

2016

staiger
FLUID CONTROL EXCELLENCE

CUSTOMER-SPECIFIC VALVES



bystaiger
FLUID CONTROL EXCELLENCE

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Dear Customers and Partners,

after meanwhile 41 years of company history we will continue our innovative track and offer this year new products and engineered solutions especially in the fields of proportional valves and drinking water technology.

As an owner controlled family business we have a strong customer focus and attach great importance on sustainable, personal and long-term customer relationships, world wide. I am therefore looking forward to meeting you personally in near future and to learn about your challenges!

Marc Staiger
CEO

For more than 40 years we have been developing and producing with 200 highly qualified employees innovative solenoid valves and valve manifolds according to customer requirements here in Germany.

At our site in Erligheim (nearby Stuttgart) we manufacture everything, from one single piece, over serial production up to mass production. Hereby we also create all necessary

manufacturing and testing devices in house. This unique know how enables us to develop cost efficient high-tech solutions, which create a real competitive advantage for our customers.

It is therefore no coincidence that our customers are global market leaders of the industries Medical Technology, Automotive, Industrial, Pneumatics, Aeronautics and last but not least Drinking Water.



HISTORY

1974

Founding of the Staiger company and first trade fair



1974

Oil burner valve



1980

First CNC work station



1982

Modular design of solenoids



1984

Light emitting seal



1986

Electronic water guard



1987

Move in building I (own construction)



1987

15 mm valve

1996

Pneumatic Modul 8-fold programmable



1992

75 Employees



1998

Certification DIN EN ISO 9001 DIN EN ISO 14001



1997

Introduction of 3D-CAD (SolidWorks)



2000

Spider®-Valve Micro 7



2003

Completion of glass pavilion (own construction)



2001

150 Employees



2005

10 mm valve



2005

Laser-technology

2009

„Bruno-Staiger-Weg“ for Bruno Staiger's 70th birthday



2012

Spider μProp® valve

2015

Spider μProp® valve 8 mm



2014

Bruno Staiger's 75th birthday and 40th company anniversary

- Quality and Environmental Management System
- Certification and Product Safety
- CE-Marking

*We really do care
about quality and
environment!*



Quality Management System

Quality means to us that we will strive to orient our products and services on the needs, requirements, and expectations of our customers, thereby increasing customer satisfaction.

According to DIN EN ISO 9001:2008 we have introduced a quality management system to realize our goals. We attain a continuous process of improvement through which the high quality standard of our products and processes is built and assured.

Environmental Management System

We want to preserve the environment. Therefore environmental protection is one of the most important goals within our enterprise. Furthermore, each of our employees is motivated to work consciously of the environment. For example, through the application of new, energy saving technologies; through the utilisation of renewable resources, such as rain water where applicable, we reduce the environmental strain to the possible minimum. The introduction of the environmental management system DIN EN ISO 14001:2009 within our firm guarantees both a trustworthy and open cooperation between our business, environmental authorities, and the public.

Certification and Product Safety

Staiger solenoid valves are used in a vast array of applications and have hereby to comply to applicable regulations and standards.

Every customer however is obliged to perform its own hazard analysis and validation with Staiger products before implementing those in its own systems. Above and beyond this, there are also special areas of technical safety; for example usage in gas applications or in potentially explosive areas. Special rules and regulations apply hereto. A series of our solenoid valves has been approved for usage in gas applications according to the requirements outlined in DIN EN 161 Class A and B.

A further series of our solenoid valves was especially designed for applications requiring low electrical energy, in particular for usage in explosion endangered areas and is thereby approved as intrinsically safe.

CE-Marking

Solenoid valves and valve electronics from Staiger are tested according to DIN and IEC regulations and, of course, are marked accordingly. Depending upon construction, dimensioning and operating conditions, the products are subject to several directives of the CE-Marking. Any applicable manufacturer's declaration can also be requested. The CE-Product-ID-No. is affixed for gas valves in accordance with the Gas Appliances Directive (GAD).

Convincing innovative concepts

- Spider μ Prop® 8 mm/21 mm
- Pilot valve for water-taps
- Pressure-balanced proportional valve

Innovations by Staiger

For more than 40 years Staiger is coining the evolution of valve technology and valve electronics essentially. More than 200 patents and utility patents result from innovativeness and technical creativity.

Of course we know all the function principles of our standard-products by heart. However, we focus the development of customized products: Valve solutions including the necessary electronic control – custom fit according to the demands at competitive prices.



- Seat principle, direct acting
- Plate armature drive
- Frictionless movement
- Long service-life
- Extremely fast

SPIDER μ Prop®

Deployment

2-way proportional valve for control/regulation of media

Benefit

The compact design and the ability to finely discharge low flow rates, create new innovative deployment possibilities, e.g. in portable appliances (Analysis devices, Ventilators, Massflow Controllers, ...).

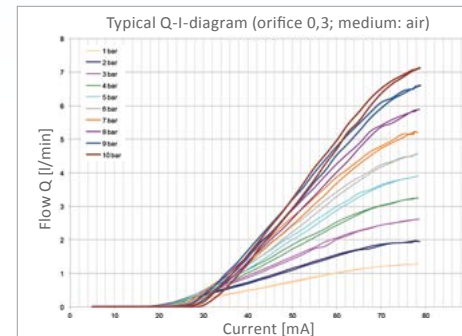
The valve can still be adapted to the application and the requirements. Hence, e.g. any sealing materials or voltages can be deployed.

Version examples



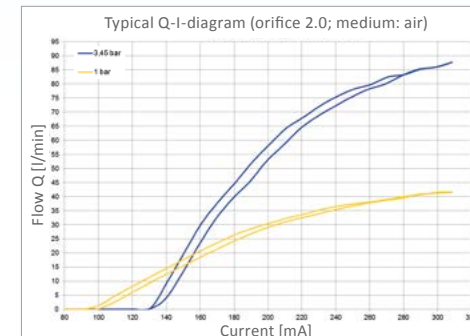
Valve characteristics 8 mm

- Orifice (DN): 0.3 mm
- Flow: 0 – 1.5 l/min @ 1 bar
- Open circuit voltage: 24 V



Valve characteristics 21 mm

- Orifice (DN): to 4 mm
- Flow: to 110 l/min @ 1 bar
- Open circuit voltage: 18 V



→ Low power consumption
through latching function

→ Battery operation
→ Small footprint

Deployment

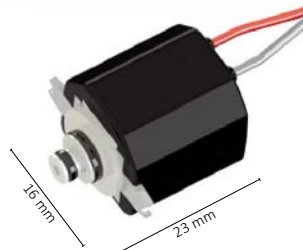
2/2-way latching pilot valve
for valves in water-taps

Benefit

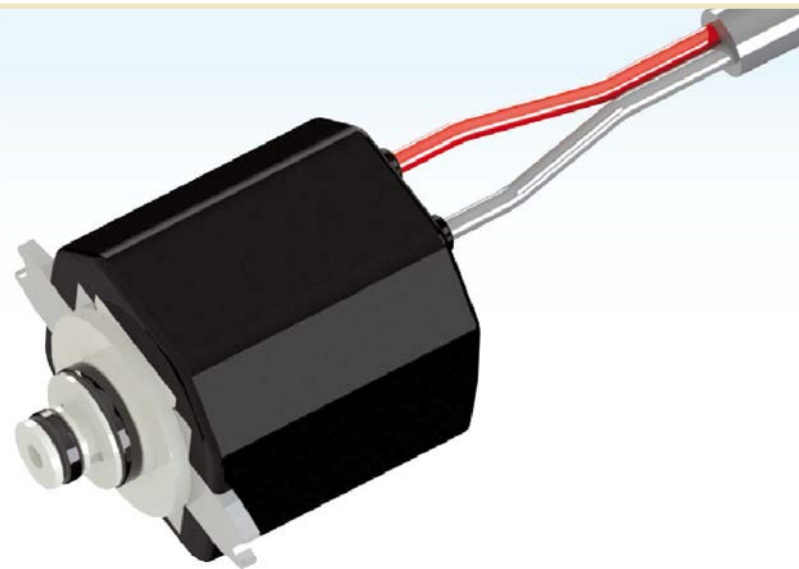
The low power consumption by the impulse control is ideally suited for use in electronically controlled taps with battery operation. The valve is constructed entirely of water-approved materials and is certified according to W270, KTW and ACS. More drinking water approvals are in testing.

Valve characteristics

- Orifice (DN): 0.6 mm
- Pressure range: 0.5 – 10 bar
- Operating voltage: 6 VDC
- Power consumption: max. 1.4 W
- Degree of protection: IP65



Version example



Pilot valve for water-taps

- Frictionless movement
- High flow rates
- Small footprints and sizes
- Low power consumption
- Pressure-balanced

Deployment

Proportional regulation and control of high flow rates

Benefit

This valve combines the advantages of the Spider®-Valve technology with the benefits of a pressure-balanced valve. The valve with its large orifice achieves high flow rates and is nevertheless directly controlled.

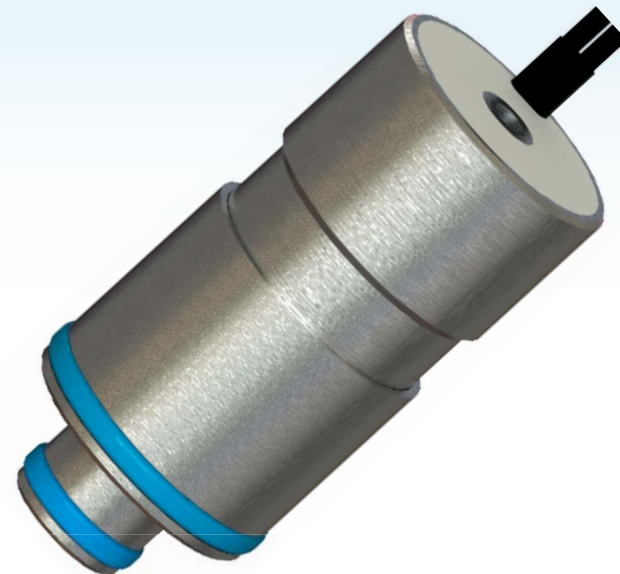
The electrical power consumption lies thereby in the lowest range of the Plate Armature Technology. The compact design of the valve provides a variety of assembly options for different areas of application.

Valve characteristics

- Orifice (DN): 6 mm
- Flow rate: 200 l/min @ 2 bar
- Pressure range: 0 – 6 bar
- Operating voltage: 24 V
- Power consumption: max. 2.5 W



Version example



Pressure-balanced proportional valve

Customer-specific solutions

- Analysis & Medical Technology
- Sanitary & Water Technology
- Industry
- Automotive
- Energy Systems
- Paper, Printing & Textile Industry

REFERENCES

A small selection of our national and international customers.



Analysis and Medical Technology



Whether Intensive care, blood pressure measurement or prosthetics – reliability is the most important characteristic of a product in the Medical Industry, as human life may depend on it.

Analytical equipment

Type VA 704-718

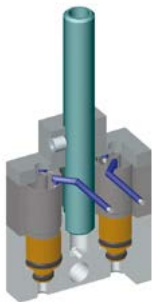
**2-fold manifold with 2-way Spider®-Valve,
size 7 mm, direct actuated, NC**

Port connection: Customer solution

Orifice (DN): 1 mm

Pressure: 0...0.5 bar

Valve body: Stainless steel



Analytical equipment

Type VA 204-515

**2-way Spider®-Valve,
size 15 mm, direct actuated, NC,
with threaded bolt M3**

Port connection: Flange

Orifice (DN): 1.0 mm

Pressure: -1...8 bar

Valve body: Stainless steel



Analytical equipment

Typ VA 301-006

**3-way solenoid valve
direct actuated, NC**

Port connection: M10x1

Orifice (DN): 2.2 mm

Pressure: 0.7...0.1 bar

Valve body: Stainless steel



Analytical equipment

Typ VA 801-001

**3-fold manifold, with 3-way
solenoid valves, direct actuated, NC**

Port connection: M12x1.25

Orifice (DN): 2.2 mm

Pressure: -0.7...0.1 bar

Valve body: Stainless steel



APPLICATIONS

ANALYSIS & MEDICAL TECHNOLOGY

Analytical equipment

Type MI 800-001

**2-fold valve with 3-way valves,
direct actuated latching function**

Port connection: Flange

Orifice (DN) 1 mm

Pressure: 0...1 bar

Valve body: Aluminium



Analytical equipment

Type QE 233-001

**2-way valve, diaphragm principle,
direct actuated, NC**

Port connection: G1/4

Orifice (DN) 4 mm

Pressure: 0...2 bar

Valve body: Teflon PFA



Dental technical equipment

Type MA 811-003

**2-fold manifold with 2- and 3-way
valves, direct actuated, NC**

Port connection: Hose nozzle OD6

Orifice (DN) 1.6 and 2.2 mm

Pressure: -0.5...0 bar

Valve body: Brass



Medical technology

Type VA 204-505

**2-way proportional valve,
direct actuated, NC**

Port connection: Cartridge

Orifice (DN): 2.2 mm

Pressure: -0.8...2 bar

Gehäuse: Stainless steel



APPLICATIONS

ANALYSIS & MEDICAL TECHNOLOGY

Medical technology

Type MA 204-007

**2-way Spider®-Valve, size 7 mm,
direct actuated, NC**

Port connection: Hose nozzle

Orifice (DN): 1 mm

Pressure: 0...350 mbar

Valve body: POM



Medical technology

Type MH 218-001

**2-way Spider®-Valve,
manually actuated, NC**

Port connection: Push-in connector

Orifice (DN): 2.2 mm

Pressure: 1...8 bar

Valve body: Brass



Medical technology

Type MA 208-002 V

**2-way Spider®-Valve,
manual actuated, NC**

Port connection: Flange

Orifice (DN): 2 mm

Pressure: 0...8 bar

Valve body: Brass



Medical technology

Type MA 700-003

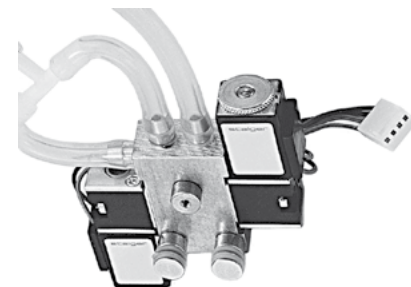
**2-fold manifold with 2-way valves,
NC and NO**

Port connection: Hose nozzle

Orifice (DN): 0.8/0.25 mm

Pressure: 0...500 bar

Valve body: Aluminium/POM



APPLICATIONS

ANALYSIS & MEDICAL TECHNOLOGY

Medical technology

Type MA 710-032

2-fold manifold with 2-way valves,
direct actuated, NC

Port connection: Hose nozzle

Orifice (DN): 0.8 mm

Pressure: 0...260 mbar

Valve body: Brass/POM



Medical technology

Type MA 804-502V

2-way, 3-way Spider®-Valve,
size 15 mm, direct actuated,
NC with pressure control

Port connection: Hose nozzle

Orifice (DN): 1.5 – 2.0 mm

Pressure: 0...2 bar

Valve body: Aluminium/Stainless steel



APPLICATIONS

ANALYSIS & MEDICAL TECHNOLOGY

Medical technology

Type MX 009-003 S

Mixer and distributor for air and
oxygen, including pressure regulators



Medical technology

Type MH 008-001 V

Manual switching function valve
for oxygen including electrical signaling

Port connection: Flange

Orifice (DN): 1 mm

Pressure: 0...2 bar

Valve body: Brass



Sanitary and Water Technology



Cost effective, convenient and reliable water management is the great challenge of the 21st Century. For you and your customers, we are applying our Know-How in the development and production of solutions according to these demands.

Water supply

Type PA 209-001

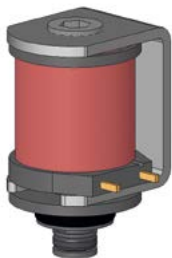
**2-way solenoid valve,
direct actuated, NC**

Port connection: Cartridge

Orifice (DN): 0.6 mm

Pressure: 1...10 bar

Valve body: Plastic



Water supply

Type PI 209-002

**2-way solenoid valve,
direct actuated, latching valve**

Port connection: Cartridge

Orifice (DN): 0.6 mm

Pressure: 1...10 bar

Valve body: Plastic



Water-tap

Type PI 200-005

**2-way valves, direct actuated,
latching function**

Port connection: Flange

Orifice (DN): 0.8 mm

Pressure: 1...8 bar

Valve body: POM



Automatic car wash system

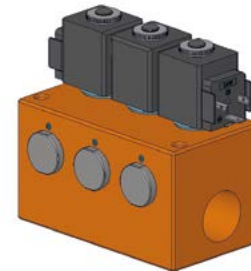
**3-station 2-way manifold valve block,
servo actuated, NC**

Port connection: G1

Orifice (DN): 10 mm

Pressure: 3...80 bar

Valve body: Brass



APPLICATIONS

SANITARY & WATER TECHNOLOGY

Automatic car wash system

Type PA 702-004

**15-fold manifold with 2-way valves,
direct actuated, NC**

Port connection: Hose nozzle

Orifice (DN): 11 mm

Pressure: 0...0.5 bar

Valve body: PP



Fire extinguishing system

Type MA 203-019

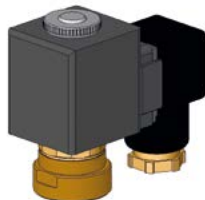
**2-way solenoid valve, direct actuated,
NC, with connector**

Port connection: Flange

Orifice (DN): 0.8 mm

Pressure: up to 170 bar

Valve body: Brass



Fire extinguishing system

Type MA 203-002

**2-way solenoid valve,
direct actuated, NC**

Port connection: M22x1.5

Orifice (DN): 1.6 mm

Pressure: 0...40 bar

Valve body: Brass



Water treatment

Type PH 208-001

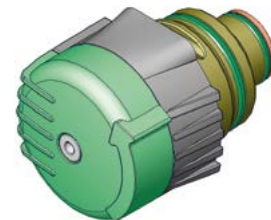
2-way valve, manually actuated, NC

Port connection: Cartridge

Orifice (DN): 10 mm

Pressure: 1...16 bar

Valve body: Plastic



APPLICATIONS

SANITARY & WATER TECHNOLOGY

APPLICATIONS

SANITARY & WATER TECHNOLOGY

Water treatment

Type PN 200-001

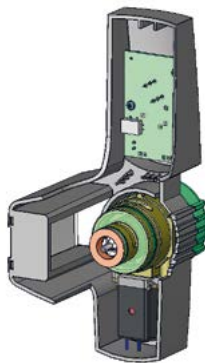
**2-way solenoid valve, servo actuated, NC,
electronic controlled, battery supply**

Port connection: Cartridge

Orifice (DN): 10 mm

Pressure: 1...16 bar

Valve body: Plastic



Water treatment

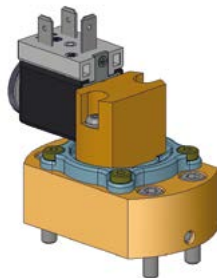
2-way solenoid valve, servo actuated, NC

Port connection: Flange

Orifice (DN): 6.5 mm

Pressure: 0.5...10 bar

Valve body: Brass



APPLICATIONS

SANITARY & WATER TECHNOLOGY

Water treatment

Type MI 240-006

**2-way latching valve, with electronic
timer and battery supply**

Port connection: G3/8

Orifice (DN): 8 mm

Pressure: 1...8 bar

Valve body: Brass





Regardless of whether these are deployed in standard solutions or in customer specific applications – our products jointly developed with you guarantee precision, reliability and optimized energy consumption. Offer your customers more productivity with Staiger-Solutions.

Pneumatic servo actuated valve

Type VA 304-903

**3-way Spider®-Valve, size 8 mm,
direct actuated, NC**

Port connection: Cartridge

Orifice (DN): 0.5 – 1 mm

Druckbereich: 2...8 bar

Leistung : 0.55 W

Valve body: Stainless steel



Automation

Type MA 733-003

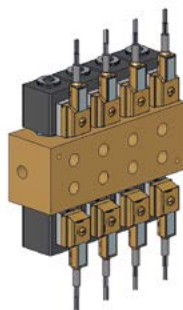
**8-fold manifold valve block with
2-way solenoid valves, direct actuated,
NC, with cable plugs**

Port connection: G1/4

Orifice (DN): 4 mm

Pressure: 0...5.5 bar

Valve body: Brass



Automation

Type MA 304-707

**3-way Spider®-Valve, size 7 mm,
direct actuated, NC**

Port connection: Hose nozzle

Orifice (DN): 0.6 mm

Pressure: 0...6 bar

Valve body: Stainless steel



Automation

Type MA 104-705

**2-way Spider®-Valve, size 7 mm,
axial flow, direct actuated, NO**

Port connection: Hose nozzle

Orifice (DN): 1.1 mm

Pressure: 0...400 mbar

Valve body: Brass



Dosing technology

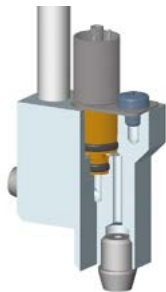
**3-way Spider®-Valve, size 7 mm,
direct actuated, diverting function**

Port connection: Push-in connector

Orifice (DN): 0.5 mm

Pressure: 0...2 bar

Valve body: PA12



Compressor condensate drain

Type MA 222-040

**2-way solenoid valve, direct actuated, NC,
with electronic timer**

Orifice (DN): 1.5 mm

Pressure: 1...10 mbar

Valve body: Brass

Cycle time: t_{on} 5 sec./ t_{off} 45 min.



Massflow Controller

Type VP 209-001

**2-way proportional valve,
direct actuated, NC**

Port connection: Flange

Orifice (DN): 4.5 mm

Pressure: 0...3 bar

Valve body: Stainless steel (1.4301)



Small engines

Type MA 202-062

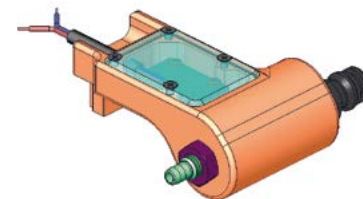
**2-way solenoid valve, direct actuated,
NC, with controller**

Port connection: Hose nozzle, G1/8

Orifice (DN): 3.2 mm

Pressure: 0...10 bar

Valve body: POM



Small engines

Type VA 204-708

**2-way Spider®-Valve, size 7 mm,
axial flow, direct actuated, NC**

Port connection: Cartridge/Hose nozzle

Orifice (DN): 0.7 mm

Pressure: 1...3 bar

Valve body: Stainless steel



Small engines

Type PA 104-001

**2-way Spider®-valve, size 7 mm,
direct actuated, NC**

Port connection: Cartridge

Orifice (DN): 0.6 – 1.0 mm

Pressure: 0...700 mbar

Valve body: Plastic



Small engines

Type PA 249-001 P

2-way tube-seat valve, NC

Port connection: G3/8, Hose nozzle

Orifice (DN): 3.0 – 4.0 mm

Pressure: 0...8 bar

Valve body: Plastic



Small engines

Type VA 204-901 V

**2-way Spider®-Valve,
direct actuated, NC**

Port connection: Cartridge

Orifice (DN): 0.6 – 1.0 mm

Pressure: 0...0.2 bar

Valve body: Stainless steel



9 mm

Vacuumgripper

Type MA 444-100

**2-way Spider®-Valve, size 21 mm,
direct actuated, NO**

Port connection: G3/8

Orifice (DN): 4 mm

Pressure: -1...0 bar

Valve body: Aluminium



Vacuum technology

Type VA 101-001

**2-way solenoid valve,
direct actuated, NO**

Port connection: M8x0,75

Orifice (DN): 2.2 mm

Pressure: Vacuum

Valve body: Stainless steel



Packing machines

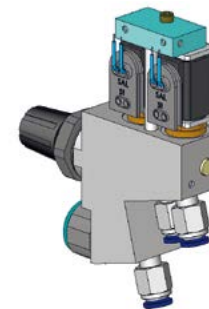
**2-fold manifold, with 3-way solenoid valves
direct actuated, NC, with pressure control**

Port connection: Push-in connector

Orifice (DN): 2.0 mm

Pressure: 1...5 bar

Valve body: Aluminium



Packing machines

Type MA 753-001

**2-fold manifold with 2-way and
3-way solenoid valves, direct actuated**

Port connection: G1/2

Orifice (DN): 6 and 2.2 mm

Pressure: 0...1 bar absolut

Valve body: Aluminium/Brass



Connector for solenoid valves

Type LL

Connector for solenoid valves

Voltage: 24 VDC

Indicator lamp: LED green

Protection circuit: Suppressor diodes

Valve connector type: DIN EN 175301-803-A



Connector cable for solenoid valves

Type LL

Pin-and-socket connector cable

Voltage: 12-24 VDC

Indicator lamp: LED green

Protection circuit: Suppressor diodes

Valve connector type: DIN EN 175301-803-BI



Connector cable for solenoid valves

Type LL

Pin-and-socket connector cable

Voltage: 230 VAC

Protection circuit: Varistor

Valve connector type: DIN EN 175301-803-B



Connector cable for general purpose

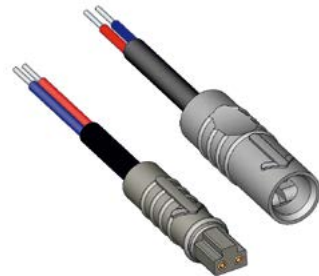
Pin-and-socket connector cable

Diameter: 8 mm

Voltage: max. 60 VDC

Current: max. 1A

Degree of protection: IP65 (EN 60529)



Automotive



High level of quality at competitive series prices is the classical challenge in this industry sector. We master this by adapting our products perfectly to technical and normative requirements and thereby make a valuable contribution to reliability and consequently to the increasing satisfaction of your customers.

APPLICATIONS

AUTOMOTIVE

Auxiliary heating

Type VA 206-001

**2-way solenoid valve,
direct actuated, NC**

Port connection: Hose nozzle

Orifice (DN): 0.6 mm

Pressure: -0.5...1.8 bar

Valve body: Stainless steel



Emission control

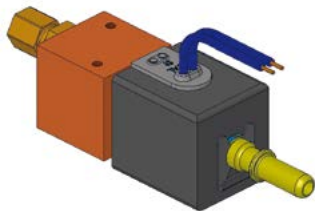
**2-way solenoid valve,
direct actuated, NO,
axial flow**

Port connection: Hose nozzle, M10x1

Orifice (DN): 2.5 mm

Pressure: 1...10 bar

Valve body: Stainless steel



Gas injection

Type VA 204-507

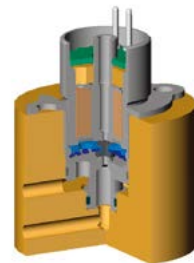
**Assembly with 3-way Spider®-Valve,
size 15 mm, direct actuated, NC**

Port connection: M5

Orifice (DN): 1.5 mm

Pressure: 0...6 bar

Valve body: Brass



Heating system

Type MA 202-007

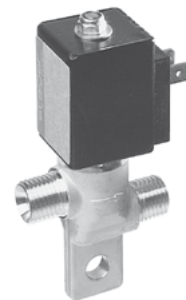
**2-way solenoid valve,
direct actuated, NC**

Port connection: M14x1.5

Orifice (DN): 3,5 mm

Pressure: 0...1 bar

Valve body: Aluminium



APPLICATIONS

AUTOMOTIVE

Heating system

Type PA 200-006

2-way cartridge valve, direct actuated, NC, adjustable stroke

Port connection: Customer specific

Orifice (DN): 1.6 mm

Pressure: 0...3 bar

Valve body: POM



A/C control

Type MA 203-009

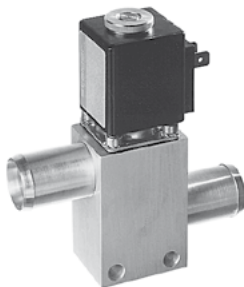
2-way solenoid valve, direct actuated, NC

Port connection: Hose nozzle

Orifice (DN): 26 mm

Pressure: 0...0.1 bar

Valve body: Aluminium



Fuel cells

Type VP 40

2-way Spider μ Prop[®], proportional valve, direct actuated, NC

Port connection: Cartridge

Orifice (DN): 4 mm

Pressure: to 14 bar

Valve body: Stainless steel



AdBlue[®] injection

Type VA 204-519

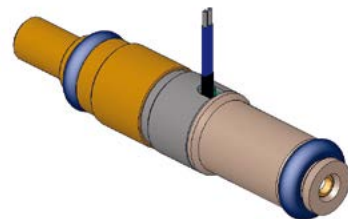
2-way Spider[®]-Valve, size 15 mm, direct actuated, NC

Port connection: Cartridge

Orifice (DN): 0.6 mm

Pressure: 1...6 mbar

Valve body: Stainless steel



Pneumatic suspension

Type MA 701-005

**2-fold manifold with 2-way valves,
direct actuated, NC**

Port connection: Push-in connector

Orifice (DN): 1.6 mm

Pressure: 0...10 bar

Valve body: Brass



Seat adjustment

Type PA 201-023

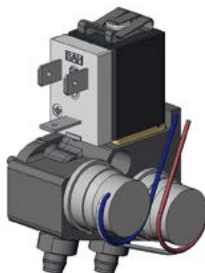
**2-way solenoid valve, direct actuated, NC,
with pressure switch**

Port connection: Hose nozzle

Orifice (DN): 1.3 mm

Pressure: -275...600 mbar

Valve body: POM



Seat adjustment

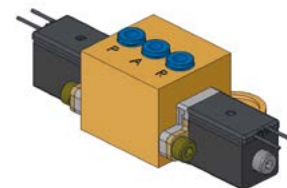
**3-way manifold valve block,
direct actuated, NC**

Port connection: Push-in connector

Orifice (DN): 1.0 mm

Pressure: 6...12 bar

Valve body: Plastic



Seat adjustment

Type PH 808-001

**5-fold manifold,
3-way lever actuated valves**

Port connection: Hose nozzle

Orifice (DN): 0.6 mm

Pressure: 2...10 bar

Valve body: POM



APPLICATIONS

Energy Systems



The effectiveness of an Energy System depends on perfect fuel dosage and lowest possible energy consumption of the system itself and its components. Our Technology enables us to offer you efficient and cost effective solutions!

Gas installations

Type PA 262-001

2-way solenoid valve, direct actuated, NC

Port connection: Customer specific

Orifice (DN): 3.5 mm

Pressure: 0...7 bar

Valve body: PVC



Gas installations

Type MA 202-047

2-way valve with emergency manual override, direct actuated, NC

Port connection: G1/4 left

Orifice (DN): 4 mm

Pressure: 0...2 bar

Valve body: Brass



Gas installations

Type MA 253-017

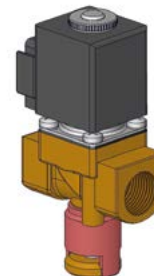
2-way solenoid valve, direct actuated, NC

Port connection: G1/2

Orifice (DN): 13 mm

Pressure: 2 bar

Valve body: Brass



Portable fuel cell

Type VA 204-716

2-way Spider®-Valve, size 7 mm, direct actuated, NC

Port connection: Cartridge

Orifice (DN): 0.5 mm

Pressure: 0...8 bar

Valve body: Stainless steel



Gas installations

Type MA 702-002

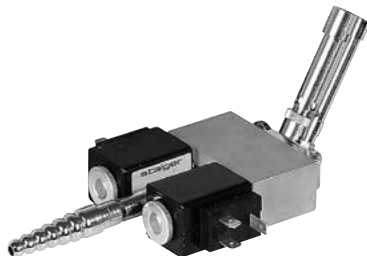
**2-way manifold valve block, 2-fold,
direct actuated, NC**

Port connection: Hose nozzle

Orifice (DN): 3.5 mm

Pressure: 0...50 mbar

Valve body: Brass



Gas installations

Type MA 753-002

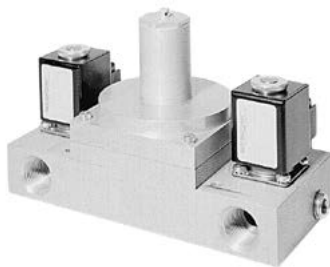
**2-fold 2-way manifold
with pressure control**

Port connection: G1/2

Orifice (DN): 13 mm

Pressure: 0...100 mbar

Valve body: Aluminium, anodized



Gas installations

Type MA 702-003

**2-way manifold valve block,
direct actuated, NC**

Port connection: M12x1

Orifice (DN): 3.5 mm

Pressure: 0...3 bar

Application: Gases according to DVGW worksheet G 260/I



Stationary fuel cell

Type VA 721

2-way solenoid valve, direct actuated, NC

Port connection: G1/8

Orifice (DN): 1.0 – 2.2 mm

Pressure: 0...12 bar

Valve body/internal parts: Stainless steel



Paper, Printing and Textile Industry



Accuracy, reliability, repeatability and media-resistance are always in demand when printing on different materials, such as paper and textiles. It is possible to fulfil these four key requirements by using the technology and products that we develop.

APPLICATIONS

PAPER, PRINTING & TEXTILE INDUSTRY

Paper manufacture

Type VA 204-013

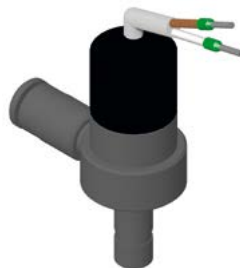
**2-way Spider®-Valve, size 15 mm,
direct actuated, NC**

Port connection: Push-in connector

Orifice (DN): 1.5 mm

Pressure: 0...2.5 bar

Valve body: Stainless steel



Paper manufacture

Type VA 704-501

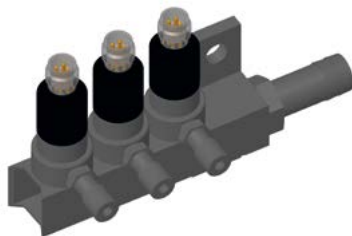
**Manifold with 2-way Spider®-Valves,
size 15 mm, direct actuated, NC**

Port connection: Push-in connector

Orifice (DN): 1.5 mm

Pressure: 1...5 bar

Valve body: Stainless steel



APPLICATIONS

PAPER, PRINTING & TEXTILE INDUSTRY

Pain mixer equipment

Type ME 633-003

**3-way valve, media separated,
direct actuated, diverting function,
with emergency manual override**

Port connection: G1/4

Orifice (DN): 4 mm

Pressure: 0...3 bar

Valve body: Brass



Ink-jet printer

Type VA 704-716 E

**4-fold manifold with 2-way Spider®-Valves,
size 7 mm, direct actuated, NC**

Port connection: Flange

Orifice (DN): 0.4 – 0.6 mm

Pressure: -0.5...8 bar

Valve body: Plastic/Stainless steel



APPLICATIONS

PAPER, PRINTING & TEXTILE INDUSTRY

Textile printing

Type VA 204-713

**2-way Spider®-Valve, size 7 mm,
direct actuated, NC, axial flow**

Port connection: Cartridge

Orifice (DN): 0.6 – 0.8 mm

Pressure: 0...5 bar

Valve body: Stainless steel



Textile machines

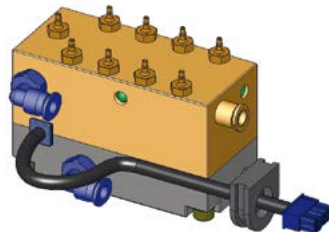
**9-fold manifold 3-way Spider®-Valves,
direct actuated, NC**

Port connection: Hose nozzle

Orifice (DN): 0.9/1.5 mm

Pressure: 0...3 bar

Valve body: Aluminium



Textile machines

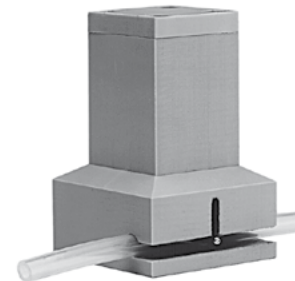
Type PB 207-002

Pinch valve, pneumatic controlled

Tube diameter: 14 mm

Pressure: 0...1 bar

Valve body: Polypropylene



APPLICATIONS

PAPER, PRINTING & TEXTILE INDUSTRY

- Spider®-Valves
- Spider µProp®
- Micro valves size 10 mm
- Cartridge valves
- Stainless steel valves
- Brass and aluminium valves
- Plastic valves
- Teflon valves
- Servo actuated valves
- Latching valves
- Gas valves
- Valves for water-taps
- Water guards
- Solenoids

Spider®-Valves

SOLENOID VALVES
SPIDER®-VALVES

→ Flat armature actuation

→ Seat principle, direct actuated

→ 2- and 3-way valves NC

→ Body and internal parts stainless steel



Type VA 204-7
7 mm



Type VA 204-5
15 mm



Type VA 204-1
21 mm

Application	Function	Type	Size	Orifice [mm]	Port size	Pressure [bar]
Neutral and mildly aggressive liquids, gases and vapors	2-way Spider®-Valve, direct actuated, NC	VA 204-1	21	1.0 to 4.0	Cartridge	0 to 10
		VA 204-5	15	0.5 to 2.0	Cartridge	0 to 10
		VA 204-7	7	0.3 to 1.0	Cartridge	0 to 10
	3-way Spider®-Valve, direct actuated, NC	VA 304-1	21	1.0 to 4.0	Cartridge	0 to 10
		VA 304-5	15	0.5 to 2.0	Cartridge	0 to 10
		VA 304-7	7	0.3 to 1.0	Cartridge	0 to 10

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

→ Further information about our Spider®-Valves can be found on p. 128.

P15 Spider μ Prop[®]

SOLENOID VALVES
SPIDER μ PROP[®]

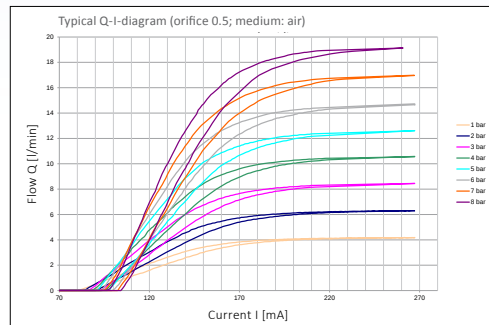
- Seat principle, direct actuated
- 2-way proportional solenoid valve, normally closed
- Flat plunger drive
- Frictionless movement
- High life cycles



Type VP 204-5
15 mm

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral liquids, gases and vapors	2-way Proportional-solenoid valve, NC	VP 204-506	0.5	Cartridge	0 to 10
		VP 204-503	1.0	Cartridge	0 to 10
		VP 204-502	1.5	Cartridge	0 to 8
		VP 204-505	2.2	Cartridge	0 to 2

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.



→ Further information about our Spider μ Prop[®] can be found on p. 130.

Micro valve size 10 mm

- Seat principle, direct solenoid actuation
- 2- and 3-way solenoid valves, NC and NO
- Manifold valves
- Grid dimension 10 mm width



Type PA 306

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral liquids, gases and vapors	2-way solenoid valve, direct actuated, NO	PA 106	0.6	Flange ISO	0 to 6
	2-way solenoid valve, direct actuated, NC	PA 206	0.6	Flange ISO	0 to 6
	3-way solenoid valve, direct actuated, NC	PA 306	0.6	Flange ISO	0 to 6
	3-way solenoid valve, direct actuated, NO	PA 406	0.6	Flange ISO	0 to 6

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

→ Further information about our Micro valves can be found on p. 132.

Cartridge valves

- Seat principle, direct solenoid actuation
- 2- and 3-way solenoid valves, NC

- Without body
- Flange and screw-in types



Type EA 200



Type EA 201



Type EA 203



Type EA 303

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral liquids, gases and vapors	2-way solenoid valve direct actuated, NC	EA 200	0.8 to 2.0	Flange	0 to 8
		EA 201	1.0 to 2.2	Flange	0 to 12
		EA 201	1.0 to 2.2	M14x0,75	0 to 12
		EA 202	1.0 to 5.0	M12x0,75	0 to 35
		EA 202	1.0 to 3.5	M14x0,75	0 to 35
		EA 203	1.0 to 6.0	M20x1	0 to 50
		EA 203	1.0 to 6.0	M24x1	0 to 50
	3-way solenoid valve direct actuated, NC	EA 301	1.0 to 2.2	Flange	0 to 10
		EA 301	1.0 to 2.2	M14x0,75	0 to 10
		EA 302	1.0 to 2.2	M14x0,75	0 to 12
		EA 303	1.0 to 3.5	M20x1	0 to 16
		EA 303	1.0 to 3.5	M24x1	0 to 16

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

Stainless steel valves

SOLENOID VALVES STAINLESS STEEL VALVES

- Seat principle, direct solenoid actuation
- 2- and 3-way solenoid valves, NC
- Manifold valves
- Internal parts stainless steel



Type VA 281



Type VA 321



Type VA 721



Type VA 210

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral and mildly aggressive liquids, gases and vapors	2-way solenoid valve, direct actuated, NC	VA 210	0.8 to 2.0	M5	0 to 8
		VA 211	1.0 to 2.2	M5	0 to 12
		VA 221	1.0 to 2.2	G1/8	0 to 12
		VA 281	1.0 to 2.2	1/4"-28	0 to 12
		VA 291	1.0 to 2.2	1/8"-NPT	0 to 12
	3-way solenoid valve, direct actuated, NC	VA 311	1.0 to 2.2	M5	0 to 10
		VA 321	1.0 to 2.2	G1/8	0 to 10
		VA 381	1.0 to 2.2	1/4"-28	0 to 10
		VA 391	1.0 to 2.2	1/8"-NPT	0 to 10
	2-way solenoid valve, direct actuated, NC, manifold valves	VA 721	1.0 to 2.2	G1/8	0 to 12

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

Brass and aluminium valves

- Seat principle, direct solenoid actuation
- 2-way solenoid valves, NC and NO

- Body material brass and aluminium
- Internal parts stainless steel



Type MA 233



Type MA 232



Type MA 210



Type MA 211

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral liquids, gases and vapors	2-way solenoid valve, direct actuated, NO	MA 122	2.0 to 3.5	G1/8	0 to 10
		MA 132	10.0	G1/4	0 to 0.5
		MA 132	2.0 to 3.5	G1/4	0 to 10
		MA 142	10.0	G3/8	0 to 0.5
		MA 152	10.0	G1/2	0 to 0.5
	2-way solenoid valve, direct actuated, NC	MA 200	0.8 to 2.0	Flange	0 to 8
		MA 201	1.0 to 2.2	Flange	0 to 12
		MA 202	2.0 to 3.5	Nozzle OD6	0 to 15
		MA 210	0.8 to 2.0	M5	0 to 8
		MA 211	1.0 to 2.2	M5	0 to 12
		MA 211	1.5	M5	0 to 8
		MA 221	1.0 to 2.2	G1/8	0 to 12
		MA 222	2.0 to 3.5	G1/8	0 to 15
		MA 223	4.0	G1/8	0 to 7
		MA 232	2.0 to 5.0	G1/4	0 to 15
		MA 232	10.0	G1/4	0 to 0.3
		MA 233	1.0 to 6.0	G1/4	0 to 50

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

Brass and aluminium valves

- Seat principle, direct solenoid actuation
- 2- and 3-way solenoid valves, NC

- Manifold valves
- Body material brass and aluminium



Type MA 211



Type MA 302



Type MA 323



Type MA 710

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral liquids, gases and vapors	2-way solenoid valve, direct actuated, NC	MA 242	3.0 to 5.0	G3/8	0 to 6
		MA 242	8.0 to 10.0	G3/8	0 to 0.6
		MA 252	10.0	G1/2	0 to 0.3
	3-way solenoid valve, direct actuated, NC	MA 301	1.0 to 2.2	Flange	0 to 10
		MA 302	1.6 to 2.7	Nozzle OD5	0 to 10
		MA 302	1.6 to 2.7	Flange	0 to 10
	3-way solenoid valve, direct actuated, NC	MA 311	1.0 to 2.2	M5	0 to 10
		MA 311	1.5	M5	0 to 8
		MA 321	1.0 to 2.2	G1/8	0 to 10
		MA 322	1.0 to 2.2	G1/8	0 to 12
		MA 323	2.5	G1/8	0 to 7
		MA 333	1.0 to 3.0	G1/4	0 to 16
	2-way solenoid valve, direct actuated, NC, manifold valves	MA 710	0.8 to 1.0	M5	0 to 8
		MA 710	1.2 to 2.0	M5	0 to 5
		MA 721	1.2 to 2.2	G1/8	0 to 12

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

Plastic valves

SOLENOID VALVES PLASTIC VALVES

- Seat principle, direct solenoid actuation
- 2- and 3-way solenoid valves, NC

- With or without media separation
- Body material brass and aluminium
- Body material POM, PVDF and PPO



Type PE 202



Type PA 301



Type PA 200



Type PA 201

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral liquids, gases and vapors	2-way solenoid valve, direct actuated, NC	PA 200	0.8 to 2.0	Flange	0 to 8
		PA 201	2.0	Nozzle OD6	0 to 7
		PA 202	1.0 to 4.0	Nozzle OD7	0 to 10
	3-way solenoid valve, direct actuated, NC	PA 300	0.8	Flange	0 to 8
		PA 301	2.0	Nozzle OD6	0 to 4
		PA 301	0.8 to 2.5	Flange	0 to 8
Neutral and aggressive liquids, gases and vapors	2-way solenoid valve, direct actuated, NC, with diaphragm separation	PE 202	1.0 to 4.0	Nozzle OD6	0 to 1
		PE 202	1.0 to 4.0	Nozzle OD7	0 to 1
		PE 203	1.0 to 4.0	Nozzle OD7	0 to 1

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

Teflon valves

→ Media separated, direct actuated
→ 2-way valves, NC

→ 3-way switching function
→ Bellows separation



Type QE 202



Type QE 203



Type QE 622



Type QE 633

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral and aggressive liquids, gases and vapors. The materials are inherently safe.	2-way solenoid valve, direct actuated, NC, with bellows separation	QE 202	1.0 to 4.0	1/4"-NPT	0 to 1
		QE 203	1	Nozzle OD6	0 to 1
		QE 212	1.0 to 2.0	M5	0 to 1
		QE 222	1.0 to 4.0	G1/8	0 to 1
		QE 232	1.0 to 4.0	G1/4	0 to 1
		QE 282	1.0 to 2.0	1/4"-28	0 to 1
		QE 292	1.0 to 2.0	1/8"-NPT	0 to 1
	2-way solenoid valve, switching function, with bellows separation	QE 603	2.0 to 5.0	1/4"-NPT	0 to 1
		QE 612	1.0 to 2.0	M5	0 to 1
		QE 622	1.0 to 2.0	G1/8	0 to 1
		QE 623	3.0 to 5.0	G1/8	0 to 1
		QE 633	2.0 to 5.0	G1/4	0 to 1
		QE 682	1.0 to 2.0	1/4"-28	0 to 1
		QE 692	1.0 to 2.0	1/8"-NPT	0 to 1
		QE 693	3.0 to 5.0	1/8"-NPT	0 to 1

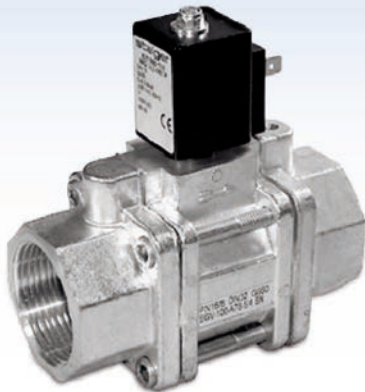
All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

Servo actuated valves

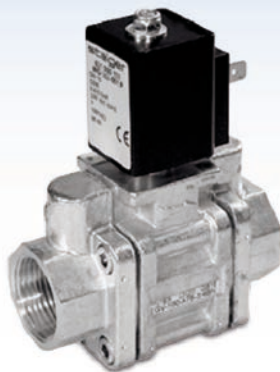
- Servo actuated diaphragm principle, direct actuated
- 2-way valves NC and NO
- Body material brass
- Internal parts stainless steel
- Drinking water admittance on enquiry



Type MG 232



Type MG 102



Type MG 162

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral liquids, gases and vapors	2-way solenoid valve, servo actuated, NO	MG 102	32	G1 1/4	0.5 to 10
		MG 102	40	G1 1/2	0.5 to 10
		MG 102	50	G2	0.5 to 10
		MG 152	15	G1/2	0.5 to 10
		MG 162	20	G3/4	0.5 to 10
		MG 172	25	G1	0.5 to 10
	2-way solenoid valve, servo actuated, NC	MG 202	32	G1 1/4	0.5 to 10
		MG 202	40	G1 1/2	0.5 to 10
		MG 202	50	G2	0.5 to 10
		MG 232	10	G1/4	0.5 to 10
		MG 242	10	G3/8	0.5 to 10
		MG 252	10	G1/2	0.5 to 10
		MG 252	15	G1/2	0.5 to 10
		MG 262	20	G3/4	0.5 to 10
		MG 272	25	G1	0.5 to 10
	2-way solenoid valve, force actuated, NC	MZ 242	10	G3/8	0 to 4
		MZ 252	10	G1/2	0 to 4

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

Latching valves

- Impulse solenoid actuated
- 2- and 3-way solenoid valves, latching function
- Low current
- Body material plastic and brass



Type MI 230



Type MI 210



Type PI 200

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral liquids, gases and vapors	2-way solenoid latching valve, direct actuated	MI 210	1.0	M5	0 to 8
		PI 200	0.8 to 1.6	Flange	0 to 8
	2-way solenoid latching valve, servo actuated	MI 230	8.0	G1/4	0.5 to 8
		MI 240	8.0	G3/8	0.5 to 8
	3-way solenoid latching valve, direct actuated	PI 300	0.8	Flange	0 to 8

All values were determined under laboratory conditions and have to be verified by the customer in specific application.

Gas valves

SOLENOID VALVES GAS VALVES

- Seat principle, direct solenoid actuation
- 2-way function NC

- Body material brass
- Internal parts stainless steel



Type MA 243



Type MA 232



Type MA 222

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]	CE-Number
Gases according to DVGW worksheet G 260/I Approval according to EN 161	2-way solenoid valve, direct actuated, NC	MA 202	3.5	M12x1	0 to 3	CE-0085AN0079
		MA 222	3.5	Rp1/8	0 to 3	CE-0085AN0078
		MA 232	3.5	Rp1/4	0 to 3	CE-0085AN0078
		MA 233	13.0	Rp1/4 G1/4	0 to 0.2	CE-0085AN0076
		MA 243	13.0	Rp3/8 G3/8	0 to 0.2	CE-0085AN0076
		MA 253	13.0	Rp1/2 G1/2	0 to 0.2	CE-0085AN0076

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

Valves for water-taps

- Servo actuated diaphragm principle, direct actuated
- 2-way valves NC
- Latching function
- Thread, flange and cartridge types



Type PI 200



Type MI 230

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral liquids, water	2-way solenoid valve, direct actuated, latching function	MI 210	1.0	M5	0 to 8
		PI 200	0.8 to 1.6 mm	Flange	0 to 8
	2-way solenoid valve, servo actuated, latching function	MI 230	8	G1/4	0.5 to 8
		MI 240	8	G3/8	0.5 to 8
	2-way solenoid valve, servo actuated, latching function	PI 209	7	Cartridge	0.3 to 10

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

→ Further information about our innovations can be found on p. 20.

Water guards

- 2-way valve, servo actuated, NC
- Electronic control unit with leak detector
- Force actuated by leak detector
- Audible alarm
- Drinking water admittance on enquiry



Type MW 252



Type MW 202



Type MW 262

Application	Function	Type	Orifice [mm]	Port size	Pressure [bar]
Neutral, electrical conducting liquids, water	2-way solenoid valve, servo actuated, NC	MW 202	32	G1 1/4	0.5 to 10
		MW 202	40	G1 1/2	0.5 to 10
		MW 202	50	G2	0.5 to 10
		MW 252	15	G1/2	0.5 to 10
		MW 262	10	G3/4	0.5 to 10
		MW 262	20	G3/4	0.5 to 10
		MW 272	25	G1	0.5 to 10

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

→ Further information about our Water guards can be found on p. 134.

Solenoids

- Steel encased solenoid
- Pin-connector with integrated surge protection

- Modular design for highest flexibility
- High degree of protection with hotmelt overmold



Type 15

Type 20

Type 27

Type 32

Application	Size	Voltage	Nom. power consumption	Circuit	Electric Port
Solenoid valve size 15 mm	Type 15	DC: 24 V, 12 V, 6 V	1 W, 2.5 W	–	SAB, SAL, SAK
Solenoid valve size 20 mm	Type 20	AC (50 oder 60 Hz): 230 V, 115 V, 42 V, 24 V, 12 V DC: 24 V, 12 V, 6 V	5 VA, 4 W, 5 W	V, X, Y, Z	SAH, SAL, SAV, SAW, SAZ
Solenoid valve size 27 mm	Type 27	AC (50 oder 60 Hz): 230 V, 115 V, 42 V, 24 V, 12 V DC: 24 V, 12 V, 6 V	11 VA, 5 W, 8 W	V, X, Y, Z	SAH, SAL, SAV, SAW, SAZ
Solenoid valve size 32 mm	Type 32	AC (50 oder 60 Hz): 230 V, 115 V, 42 V, 24 V, 12 V DC: 24 V, 12 V, 6 V	15 VA, 8 W, 11 W	V, X, Y, Z	SAH, SAL, SAV, SAW, SAZ

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

→ Further information about our Solenoids can be found on p. 136.



*Staiger is the inventor of
light emitting seals and sockets!*

VALVE ELECTRONICS

Valve Electronic Accessories

- Light emitting seal
- Light emitting socket

Light emitting seal

- Lights – seals – protects
- Flat seal with integrated circuit
- LED and transient voltage suppression
- Sealing material PUR



Type LD-SAB



Type LD-SAK



Type LD-SAH



Type LD-SAW



Type LD-SAD

Application	Function	Type	Circuit	Voltage	Solenoid valve power consumption max.
Solenoid valves with pin-connector DIN EN 175301-803	seal and light	LD-SAW-R	LED	24 V / 48 V / 115 V / 230 V	100 W
	seal, light and protection	LD-SAW-B	LED and Zener diodes	24 V	15 W
		LD-SAW-S	LED and Suppressor diodes	24 V / 48 V / 115 V	50 W
Size B	seal and light	LD-SAD-R	LED	24 V / 48 V / 115 V / 230 V	100 W
	seal, light and protection	LD-SAD-B	LED and Zener diodes	24 V	15 W
Size BI	seal and light	LD-SAH-R	LED	24 V / 48 V / 115 V / 230 V	100 W
	seal, light and protection	LD-SAH-B	LED and Zener diodes	24 V	15 W
Size C	seal and light	LD-SAB-R	LED	24 V / 48 V / 115 V / 230 V	100 W
	seal, light and protection	LD-SAB-B	LED and Zener diodes	24 V	15 W
Size CI	seal and light	LD-SAK-R	LED	24 V / 48 V / 115 V / 230 V	15 W
	seal, light and protection	LD-SAK-B	LED and Zener diodes	24 V	15 W

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

Light emitting socket

- Socket with moulded cable (3 x 0.75 mm²)
- Integrated seal and screw
- LED
- Transient voltage protection
- Cable lengths: 1.5 m, 3 m or 5 m



Application	Function	Type	Circuit	Voltage	Solenoid valve power consumption max.
Solenoid valves with pin-connector DIN EN 175301-803					
Size A	cable socket	LL-SAW-O	–	max. 250 V	100 W
	cable socket, LED and protection	LL-SAW-S	LED and suppressor diodes	24 V	50 W
		LL-SAW-V	LED and varistor	230 V	50 W
Size B	cable socket	LL-SAD-O	–	max. 250 V	100 W
	cable socket, LED and protection	LL-SAD-S	LED and suppressor diodes	24 V	50 W
		LL-SAD-V	LED and varistor	230 V	50 W
Size BI	cable socket	LL-SAH-O	–	max. 250 V	100 W
	cable socket, LED and protection	LL-SAH-S	LED and suppressor diodes	24 V	50 W
		LL-SAH-V	LED and varistor	230 V	50 W
Size C	cable socket	LL-SAB-O	LED	max. 250 V	100 W
	cable socket, LED and protection	LL-SAB-Z	LED and Zener diodes	24 V	15 W

All values were determined under laboratory conditions and have to be verified by the customer for its specific purpose.

Useful and Worth Knowing

- Valve characteristics
- Type designation code of solenoid valves
- Principles of operation

Pressure Differential [bar]

The maximum value of the pressure differential is the maximum differential pressure which can be opened by the valve. Valves for alternating current have higher values than direct current valves. The minimum value of the pressure difference is the smallest differential pressure by which the valve still reliably operates.

Flow rate [l/min] and Kv-Value [m³/h]

The flow coefficient kv is a specific value for valves. It corresponds to the flow rate of water (in liter per minute) through a valve with a differential pressure of 1 bar and a water temperature of 5°C – 30°C. The flow coefficient Kv corresponds to the flow coefficient kv using m³/h as unit.

Conversion factor: 1 [m³/h] = 16,7 [l/min.] or 0,06 [m³/h] = 1 [l/min.]

Orifice [mm]

The orifice is indicated as nominal equivalent orifice (DN). This is the diameter of the smallest cross section of flow, measured in [mm], that the media of the valve flows through.

Response Time

The response time is expressed as the maximum number of actuation per second. The switch on time is the time between the closing of the current flow and final impact of the plunger in its end position. The switch off time is the time between the opening of the current flow and the arrival of the plunger in its resting position.

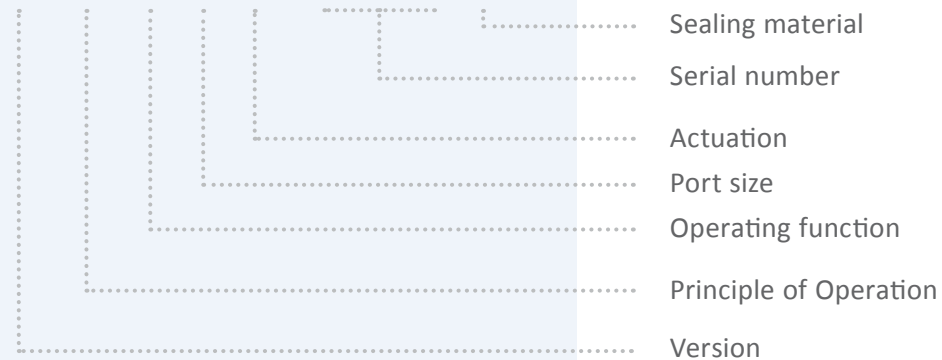
Static Pressure [bar]

The static pressure is the maximum pressure that the connections of the valve can withstand.

Viscosity of the Media [mm²/s], [°E]

The viscosity is the flow resistance of a media determined through the internal friction of the valve. The dynamic viscosity is listed in our data sheets, which are expressed in the units of mm²/s (Centistroke) and °E (°Engler).

M A 2 1 1 - 001 P



M **A** 2 1 1 - 001 P

Version

B	Manifolds with Bus control
C	Manifolds with electrical distributor
E	Cartridge valve without housing
M	Body material non-ferrous metal (brass, aluminum, red bronze, etc.)
P	Body material plastic
Q	Body material fluoro-plastic (e.g. Teflon®)
V	Body material stainless steel

Principle of Operation

A	Seat principle, direct solenoid actuation
B	Pinch valve principle
C	Non-return valve
E	Diaphragm principle
G	Servo actuated diaphragm principle, same medium, direct solenoid actuation
H	Mechanically actuated

M A **2** 1 1 - 001 P

Principle of Operation

I	Impulse solenoid actuated (latching valve)
L	Actuator
N	Coil control pushing principle, direct solenoid actuation
P	Proportional principle
W	Water guard (watcher)
X	Special device
Z	Force actuated

Operating function

1	2-way function NO (normally opened)
2	2-way function NC (normally closed)
3	3-way function NC (normally closed)
4	3-way function NO (normally opened)
5	4- and 5-way function
6	3-way switching function
7	2-way function, multiple
8	3-way function, multiple
9	4- and 5-way function, multiple
0	Special function

M A 2 **1 1** - 001 P

Port size

1	M5 thread
2	G1/8 thread
3	G1/4 thread
4	G3/8 thread
5	G1/2 thread
6	G3/4 thread
7	G1 thread
8	G1/4" thread
9	1/8"-NPT thread
0	Special connection (e.g. flange, hose-barb, other threads, ...)

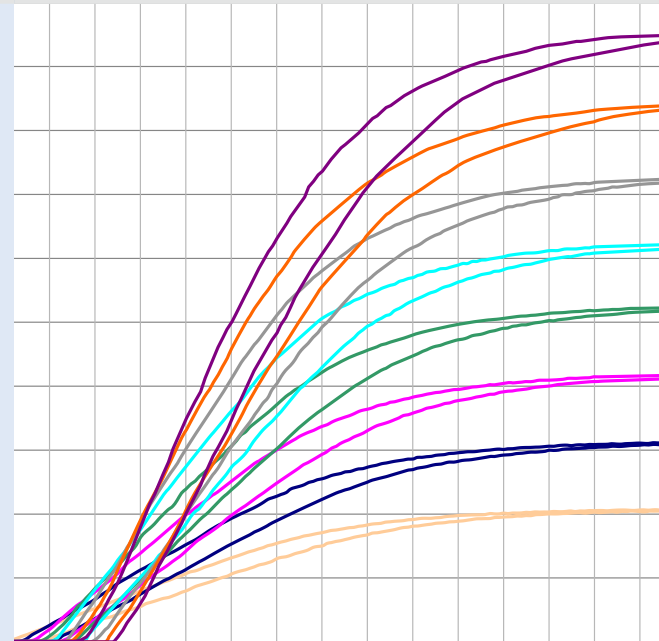
Actuation

0	15mm solenoid actuation
1	20mm solenoid actuation
2	27mm solenoid actuation
3	32mm solenoid actuation
4	Flat armature actuation
5	-
6	10mm solenoid actuation
7	Pneumatic actuation
8	Mechanical actuation
9	Special actuation

M A 2 1 1 - 001 **P**

Sealing material

E	Ethylene Propylene EPDM Nitrile	-30°C to +130°C	Hot water, steam, detergents and other oil- and fat-free medium
P	NBR/Perbunan®	-10°C to +90°C	Water, pressurized air, natural gas, gasoline, LP gas, hydraulic oil, incl. similar neutral medium
Q	Fluorosilicone MFQ	-55°C to +175°C	Fuels, mineral oils and glycol-based brake fluids
R	Ruby/Sapphire	-40°C to +200°C	Hot oils, steam, carbon-based liquids and similar medium
S	Silicone MVQ	-60°C to +200°C	Oxygen, ozone, water up to 100°C and carbon-based liquids
T	Polytetrafluorethylene, PTFE (Teflon®)	<-80°C to +260°C	Aggressive liquids, gases, steam; inherently safe
V	Fluororubber, FPM (Viton®)	-10°C to +150°C	Heated air, hot oils, solvents and medium not suitable for EPDM
Z	Fluororubber (Kalrez®, Simriz®)	-20°C to +150°C	Polarized and organic solvents, inorganic and organic acids, lye, chlorine, metallic halogen solutions, etc.



Spider®-Valves

Spider μ Prop®

Micro valves size 10 mm

Water guards

Solenoid coils

Principles of operation
in general

Functional Principle

Instead of having a plunger which moves through a coil, Spider®-Valves have a flat armature that is pulled against the magnetic yoke in the energized position. The flat armature is fastened together with a leaf spring that presses the integrated sealing element against the valve seat in the de-energized position.

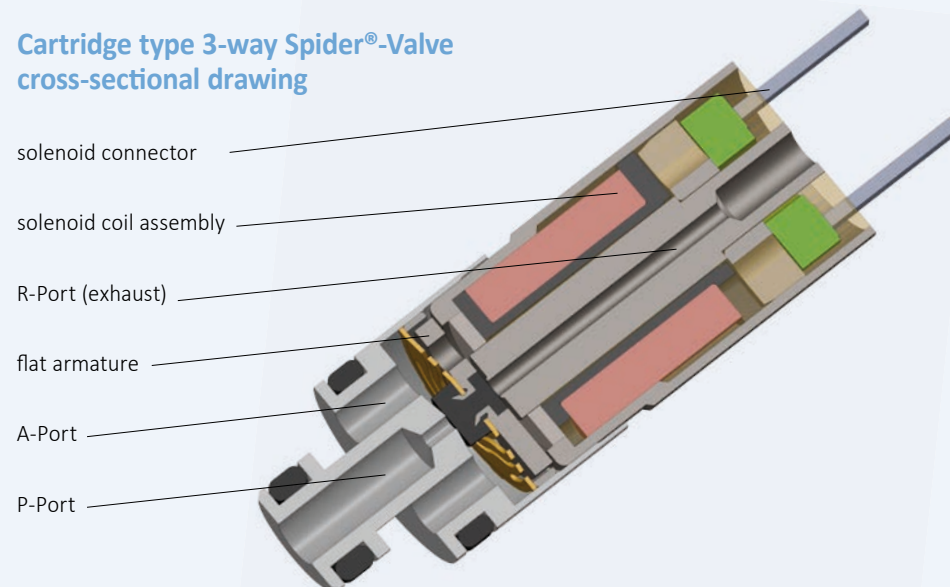
Flat armature valves are distinguished because of their virtually frictionless movement throughout very high cycle life (depending upon application $> 10^9$) and, due to the very low mass of the armature, through switching times in the millisecond (ms) range. Therefore, they are applicable as quasi-proportional valves in that they can be driven with

current pulses. The response time in switching can be varied as desired to reach variable flow rates (so called pulse width modulation).

Characteristics

- Frictionless movement
- High cycle life
- Fast response times
- Small size

Cartridge type 3-way Spider®-Valve cross-sectional drawing



Functional Principle

Instead of having a plunger which moves within a coil, this valves have a flat armature that moves between the seat and the solenoid. The flat armature is assembled together with a flat spring which presses the integrated sealing element against the valve seat in the de-energized position.

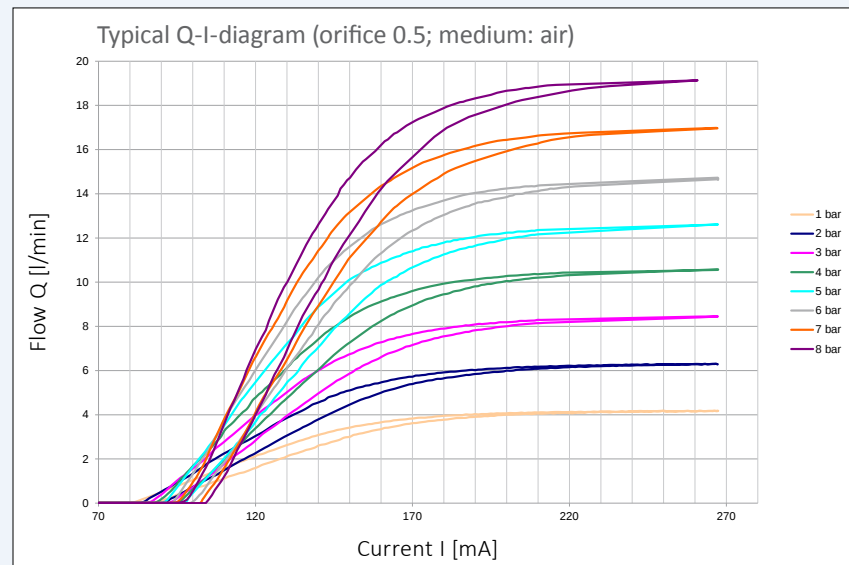
Flat armature valves distinguish themselves by frictionless movement and very high life cycles (depending upon application > 10⁹).

The Spider μ Prop[®] are real proportional valves in which the armature stroke and thus the flow rate can be varied by the applied coil current.

Characteristics

- 2-way-proportional-valve NC
- Seat principle, direct actuated
- Frictionless movement
- High durability
- Low response time
- Small size

Product example



Functional Principle and design

The new compact 10 mm Valve range is based on a modular and flexible system. The basis is a cartridge valve which can be integrated into customer-specific subbases or standard valve bodies out of plastic, ALU, stainless steel or similar.



ISO flange connection

The flange connection with integrated flat seal is executed with the ISO norm connection diagram.

A great selection of electrical connections is also available.

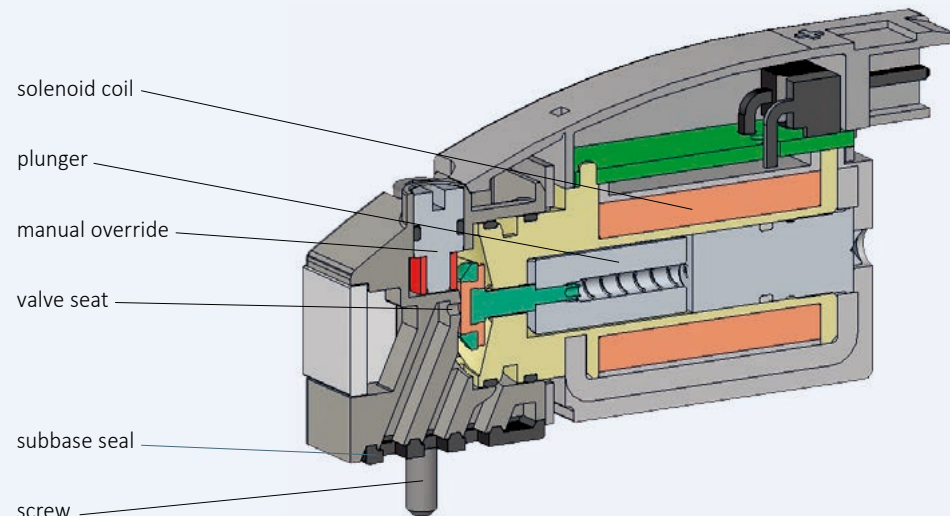
Model variety

- Cartridge valve in 2- and 3-way, NC and NO
- Stand alone valve in 2- and 3-way, NC and NO
- Isolation valves
- Accessories, mounting plates
- Customer specific mounting plates

Characteristics

- Cartridge based valve directly insertable into mounting plates
- High cycle life
- Just one seal and spring inside
- Designed as a flexible cid
- Flange connection ISO
- Multitude of electrical connection
- With Cartridge version coil is rotatable

Section view of 3-way Micro Valve size 10



Application

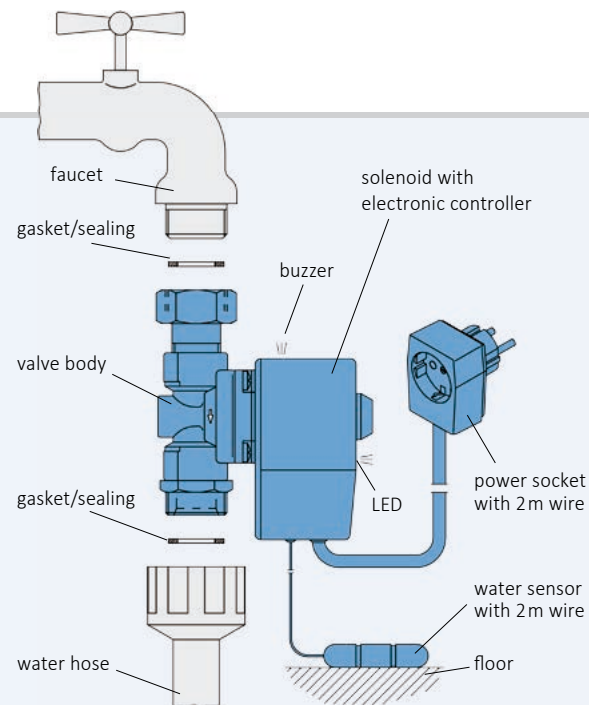
Solenoid valve system for automatic monitoring the leaks of water supply pipes and tubes. To be used in household and laboratory equipment.

Installation

Fully automatic monitoring can be built in to the supply pipes of a water source. The sensor lays on the floor and is connected with the control electronics through a cable. The solenoid coil and control electronics are built in to a plastic housing. The voltage supply occurs over a network cable with an adapter connector.

Characteristics

- Reduces the usage of electricity by sinking the electronic holding current
- A fixed setting within the inner parts of the valve are hindered through an automatic, daily valve closing impulse(optional also without closing impulse).
- Normal widths from DN10 to DN50
- Fittings G1/2 to G2
- Piezo alarm system
- LED indicator of operation
- Drinking water admittance on enquiry

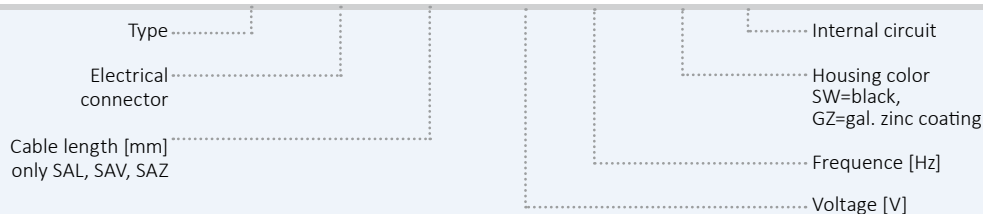


Function

Upon energizing, the control electronics opens the solenoid valve. The sensor can monitor a water film of approximately 0.5 mm and sends a signal to the electronics. The solenoid valve is closed and an audible alarm signal is triggered. This condition will be reset by interrupting the power supply.

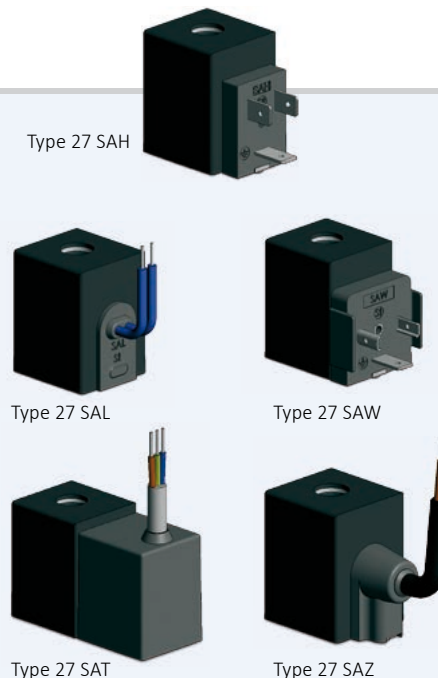
Order code for Solenoid coils

15 SAK 00 - 24/00 SW X



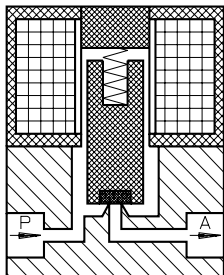
The solenoids used for Staiger valves are built as steel encased electro-magnets. The magnetic housings are manufactured as patented, folded metal stampings. A high temperature resistant plastic coil carries the windings. The coil is wrapped in isolating tape. An electrical connector is also integrated into the design. These components are assembled in a „snap together“ process, resulting in compact sub-assembly. This sub-assembly is installed into the metal solenoid housing which

builds the magnetic yoke. Through the modular design the highest flexibility is realized. In addition, the construction permits electrical circuits for e.g. surge protection to be built directly into the magnetic coil. For yet higher performance and protection the complete solenoid can be encapsulated with plastic; e.g. type Macromelt“. Hereby protection degrees can be realized up to IP68.



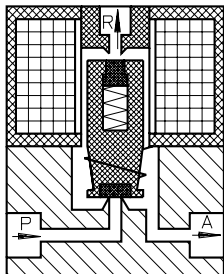
Electrical connectors

- SAB** Two-pole pin connector according to DIN EN 175301-803, C
- SAH** Three-pole pin connector according to DIN EN 175301-803, BI (industry)
- SAK** Three-pole pin connector according to DIN EN 175301-803, CI (industry)
- SAL** Two-pole pin lead wires, standard length 400mm
- SAP** Two-pole pin connector for soldering or plugging into e. g. PC boards
- SAT** Three-pole cable, electronic timer inside
- SAV** Three-pole cable with standard lengths of 500mm and 1000mm (3x0,75sq.mm)
- SAW** Three-pole pin connector according to DIN EN 175301-803, A
- SAZ** Two-pole cable with standard lengths of 500mm and 1000mm (2x0,75sq.mm)



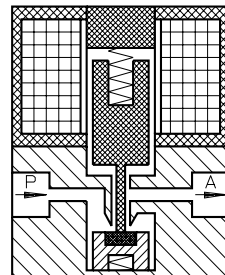
**2-way solenoid valve, direct actuated,
NC (normally closed)**

In the resting position a spring pushes the plunger with seal against the valve seat. The media hereby supports the sealing action. Upon energizing the solenoid, the plunger is pulled away from the valve seat through magnetic energy and thereby opened. The media can flow uninhibited from P to A. Upon de-energizing the solenoid, a spring pushes the plunger against the valve seat and closes the valve.



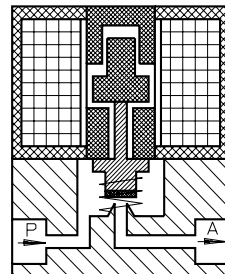
**3-way solenoid valve, direct actuated,
NC (normally closed)**

In the resting position a spring pushes the plunger against valve seat P, and exhaust A is connected with R. Upon energizing the solenoid, the plunger is pulled against seat R through magnetic energy and thereby closed. The connection P to A is thus opened. The media flows along the plunger. Upon de-energizing the solenoid, a spring pushes the plunger back into the resting position again.



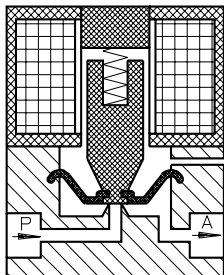
**2-way solenoid valve, direct actuated,
NO (normally open)**

In the resting position a spring pushes the plunger against a sealing element. The valve is open. Upon energizing the solenoid, the plunger is pulled against the upper spring force through magnetic energy. Thereby the lower spring presses the sealing element against the valve seat and closes the valve. The media supports the sealing action. Upon de-energizing the solenoid, the upper spring presses the plunger and sealing element downward, and the valve is opened.



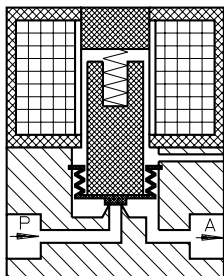
**2-way solenoid valve, direct actuated,
NO (normally open)**

In the resting position a spring pushes the sealing element against the plunger. The valve is open. Upon energizing the solenoid, the plunger is pulled through magnetic energy. The plunger presses thereby the sealing element against the valve seat. The valve is then closed. The media supports the sealing action. Upon de-energizing the solenoid, a spring presses the sealing element including plunger upwards and the valve is then opened.



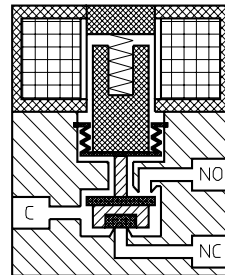
**2-way solenoid valve, direct actuated,
with diaphragm separation, NC (normally closed)**

In the resting position a spring presses the plunger including diaphragm against the valve seat. Upon energizing the solenoid, the plunger and diaphragm are pulled away from the valve seat through magnetic energy. The valve is thereby opened. Upon de-energizing the solenoid, a spring presses the plunger with diaphragm against the valve seat and the valve is closed. The diaphragm separates the media from the inner solenoid components.



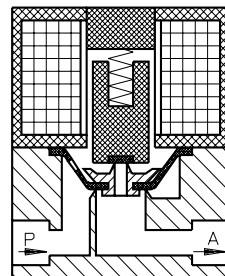
**2-way solenoid valve, direct actuated,
with bellow separation, NC (normally closed)**

In the resting position a spring presses the plunger including bellow against the valve seat. Upon energizing the solenoid, the plunger and bellow are pulled away from the valve seat through magnetic energy. The valve is thereby opened. Upon de-energizing the solenoid, a spring presses the plunger with bellow against the valve seat and the valve is closed. The bellow separates the media from the internal solenoid components.



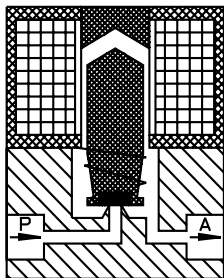
**3-way solenoid valve, direct actuated,
with bellow separation, universal function**

In the resting position a spring pushes the plunger including sealing element against the NC valve seat and seals it shut. The C port is connected with the NO port. Upon energizing the solenoid, the plunger with sealing element are pulled against the spring force through magnetic energy. Hereby is port C connected with port NC, and port NO is closed. Upon de-energizing the solenoid, the resting position is assumed again. The bellows separates the media from the inner solenoid components.



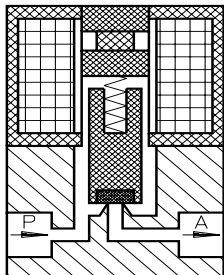
2-way solenoid valve, servo actuated, NC (normally closed)

In the resting position a spring presses the plunger including sealing element against the servo valve seat located in the diaphragm. The valve is closed. Upon energizing the solenoid, the plunger is pulled against the spring force through the magnetic energy and the servo orifice opens. The pressure relieved diaphragm is lifted upwards by the pressure of the media and the main valve seat opens. Upon de-energizing the solenoid, the spring pushes the plunger back against the servo valve seat. Hereby pressure accumulates behind the diaphragm which presses the diaphragm against the main valve seat. The valve is thus closed.



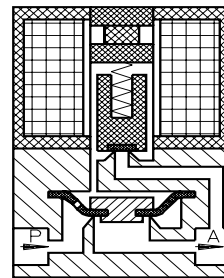
**2-way proportional solenoid valve, direct actuated,
NC (normally closed)**

In the resting position a spring pushes the plunger including sealing element against the valve seat. A proportional magnet field builds within the current when the solenoid is energized. The plunger is lifted away from the valve seat according to the current and thereby the equivalent through flow of the valve is proportional to the changing current. Upon de-energizing the solenoid, the spring pushes the plunger with sealing element against the valve seat and the valve is thereby closed.



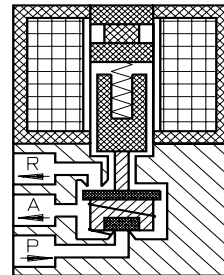
2-way solenoid valve, latching function

The valve has two stable positions of resting. In the spring resting position a spring pushes the plunger with sealing element against the valve seat. Through a short current impulse the plunger is lifted up from the valve seat and goes into the magnetic resting position; the built-in permanent magnet supports hereby the opening. The media can flow from P to A. A short current impulse in the reversed polarity pushes the plunger back into the spring resting position. The valve is closed. The media supports the sealing action.



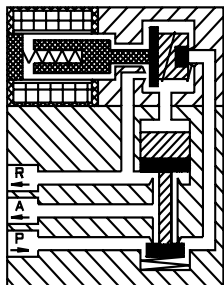
2-way solenoid valve, servo actuated, latching function

The valve has two stable resting positions. In the spring resting position a spring pushes the plunger with sealing element against the servo valve seat; the valve is closed. A short current impulse pulls the plunger away from valve seat and goes into the magnetic resting position. The pressure relieved diaphragm is lifted up by the pressure of the media; the valve is open. Through a short current impulse in the reversed polarity the plunger is pushed away and goes back into the spring resting position. The pressure rises behind the diaphragm and presses the diaphragm against the valve seat and the valve is closed.



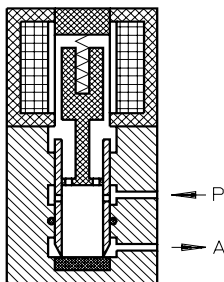
3-way solenoid valve, latching function

The valve has two stable resting positions. In the spring resting position a spring pushes the plunger with sealing element against the valve seat P. Exhaust A is connected with R. Through a short current impulse the plunger is pulled against the seat R and goes into the magnetic resting position. A built-in permanent magnet supports thereby the opening. The media flows from P to A. Through a short current impulse in the reversed polarity the plunger is pushed away and goes back into the spring resting position.



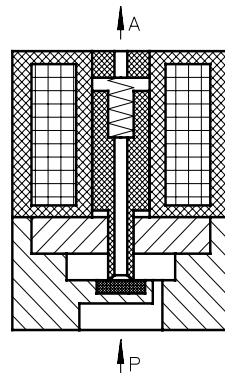
**3-way solenoid valve, servo actuated,
spool control principle, NC (normally closed)**

In the resting position a spring pushes the sealing element with seal against valve seat P. The connection A to R is opened. Upon energizing the solenoid the 3-way valve is opened and the control spool is actuated from pressure. Hereby the sealing element is pushed against the valve seat R. The connection P to A is simultaneously made, and the valve is opened. Upon de-energizing the solenoid, the servo valve closes and the spring pushes the sealing element back into the resting position.



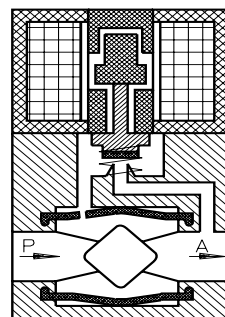
**2-way tube-seat valve, direct actuated,
NC (normally closed)**

In the resting position a spring pushes the plunger with the tube system against the sealing element. The media supports the sealing action hereby. Upon energizing the solenoid, the plunger with the tube system is pulled away from the seal and through flow is free. The media flows from P to A. Upon de-energizing the solenoid, a spring pushes the plunger back into the resting position and the valve is closed.



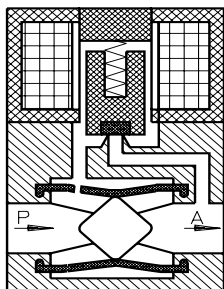
**2-way tube-seat valve, direct actuated,
NC (normally closed)**

In the resting position a spring pushes the plunger with the tube system against the sealing element. The media supports the sealing action hereby. Upon energizing the solenoid, the plunger with the tube system is pulled away from the seal and through flow is free. The media flows from P to A. Upon de-energizing the solenoid, a spring pushes the plunger back into the resting position and the valve is closed.



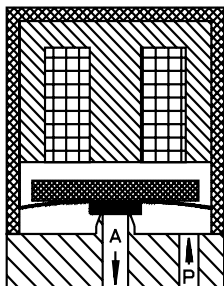
**2-way solenoid valve, direct actuated,
NO (normally open)**

In the resting position a spring pushes the sealing element against the plunger. The servo valve seat is open and the control chamber is depressurized. The diaphragm is held in the „open“ position by the through flow of the media. Upon energizing the solenoid, the plunger is pulled away through the electrical energy. The plunger thereby pushes the sealing element against the servo valve seat. Pressure begins to accumulate in the control chamber and because of its working area, the diaphragm is held in the „closed“ position.



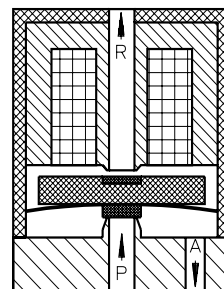
**2-way solenoid valve, servo actuated,
NC (normally closed)**

In the resting position a spring pushes the plunger against the servo valve seat. Pressure accumulates in the control chamber and because of its working area, the diaphragm is held in the „closed“ position. Upon energizing the solenoid, the plunger is pulled against the spring force through magnetic energy and the servo valve seat opens. Hereby the control chamber is relieved and the diaphragm held in the „open“ position by the through flow of the media. Hereto is a minimum pressure differential necessary.



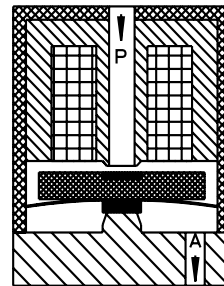
**2-way Spider®-Valve, direct actuated,
NC (normally closed)**

In the resting position the leaf spring pushes the disk armature with sealing element against the valve seat. The media supports the sealing action. Upon energizing the solenoid, the disk armature is lifted away from valve and allows through flow. The media flows from P to A. Upon de-energizing the solenoid, the leaf spring pushes the disk armature back against the valve seat and the valve is closed.



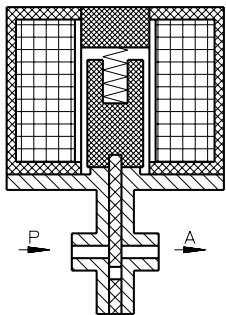
**3-way Spider®-Valve, direct actuated,
NC (normally closed)**

In the resting position a leaf spring pushes the disk armature with sealing against valve seat P. Port A is connected with port R. Upon energizing the solenoid, the disk armature is attracted and seals off exhaust R. The connection from P to A is opened. The media flows around the armature. Upon de-energizing the solenoid, the leaf spring pushes the disk armature back into the resting position again, and the valve is closed.



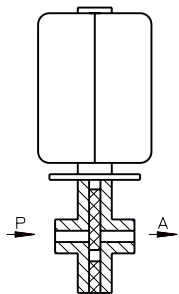
**2-way Spider®-Valve, direct actuated,
NO (normally open)**

In the resting position a leaf spring pushes the disk armature into the lower position. Port P is connected with port A. Upon energizing the solenoid the armature is lifted and seals port P, the valve is closed. Upon de-energizing the leaf spring pushes the armature back into the resting position and opens the valve.



**2-way Flat-Pack®-Valve, direct actuated,
with solenoid**

The slide is made of a thin metal foil, which is beared between two connection plates P and A. The position of the hole in the slide defines the way through the valve body. The slide is direct actuated with a solenoid.



**2-way Flat-Pack®-Valve, direct actuated,
with motor drive**

The slide is made of a thin metal foil, which is beared between two connection plates P and A. The position of the hole in the slide defines the way through the valve body. The slide is direct actuated with a Faulhaber Smoovy motor drive.

INSIDE STAIGER

Trade Fairs, Events and Impressions

INSIDE STAIGER



↓ Dräger Supplier of the Year Award 2014



Hannover Trade Fair 2015 ↓



↑ Team Staiger participated in the Penalty Competition in Erligheim and the LKZ-Company Run in Ludwigsburg 2015 ↓

*We love the challenge!
In both sports
and business.*



INSIDE STAIGER

We pay attention to modern, bright workplaces, cleanliness as well as a good working environment.



↑ Soldering



↑ Electronic team



Buying/Scheduling department ↑



↓ Milling shop



Turning shop ↓



Construction meeting ↓

INSIDE STAIGER

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distinguish our
products and our
production as well.*



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↑ Quality control



↑ Semi automated manufacturing Washer system ↓



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