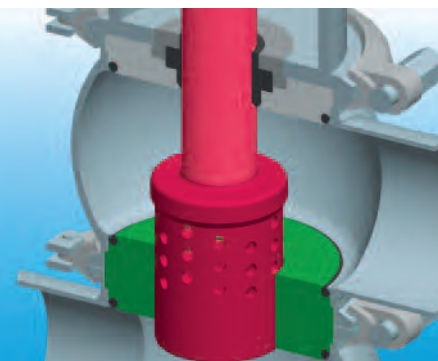
Standard parabolic plug with metal seal

The single-step parabolic plug is the ideal solution for laminar or turbulent flows. This version is suitable for handling high viscosity fluids or media containing fruit. The linear or equal-percentage plug is located in the spherical housing, which is designed in such a way that it can be cleaned thoroughly. The valve has a metal sealing and a one-piece plug.



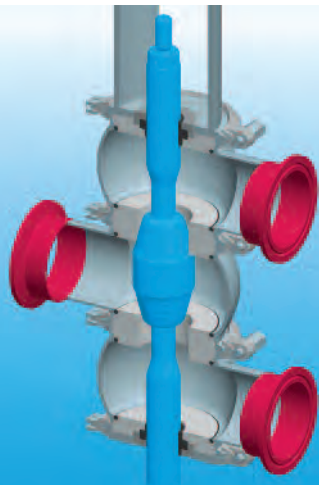
Parabolic plug with V-ring soft seal

If the hygienic valve is also used as a shut-off device, maximum tightness can be ensured by means of an EPDM or FPM V-ring soft seal. The seating thrusts are absorbed by the metal support. The stress-relieved installation of the seal increases the service life. The secure fixing of the soft seal allows the system to be used in vacuums or in applications with high flow velocity.



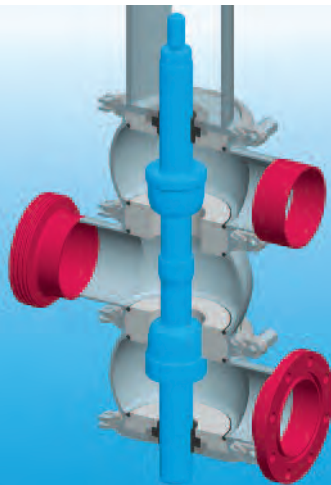
Perforated plug

A special perforated plug can be used in applications with critical pressures. The bores in the perforated plug divide the flow into numerous small flows which are less critical concerning cavitation and erosion. This not only protects the trim and housing but also reduces the noise level.



**Three-way valve as a flow mixer
(type 391-M-WM)**

This valve design comprises three identical spherical housings, each with a pipe connection. Both valve seats are secured between the housing components. This valve can be used as a flow mixer or flow divider. In the picture a valve with Tri-Clamp® connections is shown.



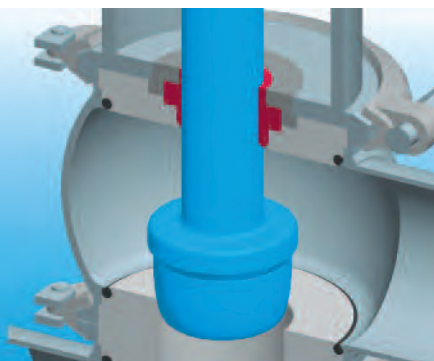
**Three-way valve as a flow divider
(type 391-T-WM)**

This three-way valve is dimensioned for both plugs with the maximum Kvs value and a linear characteristic. Reduced Kvs values are also available as an option. This valve is ideal as a flow divider.



Multi-step valve (type 391-P3-BM)

This multi-step valve combines two spherical housings (each with one connection) and a specially-shaped valve seat, which is secured between the two housing components by means of clamping rings. The control unit is ideal for pressure reducing of liquids at high differential pressure, thereby preventing the serious consequences of cavitation.



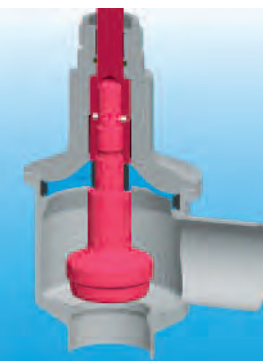
**Stem seal with combination
sealing element**

A specially-developed combination sealing element with wiper ring seals the polished and roller burnished valve stem. The wiper ring protects the sealing element and bearing against the ingress of purge liquid and particles, thereby preventing media from settling or abrasive particles from being crushed or ground down between the stem and bearing.



Stem seal with sterile lock

The sterile lock, which can be applied with steam or other sterilizing media, protects the product space against the environmental air. The medium is applied to the sterile lock at the discharge end in such a way that it always remains on the «sterilized» side.



OPTISEAL® hermetic stem seal

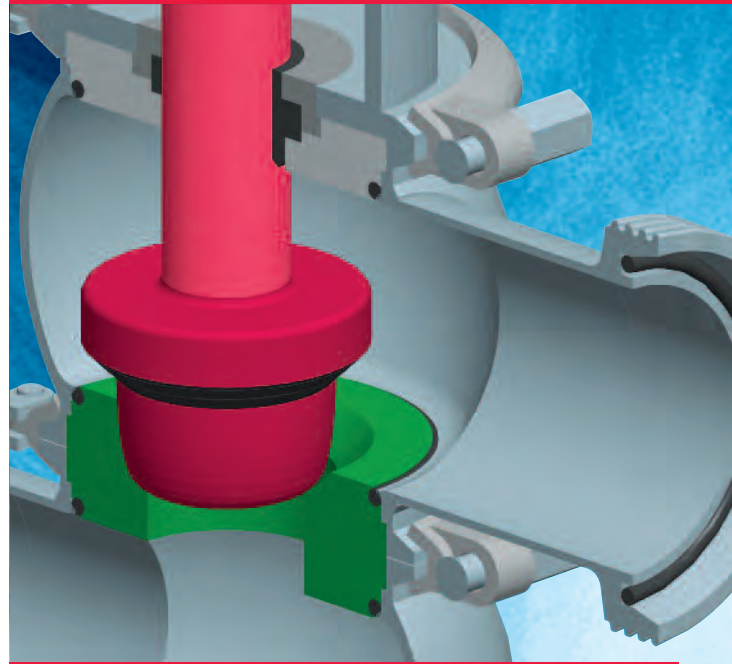
The specially-developed OPTISEAL® diaphragm seal ensures that the stem is hermetically sealed. A twin-diaphragm seal with an additional safety stuffing box, and optional hydraulic support, and a diaphragm breakage monitor provides triple stem seal protection and offers major benefits particularly in sterile processes.

Ensuring precision and efficiency

The ARCA BIOVENT® hygiene valve features zero dead space and is designed to ensure that it can be thoroughly cleaned. The modular design of the valve housing, connections, stem seals, valve trims, actuator, and positioner enables it to be optimized in line with your requirements. The hygiene-oriented design, efficiency, control precision, price/performance ratio, and maintenance outlay of the ARCA BIOVENT® hygiene valve are carefully harmonized to minimize the total cost of ownership. Our commitment to innovation in valve technology ensures that you benefit from maximum control precision for your application. Why not see for yourself!



BIOVENT® Hygienic Valve



Our innovations

- 1** Flow-optimized valve housing
- 2** Nominal diameter identical to internal diameter of piping
- 3** Compact module connection by means of clamping rings
- 4** Valve plug and seat can be replaced separately
- 5** Stem seal with special sealing element and additional wiper ring
- 6** Modular system
- 7** Customized sealing solutions
- 8** Triple-sealed, hermetic stem seal OPTISEAL®

How you benefit

- ✓ Zero dead space
- ✓ GMP compatible
- ✓ FDA compliant
- ✓ 3A sanitary standard (optional)
- ✓ Low noise emission
- ✓ Optimum CIP conditions
- ✓ No sources of infection
- ✓ Maintenance without special tools
- ✓ Quick and easy disassembly
- ✓ Cost-effective plug replacement
- ✓ Flexible valve adjustment
- ✓ Minimal spare parts required
- ✓ Long-term safety
- ✓ Maintenance free
- ✓ A wide range of connection and housing types
- ✓ Quick adjustment to process changes
- ✓ Highly cost effective
- ✓ EPDM seals from -40 °C to +135 °C (up to +150 °C over short periods)
- ✓ FPM seals from -10 °C to +200°C (optional)
- ✓ Hermetic twin-diaphragm seal
- ✓ Additional safety stuffing box
- ✓ Hydraulic support for diaphragm (optional)
- ✓ Diaphragm breakage monitor

BIOVENT®

Hygienic Valve

General specifications

Series	391		
DN	15 – 150		
PN	10 – 25		
Housing types	Angular	L	Parabolic plug
	Straight way	BO	Parabolic plug
	Straight way	BM	Parabolic plug (double guided)
	3 step	BM	3-step plug (P3)
	3 way	M-WM	Flow mixer
	3 way	T-WM	Flow divider
Material	1.4404 (316L) St. Steel (all housing components blasted and post-treated)		
	Thread connection 1.4301 (304) St. Steel		
Housing connections	Thread connections, welded ends, flanged connections, clamp connections, aseptic flanged connections		
	Other connection types available on request		
Piping classes	Metric in accordance with DIN 11850		
	Imperial OD in accordance with ISO 2037/BS 4825 Part 1		
	Imperial IPS in accordance with Schedule 5		
Surfaces	Surfaces that come into contact with product: Ra ≤ 0.8 µm; fine-blasted surface		
Plug characteristic	Standard: equal percentage or linear		
Rangeability	40:1		
Seat leakage	Metal sealing: class IV (0.01 % of kvs)		
	Soft sealing: class VI		
Plug	1.4571 (316Ti) St. Steel (superfinished; guiding surfaces roller burnished)		
Seat	1.4404 (316L) St. Steel		
Stem seal	EPDM sealing rings; temperature range: –30 to +135 °C; FDA compliant		
	Resistance: 2 to 5 % resistance to alkaline solutions and acids up to +85 °C		
	Other materials (FPM, HNBR etc.) available on request		
Options	Sterile lock, diaphragm seal		
Material certificates	Inspection certificate in accordance with EN 10204 / 3.1		
	Material certificate EN 10204 / 2.2		

Control valves



ARCA
VALVES
*quality engineered
control valves*

Control valves

Control valves from the ARCA modular parts system

Three-way control valves

The ARCA three-way control valve is designed to be used as a three-way or mixing valve, depending on the application. As a three-way valve, the incoming medium is split into two individual flows. This split can be 1:1 or a different ratio can be used. As a mixing valve, two media are mixed in the valve housing and exit the three-way valve in the desired new state.

Double-seat control valves

The ARCA double-seat control valve is characterized by its simple and robust design, featuring a double guided trim, and is used for larger volumetric flows. The flow is controlled at two ports, whereby both plug diameters are coordinated such that the medium exerts an opening force on the one plug and a closing force on the other and the actuating forces almost compensate each other out as a result. The plugs can take a variety of shapes to meet application requirements.

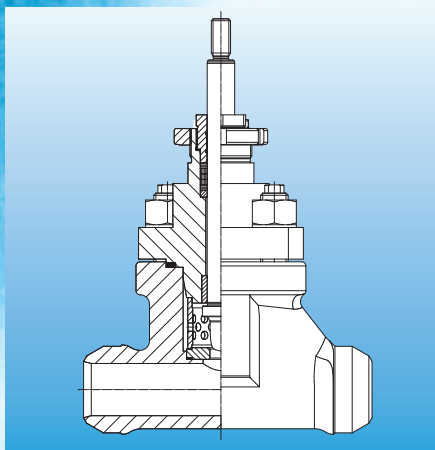
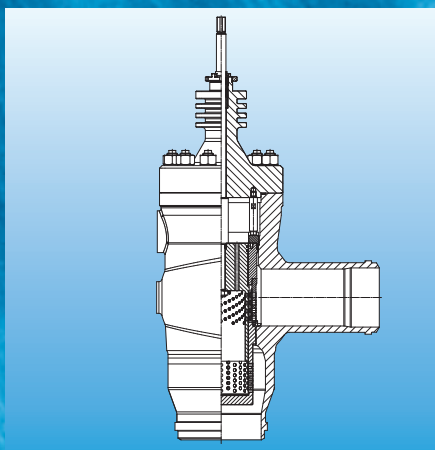
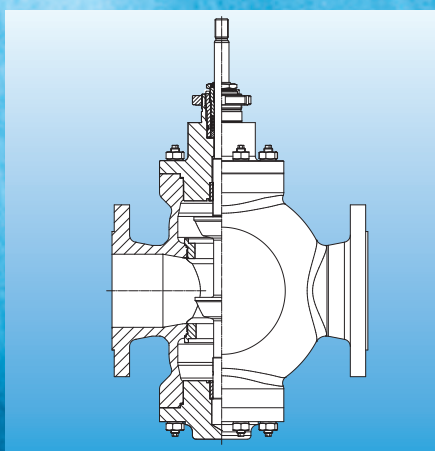
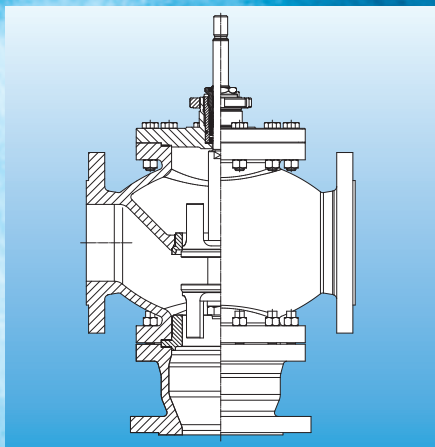
Angle valves

The ARCA angle valve is used in very specific plant applications. The ARCA modular parts system therefore integrates housings made from different cast and forged materials so that a wide variety of requirements can be met. The internals, however, always follow the same basic clamped principle of the ECOTROL® series. The process fluid flows into the angle-control valve from the side or the bottom and exits after just one deflection.

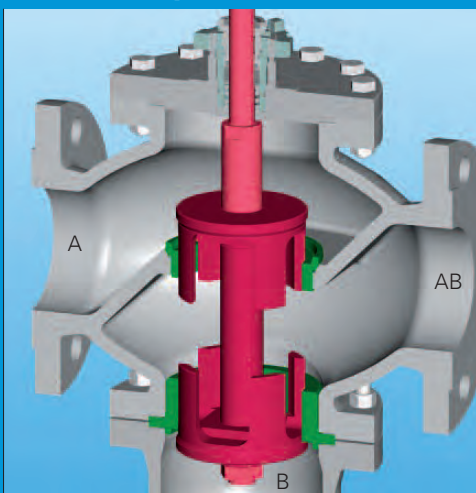
Forged valves

ARCA forged valves are made from a forged block or a dye-forged housing. Defining characteristics is the large selection of housing materials and the resulting increase in structural safety. Forged control valves are especially used in conjunction with welded ends, since they can be connected directly to the piping here. The internals also follow the basic clamped principle of the ECOTROL® series.

A wide variety of pneumatic and electric actuators, such as the series 812 pneumatic actuator, is available to precisely operate all control valves listed here.

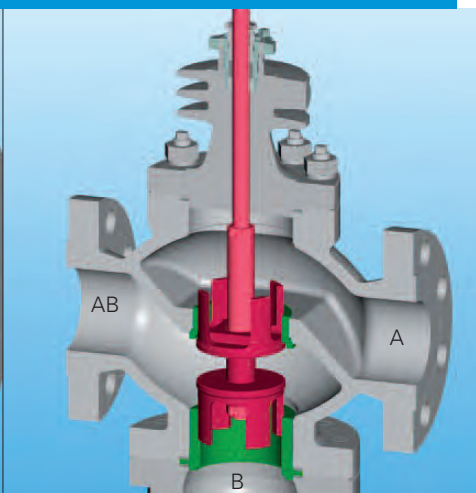


Three-way control valves: 200 and 220 series



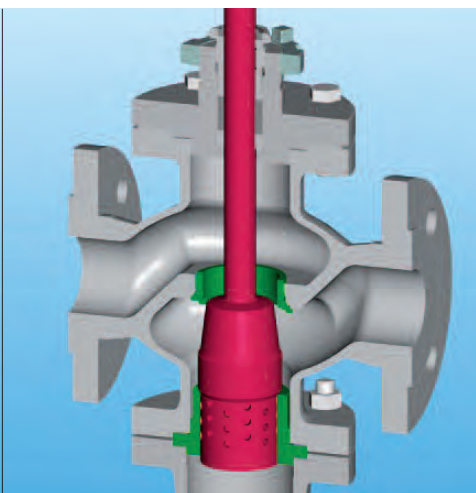
Flow divider

The fluid enters the valve housing laterally (AB), where it splits into a downward (A) and a straight-through (B) flow. Both opposed plugs have the same seat diameter and are thus pressure equalized on the static side. The ARCA design always features a double guide to also accommodate more demanding applications. The actuator then only needs to be dimensioned for the forces resulting from the differential pressure, dead weight, and packing friction.



Flow mixer

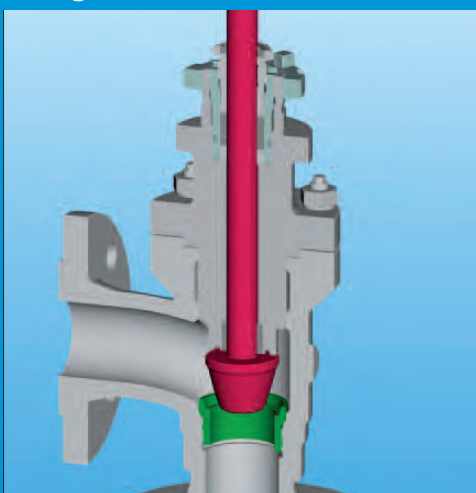
The fluid enters the valve housing laterally (A) and from the bottom (B) and mixes in the valve housing before it exits the body of the valve (AB) at the side. This is a typical application for temperature controllers. The ARCA modular parts system covers temperature applications to 530 °C for the three-way control valve, meets nominal pressure requirements of up to 250 bar (PN 250), and features cooling fins in the bonnet area. The inner construction corresponds to the modular design of the flow divider and is identical from an actuator perspective.



Further applications

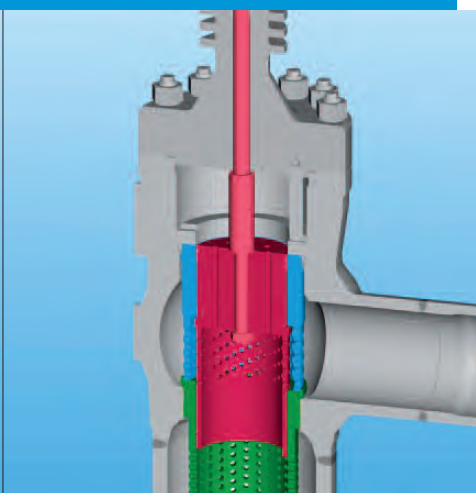
The ARCA modular parts system offers a wide variety of combination options for temperature, pressure, and flow. In the example shown, the incoming process fluid flows through in a straight line under low differential pressure and is regulated to the bottom outlet under high differential pressure. The perforated plug can respond to different flow coefficients with the right perforated pattern and safeguards bottom guidance. Many applications are possible. Contact us for more information!

Angle-control valves: 350 and 380 series



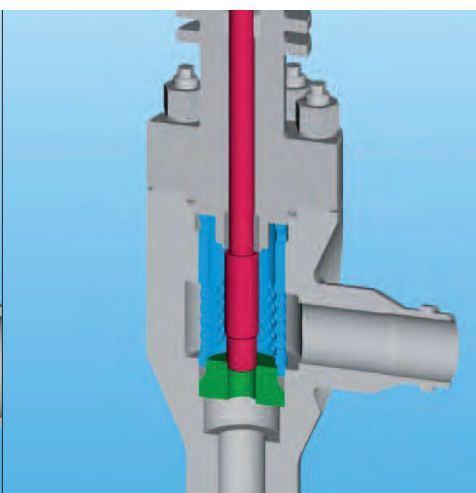
Angle-control valve

The ARCA modular parts system includes a cast model as a basic version. This cast housing series meets the requirements of basic applications. The plug used is a single-step parabolic plug. Stem sealing can be realized with cooling fins or bellows in addition to the standard bonnet, whereby the packing is selected based on the application. Further options such as a heating jacket can be added.



Angle-control valve

ARCA not only offers angle-control valves in low-pressure design, but also ones rated to a nominal pressure of 250 bar (PN 250). Several cast models are available for different materials and can withstand temperatures up to 600 °C. The base design integrates butt-welded ends to allow the housings to be adapted for individual application requirements. Different valve trims are available, all of which feature the proven clamped seat ring design. Bonnet seals include all common versions through to a self-sealing pinch cap from Bretttschneider.

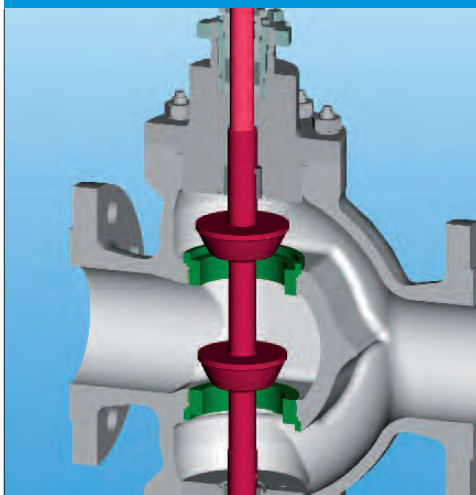


Angle-control valve

ARCA cast models cannot always serve all of your applications, which is why several forged housings have been designed around proven, standardized valve trims and bonnets. Your specific material, pressure, and temperature requirements are met, thanks to a nominal pressure rating of more than 250 bar (PN 250) and a temperature range beyond 600 °C. Such performance allows ARCA to provide the optimal solution for all applications involving angle-control valves.

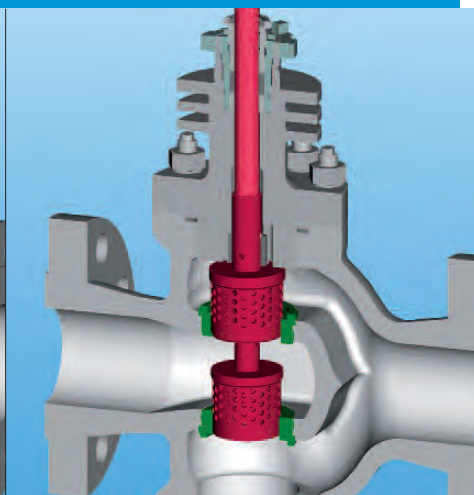
Double-seat control valves: 250 and 280 series

Control valves



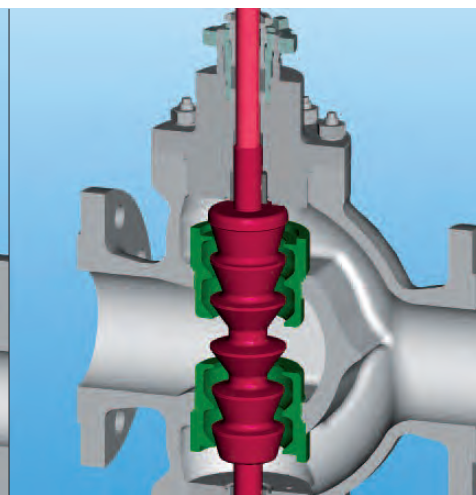
Double seat with parabolic plug

This double-seat control valve divides and controls the process fluid using two parabolic plugs. The proven double-guided parabolic plug design is frequently used for applications involving water and impresses with its robust and simple construction. The exterior dimensions of the parabolic plugs are virtually identical by design, making them almost pressure equalized. The full cone diameter does not need to be considered in dimensioning the actuating force, but only the resulting ring gap, allowing use of smaller actuators.



Double seat with perforated plug

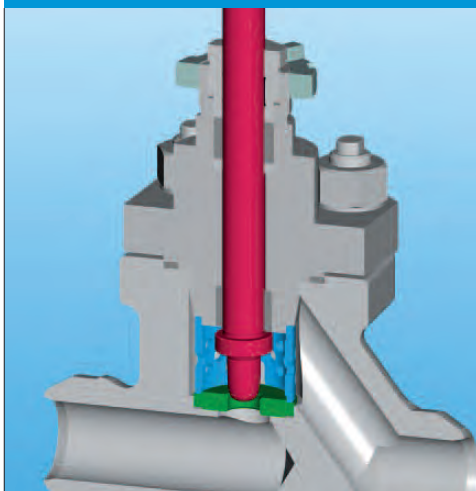
As with all ARCA series, the modular double-seat control valve is available in many versions, meets nominal pressure requirements up to a nominal pressure of 160 bar (PN 160), and is compatible with temperatures to 530 °C. This valve is a high-pressure double-seat control valve that has cooling fins in the bonnet so that the stuffing box remains outside the hot area. Fluid control takes place via perforated plugs, which are used in place of traditional parabolic plugs to reduce noise. Small actuators are also specified for this model so that high differential pressures can be regulated.



Graduated double seat

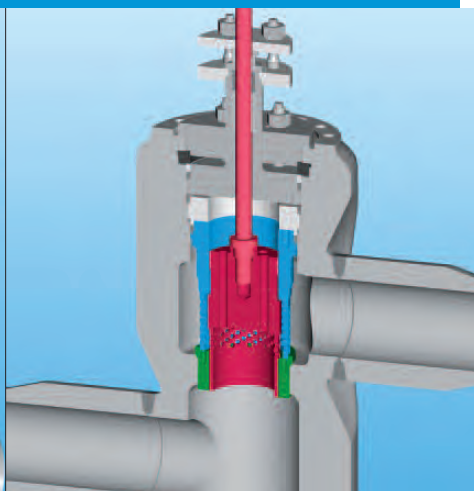
The ARCA modular parts system facilitates a multi-stage pressure drop to accommodate higher differential pressures and applications for which the purity of the medium cannot always be ensured. This version allows you to depressurize the medium without cavitation, for example. The design of the double-seat control valve eliminates the need for a pressure-relief facility and shall be preferred if the process fluid is slightly contaminated. Small actuators are of course used for the double-seat control valves.

Forged valves: 180 series



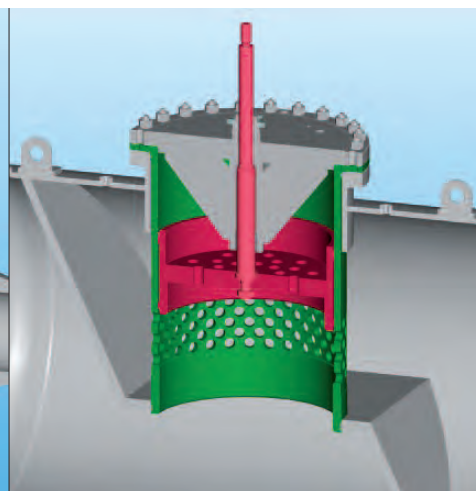
With parabolic plug

The control valves for the basic version are available in different nominal sizes and designed in accordance with the ECOTROL® principle. Proven, standardized, and diverse valve trims ensure that internal leakage between the seat and housing are a thing of the past. The forged valve housings can be ordered with butt-weld ends or conventional flanges. The bonnet affixed in the force bypass can be used to install all ARCA actuators.



Multistage perforated plugs

The globe style control valve is available in the classic straight or Z configuration, depending on the pipe layout. Here, too, ARCA can offer a coherent concept. The forged housing is designed and adapted to specific conditions and requirements based on the proven valve trim and wide variety of designs and bonnets.



With perforated plug

ARCA can also assist with its standardized design concept when it comes to large valves. The dimensions of this design are largely unrestricted. You specify the nominal width and version needed by your application. The design concept is pursued and implemented far beyond control requirements, whereby the conditions for transport and on-site commissioning are taken into account and ensured during the design stage.

Master of variety

ARCA rounds off its valve program with these control valves and offers three-way, double-seat, angle, and forged valves in addition to the classic valve line. This variety is what makes us the ideal partner for complete control valve packages.

While ARCA uses a design principle to standardize these valves, it also ensures that each series offers its own, unique benefits and variety for your process – from materials and piping system connections to numerous valve trims that regulate your medium in line with the application.

ARCA's complete selection of actuators and controllers is available to meet your control requirements.

Control valves



Our Innovations

- 1** Modular parts system with standardized components
- 2** Flow-optimized housings
- 3** Optimized valve trim comprising cone and seat for all application areas
- 4** Standardized interface to valve actuator
- 5** Valve trims can be completely removed
- 6** Always the right package
- 7** Valve plug and stem can be replaced separately

How You Benefit

- ✓ All nominal diameters
- ✓ Fewer components
- ✓ Only one special tool required
- ✓ Low levels of noise emission
- ✓ Optimized flow coefficients for all nominal diameters
- ✓ Adaptable to any requirements
- ✓ High control accuracy
- ✓ Wide control range
- ✓ Low levels of noise emission
- ✓ All types of actuator can be used – pneumatic, electric and hydraulic
- ✓ Can be easily reconfigured later on
- ✓ Maintenance work is fast and simple
- ✓ All internal parts can be removed
- ✓ No special machines required
- ✓ All interior components are clamped or screwed (no welding)
- ✓ Safety and hermetic sealing
- ✓ Maintenance free
- ✓ Reduced storage
- ✓ Cost-effective plug replacement

Control valves

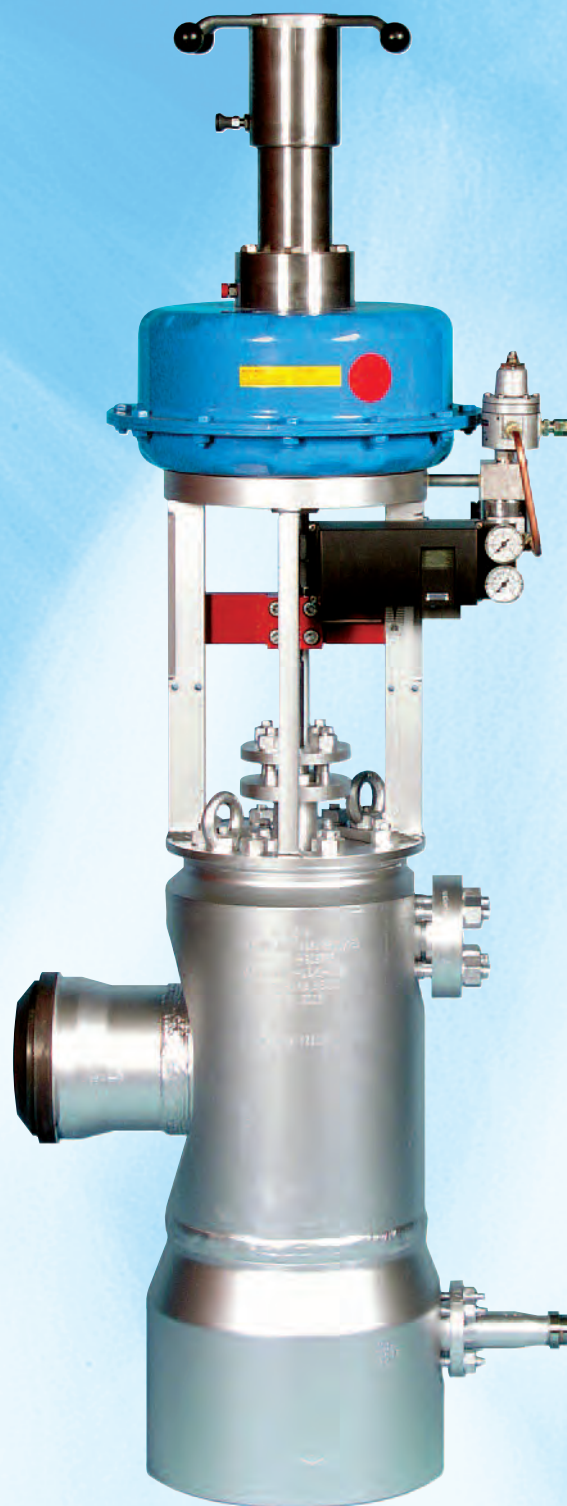
Additional valves – Technical data

Design	Three-way		Double-seat		Forged		Angular	
Type	200	220	250	280	180		350	380
DN (housing)	25–600	25–300	50–350	40–250	15–100	150–1200	15–300	25–400
PN	10–40	63–160	10–40	63–160	10–250	10–40	10–250	10–400
Housing type/design	Three-way		Straight-way		Straight-way		Angle	
Housing material	Cast		Cast		Forged		Cast	Forged

Materials

	EN	for temperatures	ASTM	for temperatures
Housing – cast	1.0619 GP240GH	up to 450 °C	A 216 WCB	up to 450 °C
	1.7357 G17CrMo5-5	up to 530 °C	A 217 WC6	up to 530 °C
	1.4581 GX5CrNiMoNb19-11-2	up to 550 °C	–	–
	1.7379 G17CrMo9-10	up to 580 °C	–	–
	1.4931 GX23CrMoV12-1	up to 600 °C	–	–
	2.1050 G CuSn10	–196 up to 300 °C	–	–
Housing – forged	1.0460 P250GH	up to 450 °C	A 105	up to 450 °C
	1.0425 P256GH	up to 450 °C	–	–
	1.5415 16Mo3	up to 530 °C	–	–
	1.7335 13CrMo4-5	up to 570 °C	A 182 F12 Cl.2	up to 570 °C
	1.7383 11CrMo9-10	up to 600 °C	A 182 F22 Cl.3	up to 600 °C
	1.4903 X10CrMoVNb91	up to 620 °C	A 182F91 - P91	up to 620 °C
Valve trims	1.4021 X20Cr13			
	1.4122 X39CrMo17-1			
	1.4571 X6CrNiMoTi17122			
	1.4922 X20CrMoV1 21			
	2.0966 / 2.0550			
Bonnet	Standard			
	With cooling fins			
	Self-sealing pinch cap			
	With stuffing box control/sealing fluid connection			
	With bellows			
Plug characteristic	Standard: linear or equal percentage			
	Optional: linear, modified			
Rangeability	25:1 / 50:1			
Seat leakage	Metal sealing: leakage rate Class IV (0.01% of flow coefficient)			
	Metal sealing: double-seat, type 250 Class III (0.1% of flow coefficient)			
	Soft sealing: Class VI			
Options	Double guide, heating jacket, ANSI classes, additional materials			

Steam-Conditioning Valve



ARCA
VALVES
*quality engineered
control valves*

Steam-Conditioning Valve

Components Tailored to Meet Any Requirement

Powerful actuator

Whether you want to use it for control or safety applications, the actuator for ARCA's steam-conditioning valves is designed with your plant in mind. This is made possible by our wide range of pneumatic, electric, and hydraulic actuators such as the series 812 pneumatic actuator (pictured). The valve-closing force and stroking time of all actuators is sized according to your requirements.

Multi-functional positioner

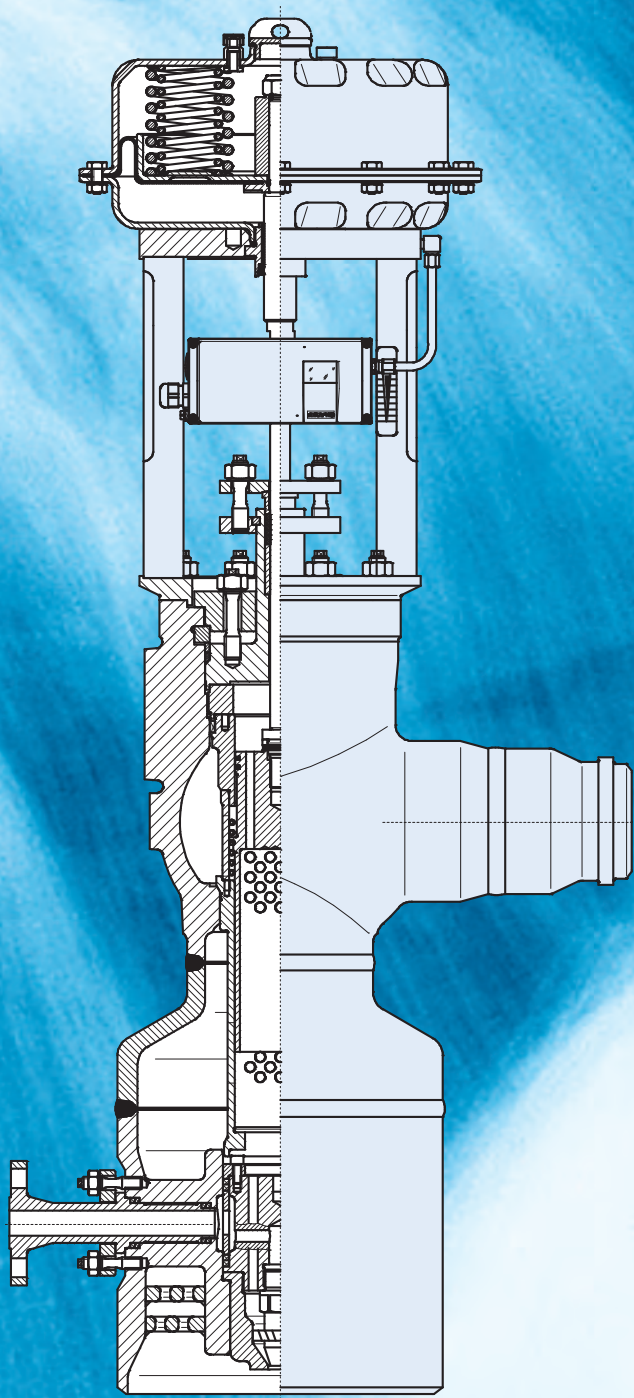
The digital ARCAPRO® positioner allows the steam-conditioning valve to communicate with the controller or process control system via a multi-functional interface. The positioner is connected to the actuator either directly or using the NAMUR mounting method and ensures that the stroke feedback is always free from backlash for maximum precision control. The standard input is the standardized 4 to 20 mA analogue signal. HART®, Profibus®, and Foundation® fieldbus standards can also be used to establish a digital interface with bidirectional data exchange (including status messages). This means that the positioner can be parameterized in the field as well as remotely via the communication system. Optional accessories such as boosters, limit switches, and solenoid valves are available to customize the valve to suit your individual requirements.

Optimized static and dynamics sealing

We have engineered a dynamic stem seal and static bonnet seal in the force bypass that are optimized in line with the pressure and temperature range of your application. The surface finish of the stem and the packing material are also taken into account here. The force bypass design used for the bonnet seal prevents assembly problems during service and maintenance. A self-sealing bonnet is used for high-pressure applications to ensure that the valve remains tight regardless of the torque applied to the bonnet screws. These design features also ensure that the valve seat and plug are not subjected to any lateral forces, thereby also minimizing internal leakage.

Versatile valve trims

These are the most crucial functional elements for controlling pressure and temperature. The perforated valve plug and seat ring are designed and manufactured to suit the prevailing flow conditions and the rangeability required. The type of water-injection selected is suited to the steam and cooling water temperature. For safety applications, a dirt strainer is inserted at the opening of the steam inlet. This prevents the ingress of contaminants and protects against defects. The patented retained seat ensures that maintenance is fast, simple, and cost-effective and does not require special tools.

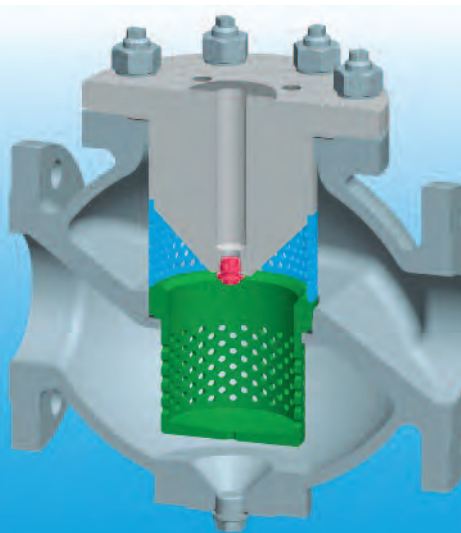


Injection systems



Single-phase nozzle (type 596)

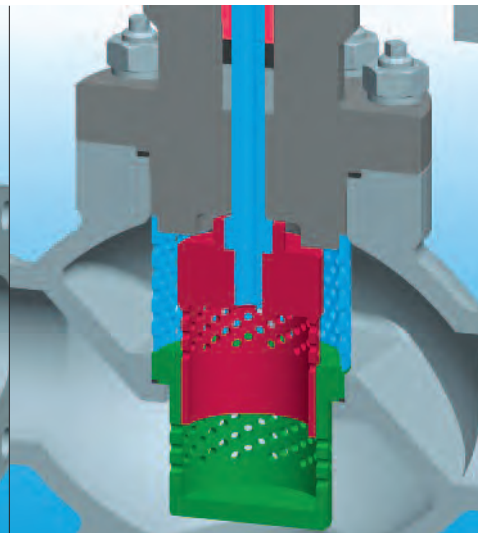
This nozzle is used as a simple means to cool overheated steam in applications that involve high-pressure water injection and a continuous supply of steam. The cooling water is regulated via the interaction between the nozzle and the cooling water control valve (in this case, an ECOTROL® valve), both of which are compatible with each other. System control ratio: up to 1 : 3.



Mini cooler (type 595)

The mini cooler, which is based on the single-phase nozzle, is used in steam-conditioning stations that process very small quantities of injected water. Once the pressure has been reduced, the water is injected into a perforated valve seat orifice to ensure ultra-high turbulence for optimal vaporization conditions. The orifice also protects the valve housing (which can also be fitted with a condensate drain connection) from coming into direct contact with the injected water.

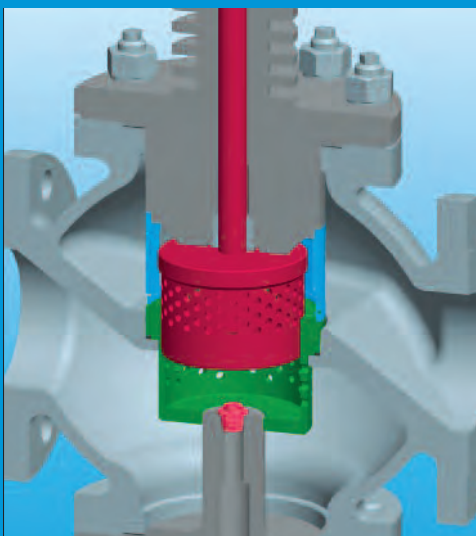
Steam-Conditioning Valve



Injection through valve stem

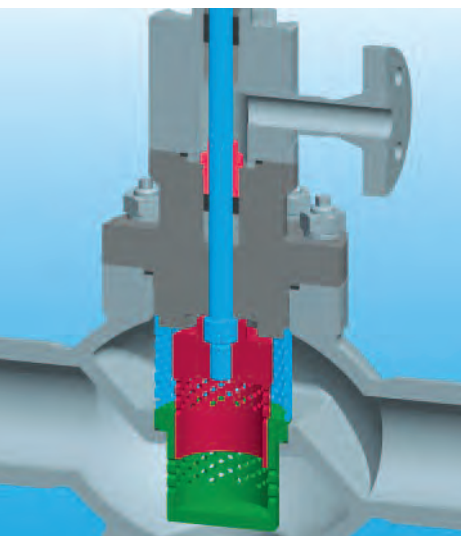
This valve features a hollow stem that uncovers a hole pattern used to inject a controlled amount of water directly into the intermediate pressure-reduction chamber (perforated plug-seat). Turbulence is at its greatest here, where cross-sectional flow areas are restricted in accordance with the quantity of steam required. This ensures optimal vaporization of the injected water and prevents the valve housing from becoming directly exposed to the medium.

Designs



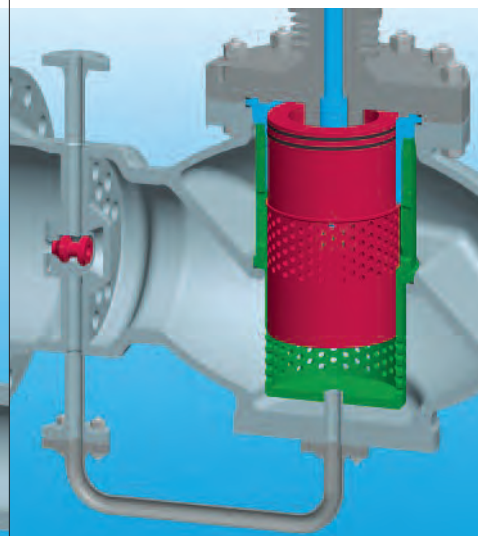
Globe-style design with flanges (type 52...)

This cast globe-style housing from the basic line (shown here with flange) is optimized for low-pressure applications with minimal differential pressure. Pressure is reduced in the perforated plug-seat while cooling water is injected.



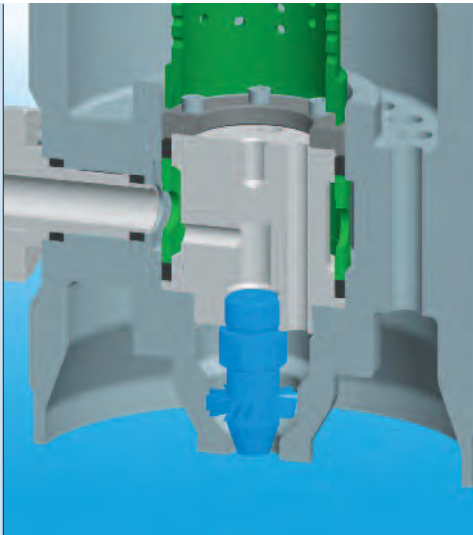
Globe-style design with welded ends and extension (type 51...)

Steam-conditioning stations are typically welded for applications with reasonable steam pressures. Higher differential pressures must be relieved in graduated steps to reduce sound pressure. This can be accomplished using a three-stage perforated trim, for example (shown). The cast standard valve housing can also be combined with an outlet extension to accommodate expanding steam.



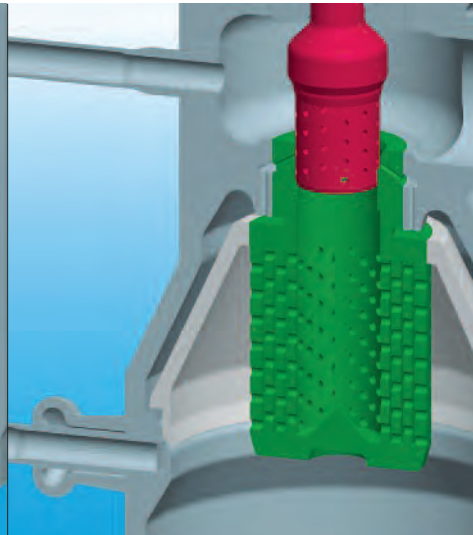
Globe-style design with steam-assisted nozzle

Part of the steam is siphoned off as motive steam and transferred directly into the two-component nozzle via the auxiliary passage at an intermediate control stage of the perforated plug. The globe valve with the downstream steam-assisted nozzle replaces the additional motive steam valve otherwise required.



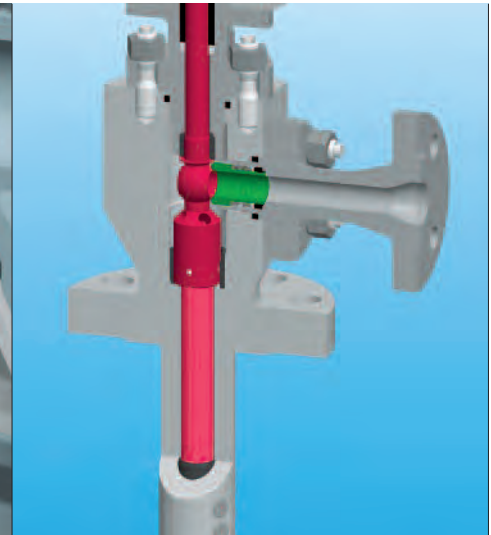
Steam-assisted nozzle (type 598)

The steam-assisted spray nozzle is an optimal solution for applications in which the temperature difference (ΔT) between the injected water and live steam is exceptionally large, water is injected at low pressure, or minimal loads must be regulated. The nozzle extracts and atomizes the water from the live steam in accordance with the injector principle so that low-pressure vaporization paths can also be realized without turbulence via perforated plug-seats.



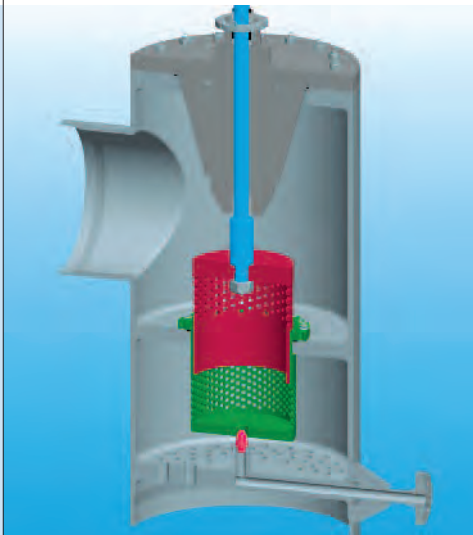
Ring nozzle

The ring nozzle is ideal for use in applications that require very large quantities of live steam and injected water. Its functional principles are similar to those of the steam-assisted spray-nozzle, although the ring nozzle siphons off the motive steam directly from the live steam at the control plug and transfers it along internal veins to the ring chamber. The steam then collides with the injected spray water (regulated by the cooling water valve) at its outer edge and atomizes it.



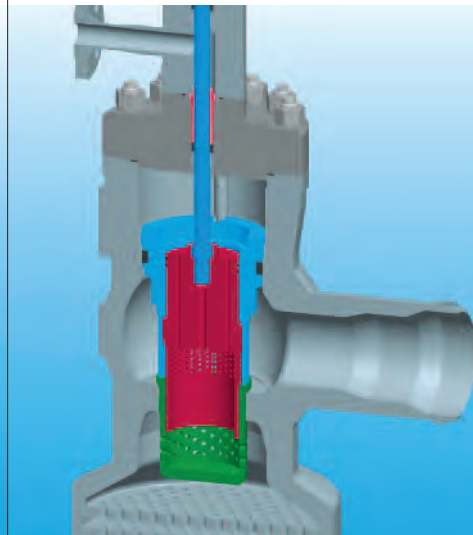
Injection-desuperheater valve

Injection-desuperheater valves are installed as a series of single-phase nozzles that sequentially activate in accordance with water-injection requirements. During operation, the differential pressure required at each nozzle remains almost entirely constant to ensure an optimal spray pattern. An additional pressure control can also be integrated for ultra-high injection pressures.



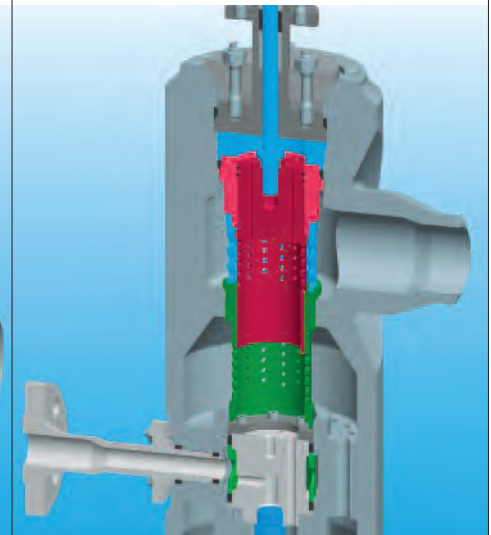
Angle-style valve for low-pressure applications

Low-pressure steam is reduced in the vicinity of the condensers. Angular valves made from piping component are used in applications where pressures are typically very low but large quantities of steam are generated. The temperature can be reduced via an integrated single-phase nozzle on the outlet side.



With welded ends and extension (type 55...)

These angle-style control valves are optimized for the flow characteristics and sound pressure levels associated with high-pressure applications. All ARCA cast angle-style housings with welded ends can be extended on the outlet side to meet individual requirements. The bonnet is available as a bolted design or as a self-sealing pinch cap from Bretschneider (optional). The cooling water chamber is constructed as shown here.



Forged angle-style valve with steam-assisted nozzle (type 58...)

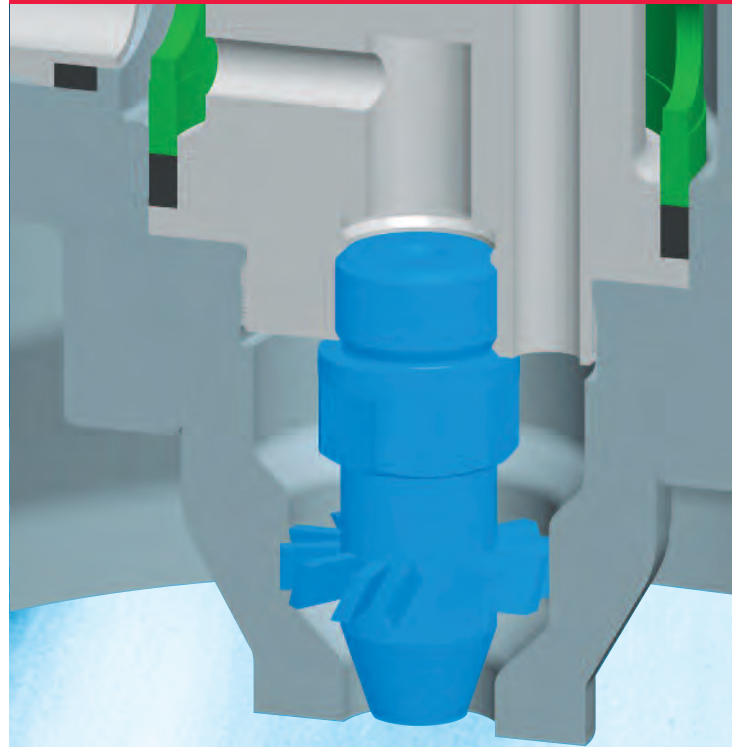
The ever-increasing demands of operating conditions can necessitate the use of fittings made from forged materials. In the design shown here, a fraction of the live steam is siphoned off at an intermediate control stage and used as motive steam by the steam assisted spray nozzle. This allows the temperature control to be maintained by one spray water control valve only; the steam valve previously required to generate the motive steam is no longer needed.

Full control in steam conditioning

ARCA steam-conditioning valves are customized in line with your specific operating conditions. A wide range of designs and materials – from cast globe-style housings to forged angle-style valves – are available to meet all pressure and temperature requirements.

ARCA control valves optimize efficiency and enable cost-effective operation in small plants and large-scale power-generation facilities. ARCA steam-conditioning valves integrate sound-reduction measures such as perforated plugs and seat rings with graduated control to minimize the impact of sound emissions on humans and the environment. We can even dimension a silencer system that encompasses the condenser of your plant.

Steam-Conditioning Valve



Our innovation

- 1** Modular system with standardized components
- 2** Flow-optimized housings
- 3** Optimized trim comprising plug and seat for all application areas
- 4** Standardized interface to valve actuator
- 5** Value trims can be completely removed

How you benefit

- ✓ All nominal diameters
- ✓ Fewer components
- ✓ Only one special tool required
- ✓ Low noise emission
- ✓ Optimized KV values for all nominal diameters
- ✓ Adaptable to any requirements
- ✓ High control accuracy
- ✓ Wide control range
- ✓ Low noise emission
- ✓ All types of actuator can be used – pneumatic, electric, and hydraulic
- ✓ Can be easily reconfigured later on
- ✓ Maintenance work is fast and simple
- ✓ All internal parts can be removed
- ✓ No special machines required
- ✓ All interior components are clamped or screwed (no welding)

Steam-Conditioning Valve

General specifications

Series	51... & 52...	55... & 56...	57... & 58...	59...
DN (Housing)	50–600 / 2"–24"	80–200 / 3"–8"	25–250 / 1"–10"	25–100 / 1"–4"
PN/ANSI	16–250 / 150–1500	16–250 / 150–1500	16–400 / 150–2500	16–400 / 150–2500
Housing types	Straight way	Angular	Angular	Angular
Body style	Cast	Cast	Forged	Forged
Materials	EN	for temperatures	ASTM	for temperatures
Cast Housing	1.0619 GP240GH	up to 450 °C	A 216 WCB	up to 450 °C
	1.7357 G17CrMo5-5	up to 530 °C	A 217 WC6	up to 530 °C
	1.4581 GX5CrNiMoNb19-11-2	up to 550 °C	–	–
	1.7379 G17CrMo9-10	up to 580 °C	–	–
	1.4931 GX23CrMoV12-1	up to 600 °C	–	–
Forged Housing	1.0460 P250GH	up to 450 °C	A 105	up to 450 °C
	1.0425 P256GH	up to 450 °C	–	–
	1.5415 16Mo3	up to 530 °C	–	–
	1.7335 13CrMo4-5	up to 570 °C	A 182 F12 Cl.2	up to 570 °C
	1.7383 11CrMo9-10	up to 600 °C	A 182 F22 Cl.3	up to 600 °C
	1.4903 X10CrMoVNb91	up to 620 °C	A 182F91 - P91	up to 620 °C
Valve trims	1.4021 X20Cr13			
	1.4122 X39CrMo17-1			
	1.4571 X6CrNiMoTi17122			
	1.4922 X20CrMoV1 21			
Bonnet	Standard, with cooling fins, self-sealing bonnet, with cooling-water injection			
Plug characteristic	Standard: linear			
	Optional: linear modified			
Rangeability	25 : 1			
Seat leakage	Metal sealing: class IV (0.01% of kvs)			
	Pressure balanced < 0,05 % of KV-value			

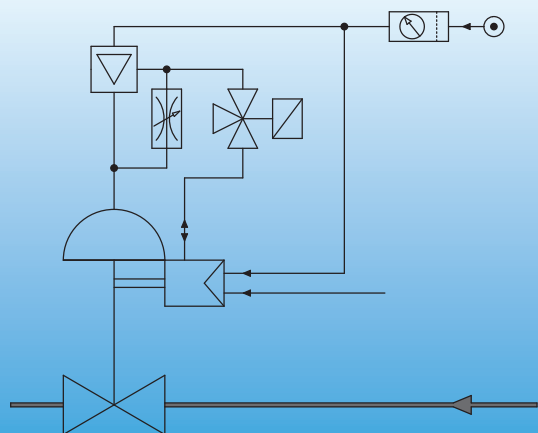
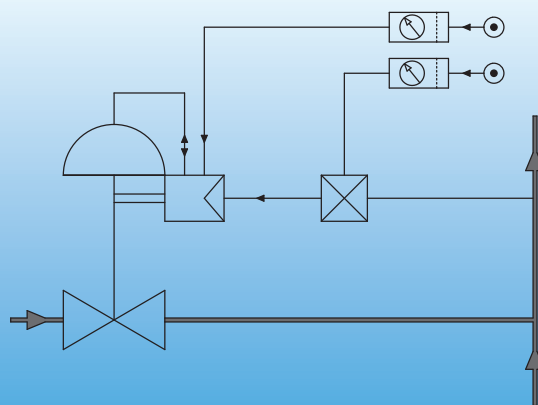
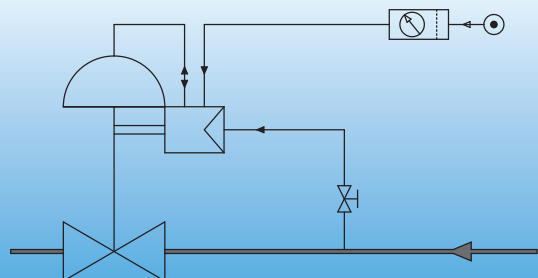
Controllers and Instrumentation



ARCA
VALVES
*quality engineered
control valves*

Controllers and Instrumentation

The Optimal Solution for Every Task



Local Pneumatic Control Circuits

Inexpensive local control circuits are often used for simple control tasks such as those related to pressure, differential pressure or temperature. They comprise a valve, pneumatic actuator and a pneumatic measuring element that determines the measurement variable, evaluates the control deviation, and integrates an I or D component in addition to the P-response to form the signal used to control the actuator.

ARCA Regler offers a line of pneumatic controllers that meets basic to advanced requirements. Be it P-controllers with a fixed setpoint value and direct actuator control or for ultra-precise control, PID or two-point controllers, available with external setpoint value configuration and support for displaying setpoint/actual values, and actuating pressure, as well as manual-automatic transition with actuator control via pneumatic positioner 824P (see ARCA brochure on the ARCAPRO positioner), ARCA's product offering has the device you're looking for to meet your control needs.

Instrumentation Accessories

Functions in addition to the ones used for actuating and controlling are often required to ensure that valves are used effectively in plants.

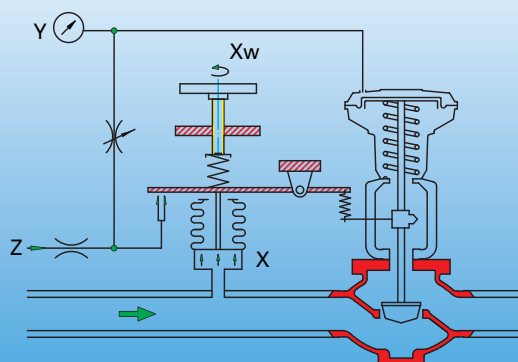
Regardless of whether the application calls for limit position signalling via inductive or mechanical switches, safety-relevant and redundant valve deactivation (if needed) via solenoid and blocking valves, longer actuating times or conditioning of instrument air – ARCA Regler can always provide an appropriate, proven solution.

Minimized Actuating Time

Control valves with large, pneumatic actuators typically have actuating times in excess of 30 seconds. Such responses are too slow for many applications, however. Special applications involving turbine bypass stations or anti-surge control valves on compressors, for example require actuating times of 2 seconds or less to prevent damage to machines and plants.

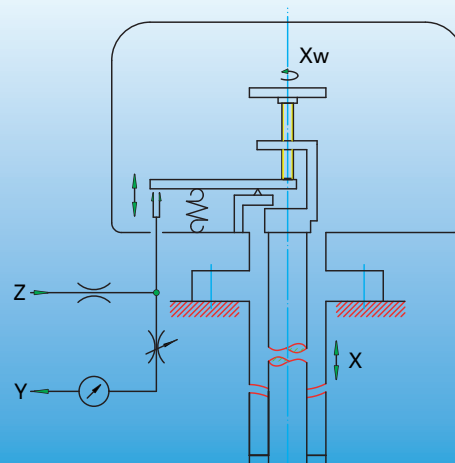
ARCA Regler has the know-how it takes to master these challenges too. Integration of boosters, throttle and solenoid valves, and filter-reduction stations in the assembly process allows us to offer actuation control circuits that are robust, free of vibrations and extremely fast for demanding situations.

Pneumatic Controllers



Type 902 Pressure Controller «Roboter»

The type 902 pressure controller is a compact measuring element controller that measures pressure and differential pressure and is mounted directly on a pneumatic actuator. The pressure to be controlled generates a force via the measuring system (bellows or diaphragm). This force is then compared to the force of an adjustable spring and used to create the actuating pressure by way of a nozzle/flapper system. A return facility from the drive spindle balances the control. The «Roboter» pressure controller can be used to regulate the flow of gas, steam, or fluid pressure in industrial plants.



Type 910 Temperature Controller

The type 910 temperature controller is an extremely robust measuring element controller for controlling temperature. It is installed directly at the measuring point and generates the actuating pressure required for the actuator via an expansion stick and a nozzle/flapper system. A calibrated scale enables the setpoint value to be configured. The pneumatic actuator with valve can also be located further away from the measuring point. The type 910 temperature controller is used to regulate the temperature of central refrigerant circuits, among other applications.

Instrumentation Accessories



Type 827S Signal Box

The type 827S signal box is suitable for signalling intermediate or limit positions. It is mounted at the actuator bracket acc. to NAMUR or ARCA standards and taps the valve stroke using the patented, zero-backlash ARCAPLUG® position feedback. Up to three inductive slot initiators are actuated by adjustable switch discs to indicate the current position of the valve.

Proximity Switches

Intermediate or limit positions can be detected by external inductive proximity sensors mounted to the NAMUR rib of the actuator bracket. A contact plate on the actuator spindle triggers the sensor signal.



Mechanical Switches

Mechanical switches with dry contacts can also be attached to ARCA actuators for signalling intermediate or limit positions. The roller-type or plunger switches are mounted to the actuator bracket acc. to NAMUR standards and triggered by a contact plate.

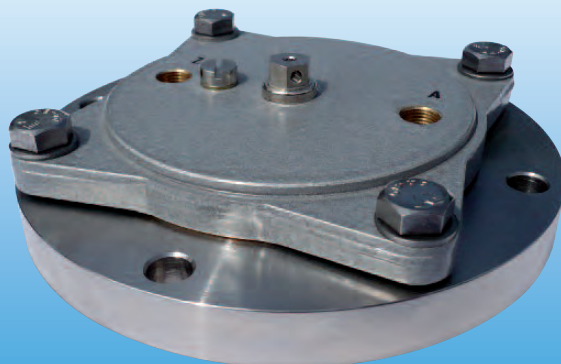
Solenoid and Blocking Valves

Solenoid valves can be used to actuate on-off valves or implement safety-relevant deactivation for control valves. Pneumatic blocking valves allow the actuating pressure of the actuator to be blocked when the supply air pressure drops below a set threshold value so that the valve remains in its current position.



Type 920 and 921 Measuring Element Controllers

The measuring element controllers for pressure (type 920) and temperature (type 921) are easy-to-use, highly-precise pneumatic uniform controllers that can be mounted in a cabinet or on a wall. They can function as P, PI, PD, PID, or two-state controllers, with configurable parameters, depending on the type of control needed. The devices indicate setpoint/actual values and the actuating pressure, allow the setpoint value to be changed and provide for a smooth transition from manual to automatic mode.



Type 931 Pressure Transmitter (1:1)

The type 931 pressure transmitter (1:1) can convert the pressure exerted by liquid, highly viscous, or aggressive media into a pneumatic, air signal and transmit this to a pneumatic measuring element controller, for example. The pressure transmitter has a very simple, robust design and requires no maintenance. It is used in any application that requires the pressure of aggressive, very hot, or highly viscous media as well as media containing solids to be measured.



Filter-Reducing Stations

For providing supply air with the required pressure and quality filter-reducing stations are used. ARCA Regler offers a wide range of materials, temperature ranges and filter porosities for your specific application.

Throttle and Throttle Check Valves

Throttle valves are installed in the control-air line to increase the actuating time of pneumatic actuators. Throttle check valves can be used if the actuating time must differ for each direction.



Accessories for Optimizing Actuating Times

Actuating times of up to 30 seconds are typical for large pneumatic actuators during normal control operation with positioners or open-close operation. Such responses are too slow for many applications, however, because the valves must open and close much more quickly to prevent damage to the plant and high follow-up costs.

The experts at ARCA Regler can provide you with boosters, throttle valves, quick-bleed valves, and appropriately dimensioned filter-reduction stations to ensure consistent, vibration-free closed-loop control or on-off operation actuation times down to 2 seconds, also for large actuators and high levels of valve friction.

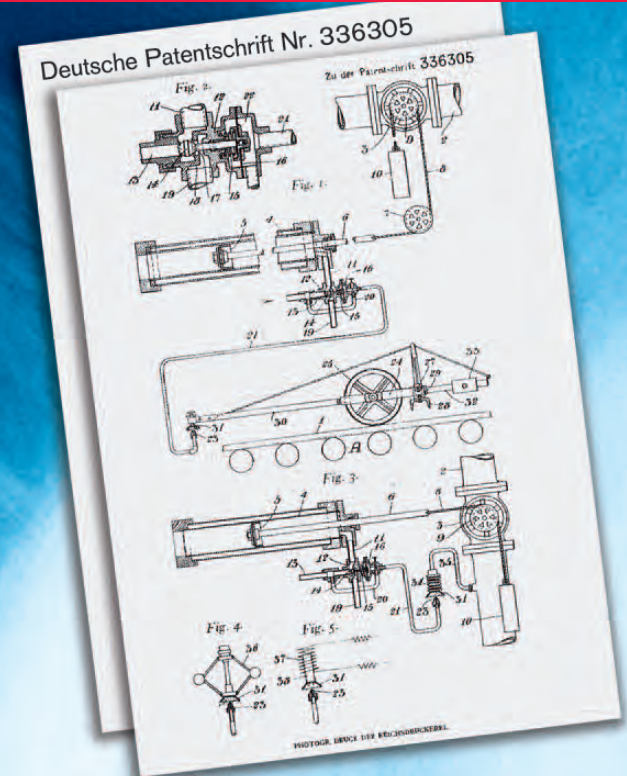
Proven Nozzle/Flapper System

The nozzle/flapper system was filed for patent protection in 1917 by the founder of ARCA Regler, Ragnar Carlstedt from Sweden. It continues to be the foundation of pneumatic automation technology and gave rise to a world of new possibilities for regulating equipment locally and remotely.

The system is rooted in the principle of controlling pressure by opening and closing a nozzle by means of a flapper and using the signal generated by this to control a pneumatic actuator. This allows the movement of the flapper to be regulated by a force, pressure or temperature signal that is converted into a distance or angle. Simple, low-cost pressure and temperature controllers or highly-precise measuring element controllers can be designed on this basis.

ARCA offers a comprehensive range of pneumatic controllers, for pressure and temperature, combining proven technology and quality and tailored to meet your specific requirements.

Controllers and Instrumentation



Our Innovations

- 1 Time-tested, classic pressure and temperature controllers with pneumatic output
- 2 Wide range of instrumentation accessories
- 3 Accessories with all common degrees of protection, including SIL classification
- 4 Broad temperature range
- 5 Actuating times of 2 seconds, even for large actuators
- 6 Safety-relevant deactivation via solenoid valve
- 7 Blocking in the event of an auxiliary power failure

Your Benefits

- ✓ Long service life
- ✓ Simple, robust design
- ✓ No external signal cables required
- ✓ Low life-cycle costs
- ✓ Optimal adaptation to a specific application
- ✓ Can be integrated in any plant concept
- ✓ Also suitable for applications in tropical or arctic environments
- ✓ Special applications possible, e.g. for turbine bypass stations and antisurge control valves on compressors
- ✓ Integration with different safety concepts possible
- ✓ Easy shut-down of plants when damage occurs

Controllers and Instrumentation

Pneumatic Controllers

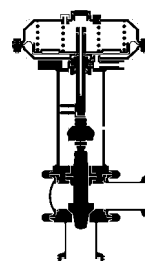
Supply air pressure	1,4 bar
Actuating air pressure	0,2...1 bar
Type 902 pressure controller «Roboter»	Measuring range -1,0...-0,01 bar to 1,5...80 bar
Type 910 temperature controller	Measuring range 0...100 °C to 150...250 °C
Type 920 measuring element controller for pressure	Measuring range -1...1 bar to 0...650 bar
Type 921 measuring element controller for temperature	Measuring range -40...50 °C to 200...600 °C
Type 931 pressure transmitter (1:1)	Measuring range 0...4 bar

Instrumentation Accessories

Type 827S signal box	Up to 3 slot initiators: SC3,5-N0-B-BU / SJ3,5-SN / SB3,5-E2
Ignition protection	None
External proximity switches	Up to 2 inductive proximity sensors: NJ5-18GK-N / NJ5-18GK-SN / NJ5-18GM50-E2
Ignition protection	None / intrinsically safe
External mechanical switches	ENM2-SU1Z Ex / GC-UV1Z-AH / 07-2511-3330/04
Switching capacity	To 400 V, 10 A AC / 250 V, 0.5 A DC, depending on the type
Ignition protection	None / flameproof
Solenoid valves	G1/4 / G1/2 / 1/4" NPT / 1/2" NPT
Type	2/2-, 3/2-, 5/2- or 5/3-way valves
Rated voltage	24 V, 50 Hz / 230 V, 50 Hz / 24 VDC
Ignition protection	None / flameproof / encapsulated / intrinsically safe
Blocking valves	G1/4
Type	2/2-, 3/2- or 4/2-way valves
Filter-reduction stations	G1/4 / G1/2 / 1/4" NPT / 1/2" NPT
Supply pressure range	Up to 31 bar, depending on the type
Downstream pressure adjustment range	0...6 bar to 0.3...10 bar, depending on the type
Filter porosity	5...40 µm, depending on the type
Quick-bleed valves / boosters / throttle valves	G1/4 / G1/2 / G 3/4 / G 1 / 1/4" NPT / 1/2" NPT / 3/4" NPT / 1" NPT

Technical Data Sheet

BIOVENT® Hygienic Control Valve



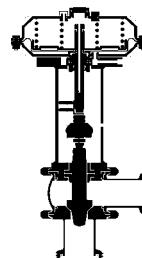
TD_391

General data

Series	391		
Nominal diameter (DN)	15 – 150		
Nominal pressure (PN)	10 – 25		
Housing designs	Angle type	L	Parabolic plug
	Globe style	BO	Parabolic plug
	Globe style	BM	Parabolic plug, double guiding
	3-step	BM	3-step plug (P3)
	3-way	M-WM	Flow mixer
	3-way	T-WM	Flow divider
Body material	Material no. 1.4404 (all body components blasted and post-treated) Thread connection 1.4301		
Body connections	Thread connections, welded ends, flanged connections, clamp connections, aseptic flange connections (other connections available on request)		
Piping classes	Metric in accordance with DIN 11850 Inch OD in accordance with ISO2037/BS 4825 Part 1 Inch IPS in accordance with Schedule 5		
Surfaces	Wetted Surfaces $Ra \leq 0.8 \mu m$; matt-blasted outer surface		
Plug characteristic	Standard: equal percentage or linear		
Rangeability	40:1		
Seat leakage	Metal sealing: class IV (0.01% of kvs) Soft sealing: class VI		
Plug	Material no. 1.4571 (superfinished; guide surfaces also finish rolled)		
Seat	Material no. 1.4404		
Stem seal	EPDM sealing rings; temperature range: -30 to +135°C; FDA compliant Resistance: 2 to 5% resistance to alkaline solutions and acids up to +85°C Other materials (FPM, HNBR etc.) available on request.		
Options	Sterile lock, diaphragm seal Optimum CIP conditions		
Material certificates	Manufacturers final test certificate in accordance with EN 10204-3.1, factory certificate in accordance with EN 10204-2.2		

Technical Data Sheet

BIOVENT® Hygienic Control Valve



TD_391

Weight and dimensions

<p>Type: 391-...-L (RG)</p>	<p>Type: 391-...-L (SS)</p>	<p>Type: 391-...-B (RG)</p>	<p>Type: 391-...-B (SS)</p>
<p>Type: 391-P3-B...(RG)</p>	<p>Type: 391-P3-B...(SS)</p>	<p>Type: 391-...-W...(RG)</p>	<p>Type: 391-...-W...(SS)</p>

SS = welded ends for piping compliant to DIN 11850 / RG = round thread connections compliant to DIN 11851

With integrated ARCA positioners type 824 and 827 (standard); other positioners available on request.

DN	Actuator	Stroke	ØD	H	HV	R	B	F	F1	F2	F3	A	A1	A2	AM ₁	C	C1	Weight
25	MFI-20	20	270	325	530	270	25	90	119	58	87	87	102	137	30	50	65	13.5
40	MFI-20	20	270	325	530	270	31	90	123	64	97	109	157	171	30	62	114	23.0
50	MFI-20	20	270	325	530	270	37	90	125	70	105	126	186	200	30	74	134	23.0
65	MFI-30 MFIII-30	30	270 400	355 387	573 651	270 400	48	125	165	83	123	154	234	250	40	96	171	23.0 38.0
80	MFI-30 MFIII-30	30	270 400	355 387	573 651	270 400	55.5	125	170	90.5	135.5	175	251	286	40	111	186	24.0 39.0
100	MFI-30 MFIII-30	30	270 400	355 387	573 651	270 400	65	125	179	100	154	205	295	335	40	130	215	27.0 42.0
125	MFIII-60	60	400	510	888	400	77.5	150	--	112.5	---	245	415	400	70	155	325	61.0

1) Dimension AM with double guide only.

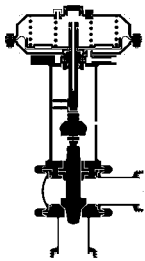
2) Weights refer to 391-P1-L angle valves with round thread connections (excluding DN 125 with welded ends) and actuator without positioner.

Maximum permissible differential pressures Δp (bar), flow against the closing direction of the plug.

The differential pressures listed do not apply to valves with V-ring sealing element.

DN	25	to	DN	50	=	25	bar
DN	65	to	DN	100	=	20	bar
DN	125	to	DN	150	=	10	bar

Technical Data Sheet **BIOVENT® Hygienic Control Valve**



TD_391

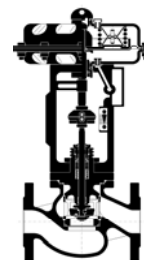
Type codes

	39	1	-P L M T	1 3	-L B W T E	M O
Series						
1 = hygienic design						
P = parabolic plug						
L = perforated plug						
M = mixer						
T = divider						
1 = 1-stage						
3 = 3-stage						
Does not apply to mixer and divider						
Housing design L						
Housing design B						
Housing design W						
Housing design T						
Housing design E						
M = removable floor panel with guide						
O = removable floor panel without guide						

Possible housing designs

L	B	W	T	E

Technical Data Sheet ECOTROL® Control Valve



TD_6H

General Data

Series	6H
Nominal Size DN / NPS	(15) 25-200 / (1/2") 1"-8"
Nominal Pressure PN / ANSI	63-250 / Class 600-1500
Characteristic	equal perc. or linear
Rangeability	40:1
Plug guide	stem guided, option: double guided (retrofit able)
Seat leakage	metal sealing: IEC 50534-4 leakage class IV (0,01% kVs-value); option leakage class V soft sealing (IEC 50534-4 leakage class VI soft sealing on request)
Bellow sealing (option)	seamless, multiple layers, made of 1.4571, option: Hastelloy and other materials
Heating jacket (option)	Connections DN 15 PN 40 (1/2" ANSI 300) flanges
Low temperature design (option)	Down to -196°C

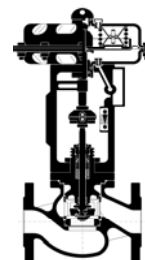
Materials

Body materials		EN	Temperature range		ASTM	Temperature range
		1.0619 GP240GH*	-10 to 400°C		A 216 WCB*	-29°C to 400°C
		1.4408 G-X 5 CrNiMo 19 11 2	-196 to 400°C		A 351 CF8M*	-196°C to 400°C
		1.4581 GX5CrNiMoNb 19-11-2*	-10 to 450°C		-	-
		1.6220 G20Mn5	-40 to 400°C		A 352 LCB	-50°C to 400°C
		1.6982 GX3CrNi13-4	-120 to 400°C		-	-
		1.7357 G17CrMo5-5	-10 to 530°C		A 217 WC6	-29°C to 530°C
Bonnet materials		Same material as body, stuffing box sleeve made of 1.4571 (AISI 316TI)				
Trim material						
Material No.	Parabolic Plug	Perforated plug L1	Seat	Seat sealing	Max. fluid temperature	
1	1.4122*	1.4122 nitrided	1.4021*	metallic	same as stem sealing	
2	1.4571*	1.4571 nitrided	1.4571*	metallic	same as stem sealing	
3	1.4112 hardened	1.4112 hardened	1.4112 hardened	metallic	same as stem sealing	

* Standard

Technical Data Sheet

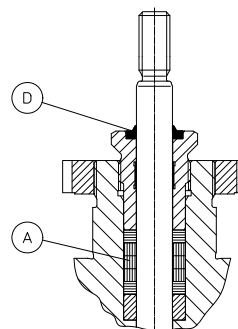
ECOTROL® Control Valve



TD_6H

Temperature range for stem sealings

Sealing type	Packing ring (Item A)	Wiper ring (Item D)	Temp. range	Top flange design	Remarks
adjustable	reinforced Graphite/ Inconel	NBR (FKM)	-29 ~ 400°C	Standard/ cooling fins	Standard operation
adjustable	Pure Graphite	VITON	-29 ~ 530°C	Standard/ cooling fins	High temperature
adjustable	Braided Graphite/PTFE	NBR	-196 ~ 200°C	Extended bonnet	Low temperature
Bellow sealing c/w double safety sealing	PTFE V-Ring bellow (1.4571 or Hastelloy C)	NBR (FKM)	-100 ~ 200°C	Bellow sealing	preloaded c/w stainless steel spring

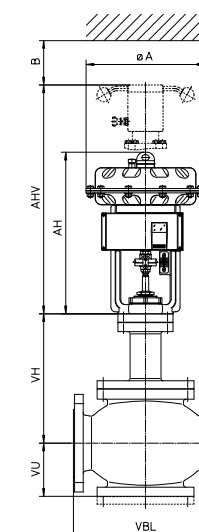
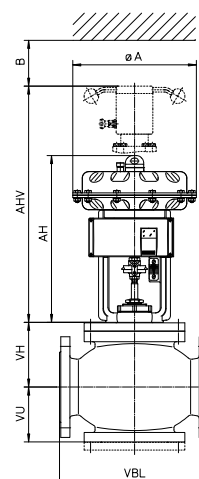


Weights and dimensions

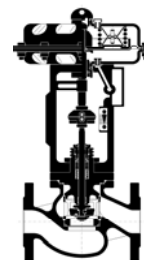
Dimensions (in mm) for valve c/w flanges acc. to DIN EN 1092-1 or ANSI Class 600/900/1500 RF/RTJ										
Valve Series 6H	DN ANSI NPS		15** ½"	25 1"	40 1 ½"	50 2"	80 3"	100 4"	150 6"	200 8"
	VBL PN63/100/160			230	260	300	380	430	550	700
	VBL PN250			260	300	350	450	520	700	800
	VBL Class 600 RF			216	241	292	356	432	559	660
	VBL Class 600 RTJ			216	241	295	359	435	562	664
	VBL Class 900 RF			254	305	368	381	457	610	737
	VBL Class 900 RTJ			254	305	372	384	460	613	740
	VBL Class 1500 RF			254	305	368	470	546	705	832
	VBL Class 1500 RTJ			254	305	372	473	549	711	842
	VH	DEK1		135	160	190	250	275	335	410
		DEK2		170	240	270	315	355	490	480
		DEK3		170	240	270	315	355	490	480
		DEK4	on request							
		DEK5								
DEK7						250	285	335	410	
VU	DEK8					315	355	490	480	
	3-Flansch		70	105	115	155	180	230	275	
	4-Flansch				175	235	265	315	410	
Actuator Type 812/811/MA	ØA	MFI	270							
		MFIII				400				
		UV							530	
		MA.60							596	
	AH	MFI	361							
		MFIII				489			625	
		UV							1006	
		MA.60							840	
	AHV	MFI	508							
		MFIII				657			888	
		UV							1323	
		B	130			150			200	
	Weight* ca. kg	MFI		34	42	72	101	136		
		MFIII		60	68	98	127	210	430	607
		UV							475	645
		MA.60							550	750

*) Weight: Valve c/w actuator w/o hand wheel

**) on request



Technical Data Sheet ECOTROL[®] Control Valve



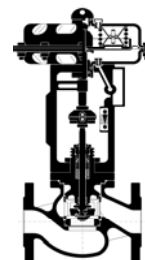
TD_6H

Standard kVs/ Cvs and seat diameters of series 6H (not balanced)

DN/NPS	Seat-Ø (mm)	Characteristics	kVs [m³/h]		Cvs [gal/min]	
			Parabolic plug	Perforated plug	Parabolic plug	Perforated plug
25 1"	16	= %	4	-	4,7	-
		linear		-		-
	19	= %	7	4	8,2	4,7
		linear		4		4,7
	24	= %	11	7	12,9	8,2
		linear		10		11,7
40 1 ½"	24	= %	11	7	12,9	8,2
		linear		10		11,7
	32	= %	18	13	21,1	15,2
		linear		18		21,1
	37	= %	26	16	30,4	18,7
		linear		26		30,4
50 2"	32	= %	18	16	21,1	18,7
		linear		23		26,9
	37	= %	26	21	30,4	24,6
		linear		26		30,4
	48	= %	43	35	50,3	41
		linear		43		50,3
80 3"	48	= %	43	38	50,3	44,5
		linear		55		64,4
	62	= %	68	43	79,6	50,3
		linear		60		70,2
	73	= %	100	55	117	64,4
		linear		80		93,6
100 4"	62	= %	68	43	79,6	50,3
		linear		60		70,2
	73	= %	100	55	117	64,4
		linear		80		93,6
	90	= %	150	68	175,5	79,6
		linear		110		128,7
150 6"	90	= %	150	125	175,5	146,3
		linear		170		198,9
	113	= %	260	150	304,2	175,5
		linear		260		304,2
	143	= %	380	210	444,6	245,7
		linear		380		444,6
200 8"	113	= %	260	150	304,2	175,5
		linear		260		304,2
	143	= %	380	210	444,6	245,7
		linear		380		444,6
	172	= %	650	260	760,5	304,2
		linear		450		526,5

Technical Data Sheet

ECOTROL® Control Valve



TD_6H

Max. shut off differential pressure (valve closed)
(Standard packing, leakage class IV, w/o balancing¹⁾, flow-to open)

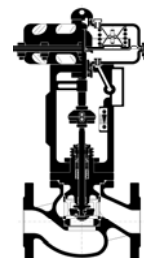
Actuator series 812 (multi-spring actuator)			Air to open / spring to close No. of springs				Air to close / spring to open No. of springs				
			3	6	9	12	3	3	3	6	6
DN	Actuator size	Seat-Ø (mm)	bar				p instrument air min. [bar]				
							3,0	4,5	6,0	4,5	6,0
25 1"	MFI-20 320 cm ² 50 in ²	24	27,0	80,1			80,1	160,0	160,0	80,1	160,0
		19	45,9	130,6			130,6	160,0	160,0	130,6	160,0
		16	67,1	160,0			160,0	160,0	160,0	160,0	160,0
40 1 1/2"	MFI-20 320 cm ² 50 in ²	37	9,5	31,8			31,8	76,4	121,1	31,8	76,4
		32	13,6	43,5			43,5	103,2	160,0	43,5	103,2
		24	27,0	80,1			80,1	160,0	160,0	80,1	160,0
50 2"	MFI-30 320 cm ² 50 in ²	48	4,7	17,9			17,9	44,5	71,0	17,9	44,5
		37	9,5	31,8			31,8	76,5	121,1	31,8	76,4
		32	13,6	43,5			43,5	103,2	160,0	43,5	103,2
	MFIII-30 720 cm ² 111 in ²	48	19,1	46,7	63,3	79,9	51,1	110,8	160,0	51,1	110,8
		37	33,7	80,2	108,1	136,0	87,6	160,0	160,0	87,6	160,0
		32	46,0	108,2	145,5	160,0	118,2	160,0	160,0	118,2	160,0
80 3"	MFI-30 320 cm ² 50 in ²	73	1,1	6,8			6,8	18,3	29,8	6,8	18,3
		62	2,1	10,0			10,0	25,9	41,8	10,0	25,9
		48	4,7	17,9			17,9	44,5	71,0	17,9	44,5
	MFIII-30 720 cm ² 111 in ²	73	7,3	19,3	26,4	33,6	21,2	47,0	72,8	21,2	47,0
		62	10,7	27,3	37,2	47,1	29,9	65,7	101,5	29,9	65,7
		48	19,1	46,7	63,3	79,9	51,1	110,8	160,0	51,1	110,8
100 4"	MFI-30 320 cm ² 50 in ²	90	0,3	4,1			4,1	11,6	19,2	4,1	11,6
		73	1,1	6,8			6,8	18,3	29,8	6,8	18,3
		62	2,1	10,0			10,0	25,9	41,8	10,0	25,9
	MFIII-30 720 cm ² 111 in ²	90	4,4	12,2	17,0	21,7	13,5	30,5	47,5	13,5	30,5
		73	7,3	19,3	26,4	33,6	21,2	47,0	72,8	21,2	47,0
		62	10,7	27,3	37,2	47,1	29,9	65,7	101,5	29,9	65,7
150 6"	MFIII-60 720 cm ² 111 in ²	143	1,2	4,3	6,2	8,1	4,8	11,6	18,3	4,8	11,6
		113	2,4	7,4	10,4	13,4	8,2	19,0	29,8	8,2	19,0
		90	4,4	12,2	17,0	21,7	13,5	30,5	47,5	13,5	30,5
200 8"	MFIII-60 720 cm ² 111 in ²	172	0,6	2,8	4,1	5,4	3,1	7,8	12,4	3,1	7,8
		143	1,2	4,3	6,2	8,1	4,8	11,6	18,3	4,8	11,6
		113	2,4	7,4	10,4	13,4	8,2	19,0	29,8	8,2	19,0

Actuator series 811 (single-spring actuator, adjustable)			Air to open -spring to close spring				Air to close - spring to open spring				
			standard		reinforced		Min.			Max.	
DN	Actuator size	Seat-Ø (mm)	Min.	Max.	Min.	Max.	p instrument air min. [bar]				
			bar	bar	bar	bar	3,0	4,5	6,0	4,5	6,0
150 6"	UV-60 1440 cm² 223 in²	143	-	6,9	-	13,5	18,5	32,0	45,6	22,3	35,8
		113	-	11,5	- 22,1		30,2	51,7	73,5	36,2	57,8
		90	-	18,7	- 35,4		48,1	82,1	116,4	57,7	91,7
200 8"	UV-60 1440 cm² 223 in²	172	-	4,6	- 9,1		12,6	21,9	31,3	15,2	24,5
		143	-	6,9	-	13,5	18,5	32,0	45,6	22,3	35,8
		113	-	11.5	- 22.1		30.2	51.7	73.5	36.2	57.8

¹⁾ For higher differential pressures, balanced trim is required. Please contact us.

Technical Data Sheet

ECOTROL® Control Valve

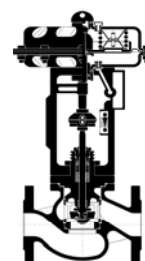


TD_6H

Actuator series MA60 (multi-spring actuator)			Air to open / spring to close No. of springs				Air to close / spring to open No. of springs				
			2	4	6	8	2	2	2	4	4
DN	Actuator size	Seat-Ø (mm)	bar				p instrument air min. [bar]				
							3,0	4,5	6,0	4,5	6,0
150 6"	MA3.60A 2185 cm ² 339 in ²	143	4,3	10,6	16,8	23,0	29,3	41,7	54,2	-	-
		113	7,4	17,4	27,4	37,3	47,3	67,3	87,2	-	-
		90	12,2	28,0	43,7	59,4	75,2	106,6	138,1		
200 8"	MA3.60A 2185 cm ² 339 in ²	172	2,8	7,1	11,4	15,7	20,0	28,6	37,2	-	-
		143	4,3	10,6	16,8	23,0	29,3	41,7	54,2	-	-
		113	7,4	17,4	27,4	37,3	47,3	67,3	87,2	-	-

For higher differential pressures, balanced trim is required. Please contact us.

Technical Data Sheet ECOTROL® Control Valve



TD_6H

ECOTROL® 6H type code

0. Operating Conditions		7. Body materials (cont.)		16. Seat/ plug seal ¹⁾	
Fluid:		6	A216WCB	0	Leakage class IV (metal to metal)
Temp.:	°C	7	A351CF8M	1	Leakage class V (metal, super finished)
Press. P ₁ :	bar abs	8	A217WC6	2*	Soft sealed (PTFE/EPDM)
Press. P ₂ :	bar abs	9	other (in acc. with order)	3*	Soft sealed (PTFE/FKM)
1. Series		8. Guiding ¹⁾		4*	Soft sealed (PTFE/ trapezoidal)
6H		0	Stem guided (standard	9	other (in acc. with order)
2. Bonnet		1	Bottom guided	17. Cage Retainer ¹⁾	
1	Standard	9	other (in acc. with order)	0	Standard
2	Double stuffing box	9. kVs		1	LN (Low Noise), not controlled
3	Cooling fins	xxx	in acc. with order	2	LN controlled
4	Bellows	10. Characteristics		9	other (in acc. with order)
5	Extension (insulating column)	l	Linear	18. Low noise cage ¹⁾	
7	Standard balanced	g	=%	1	LK1
8	Cooling fins balanced	m	modified	2	LK2
9	Special design in acc. with order	s	On/ Off	3	LK3
3. Plug design		11. Plug materials ¹⁾		4	LK4
P1-P3-P5	Parabolic plug (1-3-5 step)	1	1.4571	5	SLK1
L1-L2-L3	Perforated plug (1-2-3 step)	3	1.4112	6	SLK2
S	On/ Off plug	4	1.4122	9	other (in acc. with order)
4. Nominal diameter (DN) – DIN/ ANSI		9	other (in acc. with order)	19. Stem sealing ¹⁾	
25	DN 25 / ANSI 1"	12. Plug wear/ tear protection ¹⁾		1	-
40	DN 40 / ANSI 1 ½"	0	Standard (w/o)	2	-
50	DN 50 / ANSI 2"	1	nitrided	3	Latty 6118/ETF Inconel
80	DN 80 / ANSI 3"	2	hardened	4	Graphite 0901
100	DN 100 / ANSI 4"	3	Plug face stellited	5	Graphite/PTFE 6226/6232
150	DN 150 / ANSI 6"	4	Completely stellited	9	other (in acc. with order)
200	DN 200 / ANSI 8"	5	Colsterised	20. special design	
5. Nominal pressure (PN)		9	other (in acc. with order)	0	Standard
63	PN 63	13. Balancing ¹⁾		1	AD2000
100	PN 100	1	Piston rings	2	NACE
160	PN 160	2	EPDM- quad ring	3	Oxygen design
250	PN 250	3	FKM- quad ring	9	other (in acc. with order)
600	Class 600 acc. to ANSI B16.10	5	PTFE spring loaded	21. Material inspection (pressure retaining parts)	
900	Class 900 acc. to ANSI B16.10	9	other (in acc. with order)	0	w/o
1500	Class 1500 acc. to ANSI B16.10	14. Seat materials		1	EN 10204-2.1
6. Connections		1	1.4571	2	EN 10204-3.1
0	Flanges c/w sealing strip RF SF	3	1.4112	3	EN 10204-3.2
1	Flanges c/w groove	4	1.4122	9	other (in acc. with order))
2	Flanges c/w tongue	9	other (in acc. with order)	22. Final inspection	
3	Flanges c/w projection/ recess	15. Seat wear/ tear protection ¹⁾		0	w/o
4	Butt weld ends	0	standard (w/o)	1	EN 10204-2.1
5	Butt weld ends c/w spool pieces	1	nitrided	2	EN 10204-2.2
7	RTJ	2	hardened	3	EN 10204-3.1
9	other (in acc. with order)	3	Seat face stellited	4	EN 10204-3.2
7. Body materials ¹⁾		4	Completely stellited	9	other (in acc. with order)
2	1.0619	5	Colsterised		
3	1.4581	9	other (in acc. with order)		
4	1.7357				
5	1.6620				

¹⁾ in accordance with customer's specification, or selected by manufacturer in accordance with customer's specification (fluid, pressure, etc.)

Example:

6H - 1 - P1 - 150 - 40 - 0 - 2 *Position 1-7 / basic data*

Series 6H – c/w standard bonnet – c/w parabolic plug - DN150 – PN40 – flanges acc. to EN1092 B1 – body 1.0619

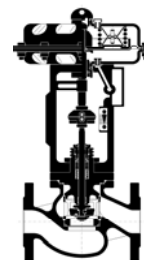
0 - 260 - g - 1 - 0 - 0 - 1 - 0 - 0 - 0 - 0 - 1 *Position 8-19 / trim*

Single stem guiding – kVs 260 – equal percentage – plug made of 1.4571 – w/o wear/tear protection – w/o balancing – seat made of 1.4571 – w/o wear/ tear protection – leakage class IV – cage retainer standard – w/o low noise cage – stem sealing PTFE-V-Ring/EPDM quad ring

0 - 1 - 1 *position 20-22 / Design/ inspections*

Standard design – Material inspection acc. to EN 10204 3.1 - Final inspection acc. to EN 10204 3.1

Technical Data Sheet ECOTROL® Control Valve



TD_6N

General Data

Series	6N
Nominal Size DN /NPS	150-500 / 6" – 20"
Nominal Pressure PN / ANSI	10-40 / Class 150-300
Characteristics	equal percentage or linear
Rangeability	40:1
Plug guide	stem guided, option: double guiding (retrofit able)
Seat leakage	metal sealing: IEC 50534-4 leakage class IV (0,01% kVs- value); option: leakage class V soft sealing: IEC 50534-4 leakage class VI
Bellow sealing (option)	seamless, double walled, made of 1.4571, option: Hastelloy and other materials
Heating jacket (option)	Connections DN 15 PN 40 (1/2" ANSI 300) flanges
Low temperature design (option)	Down to -196°C

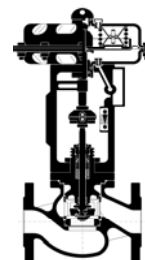
Materials

Body Materials		EN	Temperature range	ASTM	Temperature range	
		1.0619 GP240GH*	-10 to 400°C	A 216 WCB*	-29°C to 400°C	
		1.4408 G-X 5 CrNiMo 19 11 2	-196 to 400°C	A 351 CF8M*	-196°C to 400°C	
		1.4581 GX5CrNiMoNb 19-11-2*	-10 to 450°C	-	-	
		1.6220 G20Mn5	-40 to 400°C	A 352 LCB	-50°C to 400°C	
		1.6982 GX3CrNi13-4	-120 to 400°C	-	-	
		1.7357 G17CrMo5-5	-10 to 530°C	A 217 WC6	-29°C to 530°C	
Bonnet Materials		Same material as body, stuffing box sleeve made of 1.4571 (AISI 316Ti)				
Trim material						
Material No.	Parabolic Plug	Perforated plug L1	Seat	Seat sealing	Max. fluid temperature	
1	1.4122*	1.4122 nitrided	1.4021*	metallic	same as stem sealing	
2	1.4571*	1.4571 nitrided	1.4571*	metallic	same as stem sealing	
3	1.4112 hardened	1.4112 hardened	1.4112 hardened	metallic	same as stem sealing	
4	1.4122*	1.4122 nitrided	1.4021*	PTFE/FKM	-50 ~ 160°C	
5	1.4571*	1.4571 nitrided	1.4571*	PTFE/FKM	-50 ~ 160°C	
6	1.4112 hardened	1.4112 hardened	1.4112 hardened	PTFE/FKM	-50 ~ 160°C	
7	1.4122*	1.4122 nitrided	1.4021*	PTFE/EPDM	-50 ~ 140°C	
8	1.4571*	1.4571 nitriert	1.4571*	PTFE/EPDM	-50 ~ 140°C	
9	1.4112 hardened	1.4112 hardened	1.4112 hardened	PTFE/EPDM	-50 ~ 140°C	
10	1.4122*	1.4122 nitrided	1.4021*	PTFE	-196 ~ 180°C	
11	1.4571*	1.4571 nitrided	1.4571*	PTFE	-196 ~ 180°C	
12	1.4112 hardened	1.4112 hardened	1.4112 hardened	PTFE	-196 ~ 180°C	

* Standard

Technical Data Sheet

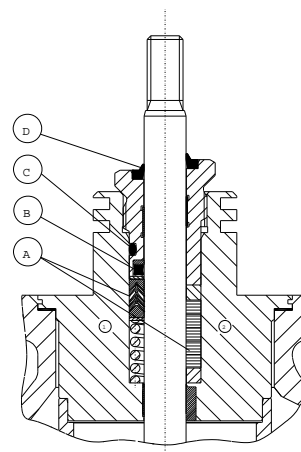
ECOTROL® Control Valve



TD_6N

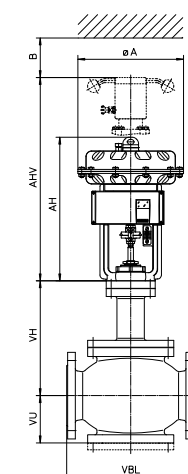
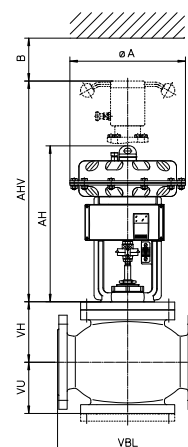
Temperature range for stem sealings

Sealing type	Packing Ring (Item A)	Micro sealing (Item B)	O-Ring (Item C)	Wiper ring (Item D)	Temp. range	Top flange design	Remarks
Maintenance free double sealing	PTFE V-Ring	EPDM (FKM)	EPDM	NBR	-25 ~ 180 (200)°C	Standard	preloaded c/w stainless steel spring
adjustable	reinforced Graphite/ Inconel	-	-	NBR (FKM)	-29 ~ 400°C	Standard/ Cooling fins	Standard operation
adjustable	Pure Graphite	-	-	VITON	-29 ~ 530°C	Standard/ Cooling fins	high temperature
adjustable	Braided Graphite/ PTFE	-	-	NBR	-196 ~ 200°C	Extended bonnet	low temperature
Bellow sealing c/w double safety sealing	PTFE V-Ring/ bellow (1.4571 or Hastelloy C)	EPDM (FKM)	EPDM	NBR (FKM)	-100 ~ 200°C	Bellow sealing	preloaded c/w stainless steel spring



Weights and dimensions

Dimensions (mm) of valves c/w flanges acc. to DIN EN 1092-1 or ANSI Class 150/300 RF/RTJ								
Valve Series 6N	DN	150	200	250	300	350	400	500
	ANSI NPS	6"	8"	10"	12"	14"	16"	20"
	VBL PN10-PN40	480	600	730	850	980	1100	1250
	VBL Class 150 RF	450,8	542,9	673,1	736,6	889	1016	1250
	VBL Class 150 RTJ	463,5	555,7	-	-	-	-	-
	VBL Class 300 RF	472,9	568,3	708	774,7	927,1	1057,3	1250
	VBL Class 300 RTJ	488,9	584,1	-	-	-	-	-
	VH	DEK1	260	295	360	395	465	600
		DEK2	355	410	510	545	615	1)
		DEK3	355	410	510	545	615	1)
		DEK4	575	605	850	850	880	1)
		DEK5	on request					
		DEK7	260	295	360	395	465	600
		DEK8	355	410	510	545	615	670
	VU	190	240	305	335	395	445	540
Actuator ²⁾ Type 812/811/MA	ØA	MFIII	400					
		UV			530			
		MA.60			596			
	AH	MFIII	625					
		UV	1006		1135			
		MA.60	840		1010			
	AHV	MFIII	888					
		UV	1323		1452			
		B	200		340			
	weight* ca. kg	MFIII	247	332				
		UV	250	350	535	830	1160	1460
		MA.60	330	390	600	1000	1300	1770



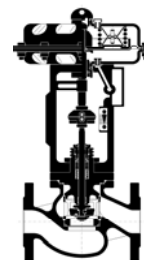
1) On request

2) Actuator type for DN500/ 20" on request

*) valve c/w actuator w/o hand wheel

Technical Data Sheet

ECOTROL® Control Valve



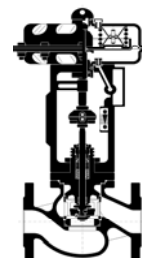
TD_6N

Standard kVs/ Cvs and seat diameters of series 6N (not balanced)

DN/ NPS	Seat-Ø (mm)	Characteristics	kVs [m³/h]		Cvs [gal/min]	
			Parabolic Plug	Perforated Plug	Parabolic Plug	Perforated Plug
150 6"	90	= %	150	125	157	146
		linear		170		199
	113	= %	260	150	304	175
		linear		260		304
	143	= %	380	210	445	246
		linear		380		445
200 8"	113	= %	260	150	304	175
		linear		260		304
	143	= %	380	210	445	246
		linear		380		445
	172	= %	650	260	761	304
		linear		450		523
250 10"	143	= %	380	210	445	246
		linear		380		445
	172	= %	650	260	761	304
		linear		450		526
	220	= %	900	520	1053	608
		linear		900		1053
300 12"	172	= %	650	260	761	304
		linear		450		526
	220	= %	900	520	1053	608
		linear		900		1053
	282	= %	1300	720	1521	842
		linear		1300		1521
350 14"	220	= %	900	520	1053	608
		linear		900		1053
	282	= %	1300	720	1521	842
		linear		1300		1521
	313	= %	1800	850	2106	995
		linear		1800		2106
400 16"	282	= %	1300	720	1521	842
		linear		1300		1521
	313	= %	1800	850	2106	995
		linear		1800		2106
	400	= %	2500	1250	2925	1462
		linear		2500		2925
500 20"	400	= %	2500	1250	2925	1462
		linear		2500		2925
	500	= %	4000	-	2925	-
		linear		4000		4680

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ECOTROL® Control Valve



TD_6N

Max. shut off differential pressures (valve closed)
(PTFE packing (V-Ring), leakage class IV, w/o balancing, ¹⁾ flow-to-open)

Actuator series 812 Type MFIII - 60 (multi-spring actuator)		Air to open / Spring to close No. of springs				Air to close / spring to open No. of springs				
		3	6	9	12	3	3	3	6	6
DN/ NPS	Seat-Ø (mm)	bar				p instrument air, min [bar]				
		3,0	4,5	6,0	4,5	6,0				
150 6"	90	4,9	12,7	17,4	22,2	14,0	31,0	47,9	14,0	31,0
	113	2,7	7,7	10,7	13,7	8,5	19,3	30,1	8,5	19,3
	143	1,4	4,5	6,4	8,3	5,0	11,7	18,5	5,0	11,7
200 8"	113	2,7	7,7	10,7	13,7	8,5	19,3	30,1	8,5	19,3
	143	1,4	7,7	6,4	8,3	5,0	11,7	18,5	5,0	11,7
	172	0,8	2,9	4,2	5,5	3,3	7,9	12,6	3,3	7,9

Actuator series 811 Type UV-60 (single-spring actuator)		Air to open / Spring to close spring				Air to close / spring to open spring				
		standard		reinforced		standard			reinforced	
DN/ NPS	Seat-Ø (mm)	Min.	Max.	Min.	Max.	p instrument air, min [bar]				
		bar	bar	bar	bar	3,0	4,5	6,0	4,5	6,0
150 6“	90		19,2		35,8	48,6	50,0	50,0	50,0	50,0
	113		11,8		22,4	30,5	50,0	50,0	36,5	50,0
	143		7,1		13,7	18,7	32,2	45,8	22,5	36,0
200 8“	113		11,8		22,4	30,5	50,0	50,0	36,5	50,0
	143		7,1		13,7	18,7	32,2	45,8	22,5	36,0
	172		4,7		9,3	12,7	22,0	31,4	15,4	24,7

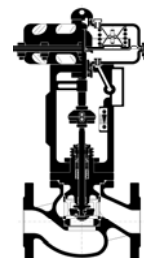
Actuator series 811 Type UV-100 (single-spring actuator)		Air to open / Spring to close spring				Air to close / spring to open spring				
		standard		reinforced		standard			reinforced	
DN/ NPS	Seat-Ø (mm)	Min.	Max.	Min.	Max.	p instrument air, min [bar]				
		bar	bar	bar	bar	3,0	4,5	6,0	4,5	6,0
250 10"	143		3,3		6,8	17,3	30,7	44,2	22,3	35,7
	172		2,1		4,5	11,8	21,1	30,4	15,2	24,5
	220		1,1		2,6	7,0	12,7	18,4	9,1	14,8
300 12"	172		2,1		4,5	11,8	21,1	30,4	15,2	24,5
	220		1,1		2,6	7,0	12,7	18,4	9,1	14,8
	282		0,5		1,4	4,1	7,6	10,0	5,4	8,8
350 14"	220		1,1		2,6	7,0	12,7	18,4	9,1	14,8
	282		0,5		1,4	4,1	7,6	10,0	5,4	8,8
	313		0,3		1,1	3,3	6,1	8,9	4,3	7,1

Actuator series 811 Type UV-120 (single-spring actuator)		Air to open / Spring to close spring				Air to close / spring to open spring				
		standard		reinforced		standard			reinforced	
DN/ NPS	Seat-Ø (mm)	Min.	Max.	Min.	Max.	p instrument air, min [bar]				
		bar	bar	bar	bar	3,0	4,5	6,0	4,5	6,0
400 16"	282	-	-	-	0,5	4,1	7,6	11,0	5,4	8,8
	313	-	-	-	0,3	3,3	6,1	8,9	4,3	7,1
	400	-	-	-	-	1.9	3.6	5.3	2.5	4.2

¹⁾ For higher differential pressures, balanced trim is required. Please contact ARCA!

Technical Data Sheet

ECOTROL® Control Valve

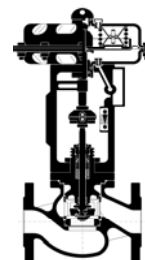


TD_6N

Max. shut off differential pressures (valve closed)
(PTFE packing (V-Ring), leakage class IV, w/o balancing, ¹⁾ flow-to-open)

Actuator series MA60.D (multi-spring actuator)		Air to open / Spring to close No. of springs				Air to close / spring to open No. of springs				
		2	4	6	8	2	2	2	4	4
DN/ NPS	Seat-Ø (mm)	bar				p instrument air, min [bar]				
						3,0	4,5	6,0	4,5	6,0
150 6"	90	12,7	28,4	44,2	50,0	50,0	50,0	50,0	-	-
	113	7,7	17,7	27,7	37,6	47,6	50,0	50,0	-	-
	143	4,5	10,7	17,0	23,2	29,4	41,9	50,0	-	-
200 8"	113	7,7	17,7	27,7	37,6	47,6	50,0	50,0	-	-
	143	4,5	10,7	17,0	23,2	29,4	41,9	50,0	-	-
	172	2,9	7,2	11,5	15,8	20,2	28,8	37,4	-	-
250 10"	143	4,5	10,7	17,0	23,2	29,4	41,9	50,0	-	-
	172	2,9	7,2	11,5	15,8	20,2	28,8	37,4	-	-
	220	1,4	3,9	6,4	8,7	11,8	18,6	25,4	-	-
300 12"	172	2,9	7,2	11,5	15,8	20,2	28,8	37,4	-	-
	220	1,4	3,9	6,4	8,7	11,8	18,6	25,4	-	-
	282	0,7	2,2	3,7	5,2	7,0	11,2	15,3	-	-
350 14"	220	1,4	3,9	6,4	8,7	11,8	18,6	25,4	-	-
	282	0,7	2,2	3,7	5,2	7,0	11,2	15,3	-	-
	313	0,5	1,7	2,9	4,1	5,6	9,0	12,4	-	-
400 16"	282	0,7	2,2	3,7	5,2	7,0	11,2	15,3	-	-
	313	0,5	1,7	2,9	4,1	5,6	9,0	12,4	-	-
	400	-	0,4	0,9	1,3	3,3	5,4	7,5	-	-

Technical Data Sheet ECOTROL® Control Valve



TD_6N

ECOTROL® 6N type code

0. Operating Conditions		7. Body materials (cont.)		16. Seat/ plug seal ¹⁾	
Fluid:		6	A216WCB	0	Leakage class IV (metal to metal)
Temp.:	°C	7	A351CF8M	1	Leakage class V (metal, super finished)
Press. P ₁ :	bar abs	8	A217WC6	2	Soft sealed (PTFE/EPDM)
Press. P ₂ :	bar abs	9	other (in acc. with order)	3	Soft sealed (PTFE/FKM)
1. Series		8. Guiding ¹⁾		4	
6N		0	Stem guided (standard)	9	other (in acc. with order)
2. Bonnet		1	Bottom guided	17. Cage Retainer ¹⁾	
1	Standard	9	other (in acc. with order)	0	Standard
2	Double stuffing box	9. kVs		1	LN (Low Noise), not controlled
3	Cooling fins	xxx	in acc. with order	2	LN controlled
4	Bellows	10. Characteristics		9	other (in acc. with order)
5	Extension (insulating column)	l	Linear	18. Low noise cage ¹⁾	
7	Standard balanced	g	=%	1	LK1
8	Cooling fins balanced	m	modified	2	LK2
9	Special design in acc. with order	s	On/ Off	3	LK3
3. Plug design		11. Plug materials ¹⁾		4	LK4
P1-P3-P5	Parabolic plug (1-3-5 step)	1	1.4571	5	SLK1
L1-L2-L3	Perforated plug (1-2-3 step)	3	1.4112	6	SLK2
S	On/ Off plug	4	1.4122	9	other (in acc. with order)
4. Nominal diameter (DN) – DIN/ ANSI		9	other (in acc. with order)	19. Stem sealing ¹⁾	
150	DN 150 / ANSI 6"	12. Plug wear/ tear protection ¹⁾		1	PTFE/V-Ring/EPDM quad ring
200	DN 200 / ANSI 8"	0	Standard (w/o)	2	PTFE/V-Ring/VITON quad ring
250	DN 250 / ANSI 10"	1	nitrided	3	Latty 6118/ETF Inconel
300	DN 300 / ANSI 12"	2	hardened	4	Graphite 0901
350	DN 350 / ANSI 14"	3	Plug face stellited	5	Graphite/PTFE 6226/6232
400	DN 400 / ANSI 16"	4	Completely stellited	9	other (in acc. with order)
500	DN 500 / ANSI 20"	5	Colsterised	20. special design	
5. Nominal pressure (PN)		9	other (in acc. with order)	0	Standard
10	PN 10	13. Balancing ¹⁾		1	AD2000
16	PN 16	1	Piston rings	2	NACE
40	PN 40	2	EPDM- quad ring	3	Oxygen design
150	Class 150 acc. to ANSI B16.10	3	FKM- quad ring	9	other (in acc. with order)
300	Class 300 acc. to ANSI B16.10	5	PTFE spring loaded	21. Material inspection (pressure retaining parts)	
6. Connections		9	other (in acc. with order)	0	w/o
0	Flanges c/w sealing strip RF SF	14. Seat materials		1	EN 10204-2.1
1	Flanges c/w groove	1	1.4571	2	EN 10204-3.1
2	Flanges c/w tongue	3	1.4112	3	EN 10204-3.2
3	Flanges c/w projection/ recess	4	1.4122	9	other (in acc. with order))
4	Butt weld ends	9	other (in acc. with order)	22. Final inspection	
5	Butt weld ends c/w spool pieces	15. Seat wear/ tear protection ¹⁾		0	w/o
7	RTJ	0	standard (w/o)	1	EN 10204-2.1
9	other (in acc. with order)	1	nitrided	2	EN 10204-2.2
7. Body materials ¹⁾		2	hardened	3	EN 10204-3.1
2	1.0619	3	Seat face stellited	4	EN 10204-3.2
3	1.4581	4	Completely stellited	9	other (in acc. with order)
4	1.7357	5	Colsterised		
5	1.6620	9	other (in acc. with order)		

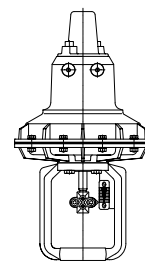
¹⁾ in accordance with customer's specification, or selected by manufacturer in accordance with customer's specification (fluid, pressure, etc.)

Example:

6N - 1 - P1 - 150 - 40 - 0 - 2	<i>Position 1-7 / basic data</i>
Series 6N – c/w standard bonnet – c/w parabolic plug - DN150 – PN40 – flanges acc. to EN1092 B1 – body 1.0619	
0 - 260 - g - 1 - 0 - 0 - 1 - 0 - 0 - 0 - 0 - 1	<i>Position 8-19 / trim</i>
Single stem guiding – kVs 260 – equal percentage – plug made of 1.4571 – w/o wear/tear protection – w/o balancing – seat made of 1.4571 – w/o wear/ tear protection – leakage class IV – cage retainer standard – w/o low noise cage – stem sealing PTFE-V-Ring/EPDM quad ring	
0 - 1 - 1	<i>position 20-22 / Design/ inspections</i>
Standard design – Material inspection acc. to EN 10204 3.1 - Final inspection acc. to EN 10204 3.1	

Technical Data Sheet

pneum. Diaphragm Actuator



TD_811

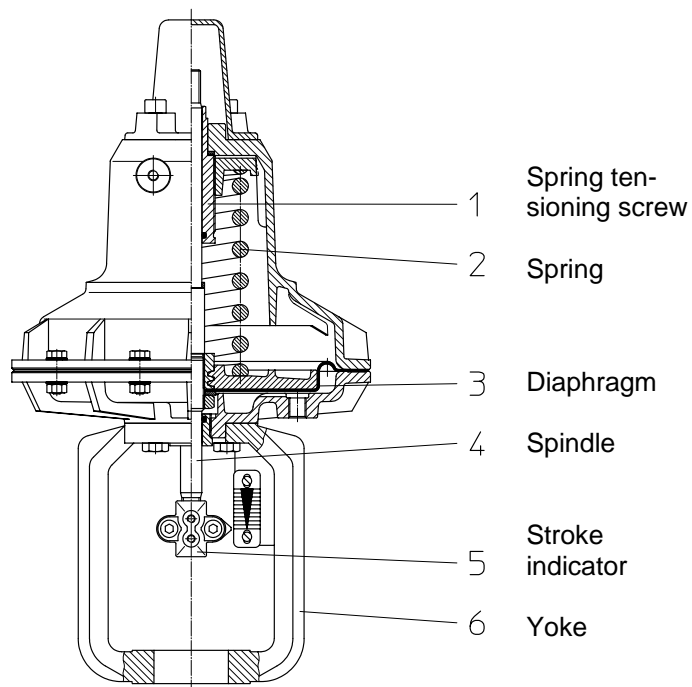
Technical Data

Series	811
Diaphragm effective area	210 - 1440 cm ²
Stroke	10 - 120 mm
Control signal	6 bar max.
Materials	Body parts and diaphragm plates: seawater-proof aluminium alloy 3.2581 Spring tensioning screw, spindle bushing: 1.4104 Spindle: 1.4021 Yoke: GG-25 or GGG-40, free of non-ferrous metal Diaphragm: NBR, fabric-reinforced (moulded)
Operating temperature	-20 to +80°C (Option -40 to + 80°C)
Spindle bushing	Straight-through spindle with rolled surface, top and bottom guided in PTFE/Graphite-slot ring bearings. Pressure chamber with O-ring sealing.
Standard spring	Control range = 0,8 bar, for control function: air to open or air to close
Reinforced spring	Control range > 0,8 bar; for max. spring forces with control function: air to open

Functional description:

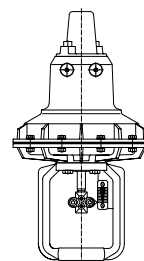
This is a pneumatic diaphragm actuator with spring return (fail safe) and is used to actuate linear valves. The actuator positions the valve plug, which in turn is controlled by a pneumatic or electropneumatic positioner. These actuators can be operated in the "Air to open" function or with the reverse action "Air to close".

- The central spring preload can be adjusted to optimum effect to the required actuating forces using the spring tensioning screw (1).
- A fabric-reinforced diaphragm ensures smooth conversion of the pneumatic application of pressure into the linear motion of the actuator spindle. The power diaphragm (3), supported by the diaphragm disc, is connected to the actuator spindle (4) and divides the actuator housing into pressure and spring chambers. If the force of the compressed air control signal exceeds the opposing spring force (2), the actuator spindle (4) moves and actuates the linear valve.
- The valve yoke (6) connects the actuator to the control valve, while the actuator spindle (4) is connected to the valve spindle via the coupling shown as a stroke indicator (5), securely guided in the slide bearing and sealed with a sealing element.



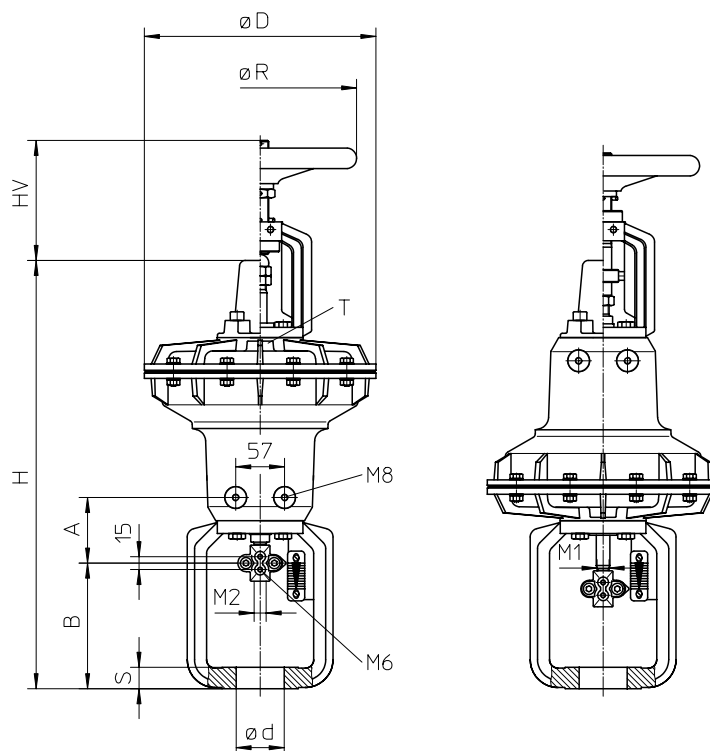
Technical Data Sheet

pneum. Diaphragm Actuator



TD_811

Dimensions and weights

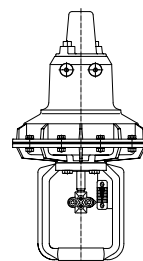


M2=Thread of
particular valve spindle

Size	Diaph.- surf. (cm²]	Order- No.	Weight (kg) handwheel w/o with		Stroke	ØD	M1 actua- tor	Ød	S	B	A	H	HV	ØR	T inside
U0	210	811.11	6,6	8,2	10/20	230	M10	40	15	117	77	430	110	180	G ¼
		811.13	7,0	8,6				48	20			438			
		811.12	7,0	8,6				48	20			438			
		811.14	7,4	9,0											
UI	320	811.21	13,5	16,3	10/20	270	M10	48	20	127	82	495	135	225	
		811.23	14,1	16,9				20/30	M14	56	25	147			
		811.22	14,2	17,0	20/30		M14			56	25	147			
		811.24	14,6	17,4											
UIII	720	811.31	33,0	42,3	20/30	392	M14	56	25	151	155	722	197	320	G ½
		811.34	36,2	45,5				72	30	196 189 196	140 147 140	752			
		811.32	33,2	42,5											
		811.33	35,0	44,3											
		811.35	37,2	46,5											
		811.36	39,3	48,6											
UV	1440	811.41	79,0	99,0	30 45 60	530	M20x 1,5	72	30	194 187 194	147 154 147	1006	295	400	2x G½"
		811.44	85,0	105,0						234 223 234	127 138 127	1026			
		811.42	79,5	99,5											
		811.43	78,0	98,0											
		811.45	86,0	106,0											
		811.46	87,0	107,0											
UV	1440	811.43.1 811.46.1	100	120	100	530	M20x 1,5	100	50	334	138	1134	295	400	2x G½"
UV	1440	811.47 811.48	105	125	120	530	M20x 1,5	100	50	344	128	1176	300	400	2x G½"

Technical Data Sheet

pneum. Diaphragm Actuator



TD_811

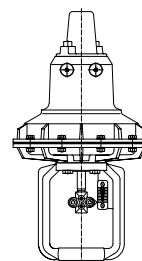
Control forces and control ranges

Opening function (air to open - spring to close)

Size	Diaphragm surface (cm²)	Order-No.	Spring-No.	Stroke (mm)	Control range adjustable (bar)		Control force (kN)
					from	to	
U0	210	811.11	54610	10	0,4-0,8	1,4-1,8	2,8
				20	0,0-0,8	1,0-1,8	2,1
		811.12		10	0,4-0,8	1,4-1,8	2,8
				20	0,0-0,8	1,0-1,8	2,1
		811.13	54611	10	1,0-1,8	2,2-3,0	4,5
				20	0,2-1,8	1,4-3,0	2,8
		811.14		10	1,0-1,8	2,2-3,0	4,5
				20	0,2-1,8	1,4-3,0	2,8
UI	320	811.21	54620	10	0,55-0,95	1,4-1,8	4,4
				20	0,15-0,95	1,0-1,8	3,1
		811.22	54621	20	0,46-1,0	1,26-1,8	4,0
				30	0,2-1,0	1,0-1,8	3,1
		811.23	54622	10	1,28-1,8	2,48-3,0	7,7
				20	0,75-1,8	1,95-3,0	5,7
		811.24		20	0,75-1,8	1,95-3,0	5,7
				30	0,4-2,0	1,4-3,0	4,4
UIII	720	811.31	54630	20	0,46-1,0	1,46-2,0	10,3
				30	0,2-1,0	1,2-2,0	8,4
		811.32	54631	30	0,46-1,0	1,26-1,8	8,8
				45	0,2-1,0	1,0-1,8	7,0
		811.33	54632	60	0,2-1,0	0,8-1,6	5,7
				811.34	54633	20	1,36-1,9
		30	1,4-2,2			2,2-3,0	15,5
		30	1,4-2,2			2,2-3,0	15,5
45	1,0-2,2	1,8-3,0	12,7				
UV	1440	811.41	54650	60	0,7-2,3	1,4-3,0	9,8
				30	0,5-0,9	1,4-1,8	19,7
				45	0,3-0,9	1,2-1,8	16,9
		811.42	54651	60	0,1-0,9	1,0-1,8	14,1
				75	0,3-0,9	1,0-1,6	14,1
			811.43	54652	100	0,1-0,9	0,8-1,6
		811.44	54658	30	0,1-0,9	0,6-1,4	8,4
				30	1,0-1,65	2,35-3,0	33,1
45	0,7-1,65			2,05-3,0	28,9		
60	0,4-1,65	1,75-3,0		24,7			
811.45	54658	75	0,4-2,0	1,4-3,0	19,7		
		100	0,4-2,4	1,0-3,0	14,1		
UV	1440	811.47	54652	120	0,15-1,0	0,35-1,2	5,0
		811.48	54658	120	0,25-3,2	0,7-3,2	10,0

Technical Data Sheet

pneum. Diaphragm Actuator



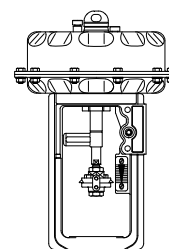
TD_811

Closing function (air to close - spring to open)

Size	Diaphragm surface (cm²)	Order-No.	Spring-No.	Stroke (mm)	Control range (bar)	Control force kN depending on control pressure (bar)					
						1,4	2,0	2,5	3,0	4,5	6,0
U0	210	811.11	54610	10	0,4	2,0	3,2	4,3	5,3	8,5	11,6
				20	0,8	1,1	2,4	3,4	4,5	7,6	10,8
		811.12		10	0,4	2,0	3,2	4,3	5,3	8,5	11,6
				20	0,8	1,1	2,4	3,4	4,5	7,6	10,8
UI	320	811.21	54620	10	0,4	3,1	5,0	6,6	8,2	13,2	17,8
				20	0,8	1,9	3,8	5,4	7,0	11,8	16,6
		811.22	54621	20	0,53	2,1	4,0	5,6	7,2	12,0	16,8
				30	0,8	1,3	3,2	4,8	6,4	11,2	16,0
UIII	720	811.31	54630	20	0,53	6,3	10,6	14,2	17,8	28,6	39,4
				30	0,8	3,7	8,0	11,6	15,2	26,0	36,0
		811.32	54631	30	0,53	6,4	10,7	14,3	17,9	28,7	39,5
				45	0,8	4,6	8,9	12,5	16,1	26,9	37,7
		811.33	54632	60	0,8	3,8	8,1	11,7	15,3	26,1	36,9
UV	1440	811.41	54650	30	0,4	14,9	23,6	30,8	38,0	59,6	81,2
				45	0,6	12,3	21,0	28,2	35,4	57,1	78,6
				60	0,8	9,7	18,4	25,6	32,8	54,4	76,2
		811.42	54651	60	0,6	11,8	20,4	27,6	34,8	56,4	78,0
				75	0,8	9,7	18,3	25,5	32,7	54,3	75,9
		811.43	54652	100	0,8	7,9	16,5	23,7	30,9	52,5	74,1
UV	1440	811.47	54652	120	1,0	-	-	-	-	-	-
		811.48	54658	120	2,5	-	-	-	-	21,0	43,0

Technical Data Sheet

pneum. Multi-Spring-Actuator



TD_812

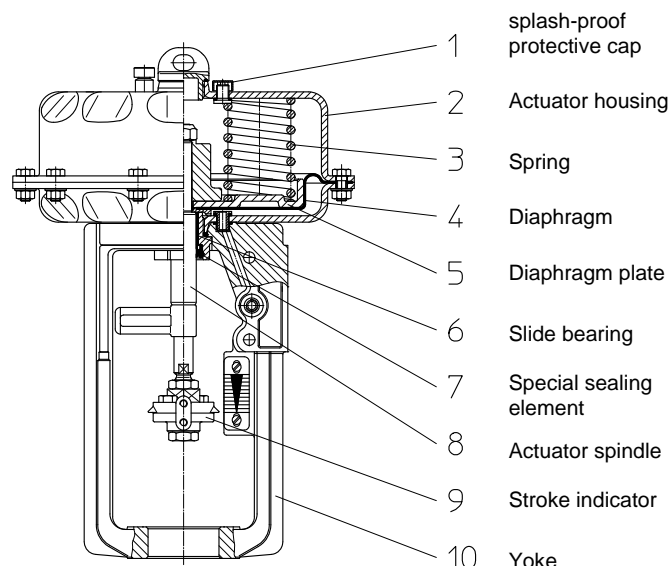
Technical Data

Series	812
Diaphragm effective area	320 / 720 cm ²
Stroke	20-60 mm
Control signal	6 bar max.
Materials	Diaphragm- and spring chamber: Steel ST W 22, 1.0332 (Optional: stainless steel 1.4301) Diaphragm plate: St W 22 chromitized Yoke: GGG-40, 0.7040 Spindle: 1.4122 Springs: 1.1230 plastic-covered Diaphragm: NBR, fabric-reinforced (moulded) Gasket: high-quality, special polyurethane
Spring chamber	Optionally with air scavenging
Operating temperature	-20 to +80°C (Option -40 to + 80°C)
No. of springs	3-12
Control force spring max.	4,8 - 16 kN
Control force air max.	14,4 - 32,4 kN

Functional description

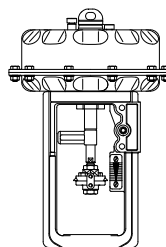
The ARCAPAQ® is a pneumatic multi-spring diaphragm actuator with spring return (fail safe) and is used to actuate linear valves. The actuator positions the valve plug, which in turn is controlled by a pneumatic or electro-pneumatic positioner. These actuators can be operated in the "Air to open" function or with the reverse action "Air to close".

- The actuator has a compact design with a low installed height. Various spring sets with different ranges ensure good adaptation to the relevant operating conditions.
- A fabric-reinforced diaphragm ensures smooth conversion of the pneumatic application of pressure into the linear motion of the actuator spindle. The power diaphragm (4), supported by the diaphragm disc (5), is connected to the actuator spindle (8) and separates the actuator housing (2) into pressure and spring chambers. If the force of the compressed air control signal exceeds the opposing spring force (3), the actuator spindle (8) moves and actuates the linear valve.
- The control signal is carried to the diaphragm chamber via internal channels in the yoke (10). The air supply and venting (ventilation) of the spring chamber is carried out by means of the protective cap (1), which is impermeable to splash water, or the chamber is purged through internal channels with the air from the positioner.
- The yoke (10) connects the actuator to the control valve, while the actuator spindle (8) is connected to the valve spindle via the coupling shown as a stroke indicator (9), securely guided in the slide bearing (6) and sealed with a special sealing element (7) with wiper.



Technical Data Sheet

pneum. Multi-Spring Actuator



TD_812

Control forces and control ranges

Opening function (air to open - spring to close)

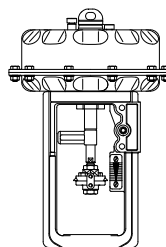
Size	Diaphragm surface (cm ²)	Type	No. of springs	Stroke (mm)	Control range		Control force (kN)	Force diagram (page 4)
					from (bar)	to (bar)		
MFI-20	320	812-213.. 812-223..	3	20	0,75	1,5	2,4	IA
			6		1,5	3,0	4,8	
MFI-20(v)		812-224..	3		1,0	1,5	3,2	IB
			6		2,0	3,0	6,4	
			7		2,3	3,5	7,4	
MFI-30		812-234..	3	30	0,75	1,5	2,4	II
			6		1,5	3,0	4,8	
MFIII-30	812-334..	3	0,7		1,5	5	III	
		6	1,5		3,0	10		
		9	1,8		3,7	13		
		12	2,2		4,4	16		
MFIII-60	812-346..	3	60	0,7	1,5	5	IV	
		6		1,4	3,0	10		
		9		1,7	3,6	12		
		12		2,0	4,3	14		

Closing function (air to close - spring to open)

Size	Diaphragm surface (cm²)	Type	No. of springs	Stroke (mm)	Control pressure min. bar	Control force (kN) depending on control pressure				
						2,0 bar	3,0 bar	4,0 bar	5,0 bar	6,0 bar
MFI-20	320	812-213.. 812-223..	3	20	1,5	1,6	4,8	8,0	11,2	14,4
			6		3,0	-	-	3,2	6,4	9,6
MFI-20(v)		812-224..	3		1,5	-	4,8	8,0	11,2	14,4
			6		3,0	-	-	3,2	6,4	9,6
			7		3,5	-	-	1,6	4,8	8,0
MFI-30		812-234..	3		30	1,5	1,6	4,8	8,0	11,2
			6	3,0		-	-	3,2	6,4	9,6
MFIII-30	812-334..	3	1,5	3,6		10,8	18	25,2	32,4	
		6	3,0	-		-	7,2	14,4	21,6	
		9	3,7	-		-	2,2	9,4	16,6	
		12	4,4	-		-	-	4,3	11,5	
MFIII-60	812-346..	3	60	1,5	3,6	10,8	18	25,2	32,4	
		6		3,0	-	-	7,2	14,4	21,6	
		9		3,6	-	-	2,9	10,1	17,3	
		12		4,3	-	-	-	5,0	12,2	

Technical Data Sheet

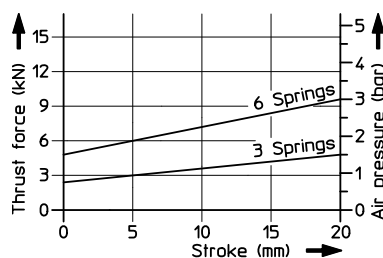
pneum. Multi-Spring Actuator



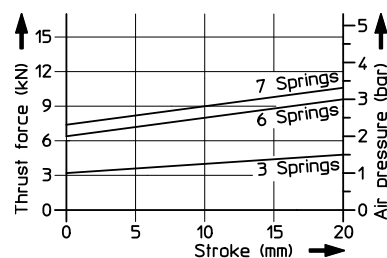
TD_812

Force diagram

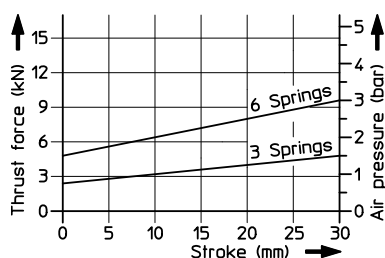
IA MFI-20



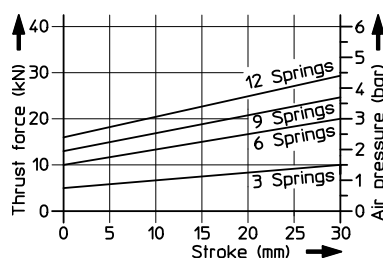
IB MFI-20(v)



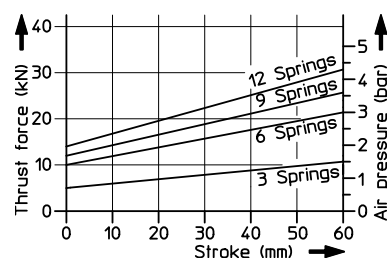
II MFI-30



III MFIII-30



IV MFIII-60



Type code

812 -2 2 3 3 2- O B 0 -HV

Series

Actuator size

2 MFI diaphragm surface 320 cm²

3 MFIII diaphragm surface 720 cm²

Yoke (ø = adapter in mm)

0 1 2 3 4 5 6 9
w/o ø40 ø48 ø56 ø72 ø40-8C ø48-8C special

Stroke

1 2 3 4 5 6
10 mm 15 mm 20 mm 30 mm 45 mm 60 mm

Spring set

3=3 springs 6(7)=6(7) springs 9=9 springs 0=12 springs

Material of diaphragm chamber

2 = Steel StW22 3 = Stainless steel

Function

O = springs move the spindle downwards (air to open)

S = springs move the spindle upwards (air to close)

Execution

B or E*

Extra equipment

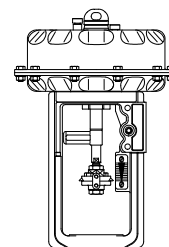
0 1 2 3 4 5
None Stroke limitation Lifting eye 1+2 Low temperature design Air connection ½"

Handwheel

* Exec. B: Reversible, w/o spring chamber purge; Exec. E: Reversible, with integrated spring chamber purge.

Technical Data Sheet

pneum. Multi-Spring-Actuator



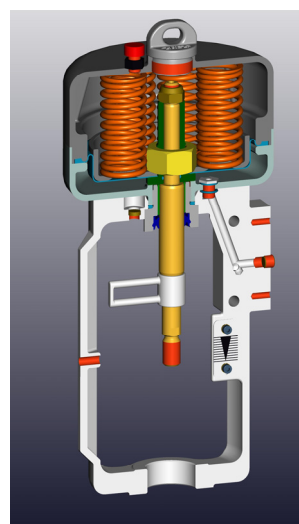
**TD_812
MF0**

Technical Data

Series	812 MF0
Diaphragm effective area	143 cm ²
Stroke	20 mm
Control signal	6 bar max.
Materials	Stainless steel WN 1.4301/304 SS Diaphragm plate: St W 22 galvanized Yoke: investment casting 1.4308/304 SS Spindle: WN 1.4122 micro-finished Springs: WN VD Si Cr plastic-covered Diaphragm: NBR fabric-reinforced (moulded) Gasket high-quality, special polyurethane
Operating temperature	-20 to +80°C (Option -40 to + 80°C)
No. of springs	
ATO	6
ATC	3
Control force spring max.	2,9 kN
Control force air max.	5.6 kN

Functional description

The ARCAPAQ® is a pneumatic multi-spring diaphragm actuator and is used to actuate linear valves. The actuator spindle is connected to the valve spindle via the coupling shown as a stroke indicator, securely guided in the slide bearing and sealed with a special sealing element with wiper ring. The diaphragm, supported by the diaphragm plate, is connected to the actuator spindle and separates the actuator housing into pressure and spring chamber. If the force of the compressed air control signal exceeds the opposing spring force, the actuator spindle moves and actuates the linear valve. The compressed air is led to the diaphragm chamber via internal channels in the yoke. The air ventilation of the spring chamber is carried out through the protective cap, which is impermeable to splash water.



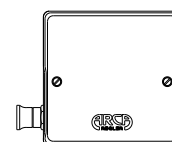
Design features:

- Function: air to open or air to close
- Adjustable position feedback
- Direct mounting interface for Positioner type 827A /SipartPS2, 824 compact, fully welded design

Size	Diaphragm surface (cm ²)	Type	Weight	No. of springs	Stroke (mm)	Ø D (mm)	M	Ø d (mm)	S (mm)	A (mm)	B (mm)	H (mm)
MF0-20	143	812-11.	11	3	20	170	14	40	20	120	180	383
				6				48				
		812-12.		3								
		6										

Technical Data Sheet

Positioner Type 824

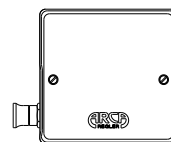


TD_824

General data

Mounting	On linear actuators	ARCA-integrated or acc. to IEC 534-6 (NAMUR) Range of stroke 10 ... 120 mm
	On quarter-turn actuators	ARCA-integrated or acc. to VDI/VDE 3845 Angle of rotation 90 °
Enclosure material		Aluminium cast / plastic
Degree of protection		IP 54
Installation position		Any installation position possible
Climate class	Operation	4K3, but -20 ... +80 °C, low temperature execution -40 ... +80 °C
	Storage	1K5, but -40 ... +80 °C
	Transport	2K4, but -40 ... +80 °C
Vibration resistance		< 10 g acc. to DIN 89011 Recommended continuous range for complete fittings ≤ 3 g
CE marking		Compliant with EG-EMV-rules 2014/30/EU and EC machinery rule 2006/24/EG
Controller data	Gain	max. 100
	Hysteresis	< 0,7 % of the control range
	Response level	< 0,5 % of the control range
	Unlinearity	< 2 % of the control range
	Supply air influence	< 0,2 % / 0,1 bar, type 824.P < 0,1 % / 0,1 bar
Dimensions		See dimensional drawings figure 1 and 2
Weight	Type 824.P	Approx. 1,8 kg
	Type 824.E	Approx. 2,0 kg
	Pressure gauge block	Approx. 0,5 kg
Connections	Electric	In dependence of version 0 to 2 cable inlets M20 x 1,5
	Pneumatic with external pipe	Y and Z: collateral G ¼ DIN 45141, special version ¼"NPT
	Pneumatic with internal pipe	Z: collateral G ¼ DIN 45141, Y: behind G 1/8

Technical Data Sheet Positioner Type 824



TD_824

Pneumatic data

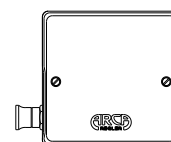
Inlet air pressure		1,4...6 barg
Air quality	Solids	ISO 8573-1 Class 2 (particle size $\leq 1 \mu\text{m}$, particle density $\leq 10 \text{ mg/Nm}^3$)
	Dew point	ISO 8573-1 Class 2 (- 40 °C, min. 20 K below ambient temperature, low temperature execution < - 50 °C)
	Oil content	ISO 8573-1 Class 2 ($\leq 0,1 \text{ mg/Nm}^3$)
Air consumption		< 0,6 Nm ³ /h, type 824.P < 0,5 Nm ³ /h during stationary operation
Flow rate		6 Nm ³ /h at 1,4 barg

Electrical / pneumatic data basic device

	Pneumatic	Not explosion-proof
Electrical connection		Figure 3
Input signal	0,2 ... 1 bar	0 / 4 ... 20 mA
Split ranges	0,2 ... 0,6 ... 1 bar	0 / 4 ... 10 / 12 ... 20 mA
Load resistance		170 Ω
Required load voltage		3,4 V

Technical Data Sheet

Positioner Type 824



TD_824

Electrical data options – inductive limit switches

Version	824.P . . .	824.E . . .
---------	-------------	-------------

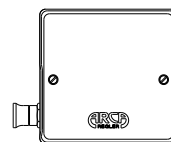
Limit switch N	824 - . . . 1 . . .
Normal version	2 wire connection to DIN 19234 (NAMUR), for connected switching amplifier
2 slot initiators	Type SJ3,5-N
Function	Break contact (NC, normally closed)
Hysteresis	$\leq 1 \%$
Control loop	See connected switching amplifier
EMC acc. to	EN 60947-5-2 and DIN 19234
Electrical connection	Figure 4

Limit switch SN	824 - . . . 2 . . .
Safety version	2 wire connection to DIN 19234 (NAMUR) for connected switching amplifier in safety version
2 slot initiators	Type SJ3,5-SN
Function	Break contact (NC, normally closed)
Hysteresis	$\leq 1 \%$
Control loop	See connected switching amplifier
EMC acc. to	EN 60947-5-2 and DIN 19234
Electrical connection	Figure 4

Limit switch E2	824 - . . . 3 . . .
Direct switching version	3 wire connection with integrated switching amplifier
2 slot initiators	Type SB3,5-E2
Function	Make contact (NO, normally open)
Hysteresis	$\leq 1 \%$
Supply voltage	10...30 V DC
Max. load current	100 mA
Electrical connection	Figure 5

Technical Data Sheet

Positioner Type 824



TD_824

Electrical data options – potentiometer and position feedback

Version	824.P . . .	824.E . . .
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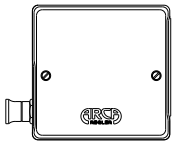
Potentiometer	824 - 2
Resistance	200, 500 or 1000 Ohm ④
Deviation of characteristic	$\leq 2\%$ ⑤
Internal capacitance C_i	3,5 pF
Internal inductance L_i	10 μ H
Electrical connection	Figure 6

Position transmitter 3w	824 - 3
3 wire connection	RWG, type 4522
Supply voltage	15...24 V DC
Output	4(0) - 20 mA, short-circuit resistant
Current limitation	at ca. 28 mA
Load resistance R_i	0 - 400 Ohm
Deviation of characteristic	$\leq 2\%$ ⑤
Electrical connection	Figure 7

Position transmitter 2w	824 - 4
2 wire connection	RWG, type TMT 136R
Supply voltage	8,5 ... 36 V DC
Output	4 - 20 mA, short-circuit resistant
Current limitation	at ca. 36 mA
Load resistance R_i	1300 Ohm at 36 V DC
Deviation of characteristic	$\leq 2\%$ ⑤
Electrical connection	Figure 8

- ① Valid ambient temperature at other loops on request.
- ② Special version to - 40° C (dew point < -50°C).
- ③ Special version NPT 1/4".
- ④ Adjustment of zero point and range at receiver terminal.
- ⑤ Deviation of characteristic depends on mounting and stroke, max. 5 %.

Technical Data Sheet
Positioner Type 824



TD_824

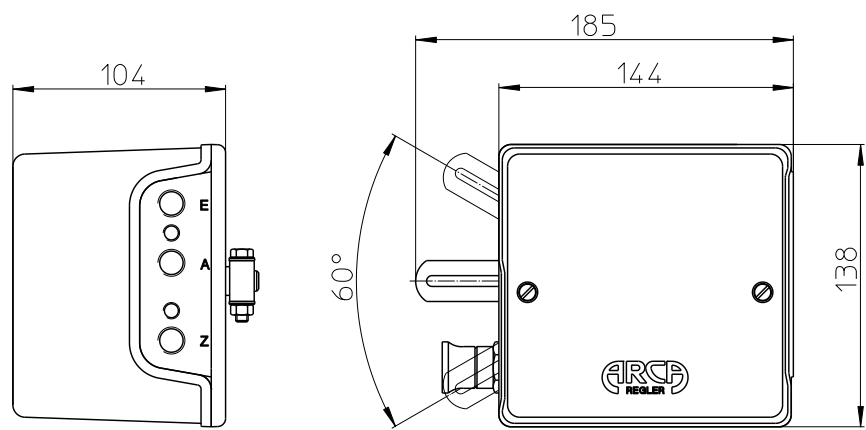


Figure 1 Dimensional drawing basic device type 824.P and 824.E

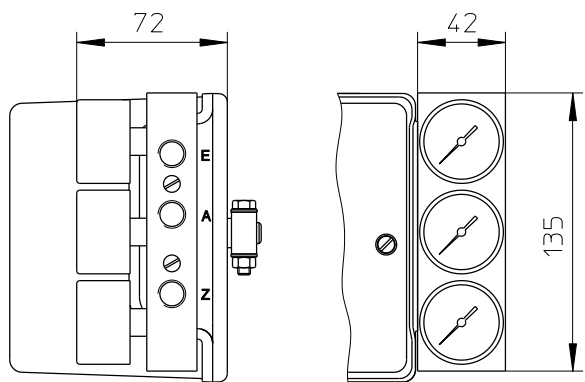
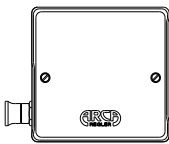


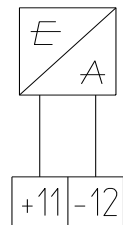
Figure 2 Dimensional drawing pressure gauge block

Technical Data Sheet

Positioner Type 824



TD_824



4 – 20 mA

Figure 3 Electrical connection signal input basic device, type 824.E

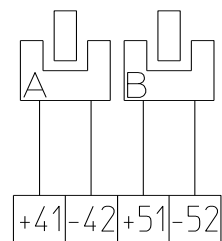


Figure 4 Electrical connection 2 wire limit switch (N and SN)

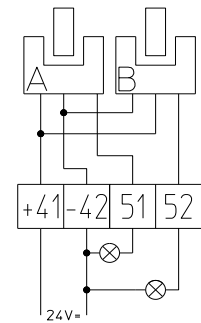


Figure 5 Electrical connection 3 wire limit switch (E2)

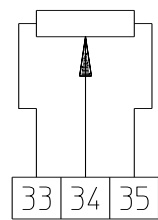
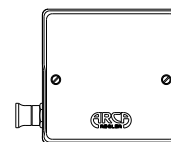


Figure 6 Electrical connection feedback potentiometer

Technical Data Sheet Positioner Type 824



TD_824

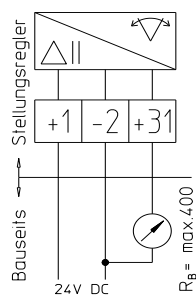


Figure 7 Electrical connection 3 wire position transmitter

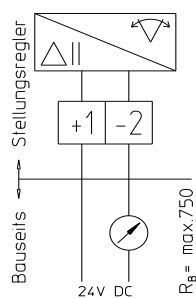
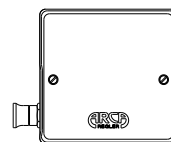


Figure 8 Electrical connection 2 wire position transmitter

Technical Data Sheet

Positioner Type 824



TD_824

Order keys

8 2 4 . P 0 0 0 - 0 0 0

Series

Blocking and
feedback

0
1
2
3
4

without

./.

Potentiometer

Position transmitter 3 wire

Position transmitter 2 wire

Limit switches

0
1
2
3

without

inductive normal version SJ3,5-N
inductive safety version SJ3,5-SN
inductive direct switching SB3,5-E2

Pneumatic
extra equipment

0
1

without

pressure gauge block

For linear stroke /
quarter turn

0
1
3
4

Stroke $\geq 20\text{mm}$

Stroke $< 20\text{mm}$

Angle of rotation 90°

Angle of rotation 60°

Input signal

0
1
2
3
4
5
6
7
8

0,2-1,0 bar

4-20 mA

0-20 mA

0,2-0,6 bar

0,6-1,0 bar

4-12 mA

12-20 mA

0-10 mA

10-20 mA

Output signal

1
2

single acting

double acting

Operating mode

P
E

pneumatic

electro-pneumatic,

not explosion-proof

Technical Data Sheet

ARCAPRO® Positioner Type 827A



TD_827A

General data

Mounting	On linear actuators	ARCA-integrated or to VDI/VDE 3847-1 or IEC 534-6 (NAMUR) Range of stroke: 3 ... 130 mm
	On quarter turn actuators	Integrated to VDI/VDE 3847-2 or VDI/VDE 3845 Angle of rotation: 30 ... 100°
Enclosure material	Metal	Aluminium cast AlSi 12 or austenitic stainless steel 1.4581
	Plastic	Glass-fibre-reinforced polycarbonate
Degree of protection		IP 66 to EN 60529
Installation position		Any installation position possible; pneumatic connections and exhaust opening must not point upwards for wet applications
Climate class	Operation	4K3, but -30 ... +80 °C (Standard and FIP) -40...+80 °C (LT) (see electrical data for explosion-protected devices)
	Storage	1K5, but -40 ... +80 °C
	Transport	2K4, but -40 ... +80 °C
Vibration resistance		98 m/s ² , 27 ... 300 Hz Recommended continuous range for complete fitting ≤ 30 m/s ²
Classification according PED97/23/EC		For fluid group 1 gases; fulfils requirements in article 3, paragraph 3 (good engineering practice)
CE marking		Applicable directives and standards see declaration of conformity
Controller unit	Five-point switch	Adaptive
	Dead zone	Adaptive or fixed from 0.1 ... 10 %
	Actuating times	≥1.5 s adjustable
A/D converter	Resolution	≤ 0.5 %
	Sampling time	10 ms
Cycle time	With / without HART communication	20 ms
	With PROFIBUS PA communication	60 ms
	With Fieldbus Foundation communication	60 ms
Dimensions		See dimension drawings 1 to 4
Weight	Metal enclosure, aluminium	Approx. 1.3 kg
	Metal enclosure, stainless steel	Approx. 3.9 kg
	Metal enclosure, flame-proof	Approx. 5.2 kg
	Plastic enclosure	Approx. 0.9 kg
Connections	Electric	Screw terminals 2.5 AWG28-12; cable inlet see order key
	Pneumatic	G 1/4 DIN 45141 or 1/4-18NPT, see order key

Technical Data Sheet

ARCAPRO® Positioner Type 827A



TD_827A

Pneumatic data

Operation	Standard	At failure of electrical or pneumatic energy exhausting
Option	Fail In Place	At failure of electrical or pneumatic energy blocking
Inlet air pressure		1.4 ... 7 bar (Standard) / 3...7 bar (FIP)
Air quality	Solids	ISO 8573-1 Class 2 (particle size $\leq 1 \mu\text{m}$, particle density $\leq 1 \text{ mg/Nm}^3$)
	Dew point	ISO 8573-1 Class 2 (-40 °C, min. 20 K below ambient temperature)
	Oil content	ISO 8573-1 Class 2 ($\leq 0.1 \text{ mg/Nm}^3$)
Air consumption		< 36 Ndm ³ /h during stationary operation
Flow rate (unthrottled)	Air supply valve at Δp	2 bar - 4.1 Nm ³ /h, 4 bar - 7.1 Nm ³ /h, 6 bar - 9.8 Nm ³ /h
	Air exhaust valve at Δp	2 bar - 8.2 Nm ³ /h, 4 bar - 13.7 Nm ³ /h, 6 bar - 19.2 Nm ³ /h 2 bar - 4.3 Nm ³ /h, 4 bar - 7.3 Nm ³ /h, 6 bar - 9.8 Nm ³ /h
Valve leakage		< 0.6 Ndm ³ /h
Throttle ratio		Up to $\infty : 1$ adjustable

Electrical data for basic device

Explosion protection	Intrinsic safety "ia"	II2G Ex ia IIC T6/T4 Gb ¹⁾ , Zone 1, II2D Ex ia IIIC T110°C Db, Zone 21 ²⁾
	Intrinsic safety "ic"	II3G Ex ic IIC T6/T4 Gc ¹⁾ , Zone 2 ²⁾
	Non-sparking, "ec"	II3G Ex ec IIC T6/T4 Gc ¹⁾ , Zone 2 ²⁾
	Dust, protection by enclosure "t" ³⁾	II2D Ex tb IIIC T100°C Db, Zone 21 ²⁾
	Flameproof "d"	II2G Ex d IIC T6/T4, Zone 1 ²⁾
Permissible ambient temperature	"ia", "ic", "ec" with / without HART	T4 / T6 - 30 ... + 80 °C / - 30 ... + 60 °C (Standard and FIP) T4 / T6 - 40 ... + 60 °C / - 40 ... + 60 °C (LT)
Permissible ambient temperature	"ia", "ic", "ec" with PROFIBUS PA / Foundation Fieldbus	T4 / T6 - 30 ... + 80 °C / - 30 ... + 50 °C (Standard and FIP) T4 / T6 - 40 ... + 60 °C / - 40 ... + 50 °C (LT)
	"t"	- 30 ... + 80 °C (Standard and FIP) - 40 ... + 80 °C (LT)
	"d"	T4 / T6 - 30 ... + 80 °C / - 30 ... + 50 °C

¹⁾ With analogue module T4 only

²⁾ On request

³⁾ Without contact module

Technical Data Sheet

ARCAPRO[®] Positioner Type 827A



TD_827A

Electrical data for basic device with / without HART 2 wire connection

Explosion protection	without, "d"	„ia“	„ic“	“ec”, “t”
Electrical connection	See Figures 5 and 6	See Figures 5 and 6	See Figures 5 and 6	See Figures 5 and 6
Communication	HART version 7			
Input signal I_W	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA
Current to maintain the power supply	≥ 3.6 mA	≥ 3.6 mA	≥ 3.6 mA	≥ 3.6 mA
Required load voltage without HART 2 wire device	6.5 V	8.3 V	8.3 V	8.3 V
Required load voltage without HART 2/3/4 wire device	8.4 V	-	-	-
Required load voltage with HART 2 wire device	6.7 V	-	-	-
Required load voltage with HART 2/3/4 wire device	-	8.8 V	8.8 V	8.8 V
Static destruction limit	± 40 mA	-	-	± 40 mA
For connection to	-	certified intrinsically safe circuits with max. $U_i = 30$ V $I_i = 100$ mA $P_i = 1$ W	intrinsically safe circuits with max $U_i = 30$ V $I_i = 100$ mA	circuits with max. $U_n = 30$ V $I_n = 100$ mA
Internal capacitance	-	11 nF	11 nF	-
Internal inductance	-	207 μ H without HART 310 μ H with HART	207 μ H without HART 310 μ H with HART	-
Binary input BE1	Suitable for dry contact, max. contact load ≤ 5 μ A at 3 V			
Electrical isolation	I_W and BE1 electrically connected	I_W and BE1 electrically connected	I_W and BE1 electrically connected	I_W and BE1 electrically connected

Technical Data Sheet

ARCAPRO® Positioner Type 827A



TD_827A

Electrical data for basic device with / without HART 3/4 wire connection

Explosion protection	without, "d"	„ia“	“ic”	“ec”, “t”
Electrical connection	See Figure 7	See Figure 7	See Figure 7	See Figure 7
Communication	HART version 7			
Input signal I _w	0/4 ... 20 mA	0/4 ... 20 mA	0/4 ... 20 mA	0/4 ... 20 mA
Required load voltage	0.2 V	1.0 V	1.0 V	1.0 V
Power supply U _H	DC 18 ... 35 V	DC 18 ... 30 V	DC 18 .. 30 V	DC 18 ... 30 V
For connection to	-	certified intrinsically safe circuits with max. U _i = 30 V I _i = 100 mA P _i = 1 W	intrinsically safe circuits with max U _i = 30 V I _i = 100 mA	circuits with max. U _n = 30 V I _n = 100 mA
Internal capacitance	-	11 nF	11 nF	-
Internal inductance	-	310 µH	310 µH	-
Binary input BE1	Suitable for dry contact, max. contact load ≤ 5 µA at 3 V			
Electrical isolation	U _H and I _w electrically isolated, I _w and BE1 electrically connected	U _H and I _w electrically isolated, I _w and BE1 electrically connected	U _H and I _w electrically isolated, I _w and BE1 electrically connected	U _H and I _w electrically isolated, I _w and BE1 electrically connected

Electrical data for basic device PROFIBUS PA

Electrical connection	See Figure 8
Communication	Layers 1 + 2 to PROFIBUS PA, transmission technique to IEC 1158-2, slave function layer 7 to PROFIBUS DP to EN 50170 with extended PROFIBUS functionality
Device profile	PROFIBUS PA profile B, version 3.02, over 150 objects
Response time for a master telegram	typically 10 ms
Device address	126 in the as-delivered condition

Electrical data for basic device Foundation Fieldbus

Electrical connection	See Figure 9
Communication	H1 communication to specification of the Fieldbus Foundation, group 3, class 31 PS (Publisher/Subscriber) V 2.4 1 resource block (RB2), 1 analogue output function block (AO), 1 PID function block (PID), 1 transducer block (standard advanced positioner valve)
Physical layer profile	123, 511
Block execution times	Analogue output function block 60 ms; PID function block 80 ms

Technical Data Sheet

ARCAPRO® Positioner Type 827A



TD_827A

Electrical data for basic device PROFIBUS PA / Foundation Fieldbus

Explosion protection	without, "d"	„ia“	“ic”	“ec”, “t”
Power supply	Bus-powered	Bus-powered	Bus-powered	Bus-powered
Bus voltage	DC 9 ... 32 V	DC 9 ... 24 V	DC 9 ... 32 V	DC 9 ... 32 V
Current consumption	10.5 mA ± 10 %	10.5 mA ± 10 %	10.5 mA ± 10 %	10.5 mA ± 10 %
Fault current	0	0	0	0
For connection to	-	circuits with certified FISCO power supply with max. $U_i = 17,5 \text{ V}$ $I_i = 380 \text{ mA}$ $P_i = 5,32 \text{ W}$	circuits with FISCO power supply with max $U_i = 17,5 \text{ V}$ $I_i = 570 \text{ mA}$	circuits with max. $U_n = 30 \text{ V}$ $I_n = 100 \text{ mA}$
	-	circuits with certified barrier with max. $U_i = 24 \text{ V}$ $I_i = 250 \text{ mA}$ $P_i = 1,2 \text{ W}$	circuits with barrier with max $U_i = 32 \text{ V}$	
Internal capacitance	-	Negligible small	Negligible small	-
Internal inductance	-	8 µH	8 µH	-
Safety shutdown				
Input resistance	> 20 kΩ	> 20 kΩ	> 20 kΩ	> 20 kΩ
Signal status 0: active	DC 0 ... 4.5 V	DC 0 ... 4.5 V	DC 0 ... 4.5 V	DC 0 ... 4.5 V
Signal status 1: inactive	DC 13 ... 30 V	DC 13 ... 30 V	DC 13 ... 30 V	DC 13 ... 30 V
For connection to	-	certified intrinsically safe circuits with max. $U_i = 30 \text{ V}$ $I_i = 100 \text{ mA}$ $P_i = 1 \text{ W}$	intrinsically safe circuits with max $U_i = 30 \text{ V}$ $I_i = 100 \text{ mA}$	circuits with max. $U_n = 30 \text{ V}$ $I_n = 100 \text{ mA}$
Internal capacitance	-	Negligible small	Negligible small	-
Internal inductance	-	Negligible small	Negligible small	-
Binary input BE1	Suitable for dry contact, max. contact load ≤ 5 µA at 3 V			
Electrical isolation	Bus connection and safety shutdown electrically isolated, Bus connection and BE1 electrically connected	Bus connection and safety shutdown electrically isolated, Bus connection and BE1 electrically connected	Bus connection and safety shutdown electrically isolated, Bus connection and BE1 electrically connected	Bus connection and safety shutdown electrically isolated, Bus connection and BE1 electrically connected

Technical Data Sheet

ARCAPRO® Positioner Type 827A



TD_827A

Electrical data for option modules – analogue module

Explosion protection	without, “d”	„ia“	“ic”	“ec”, “t”
Electrical connection	See Figure 10	See Figure 10	See Figure 10	See Figure 10
Nominal signal range	4...20 mA, short circuit resistant	4...20 mA, short circuit resistant	4...20 mA, short circuit resistant	4...20 mA, short circuit resistant
Dynamic range	3.6...20.5 mA	3.6...20.5 mA	3.6...20.5 mA	3.6...20.5 mA
Auxiliary voltage U_H	+12...+35 V	+12...+30 V	+12...+30 V	+12...+30 V
External load R_B [kΩ]	$(U_H [V] - 12)/I [mA]$	$(U_H [V] - 12)/I [mA]$	$(U_H [V] - 12)/I [mA]$	$(U_H [V] - 12)/I [mA]$
For connection to	-	certified intrinsically safe circuits with max. $U_i = 30 V$ $I_i = 100 mA$ $P_i = 1 W$	intrinsically safe circuits with max $U_i = 30 V$ $I_i = 100 mA$	circuits with max. $U_n = 30 V$ $I_n = 100 mA$ $P_n = 1 W$
Internal capacitance	-	11 nF	11 nF	-
Internal inductance	-	Negligible small	Negligible small	-
Electrical isolation	Disconnected from basic device	Disconnected from basic device	Disconnected from basic device	Disconnected from basic device

Electrical data for option modules – binary module

Explosion protection	without, “d”	„ia“	“ic”	“ec”, “t”
Electrical connection	See Figure 11	See Figure 11	See Figure 11	See Figure 11
Binary outputs A1, A2, fault				
Signal status “High” (not responded)	Conductive, $R = 1 k\Omega$ ¹⁾	$\geq 2.1 mA$ ²⁾	$\geq 2.1 mA$ ²⁾	$\geq 2.1 mA$ ²⁾
Signal status “Low” (responded)	Blocked, $I_R < 60 \mu A$	$\leq 1.2 mA$ ²⁾	$\leq 1.2 mA$ ²⁾	$\leq 1.2 mA$ ²⁾
For connection to	-	certified intrinsically safe circuits with max. $U_i = 15 V$ $I_i = 25 mA$ $P_i = 64 mW$	intrinsically safe circuits with max $U_i = 15 V$ $I_i = 25 mA$	circuits with max. $U_n = 15 V$ $I_n = 25 mA$
Internal capacitance	-	5,2 nF	5,2 nF	-
Internal inductance	-	Negligible small	Negligible small	Negligible small

¹⁾ – Current must be restricted to 10 mA per output if operated in flameproof housing.

²⁾ – Switching thresholds for supply to EN 60947-5-6: $U_H = 8.2 V$, $R_i = 1 k\Omega$

Technical Data Sheet

ARCAPRO® Positioner Type 827A



TD_827A

Electrical data for option modules – binary module (continuation)

Explosion protection	without, "d"	„ia“	“ic”	“ec”, “t”
Binary input BE2 Terminals 11/12			-	-
Auxiliary voltage U_H	\leq DC 35 V \leq 20 mA	-	-	-
Signal status 0:	\leq DC 4.5 V or open	\leq DC 4.5 V or open	\leq DC 4.5 V or open	\leq DC 4.5 V or open
Signal status 1:	\geq DC 13 V	\geq DC 13 V	\geq DC 13 V	\geq DC 13 V
Input resistance	$> 25 \text{ k}\Omega$	$> 25 \text{ k}\Omega$	$> 25 \text{ k}\Omega$	$> 25 \text{ k}\Omega$
Static destruction limit	$\pm 35 \text{ V}$	-	-	-
For connection to	-	certified intrinsically safe circuits with max. $U_i = 25,2 \text{ V}$	intrinsically safe circuits with max $U_i = 25,2 \text{ V}$	circuits with max. $U_n = 25,2 \text{ V}$
Internal capacitance	-	Negligible small	Negligible small	-
Internal inductance	-	Negligible small	Negligible small	-
Binary input BE2 Terminals 21/22				
Signal state 0:	Dry contact, open	Dry contact, open	Dry contact, open	Dry contact, open
Signal state 1:	Dry contact, closed	Dry contact, closed	Dry contact, closed	Dry contact, closed
Contact load	3 V, 5 μA	3 V, 5 μA	3 V, 5 μA	3 V, 5 μA
Electrical isolation	Binary outputs A1, A2, fault, binary input BE2 terminals 11/12 disconnected from basic device; binary input BE2 terminals 21/22 connected to basic device	Binary outputs A1, A2, fault, binary input BE2 terminals 11/12 disconnected from basic device, binary input BE2 terminals 21/22 connected to basic device	Binary outputs A1, A2, fault, binary input BE2 terminals 11/12 disconnected from basic device; binary input BE2 terminals 21/22 connected to basic device	Binary outputs A1, A2, fault, binary input BE2 terminals 11/12 disconnected from basic device; binary input BE2 terminals 21/22 connected to basic device

Technical Data Sheet

ARCAPRO® Positioner Type 827A



TD_827A

Electrical data for option modules – slot initiator module

Explosion protection	without, “d”	„ia“	“ic”	“ec”, “t”
Electrical connection	See Figure 12	See Figure 12	See Figure 12	See Figure 12
Binary outputs A1, A2	Slotted initiators SJ2-SN or N7S20A to EN 60947-5-6 (NAMUR) for connecting to switching amplifier, NC (normally closed) function			
Signal state “High” (not responded)	$\geq 3 \text{ mA}$ at $U_{nom} = 8 \text{ V}$	$\geq 2.1 \text{ mA}^{1)}$	$\geq 2.1 \text{ mA}^{1)}$	$\geq 2.1 \text{ mA}^{1)}$
Signal state “Low” (responded)	$\leq 1 \text{ mA}$ at $U_{nom} = 8 \text{ V}$	$\leq 1.2 \text{ mA}^{1)}$	$\leq 1.2 \text{ mA}^{1)}$	$\leq 1.2 \text{ mA}^{1)}$
For connection to	$U_{nom} = 8 \text{ V}$	certified intrinsically safe circuits with max. $U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$ $P_i = 64 \text{ mW}$	intrinsically safe circuits with max $U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$	circuits with max. $U_n = 15 \text{ V}$ $I_n = 25 \text{ mA}$
Internal capacitance	-	161 nF	161 nF	-
Internal inductance	-	120 μH	120 μH	-
Binary output fault				
Signal status “High” (not addressed)	$R = 1,1 \text{ k}\Omega$	$\geq 2.1 \text{ mA}^{1)}$	$\geq 2.1 \text{ mA}^{1)}$	$\geq 2.1 \text{ mA}^{1)}$
Signal status “Low” (addressed)	$R = 10 \text{ k}\Omega$	$\leq 1.2 \text{ mA}^{1)}$	$\leq 1.2 \text{ mA}^{1)}$	$\leq 1.2 \text{ mA}^{1)}$
For connection to	$U_H \leq 35 \text{ V}$ $I \leq 20 \text{ mA}$	certified intrinsically safe circuits with max. $U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$ $P_i = 64 \text{ mW}$	intrinsically safe circuits with max $U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$	circuits with max. $U_n = 15 \text{ V}$ $I_n = 25 \text{ mA}$
Internal capacitance	-	5.2 nF	5.2 nF	-
Internal inductance	-	Negligible small	Negligible small	-
Electrical isolation	Binary outputs A1, A2, fault disconnected from basic device	Binary outputs A1, A2, fault disconnected from basic device	Binary outputs A1, A2, fault disconnected from basic device	Binary outputs A1, A2, fault disconnected from basic device

¹⁾ – Switching thresholds for supply to EN 60947-5-6: $U_H = 8.2 \text{ V}$, $R_i = 1 \text{ k}\Omega$

Technical Data Sheet

ARCAPRO® Positioner Type 827A



TD_827A

Electrical data for option modules – contact module

Explosion protection	without, “d”	„ia“	“ic”	“t”
Electrical connection	See Figure 13	See Figure 13	See Figure 13	See Figure 13
Binary outputs A1, A2	dry contacts			
Max. switching current	4 A AC / DC	-	-	-
Max. switching voltage	250 V AC, 24 V DC	-	-	-
For connection to	-	certified intrinsically safe circuits with max. $U_i = 30 \text{ V}$ $I_i = 100 \text{ mA}$ $P_i = 750 \text{ mW}$	intrinsically safe circuits with max $U_i = 30 \text{ V}$ $I_i = 100 \text{ mA}$	circuits with max. $U_n = 30 \text{ V}$ $I_n = 100 \text{ mA}$
Internal capacitance	-	Negligible small	Negligible small	-
Internal inductance	-	Negligible small	Negligible small	-
Binary output fault				
Signal status “High” (not responded)	$R = 1,1 \text{ k}\Omega$	$\geq 2.1 \text{ mA}^1)$	$\geq 2.1 \text{ mA}^1)$	$\geq 2.1 \text{ mA}^1)$
Signal status “Low” (responded)	$R = 10 \text{ k}\Omega$	$\leq 1.2 \text{ mA}^1)$	$\leq 1.2 \text{ mA}^1)$	$\leq 1.2 \text{ mA}^1)$
For connection to	$U_H \leq 35 \text{ V}$ $I \leq 20 \text{ mA}$	certified intrinsically safe circuits with max. $U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$ $P_i = 64 \text{ mW}$	intrinsically safe circuits with max $U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$	circuits with max. $U_n = 15 \text{ V}$ $I_n = 25 \text{ mA}$
Internal capacitance	-	5.2 nF	5.2 nF	-
Internal inductance	-	Negligible small	Negligible small	-
Electrical isolation	Binary outputs A1, A2, fault disconnected from basic device	Binary outputs A1, A2, fault disconnected from basic device	Binary outputs A1, A2, fault disconnected from basic device	Binary outputs A1, A2, fault disconnected from basic device

¹⁾ – Switching thresholds for supply to EN 60947-5-6: $U_H = 8.2 \text{ V}$, $R_i = 1 \text{ k}\Omega$

Technical Data Sheet

ARCAPRO® Positioner Type 827A



TD_827A

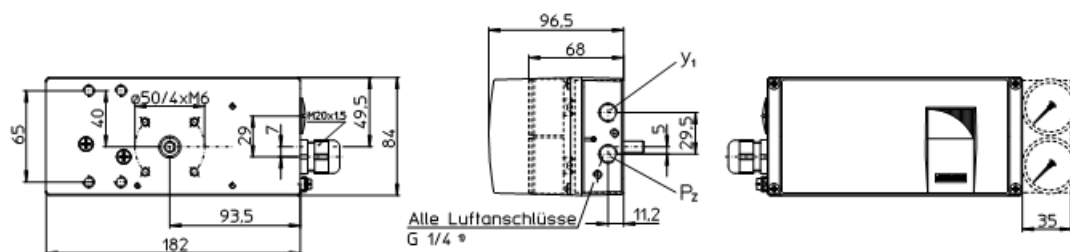


Figure 1 Metal enclosure, standard

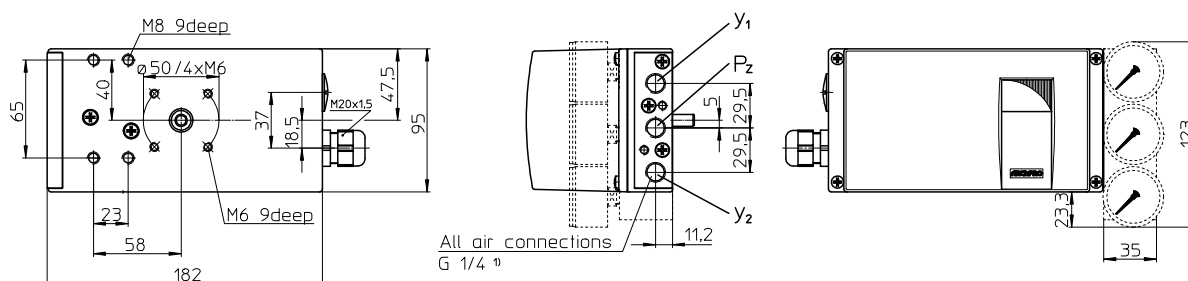


Figure 2 Plastic enclosure

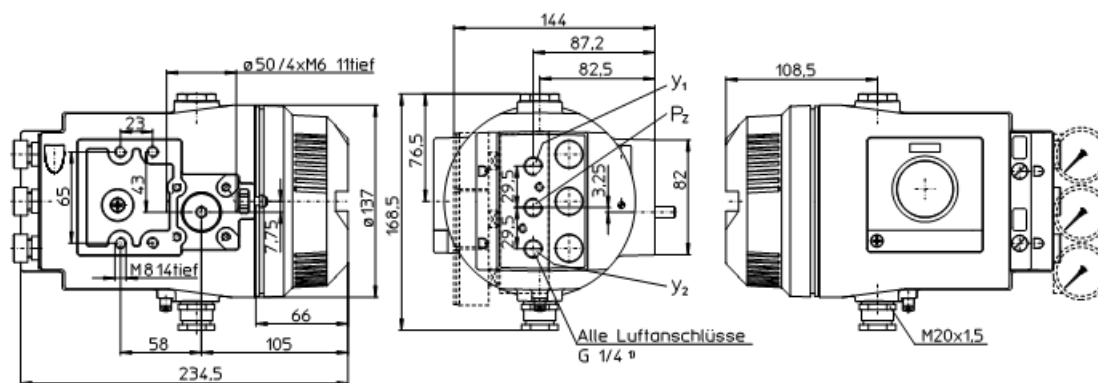


Figure 3 Metal enclosure, flameproof

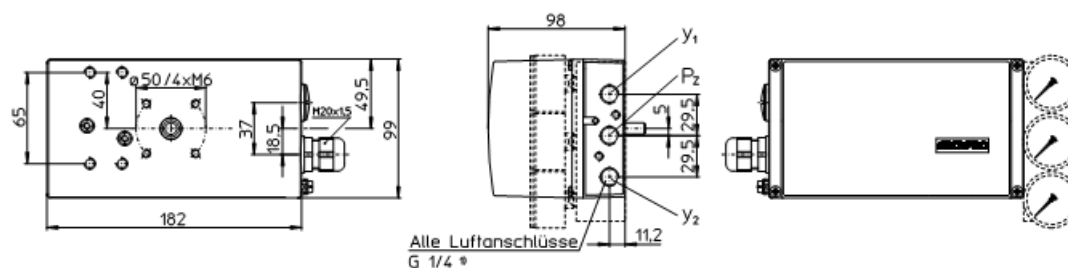


Figure 4 Metal enclosure, stainless steel

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TD_827A

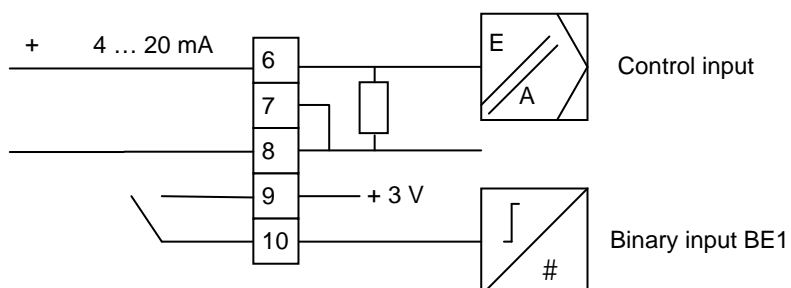


Figure 5 Electrical connection of 2 wire basic device

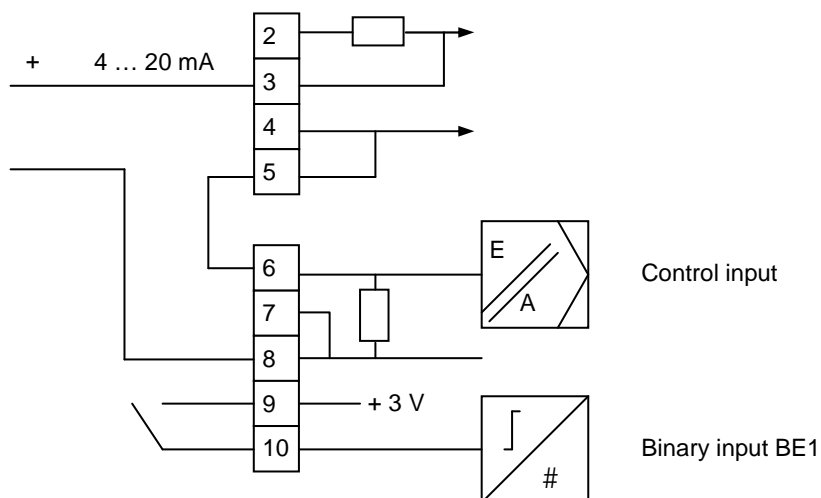


Figure 6 Electrical connection of 2/3/4 wire base device, 2 wire connection

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TD_827A

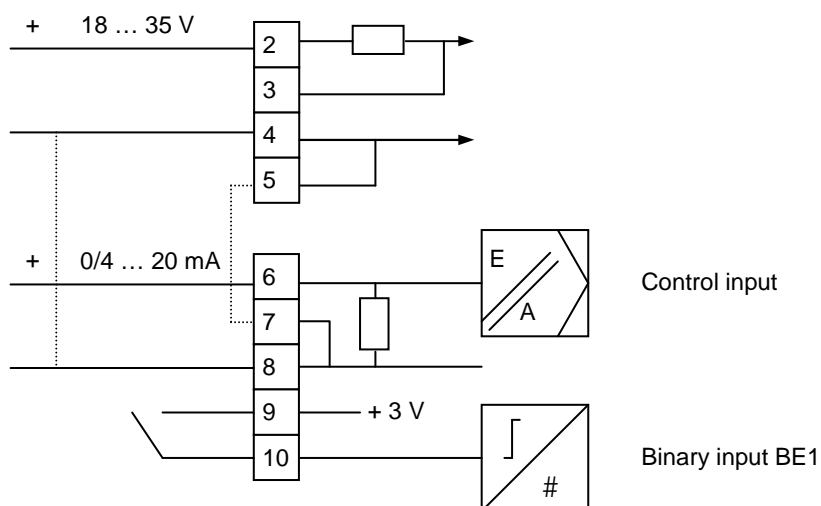


Figure 7 Electrical connection of 2/3/4 wire base device, 3/4 wire connection

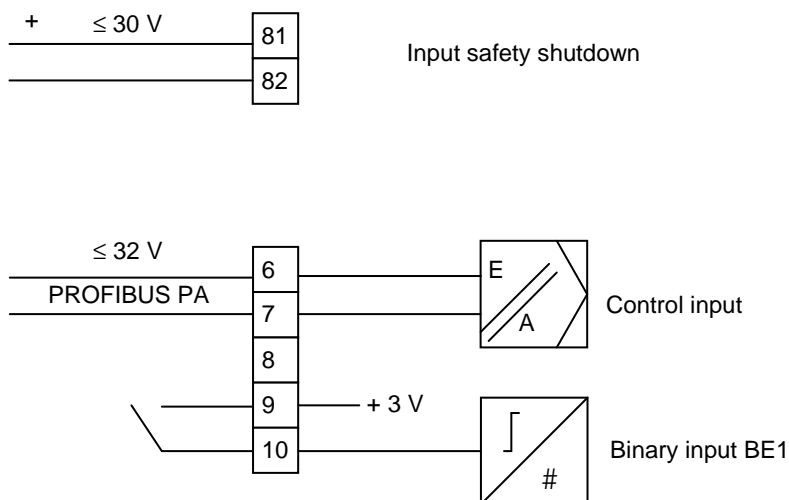


Figure 8 Electrical connection of base device, PROFIBUS PA

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TD_827A

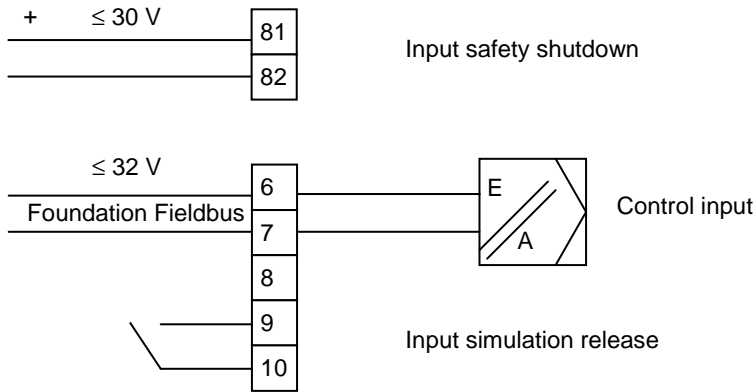


Figure 9 Electrical connection of base device, Fieldbus Foundation

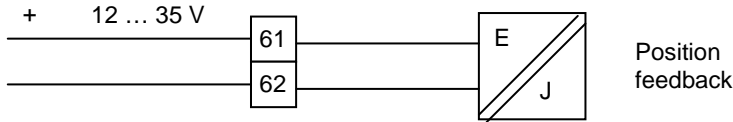


Figure 10 Electrical connection of analogue module

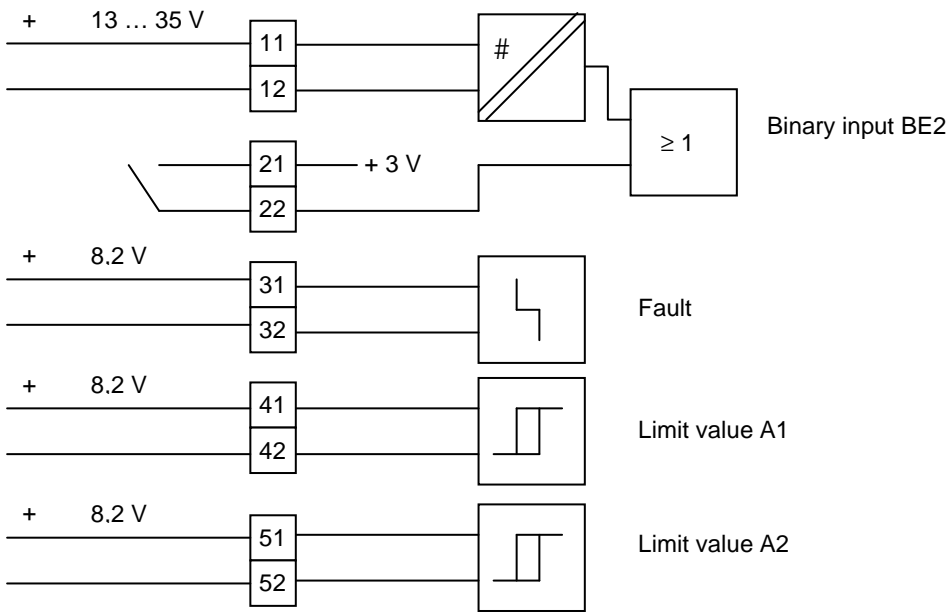


Figure 11 Electrical connection of binary module

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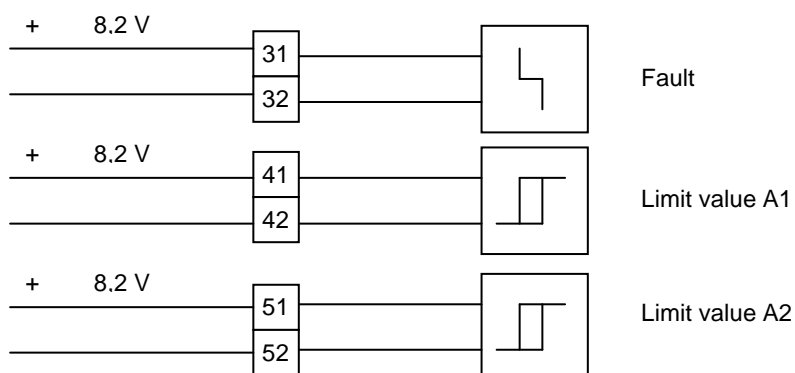


Figure 12 Electrical connection of slot initiator module

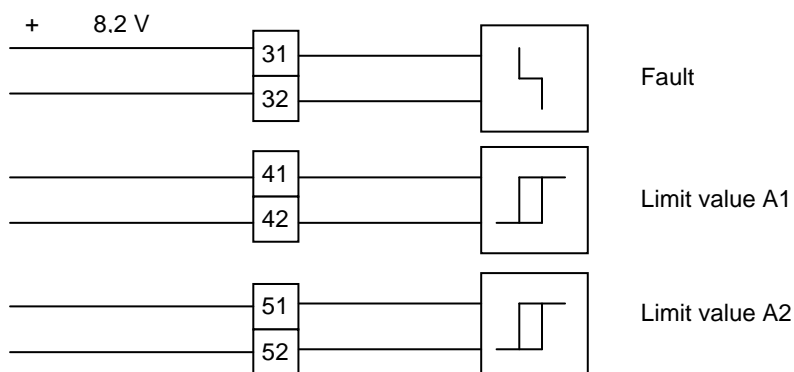


Figure 13 Electrical connection of contact module

Technical Data Sheet

ARCAPRO® Positioner Type 827A



TD_827A

Order keys for ARCAPRO® type 827A

1. Series		7. Enclosure material	
827A		M	Aluminium (single-acting only)
2. Explosion protection ¹⁾			Plastic ⁶⁾ , ⁷⁾
E	Without	E	Stainless steel ⁶⁾
X	Explosion-proof "ia" II2G ²⁾	8. Pneumatics	
	Explosion-proof "ia" II2D , "ic" ²⁾ , ³⁾ , ⁷⁾	1	Single-acting
	Explosion-proof "nA", "t" ²⁾ , ⁴⁾ , ⁷⁾	2	Double-acting (aluminium housing excluded)
	Explosion-proof "d" ⁷⁾		
3. Connection of base device		9. Mechanical actuation	
2	2 wire	0	Standard
4	2/3/4 wire ⁵⁾	1	with internal non contacting sensor ⁷⁾
		2	None (for external sensor)
4. Analogue output		10. Connection thread, electric / pneumatic	
0	Without analogue output	G	M20x1.5 / G 1/4
A	Analogue module	N	1/2" NPT / 1/4" NPT
5. Binary output		M	M20x1.5 / 1/4" NPT
0	Without binary output	P	1/2" NPT / G 1/4
B	Binary module	Q	M25x1.5 / 1/4" NPT (EEx d only)
S	Slot initiator module ⁶⁾	R	connector M12 for input signal / G 1/4
K	Contact module ⁶⁾	S	connector M12 for input signal / 1/4" NPT
6. Communication		11. Options	
0	Without communication	FIP	Fail In Place ⁷⁾
H	HART	LT	- 40 °C ⁷⁾
P	PROFIBUS PA	SA	connector M12 for Analogue module ⁷⁾
F	Fieldbus Foundation	SB	connector M12 for Binary module ⁷⁾
		SS	connector M12 for Slot initiator module ⁷⁾
		SW	connector M12 for External stroke sensor ⁷⁾

¹⁾ ATEX approval, other approvals on request

²⁾ With HART communication 2/3/4 wire only

³⁾ Stainless steel housing excluded

⁴⁾ Without inspection window

⁵⁾ PROFIBUS PA and Foundation Fieldbus excluded

⁶⁾ Not for flameproof devices

⁷⁾ On request

Example:

827A.E2-A0H-	<i>Positions 1 - 6</i>
---------------------	------------------------

Positioner 827A – no explosion-proof – 2-wire connection – analogue module – without binary output – HART communication

M10-G-LT	<i>Positions 7 - 11</i>
-----------------	-------------------------

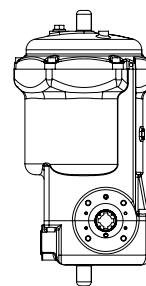
Aluminium enclosure – single-acting – mechanical actuation (standard) – connection thread electric M20x1.5 / pneumatic G 1/4 / - 40 °C

Accessories

Mounting kits	For integrated mounting ARCA linear actuators type 812
	For integrated mounting ARCA linear actuators type 813
	For integrated mounting on linear actuators acc. to VDI/VDE 3847-1
	For mounting on linear actuators acc. to IEC 534 (NAMUR)
	For integrated mounting ARCA quarter turn actuators type 840
	For mounting on quarter turn actuators acc. to VDI/VDE 3845
Pressure gauge blocks	Pressure gauge block for single-acting or double-acting positioner
Extern. position detection	External rotary potentiometer for strokes to 130 mm or external linear potentiometer

Technical Data Sheet

Rotary Actuator



TD_840

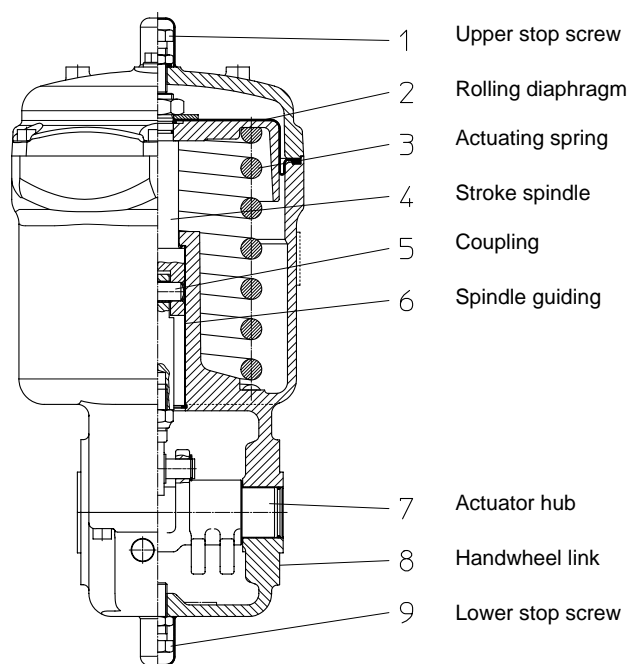
Technical data

Series	840
Diaphragm effective area	104 - 780 cm ²
Rotary angle	0-90° / 0-60° / 30-90°
Control signal	6 bar max.
Materials	Body: 3.2341/3.2371.61 Hub: 0.7040/0.7033 Rolling diaphragm: NBR, fabric-reinforced Bearing + guiding: PTFE/Graphite
Spring chamber	Optionally with air scavenging
Operating pressure	max. 7 bar ü
Operating temperature	-20 to +100°C (Option: -50 to +100°C)
Internal piping	-20 to +100°C (Option: -35 to +100°C)
No. of springs	1
Control force spring max.	46 - 1630 Nm
Control force air max.	87 - 2295 Nm

Functional description

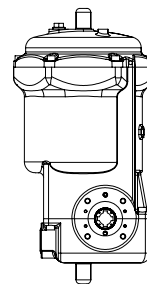
The ARCATORQUE® is a pneumatic diaphragm actuator with spring return (fail safe) and is used to actuate rotary valves. The actuator positions the valve plug, which in turn is controlled by a pneumatic or electropneumatic positioner. These actuators can be operated in the "Air to open" function or with the reverse action "Air to close".

- A fabric-reinforced power diaphragm ensures smooth conversion of the pneumatic application of pressure into the linear motion of the actuator spindle. The power diaphragm (2), supported by the diaphragm disc, is connected to the linear spindle (4) and divides the actuator housing into pressure and spring chambers. If the force of the compressed air control signal exceeds the opposing spring force (3), the linear spindle (4) moves and actuates the rotary valve via a reversing lever.
- The spindle guide, and the pivot and hub bearings are made of maintenance-free PTFE composite materials and ensure a high level of adjusting accuracy when switching from a linear to a rotary motion.
- The control signal is carried to the diaphragm chamber via internal channels in the actuator housing. The air supply and venting (ventilation) of the spring chamber is carried out by means of the protective cap, which is impermeable to splash water, or the chamber is purged with the air from the positioner.
- The actuators are flange-mounted to the rotary valve directly or via an intermediate yoke. Force is transmitted to the shaft of the rotary valve via a positive-fit connection using a key or adjusting washer.



Technical Data Sheet

Rotary Actuator



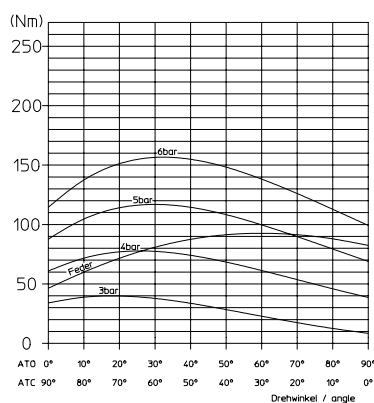
TD_840

Control force and control ranges

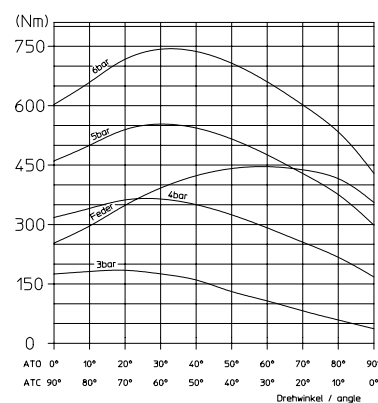
Actuator size		841	842	843	844
Spring 0% stroke	(Nm)	46	253	714.2	1629
	(bar)	1.75	1.75	1.75	2.0
Spring 100% stroke	(Nm)	82	355	1183	2612
	(bar)	2.75	2.75	2.75	3.8
Air 0% Stroke	(Nm)	87	460	1345	2295
	(bar)	5.0	5.0	5.0	5.0
Air 100% Stroke	(Nm)	68	298	855	872
	(bar)	5.0	5.0	5.0	5.0
Rolling diaphragm	(mm ²)	10387	36217	47120	77892
Cylinder Ø	(mm)	120	220	250	320
Stroke volume	(dm ³)	0.6	2.9	8.6	15.6
Max. coupling-Ø	(mm)	22	25	40	50
Mounting standard DIN/ISO5211		F07	F10	F12	F14
Air connection		G1/4	G1/2	G1/2	G1/2
Weight	(kg)	8	30	52	140
Handwheel	(kg)	1.5	2.5	3.5	15

Torque moment

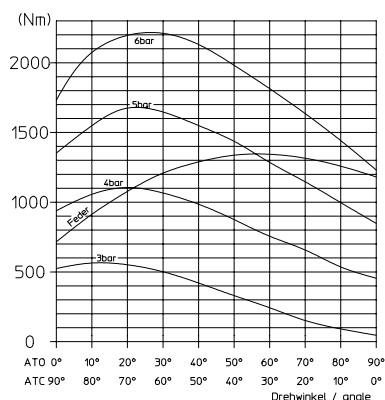
Torque moment (Nm) 841



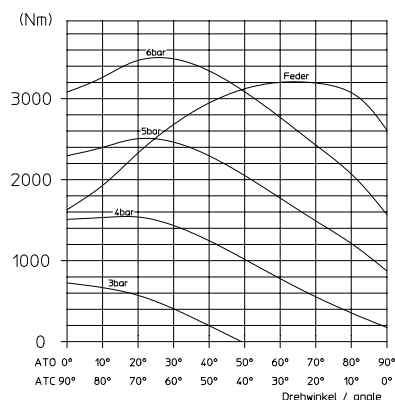
Torque moment (Nm) 842



Torque moment (Nm) 843

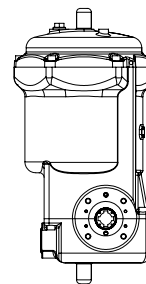


Torque moment (Nm) 844



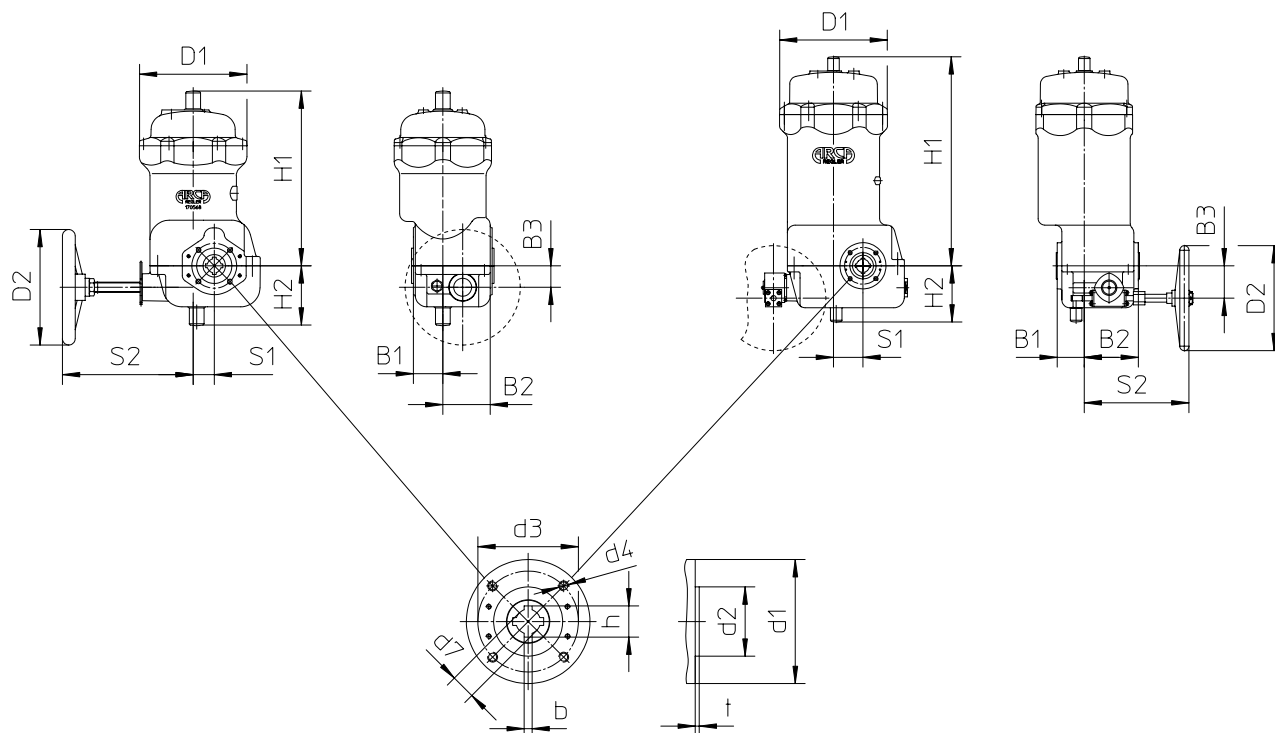
Technical Data Sheet

Rotary Actuator



TD_840

Dimensions and weights



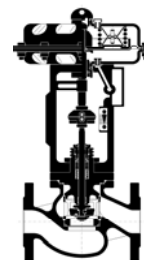
Type	Actuator									Mounting group	DIN/ISO 5211 DIN 3337-F__S							
	D1	D2	H1	H2	B1	B2	B3	S1	S2		d1	d2 _{f8}	d3	d4	t	d7	h	b ^{JS9}
841	168	180	273	93	46	77	33.5	33	125.5	F07	90	55	70	4xM8	3	15	19.4	5
																20	25.6	6
																22	27.6	6
842	284	225	429	132.5	66.5	105.5	44.5	44.5	177	F10	125	70	102	4xM10	3	15	19.4	5
																20	25.6	6
																22	27.6	6
																25	31.6	8
843	320	320	609	192	79	142	86	88	245	F12	150	85	125	4xM12	3	22	27.6	6
																25	31.6	8
																30	36.6	10
																35	41.6	10
																40	46.6	12
844	412	400	796	214	103	207	135.5	112.5	305	F14	175	100	140	4xM16	3	35	41.6	10
																40	46.6	12
																50	57.6	14

Type code

	841	-22	-09	-0	-1	-1	-0	-0	-0	-0
Series	841	diaphragm surface	103,87 cm²							
Size of actuator	842	diaphragm surface	362,17 cm²							
	843	diaphragm surface	471,20 cm²							
	844	diaphragm surface	778,92 cm²							
*Hub diameter (mm)	841	15/20/22								
	842	15/20/22/25								
	843	22/25/30/35/40								
	844	35/40/50								
Rotary angle	09	06	39							
	0-90°	0-60°	30-90°							
Standard spring	0	1								
	yes	no								
Internal piping	0	1	2							
	no	yes	only aeration							
Handwheel	0	1								
	no	yes								
Position indication	0	1								
	no	yES								
Special options	0	1								
	w/o	big screwing								
Painting	0	1	2							
	standard	special	hard-coated							
Execution	0	E	T							
	standard	hub diameter in inch	low temperature design							

Technical Data Sheet

ECOTROL® Control Valve



TD_8C

General Data

Series	8C
Nominal size DN / NPS	15-100 / 1/2" – 4"
Nominal pressure PN / ANSI	16-40 / Class 150-300
Characteristic	equal percentage or linear
Rangeability	50:1
Plug guide	stem guided option: integrated double guiding (retrofitable) for DN40 - DN100 (1 1/2" - 4")
Seat leakage	metal sealing: IEC 50534-4 leakage rate IV (0.01% Kvs value); option: leakage rate V as well as soft sealing: IEC 50534-4 leakage rate VI
Bellows seal (optional)	seamless, double walled, made of 1.4571; option: Hastelloy and other materials
Heating jacket (optional)	connections DN 15 PN 40 (1/2" ANSI 300) flanges
Low-temperature version (optional)	down to -196°C, with cover flange if required

Materials

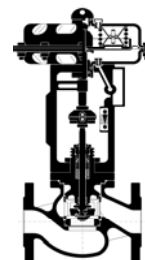
	EN	for temperatures	ASTM	for temperatures
Body material	1.0619 GP240GH	-10 to 400°C	A 216 WCB	-29°C to 425°C
	1.4408 G-X 5 CrNiMo 19 11 2	-29 to 400°C	A 351 CF8M	-29°C to 400°C
	1.4408 G-X 5 CrNiMo 19 11 2	-196 to 400°C	A 351 CF8M	-196°C to 400°C
	1.6220 G20Mn5	-50 to 345°C	A 352 LCC	-50°C to 345°C
	1.7357 G17CrMo5-5	-10 to 530°C	A 217 WC6	-10°C to 530°C
Bonnet material	≤ DN 65: 1.4408 (A 351 CF8M)			
	≥ DN 80: same material as body, but for body materials 1.0619/ A216WCB, 1.6220/ A352LCC and 1.7357/ A217WC6 c/w stuffing box sleeve made of 1.4571 (AISI 316Ti)			

Valve trim materials						
Material no.	Parabolic plug	Double-guided parabolic plug P1 ¹⁾	Perforated plug L1	Seat	Seat seal	Max. medium temperature
1	1.4571	1.4571	-	1.4571	Metal	same as stem seal
2	-	-	1.4571	1.4571 nitrided	Metal	same as stem seal
3	1.4112 hardened	1.4112 hardened	1.4112 hardened	1.4112 hardened	Metal	same as stem seal
4	1.4571	-	-	1.4571	PTFE/FKM	-20 ~ 180°C
5	1.4571	-	-	1.4571	PTFE/EPDM	-29 ~ 140°C
6	1.4571	-	-	1.4571	PTFE	-196 ~ 180°C

1) only as of DN ≥ DN40 (1 1/2") with KVs ≥ 25 (Cvs ≥ 29)

Technical Data Sheet

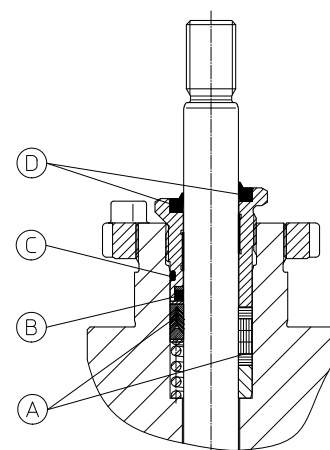
ECOTROL® Control Valve



TD_8C

Temperature range for stem sealing

Seal type	Seal (pos. A)	Profile ring (pos. B)	O-ring (pos. C)	Wiper ring (pos. D)	Medium temperature	Bonnet flange	Comments
maintenance-free double seal	PTFE V-ring	EPDM	EPDM	NBR	-29°C~180°C	standard	preloaded with stainless steel spring
maintenance-free double seal	PTFE V-ring	FKM	FKM	NBR	-20°C~200°C	standard	preloaded with stainless steel spring
adjustable	reinforced graphite / Inconel	-	-	NBR	-29°C~400°C	standard/ cooling fins	adjustable
adjustable	pure graphite	-	-	NBR	-29°C~530°C	standard/ cooling fins	adjustable
adjustable	braided graphite / PTFE	-	-	NBR	-196°C~200°C	insulating column	low temperature
Bellow sealing made of 1.4571 or Hastelloy C	PTFE V-ring	EPDM (FKM)	EPDM (FKM)	NBR	-100°C~200°C	bellows	preloaded with stainless steel spring

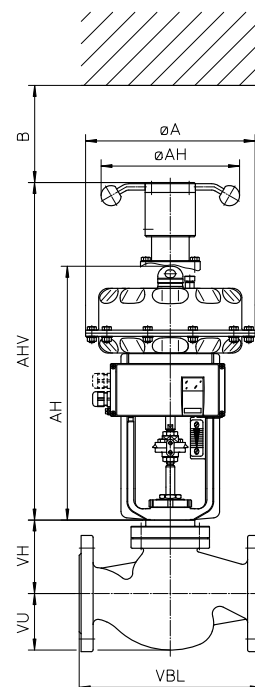


Weight and dimensions

ECOTROL® globe valve with multi-spring actuator type 812 ARCAPAQ

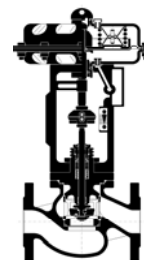
Dimensions (in mm) of valves with flanges to DIN EN 1092-1 or ANSI class 150/300 RF/RTJ												
Valve Type 8C	DN		15	20	25	32	40	50	65	80	100	
	ANSI NPS		1/2"	-	1"	-	1 1/2"	2"	-	3"	4"	
	VBL PN16-PN40		130	150	160	180	200	230	290	310	350	
	VBL Class 150 RF		178	-	184	-	222	254	-	298	352	
	VBL Class 150 RTJ		-	-	197	-	235	267	-	311	365	
	VBL Class 300 RF		190	-	197	-	235	267	-	317	368	
	VBL Class 300 RTJ		202	-	210	-	248	282	-	333	384	
	VH	DEK1	114					105			156	181
		DEK3	170					167			248	267
		DEK4	228					233			365	389
		DEK5	on request									
DEK7										196	221	
DEK8										261	286	
VU		48	59	62	70	78	83	93	106	136		
Actuator Type 812	ØA	MFI	270							270		
		MFIII								400		
	AH	MFI	346							404		
		MFIII								489		
	AHV	MFI	493							551		
		MFIII								651		
	Weight * approx. kg	MFI	20.5	22.5	23	24	31	33	41,5	70	93	
		MFIII								96	119	
B		150										
* Weight: valve (DEK1) + actuator without manual operation												

* Weight: valve (DEK1) + actuator without manual operation



Technical Data Sheet

ECOTROL® Control Valve



TD_8C

Max. shut off differential pressure in bar (closed position)

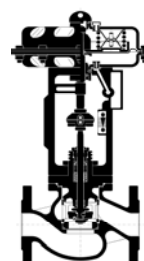
ECOTROL® 8C PN16 - PN40 / ANSI Class 150 / ANSI Class 300										Air to open/ Spring to close No. of springs				Air to close/ Spring to open No. of springs				
Valves w/o balancing c/w PTFE-packing / V-Rings, leakage class IV																		
Flow to open (FTO)																		
Actuator series 812										3	6	9	12	3	3	3	6	6
DN	Stroke (mm)	Actuator size	P1		L1 lin		L1 =%		Seat-Ø (mm)	bar	bar	bar	bar	P Instrument Air, min (bar)				
			Kv	Cv	Kv	Cv	Kv	Cv						3.0	4.5	6.0	4.5	6.0
15 1/2"	20	MFI-20 320 cm ² 50 in ²	4.0	4.6	4.0	4.6	4.0	4.6	16	50.0	50.0			50.0	50.0	50.0	50.0	50.0
			1.6	1.9	-	-	-	-	10	50.0	50.0			50.0	50.0	50.0	50.0	50.0
			0.63	0.73	-	-	-	-	5	50.0	50.0			50.0	50.0	50.0	50.0	50.0
20	20	MFI-20 320 cm ² 50 in ²	4.0	4.6	4.0	4.6	4.0	4.6	16	50.0	50.0			50.0	50.0	50.0	50.0	50.0
			1.6	1.9	-	-	-	-	10	50.0	50.0			50.0	50.0	50.0	50.0	50.0
			0.63	0.73	-	-	-	-	5	50.0	50.0			50.0	50.0	50.0	50.0	50.0
25 1"	20	MFI-20 320 cm ² 50 in ²	10	11.6	10	11.6	8.5	9.9	25	30.3	50.0			50.0	50.0	50.0	50.0	50.0
			4.0	4.6	4.0	4.6	4.0	4.6	16	50.0	50.0			50.0	50.0	50.0	50.0	50.0
			1.6	1.9	-	-	-	-	10	50.0	50.0			50.0	50.0	50.0	50.0	50.0
			0.63	0.73	-	-	-	-	5	50.0	50.0			50.0	50.0	50.0	50.0	50.0
32	20	MFI-20 320 cm ² 50 in ²	10	11.6	10	11.6	8.5	9.9	25	30.3	50.0			50.0	50.0	50.0	50.0	50.0
			4.0	4.6	4.0	4.6	4.0	4.6	16	50.0	50.0			50.0	50.0	50.0	50.0	50.0
			1.6	1.9	-	-	-	-	10	50.0	50.0			50.0	50.0	50.0	50.0	50.0
			0.63	0.73	-	-	-	-	5	50.0	50.0			50.0	50.0	50.0	50.0	50.0
40 1 1/2"	20	MFI-20 320 cm ² 50 in ²	25	29	25	29	18	21	37	12.1	33.3			35.5	50.0	50.0	35.5	50.0
			16	19	15	17.4	10	11.6	30	19.9	50.0			50.0	50.0	50.0	50.0	50.0
			10	11.6	10	11.6	8.5	9.9	25	30.3	50.0			50.0	46.7	50.0	50.0	50.0
			40	46	40	46	20	23	48	6.2	18.8			20.2	50.0	50.0	20.2	46.7
50 2"	20	MFI-20 320 cm ² 50 in ²	25	29	25	29	18	21	37	12.1	33.3			35.5	50.0	50.0	35.5	50.0
			16	19	15	17.4	10	11.6	30	19.9	50.0			50.0	50.0	50.0	50.0	50.0
			10	11.6	10	11.6	8.5	9.9	25	30.3	50.0			50.0	46.7	50.0	50.0	50.0
			40	46	40	46	20	23	48	6.2	18.8			20.2	50.0	50.0	20.2	46.7
65	20	MFI-20 320 cm ² 50 in ²	25	29	25	29	18	21	37	12.1	33.3			35.5	50.0	50.0	35.5	50.0
			16	19	15	17.4	10	11.6	30	19.9	50.0			50.0	50.0	50.0	50.0	50.0
			10	11.6	10	11.6	8.5	9.9	25	30.3	50.0			50.0	15.6	50.0	50.0	50.0
			40	46	40	46	20	23	48	6.2	18.8			20.2	50.0	50.0	20.2	46.7
80 3"	30	MFI-30 320 cm ² 50 in ²	100	116	100	116	75	87	80	1.0	5.6			6.1	28.9	25.2	6.1	15.6
			63	73	63	73	55	64	62	2.7	10.2			11.0	46.1	45.9	11.9	28.9
			40	46	40	46	20	23	48	5.7	18.3			19.6	39.5	50	19.6	46.1
		MFIII-30 720 cm ² 111 in ²	100	116	100	116	75	87	80	6.0	15.4	21.1	26.8	18.0	50.0	50.0	18.0	39.5
			63	73	63	73	55	64	62	10.9	26.6	36.0	45.5	30.9	50.0	50.0	30.9	50.0
			40	46	40	46	20	23	48	19.3	45.6	50.0	50.0	50.0	9.6	50.0	50.0	50.0
100 4"	30	MFI-30 320 cm ² 50 in ²	160	186	140	162	80	93	100	0.3	3.2			3.5	15.6	15.7	3.5	9.6
			100	116	100	116	75	87	80	1.0	5.6			6.1	28.9	25.2	6.1	15.6
			63	73	63	73	55	64	62	2.7	10.2			11.0	46.1	45.9	11.9	28.9
			40	46	40	46	20	23	48	5.7	18.3			19.6	2.9	50	19.6	46.1
		MFIII-30 720 cm ² 111 in ²	160	186	140	162	80	93	100	3.4	9.5	13.1	16.7	11.1	39.5	38.6	11.1	24.9
			100	116	100	116	75	87	80	6.0	15.4	21.1	26.8	18.0	50.0	50.0	18.0	39.5
			63	73	63	73	55	64	62	10.9	26.6	36.0	45.5	30.9	50.0	50.0	30.9	50.0
			40	46	40	46	20	23	48	19.3	45.6	50.0	50.0	50.0		50.0	50.0	50.0

Please pay attention to the Pressure/ Temperature rating of the valve body!

For a list of other valve/packing versions, see sizing data sheet AD_8C_gb.

Technical Data Sheet

ECOTROL® Control Valve



TD_8C

ECOTROL® 8C model code

0. Operating Conditions		7. Body materials (cont.)		15. Seat wear/ tear protection (cont.)	
Medium:		4	1.7357	5	Colsterised
Temp.:	°C	5	1.6620	9	Acc. to spec.
Press. P ₁ :	bar abs.	6	A216WCB	16. Seat/ Plug seal ¹⁾	
Press. P ₂ :	bar abs.	7	A351CF8M	0	Leakage Class IV metal to metal
P Design	bar g	8	A217WC6	1	Leakage Class V (metal to metal)
T Design	°C	9	Acc. to spec.	2	Leakage Class VI soft sealing PTFE/EPDM
1. Series		8. Guide ¹⁾		3	Leakage Class VI soft sealing PTFE/FKM
8C	Single Seat Globe Control Valve ECOTROL® 8C	0	Stem guided (Standard)	4	Leakage Class VI soft sealing PTFE/Trapezium
2. Top Flange		1	Double guided	9	Acc. to spec.
1	Standard	9	Acc. to spec	17. Cage retainer ¹⁾	
3	Cooling fins	9. KVs Value		0	Standard
4	Bellow Sealing	xxx	Acc. to spec.	1	LN (Low Noise) not controlled
5	Extended Bonnet (Insulating Column)		KVs values acc. to table	2	LN (Low Noise) controlled
7	Standard c/w Balancing	10. Performance Curve Characteristics		9	Acc. to spec
8	Cooling fins c/w Balancing	g	=%	18. Seat retainer ¹⁾	
9	Special design acc. to spec.	l	Linear	0	Without
3. Plug Design		m	Modified	1	LK1
P1, P3	Parabolic Plug (1-step resp. 3-steps)	11. Plug Materials ¹⁾		2	LK2
L1-L2-L3	Perorated Plug (1-2-3 steps)	1	1.4571	5	SLK1
4. Nominal Diameter (DN) - DIN/ ANSI		3	1.4112	6	SLK2
15	DN 15 / ANSI ½"	9	Acc. to spec.	19. Stem seal ¹⁾	
20	DN 20 (only acc. to DIN)	12. Plug wear/ tear protection ¹⁾		1	PTFE/V-Ring/EPDM quad ring
25	DN 25 / ANSI 1"	0	Standard (w/o)	2	PTFE/V-Ring/VITON quad ring
32	DN 32 (only acc. to DIN)	1	Nitrided	3	Latty 6118/ETF Inconel
40	DN 40 / ANSI 1½"	2	Hardened	4	Graphite 0901
50	DN 50 / ANSI 2"	3	Plug face stellited	5	Graphite/PTFE 6226/6232
65	DN 65 (only acc. to DIN)	4	Completely stellited	9	Special design acc. to spec.
80	DN 80 / ANSI 3"	5	Colsterised	20. Special Designs	
100	DN 100 / ANSI 4"	9	Others (acc. to spec.)	0	Standard
5. Pressure Ratings (PN)		13. Balancing ¹⁾		1	AD2000
16	PN 16	0	Standard (w/o)	2	NACE
40	PN 40	1	Piston Rings	3	Oxygen version
150	Class 150 acc. to ANSI B16.10	2	EPDM-Quadring	9	Others acc. to spec.
300	Class 300 acc. to ANSI B16.10	3	FKM-Quadring	21. Material Inspections (pressure retaining parts)	
6. Connections		5	PTFE spring loaded	0	w/o
0	RF flanges (Standard)	9	Acc. to spec.	1	EN 10204-2.1
1	Flanges c/w groove	14. Seat Materials ¹⁾		2	EN 10204-3.1
2	Flanges c/w tongue	1	1.4571	3	EN 10204-3.2
3	Flanges c/w projection/ recess	3	1.4112	9	Others on request
4	Butt weld ends	9	Acc. to spec.	22. Final Inspections	
5	Butt weld ends c/w spool pieces	15. Seat wear/ tear protection ¹⁾		0	None
7	RTJ	0	Standard (w/o)	1	EN 10204-2.1
9	Acc. to spec.	1	Nitrided	2	EN 10204-2.2
7. Body materials ¹⁾		2	Hardened	3	EN 10204-3.1
2	1.0619	3	Seat Face stellited	4	EN 10204-3.2
3	1.4408	4	Completely stellited	9	Others on request

1) In accordance with customer specifications, or selected by the manufacturer in accordance with customer specifications (medium, pressure, temperature, etc.).

Blue letters: Standard design, at most 3 pieces, available within one week.

Example:

8C - 1 - P1 - 15 - 40 - 0 - 2	Position 1-7 / basic data
Series 8C - with standard bonnet – one-step parabolic plug - DN15 – PN40 – flange EN1092 B1 – body 1.0619	
0 - 4,0 - g - 1 - 0 - 0 - 1 - 0 - 0 - 0 - 0 - 1	Position 8-19 / valve trims
Single stem guide – KVs 4.0 – equal percentage – plug made of 1.4571 – no wear/tear protection – not balanced – seat made of 1.4571 – no wear/tear protection – leakage class IV – standard cage retainer – no low-noise cage – stem seal PTFE V-ring / EPDM quad ring	
0 - 1 - 1	Position 20-22 / version/inspections
Standard version – material inspection EN 10204 3.1 – final specification EN 10204 3.1	

Technical Data Sheet

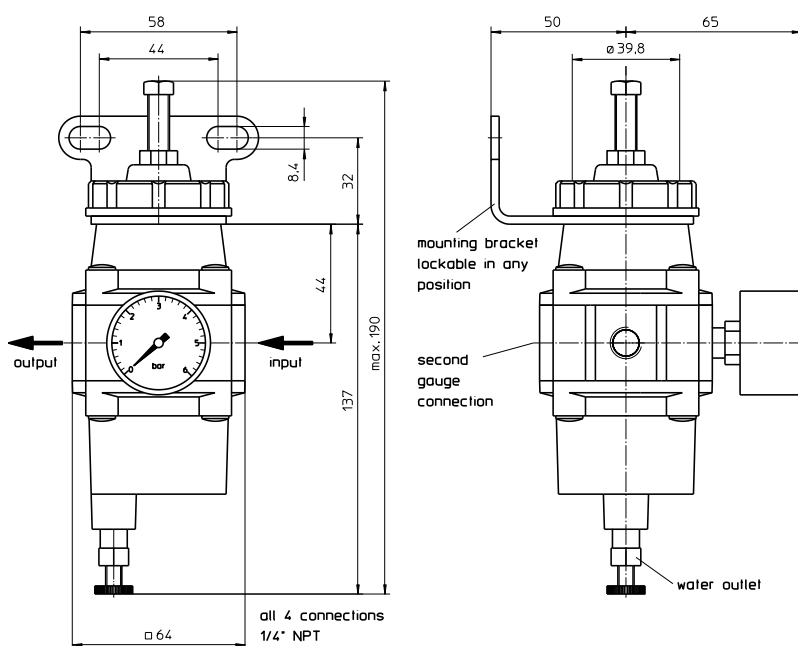
Filter and reducing station Type 961



TD_961

Technical Data

Body material	Aluminium
Mounting position	Vertically, water outlet on bottom
Temperature range	Type 961 0...50 °C
	Type 961-LT -30...60 °C
Adjustment range	0...6 bar
Filter	Made of Nylon / filter size 5 µm
Adjustment accuracy	2 mbar
Sensitivity	< 0,5 mbar
Flow capacity	Venting : 34 m³/h in standard condition at $p_1 = 7$ bar und $p_2 = 1,4$ bar
	Aerating : 0,85 m³/h in standard condition at $p_1 = 1,75$ bar und $p_2 = 1,4$ bar
Upstream pressure	18 bar
Proper air consumption	≤ 8 dm³/h in standard condition at $p_2 = 1,4$ bar
Connections	1/4" NPT
Dimensions	Please refer to the dimensional drawing
Weight	App. 0,6 kg



Technical Data Sheet

Pneumatic Controller Type 920.350



TD_920.350

Technical Data

Mounting	Wall mounting or front panel mounting	
Body material	Aluminium / Steel	
Mounting position	Vertically acc. to screen	
Temperature range	-30...+80 °C	
Measuring range	[bar(g)]	Measuring element
Over pressure	(0...0,25; 0...0,5; 0...0,7) 0,2...1	Metal bellows SS
	0...1; 0...2	Bourdon tube made of SS
	0...4; 0...7; 0...10; 0...14; 0...20	Bourdon tube made of SS
	0...28; 0...40; 0...70; 0...140	Bourdon tube made of SS
Control algorithm	P-, PI-, PD-, PID- or 2-state-controller	
P-Range K_P	1...100 % adjustable	
Sensitivity	0,1 % of final value of adjustment range at K _P = 100 %	
Accuracy	≤ 1%	
Flow capacity	5 Sl/min. at 0,6 bar outlet pressure	
Air supply pressure p_z	1,4 (2,4) bar	
Control pressure y	0,2...1 bar (0,4...2,0 bar)	
Air consumption	0,05 Nm ³ /h (3,5 Nm ³ /h)	
Connections pneum.	1/4" NPT	
Connections process Bourdon tube	1/2" BSP M (bellow 1/4"NPT F)	
Dimensions	Please refer to the dimensional drawing	
Weight	App. 6,5 kg	
Degree of protection	IP 55	
Available certificates 94/9/EC (ATEX)	II2GIIICcXGb / II2DIIICcXD6	

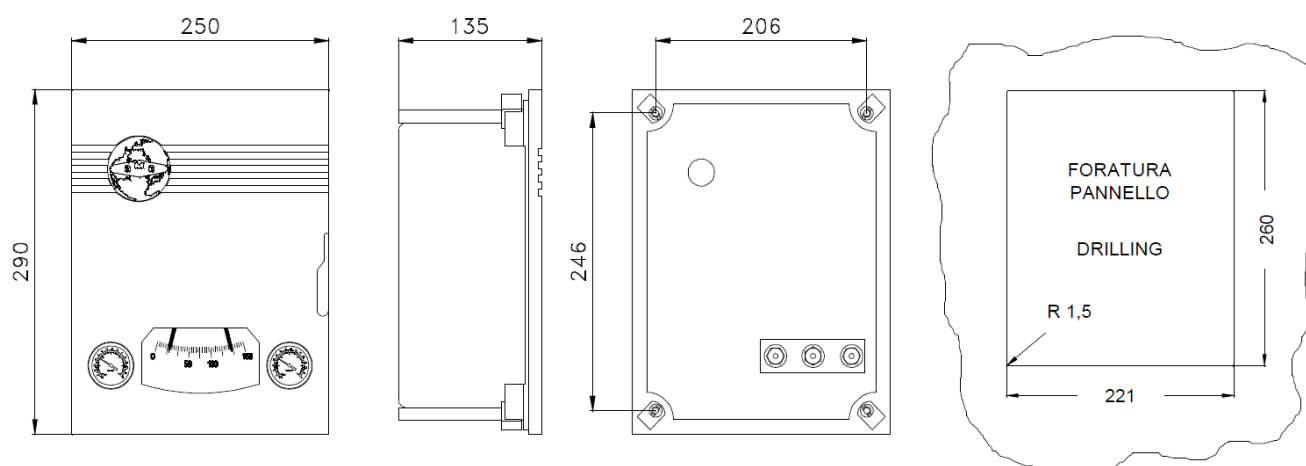
Technical Data Sheet

Pneumatic Controller Type 920.350



TD_920.350

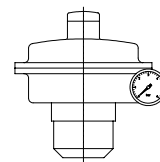
Dimensions



Technical Data Sheet

Pressure Controller

„Roboter“ Type 902

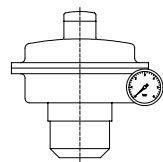


TD_902

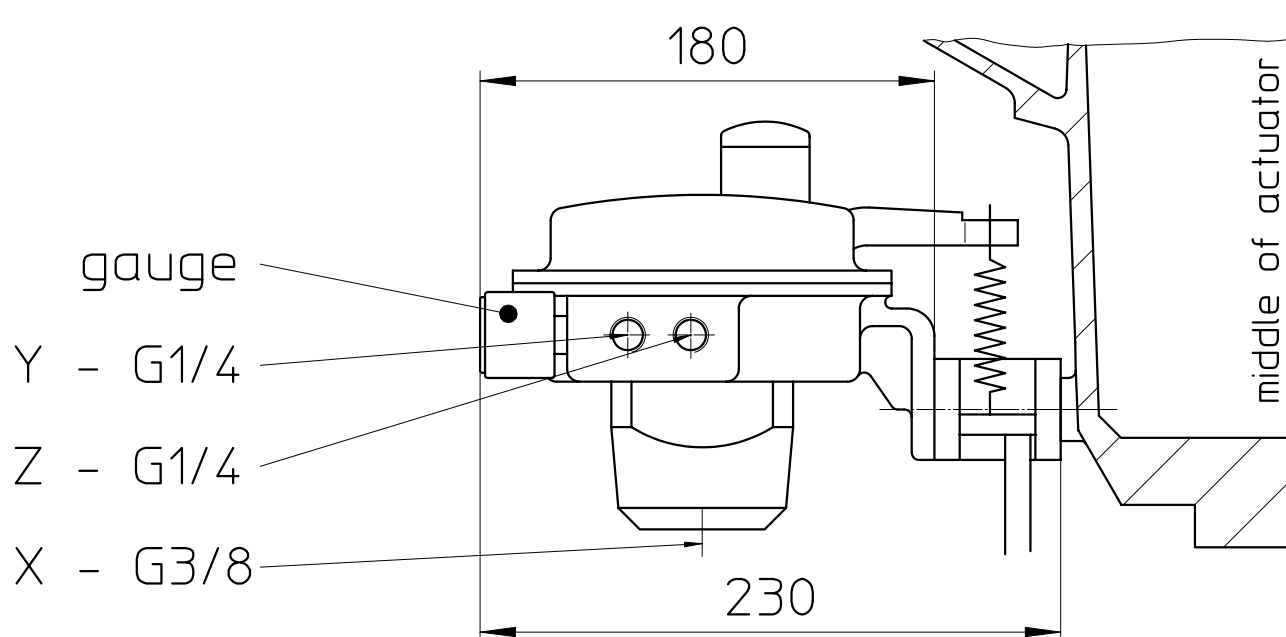
Technical Data

Mounting	Assembled to diaphragm actuator type 811		
Body material	Standard: Aluminium / Steel / Stainless Steel - Special: Hastelloy, ...		
Mounting position	Measuring unit (bellows) vertically to the top, impulse line connection at the bottom		
Temperature range	-20 to +120°C or on request		
Adjustment range	[bar(g)]	Measuring element	Overload Capacity [bar(g)] Bronze / Stainless Steel
Vacuum	-1...-0,01	bellows Ø 60 mm	9 / - (only SS)
Over pressure	0,02...0,4	diaphragm Ø 160 mm	4
	0,08...1,8	bellows Ø 60 mm	9 / - (only SS)
	0,15...3	bellows Ø 50 mm	7 / 14
	0,25...7	bellows Ø 36 mm	9 / 15
	0,5...15	bellows Ø 28 mm	18 / 25
	0,7...18	bellows Ø 22 mm	22 / 22
	1...30	bellows Ø 19 mm	40 / 40
	1,5...80	bellows Ø 15 mm	90 / 105 (only SS)
Differential pressure	0,25...5	bellows Ø 50 mm	12 / 25
Control algorithm	P-Controller		
Sensitivity	< 0,02 % of medium adjustment range		
Hysteresis	< 1 % of medium adjustment range		
Air supply influence	< 0,4 % per 0,1 bar air supply change		
Flow capacity	460 SI/h at Y = 0,6 Z = 1,4 nozzle 2/1,9 / 650 SI/h at Y = 0,6 Z = 1,4 nozzle 3/1,8		
	1200 SI/h at Y = 0,6 Z = 1,4 nozzle 3/1,7		
Air supply pressure p_z	1,4 (2,5) bar		
Control pressure y	0,2...1 bar (0,2 ...2,0 bar)		
Air consumption	≤ 300 Sdm ³ /h at p _z = 1,4 bar		
Connections	x G 3/8, y and p _z G ¼		
Dimensions	Please refer to the dimensional drawing		
Weight	App. 4,5 kg		

Technical Data Sheet
Pressure Controller
„Roboter“ Type 902



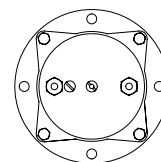
TD_902



Technical Data Sheet

Pneum. Pressure Transformer 1:1

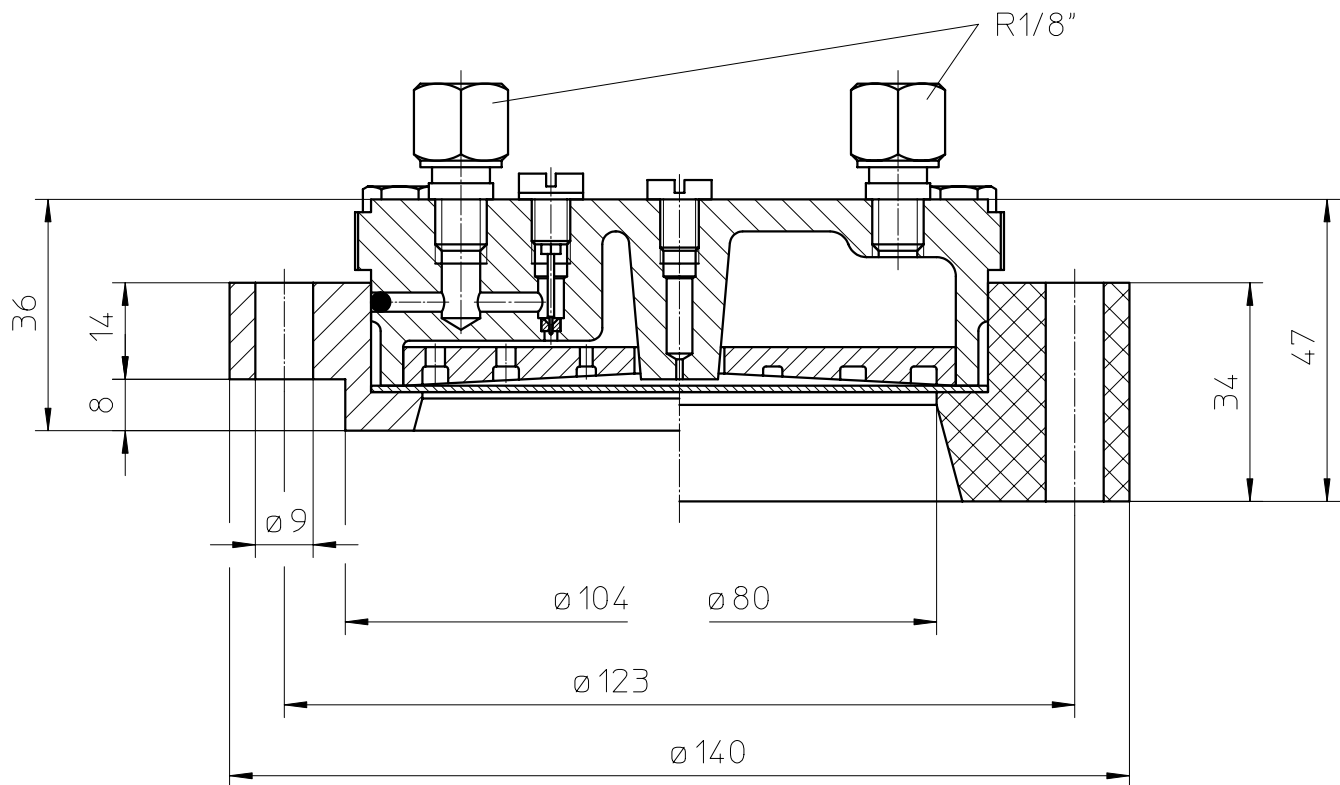
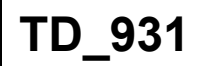
Type 931



TD_931

Technical Data

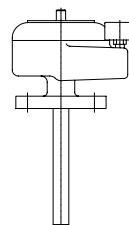
Mounting	With flange \varnothing 140 mm or flange DN 80 PN 16 acc. to EN 1092-1		
Material	Body brass, flange stainless steel 1.4571 or PVC or PTFE diaphragm PTFE glass-fibre reinforced or Viton, reinforced with polyester		
Mounting position	Anyone		
Temperature range	Flange stainless steel, diaphragm PTFE -50...200 °C		
	Flange stainless steel, diaphragm Viton -20...150 °C		
Measuring range	[bar(g)]	Diaphragm	Overload capacity [bar(g)]
	0...4	PTFE	6,0
	0...0,25	Viton	3,8
Measuring failure	$\leq 0,2$ % of measuring value		
Sensitivity	$\leq 0,2$ mbar		
Hysteresis	≤ 1 mbar for Teflon-diaphragm		
	$\leq 0,2$ mbar for FKM-diaphragm		
Air supply pressure p_z	1,2 x of final value of adjustment range, minimum 1,4 bar		
Air consumption	≤ 80 Sdm ³ /h.		
Connections	G 1/8		
Dimensions	Please refer to the dimensional drawing		
Weight	App. 1,3 kg w/o flange / app. 2,5 kg with flange		



made of PVC or PTFE

Technical Data Sheet

Temperature Controller Type 910



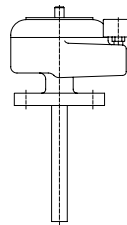
TD_910

Technical Data

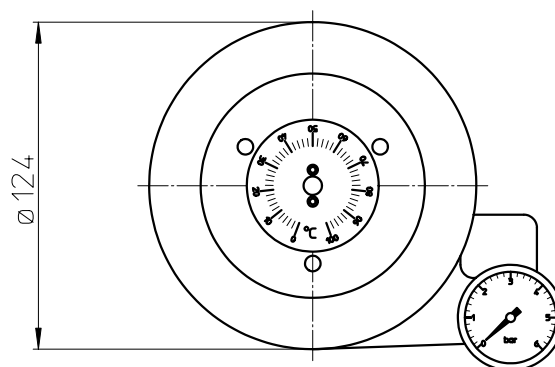
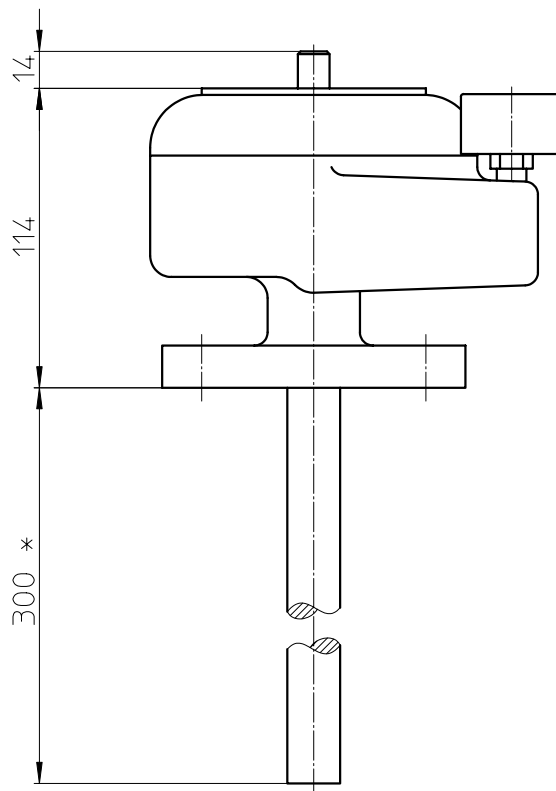
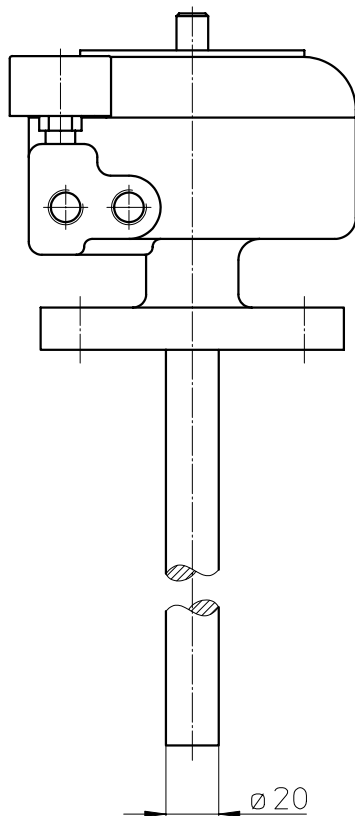
Mounting	By means of flanges DN 25 PN 6 up to PN16 or DN 25 PN 40 acc. to EN 1092-1 Form B1
Body material	Flanges up to PN 16 Aluminium, flanges PN 40 stainless steel
Material of heat sensor	Stainless steel + CU-sensor
Mounting position	Anyone
Temperature range	Depending on measuring range
Adjustment range	0...100 °C (start increasable from 0...150°C)
Control algorithm	P-Controller
P-Range	3 K, adjustable over the complete measuring range
Signal (input/output)	Increasing / increasing or increasing / decreasing
Flow capacity	Max. 500 Sdm ³ /h
Air supply pressure p_z	1,4 bar
Control pressure y	0,2...1 bar
Air consumption	≤ 400 Sdm ³ /h at p _z = 1,4 bar and y = 0,6 bar
Pneumatic connections	G 1/4"
Dimensions	Please refer to the dimensional drawing
Weight	App. 2,5 kg

Technical Data Sheet

Temperature Controller Type 910



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Архангельск (8182)63-90-72	Калининград (4012)72-03-81	Новосибирск (383)227-86-73	Сочи (862)225-72-31
Астана +7(7172)727-132	Калуга (4842)92-23-67	Омск (3812)21-46-40	Ставрополь (8652)20-65-13
Астрахань (8512)99-46-04	Кемерово (3842)65-04-62	Орел (4862)44-53-42	Сургут (3462)77-98-35
Барнаул (3852)73-04-60	Киров (8332)68-02-04	Оренбург (3532)37-68-04	Тверь (4822)63-31-35
Белгород (4722)40-23-64	Краснодар (861)203-40-90	Пенза (8412)22-31-16	Томск (3822)98-41-53
Брянск (4832)59-03-52	Красноярск (391)204-63-61	Пермь (342)205-81-47	Тула (4872)74-02-29
Владивосток (423)249-28-31	Курск (4712)77-13-04	Ростов-на-Дону (863)308-18-15	Тюмень (3452)66-21-18
Волгоград (844)278-03-48	Липецк (4742)52-20-81	Рязань (4912)46-61-64	Ульяновск (8422)24-23-59
Вологда (8172)26-41-59	Магнитогорск (3519)55-03-13	Самара (846)206-03-16	Уфа (347)22948 -12
Воронеж (473)204-51-73	Москва (495)268-04-70	Санкт-Петербург (812)309-46-40	Хабаровск (4212)92-98-04
Екатеринбург (343)384-55-89	Мурманск (8152)59-64-93	Саратов (845)249-38-78	Челябинск (351)202-03-61
Иваново (4932)77-34-06	Набережные Челны (8552)20-53-41	Севастополь (8692)22-31-93	Череповец (8202)49-02-64
Ижевск (3412)26-03-58	Нижний Новгород (831)429-08-12	Симферополь (3652)67-13-56	Ярославль (4852)69-52-93
Казань (843)206-01-48	Новокузнецк (3843)20-46-81	Смоленск (4812)29-41-54	