

# ARCAPROCESS

CONTROLLERS AND INSTRUMENTATION

Signal box  
Series 827S



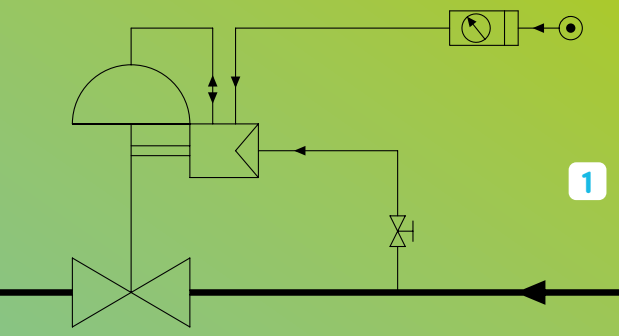
Pressure  
Controller  
Series 902



Temperature  
Controller  
Series 910



# THE OPTIMUM SOLUTION FOR EVERY TASK

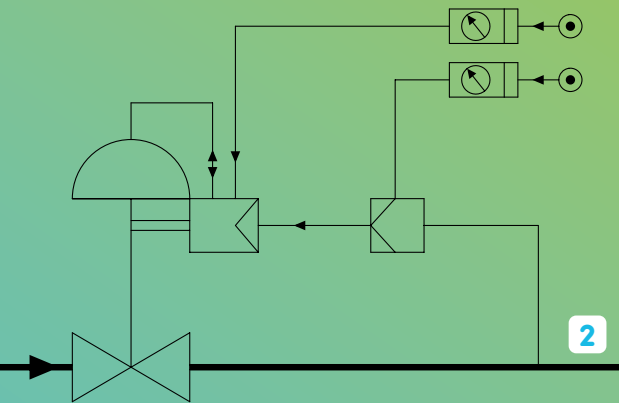


1

## Local Pneumatic Control Loops

Inexpensive local control loops are often used for simple control tasks, such as pressure, differential pressure or temperature control. They comprise a valve, a pneumatic actuator and a pneumatic measuring controller that records the measured variable, evaluates the control deviation, adds an integrating (I) or differentiating (D) component to the proportional response (P) if necessary, and uses this to generate the control signal to the actuator.

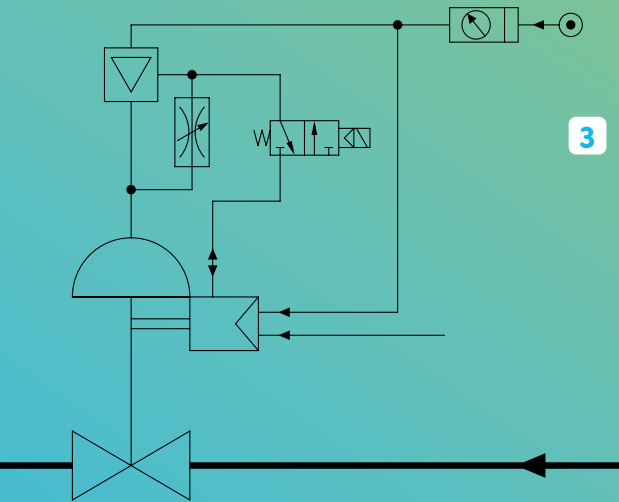
ARCA offers a range of pneumatic controllers that meets basic to advanced requirements. Whether P-controllers with fixed setpoint and direct control of the actuator or, for maximum control accuracy, PID controllers - optionally with external setpoint adjustment, display of setpoint, actual value and signal pressure as well as with manual/automatic switchover and control of the actuator via the pneumatic positioner series 824P (see also ARCA brochure ARCACONTROL positioner) - the ARCA product range always has the right device to solve your control task.



2

## Control Valve Instrumentation

To use valves optimally in a process plant, additional functions are often required in addition to the actual control task. Regardless of whether the application calls for limit position signaling by inductive or mechanical switches, safety-related and (if necessary) redundant valve shut-off by solenoid or interlock valves, adjustment of the valve stroke time or conditioning of the instrument air - ARCA always can provide an appropriate field-proven solution.



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## Minimizing The Actuator Stroking Time

Control valves with large pneumatic actuators often have full-stroke times more than 30 seconds. Such response times are too slow for applications such as turbine bypass stations or pump limit control valves on compressors. In these applications, a full-stroke time of one second or even less is required to prevent damage to machines and plant systems in the event of a fault.

ARCA also has the necessary expertise for these special applications. With the help of amplifiers, throttle and solenoid valves as well as filter reduction stations, our instrumentation department creates stable, overshoot-free and extremely fast position control loops for such applications.

ARCA is a specialist in sophisticated industrial process control.

Our story began in 1917 with a groundbreaking innovation. Since then, outstanding engineering skills and pioneering spirit have been key strengths of our family-run company. Today our control technology provides reliable interfaces for your process.

Our comprehensive services guarantee the secure and efficient control of your production, from early project consulting to maintenance all the way to process optimization.

CONTROL THE FLOW

## PNEUMATIC CONTROLLERS

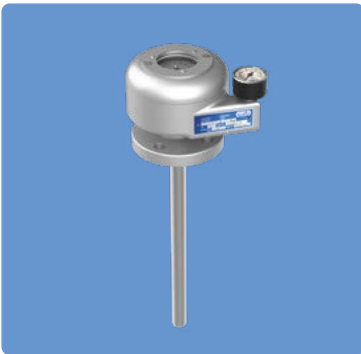


### Pressure Controller «Roboter» Series 902

The series 902 pressure controller is a compact measuring controller for pressure and differential pressure and is mounted directly onto a pneumatic actuator. The pressure to be controlled generates a force via the measuring system (bellows or diaphragm), which is compared with the force of an adjustable spring and generates the actuating pressure via a nozzle/flapper

system. Mechanical position feedback from the actuator stem is used to stabilize the control loop. The «Roboter» pressure controller can be used to control gas, steam or liquid pressure in industrial plants.

## PNEUMATIC CONTROLLERS



### Temperature Controller Series 910

The series 910 temperature controller is an extremely robust measuring controller for temperature. It is installed at the measuring point and generates the actuating pressure for the actuator via an expansion rod and a nozzle/flapper system. A calibrated scale allows precise setpoint adjustment. The control valve with pneumatic actuator can also be located remote from the measuring

point. The series 910 temperature controller is used, among other applications, to control the coolant temperature in central refrigerant circuits.

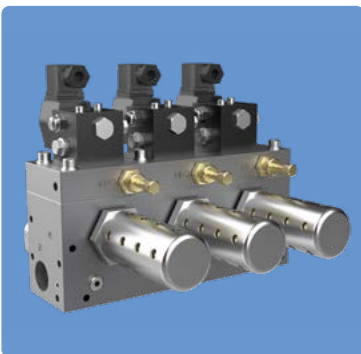
## CONTROL VALVE INSTRUMENTATION



### Solenoid and Lockup Valves

Solenoid valves can be used to operate on/off valves or to implement a safety-related closing or opening function on control valves. Pneumatic lockup valves shut off the actuator's signal as soon as the supply air pressure drops below an adjustable threshold, thus locking the valve in its current position.

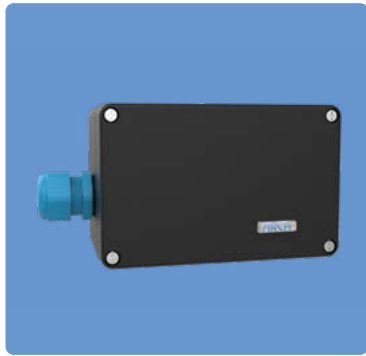
## CONTROL VALVE INSTRUMENTATION



### Protection against Overpressure

The type-tested pneumatic manifold eliminates all risks of possible overpressure in a steam system. Classically developed from TRD 421, this vent block protects the steam network against overpressure. Three independent operating pressure switches ensure safe operation and reliably shut off the ARCA POWERCONTROL if necessary.

## CONTROL VALVE INSTRUMENTATION



### Signal Box Series 827S

The 827S signal box is suitable for signaling intermediate or end positions of the valve stroke. It is attached to the actuator yoke either integral or according to the NAMUR standard and detects the valve stroke via the patented backlash-free ARCAPLUG position feedback. Up to three inductive proximity switches are activated by adjustable switching disks to indicate the current valve position.

### Proximity Switches

Intermediate or end positions can be detected contactlessly by external inductive proximity sensors. The sensors are mounted onto the NAMUR rib of the actuator yoke. A switch plate attached to the actuator stem triggers the sensor signal.

## CONTROL VALVE INSTRUMENTATION



### Mechanical Switches

Mechanical switches with potential-free contacts for signaling intermediate or end positions can also be fitted to ARCA drives. The roller or plunger switches are attached to the actuator yoke according to the NAMUR standard and operated by a switch plate attached to the actuator stem.

On request, all proximity or mechanical switches can be wired into a terminal box. All components supplied by ARCA undergo a rigorous functional test before delivery.

## CONTROL VALVE INSTRUMENTATION



### Filter-Regulators

Filter-regulators (air sets) are used to provide the instrument air supply with the desired constant pressure and in the required air quality. ARCA offers a wide range of different materials, temperature ranges and filter fineness for your specific application.

### Throttle and Throttle Check Valves

Throttle valves are installed in the control air piping to line to maintain stability and adjust the actuating time of pneumatic actuators. If the actuating time shall be different in the open and close directions, throttle check valves can be used.

## CONTROL VALVE INSTRUMENTATION



### Accessories for Positioning Time Optimization

Large pneumatic actuators often have actuating times of 30 seconds and even more in control mode with a positioner or in open/close mode when operated by a standard solenoid valve. For a lot of applications, however, such long actuating times are not acceptable because the valve must open or close in a much shorter time to avoid damage to the plant equipment and the resulting high follow-up costs.

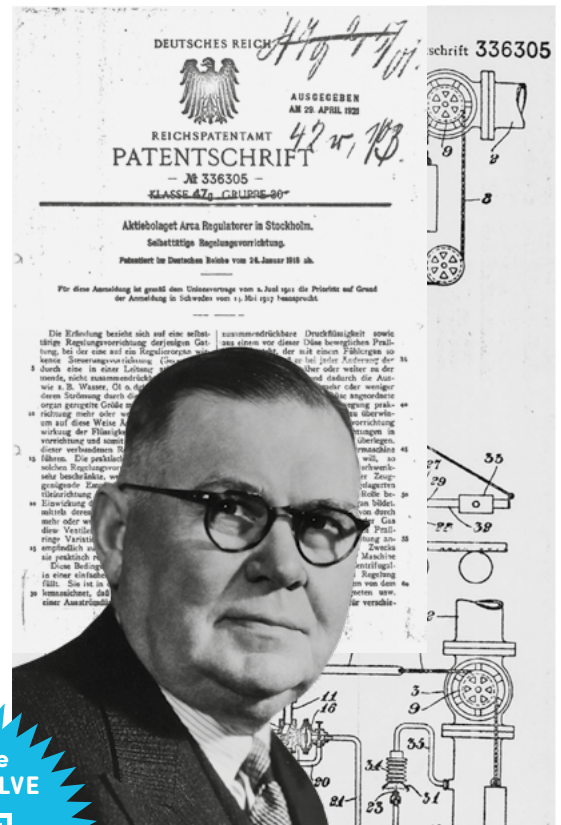
With the help of boosters, throttle and throttle check valves, quick exhaust valves and appropriately dimensioned filter-regulators, ARCA's know-how ensures stable and vibration-free control or on/off operation with less than 1 second stroking time, even with large actuators and challenging control accuracy requirements.

# PROVEN NOZZLE/FLAPPER SYSTEM

The nozzle/flapper system was patented in 1917 by the Swede Ragnar Carlstedt, the founder of ARCA Regler. It still forms the basis of pneumatic automation technology and gave rise to a world of new possibilities for local or remote process control.

The principle is based on the principle of controlling pressure by opening and closing a nozzle by means of a flapper and using the amplified pressure signal generated to control a pneumatic actuator. The movement of the flapper can be generated by a force, pressure or temperature signal converted into a distance or angle. Simple, low-cost pneumatic pressure and temperature sensors and high-precise measuring controllers can be designed based on this system.

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



ARCAonsite allows you with a QR code nameplate on the control valve worldwide direct access to our digital platform. There you will find all the necessary information and the latest documentation for your valves.

## OUR INNOVATIONS

## YOUR BENEFITS

- |  |  |
|--|--|
| <p><b>1</b> Long-time proven classic pressure and temperature regulators with pneumatic output</p>               | <ul style="list-style-type: none"> <li>➔ Long service lifetime</li> <li>➔ Robust, simple design</li> <li>➔ No external signal cables required</li> <li>➔ Low life-cycle costs</li> </ul> |
| <p><b>2</b> Wide range of instrumentation accessories</p>  | <ul style="list-style-type: none"> <li>➔ Optimal adaptation to the specific application</li> </ul>   |
| <p><b>3</b> Accessories with all common types of ignition protection (also with SIL / TRD 421 certification)</p> | <ul style="list-style-type: none"> <li>➔ Easy integration into any plant concept</li> </ul>  |
| <p><b>4</b> Wide ambient temperature range</p>   | <ul style="list-style-type: none"> <li>➔ Also suitable for tropical or arctic environments</li> </ul>  |
| <p><b>5</b> Actuating times less than 1 second even with large actuators</p>                                     | <ul style="list-style-type: none"> <li>➔ Can be used for special applications, e.g. for turbine bypass stations or anti-surge control valves on compressors</li> </ul>                   |
| <p><b>6</b> Safety-related shutoff or opening via solenoid valve</p>   | <ul style="list-style-type: none"> <li>➔ Integration into safety concepts possible</li> </ul>  |
| <p><b>7</b> Locking the valve in current position in the event of supply pressure failure</p>                    | <ul style="list-style-type: none"> <li>➔ Reliable shutdown of plant systems in case of failure</li> </ul>  |



### Pneumatic Controllers

<b>Pressure controller series 902 «Roboter»</b>	Measuring range -1,0...-0,01 bar to 1,5...80 bar
<b>Temperature controller Series 910</b>	Measuring range 0...100 °C to 150...250 °C
Air supply pressure	1,4 bar
Actuating signal pressure	0,2...1 bar

### Control Valve Instrumentation

<b>Signal box series 827S</b>	max. 3 proximity sensors: SC3,5-N0-B-BU / SJ3,5-SN / SB3,5-E2
Ignition protection	none / intrinsically safe
<b>External proximity switches</b>	max. 2 proximity sensors: NJ5-18GK-N / NJ5-18GK-SN / NJ5-18GM50-E2
Ignition protection	none / intrinsically safe
<b>External proximity switches</b>	ENM2-SUIZ Ex / GC-UVIZ-AH / 07-2511-3330/04
Switching capacity	up to 400 V, 10 A AC / 250 V, 0,5 A DC, depending on type
Ignition protection	none / flameproof enclosure
<b>Solenoid valves</b>	G1/4, G1/2, 1/4" NPT, 1/2" NPT
Type	2/2-, 3/2-, 5/2- oder 5/3-way valves
Rated voltage	24 V, 50 Hz / 230 V, 50 Hz / 24 V DC
Ignition protection	none / intrinsically safe / flameproof enclosure / encapsulated
<b>Lockup valves</b>	G1/4
Type	2/2- or 3/2-way valves
<b>Filter-regulators</b>	G1/4, G1/2, 1/4" NPT, 1/2" NPT
Material	Zinc high pressure die-cast, optional stainless steel
Inlet pressure range	standard 12 bar, optional up to 31 bar
Back pressure setpoint range	0,5 bar... 12 bar
Filter unit fineness	5... 40 µm, depending on type
Condensate drain	automatic or manual
<b>Quick exhaust valves / boosters/ Throttle valves</b>	G1/4, G1/2, G 3/4, G 1, 1/4" NPT, 1/2" NPT, 3/4" NPT, 1" NPT

## ARE YOU FAMILIAR WITH OUR ARCA SERVICE PACKAGES?

On the basis of our comprehensive application knowledge about the entire process or control loop ARCA Services underscore our promise to you:  
CONTROL THE FLOW

## ARCA launch

With ARCAlaunch we assist you with the commissioning of your control valves. That applies to support during construction and also during the cold and hot commissioning.

## ARCA care

With ARCAcare, we offer maintenance contracts that are precisely tailored to your plant. This way, planned prophylactic service dates aren't hampered by everyday operation. The failure of important valves is prevented.