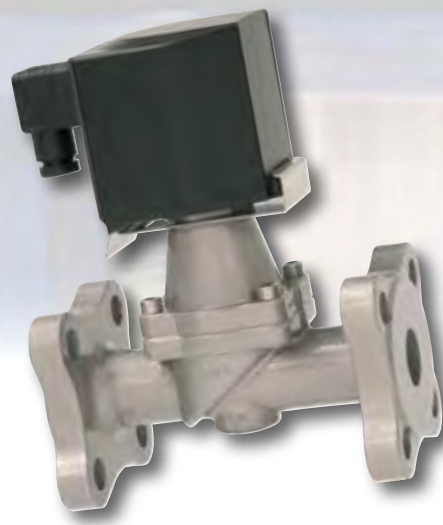


# POWER PLANT TECHNOLOGY



## On off or control

The opening and closing of a valve is just one simple act. Yet so much depends on it. Valves must always operate reliably, without any “ifs” and “buts”.

Valve technology is essential to almost every walk of life. It maintains and enhances our high standard of living.

## Good address



Buschjost, now a member of the British IMI Norgren Group, is a market leader in process and all-fluid valves. Short communication channels make the company flexible and responsive. All of its facilities are under one roof: product development with its modern laboratories, production, tooling and prototyping, fully automatic test equipment - in short everything we need for our trend-setting work. A 320-strong workforce ensures perfect integration of all processes.

Over 75 years experience, over 1 million valves per year



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1

2

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4

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## **Markets**

Technical progress implies a rapidly changing world where the demand for valve technology is steadily growing. As an expanding company Buschjost is set on opening up new national and international markets.

Buschjost valves are already to be found in virtually every market sector. Well-known customers in mechanical engineering, energy and environmental technology, vehicle manufacturing, process plant engineering etc. place their trust in the high quality and functionality of Buschjost products.

## *Individual Solutions*

Competitiveness is increasingly important in today's markets. Buschjost helps its customers be more competitive by providing them with innovative technologies for Fluid Control.

In partnership with its customers, Buschjost develops dedicated system solutions, perfectly adapted to optimise production processes and machine performance. This gives our customers a significant competitive advantage on the market.



## Electrical Energy

Electrical energy is present in electrical charges, i.e., in free electrons or ions, or in magnetic fields. Electrical energy represents the capability to produce physical work via electricity. It also can be converted into other forms of energy. Electric energy is measured in watt seconds (Ws) or Joule (J). However, in the energy-producing industry and in the domestic consumption of electricity, the kilowatt hour (kWh) has become widely accepted as a unit of measure.

In particular, industrial facilities have become very dependent on electrical energy. Since electrical energy is relatively easy to generate from other forms of energy and is easy to transport, it is regarded as a premium form of energy. However, when converting other forms of energy into electrical energy, only a relatively small amount of efficiency can be obtained. Furthermore, energy can only be stored in small amounts.

Electrical energy is generated by converting primary thermal, chemical or mechanical energy. To do this, processes are implemented that resort to a variety of raw materials, which in turn have different degrees of efficiencies.

Thermal power stations use fossil fuels (e.g. coal) for the generation of highly pressurised steam, which drives the turbines. The turbine's mechanical energy is converted to electrical energy by a generator. In comparison, nuclear power stations use nuclear fission rather than fossil fuels to provide the temperature that is required for the steam generation. Diesel power stations use diesel fuel to power the electricity-producing generator. Water and wind power plants are not subject to loss of thermal energy when powering the generator. The generation of electrical energy through biogas and solar cells is limited to local application levels only.

Buschjost produces standard and special valves for various sectors in the power generating industry. Some of the application areas are depicted in this catalogue.





■ Block unit power plant



■ Pipeline system



■ Generator



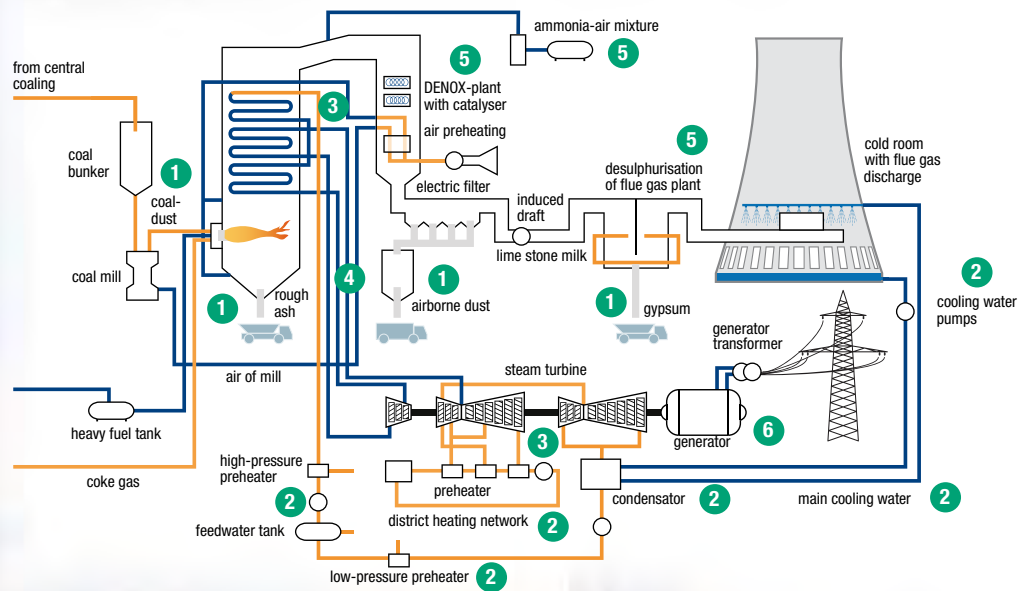
■ Dust filter cleaning

# Conventional power plants

- Steam power station
  - Gas-steam power station
  - Coal-fired power station


















## Methods / general functions:
















Conventional power stations fire coal, gas or oil to generate steam. This heats and evaporates the water. The highly pressurised steam enters the turbine, which in turn mechanically drives the generator. The actual power generation occurs in the generator.







No.	Picture	Series	Connection	Material	Page
<b>Air purification / exhaust air and turbine intake air cleaning</b>					
1		82900 / 82910	G 1 1/2 – G 3	Aluminium	48
		82960 / 82970	G 1 1/2 – G 3	Aluminium	52
		8499484	Special designs – on request		
		8589xxx	DN 25	Aluminium	56
<b>Water, waste water / condenser, condensate</b>					
2		82400 / 82410	G 1/4 – G 2	Brass	22
		82540 / 82640	G 1/4 – G 2	Brass	30
		83030 / 83580	DN 15 – DN 50 DN 65 – DN 100	Cast Steel Grey Cast Iron	60
		83040	DN 15 – DN 50	Cast Steel	64
		85500 / 84100	DN 15 – DN 50 DN 65 – DN 100	Cast Steel Grey Cast Iron	116
		85540	DN 15 – DN 50	1.4401	124
		85560 / 84320 / 84340	DN 15 – DN 50 DN 65 – DN 100 DN 65 – DN 100	Cast Steel Grey Cast Iron Cast Steel	128
		85700 / 85710	G 1/4 – G 2	Brass	136
	<b>Steam generation</b>				
3		8452x9x / 8453x9x	G 1 – G 2	1.4408	90
		84740 / 84750	G 1/2 – G 1	1.4408	94
		85300 / 85310	G 1/4 – G 2	Brass	102
		85320 / 85330	G 1/4 – G 1	Brass	106
		85520 / 84120 / 84220	DN 15 – DN 50 DN 65 – DN 100 DN 65 – DN 100	1.4408 Grey Cast Iron Cast Steel	120

No.	Picture	Series	Connection	Material	Page
3		85700 / 85710	G 1/4 – G 2	Brass	136
		85720 / 85730	G 1/4 – G 2	Brass	140
<b>Industrial boiler cleaning</b>					
4		84500 / 84510	G 1/2 – G 3	Brass	82
		85500	DN 15 – DN 50	Cast Steel	116
		85700 / 85710	G 1/4 – G 2	Brass	136
<b>Flue gas purification</b>					
5		83350	G 1/2 – G 2	Grey Cast Iron	70
		83380	DN 15 – DN 150	Grey Cast Iron	74
		84140	DN 65 – DN 100	1.4581	124
		82380 / 82390 / 82480 / 82490	G 1/4 – G 2	1.4408	26
		84520 / 84530	G 1/2 – G 2	1.4581	86
		8496000	DN 1,6	Sandvik 1802	98
	<b>Generator cooling, systems (backpressure tight)</b>				
6		85340	DN 15 – DN 50	1.4408	110
		85440	G 1/2 – G 2	1.4408	113
		85600	G 1/2 – G 2	Brass	132
		8499698 / 8499697 / 8499699	Special designs – on request		



## Air purification / applications



Fossil energy sources, such as coal (brown and black coal), peat, crude oil (heating oil, heavy fuel oil), and petroleum gas are the product of physical and biological processes deep inside the earth, fossilising former plants and bio masses over a long period of time. During the combustion, greenhouse gases, CO<sub>2</sub> and other environmentally relevant dust and SO<sub>2</sub> emissions (except for petrol gas) are generated.

### Air purification of coarse particles, electromechanically

First, the burned ashes are electromechanically filtered. Activated carbon is added. This bonds the sulphur dioxide. By blending in ammonia, the active carbon breaks down the nitrogen oxides into nitrogen and water. The sulphur dioxide is bonded with the carbon and reheated. This purifies the active carbon. The sulphur gases are converted to sulphur acid. 99.8 % of the sulphur dioxide is removed from the air, while 70 % of the nitrogen oxides are eliminated. The waste product is ash, a raw product that is very much sought after by the cement industry, while sulphuric acid is used in the chemical industry.

### Air purification of particulate matter, using hose- or envelope-type filters

Among other things, these filters are used in the area of air filtration in gas power stations, in loading facilities and dust removal equipment of silos, as well as the intake filtration systems of gas turbines.

For this application, Buschjost produces filter valves using connections from 3/4" to 3", which are pneumatically and electromagnetically activated. In addition, we can supply complete tank systems.

Techniques such as dry electro filters (dust removal) and dry sorption or conditioned dry sorption by means of fabric filters (dust removal and De-Sox) are applied.

### SCR System - the technology applied for exhaust emission control

Only with the introduction of Euro 6 exhaust emission standards in the EU and the EPA-2010 limits in the USA, will it be possible to attain a sizable emission regulation by law, which can be achieved by using an effective after-treatment of exhaust gases. According to expert opinion, these limits can be maintained with SCR systems (Selective Catalytic Reduction). By injecting ammonia (e. g., in the form of aqueous urea), nitrogen oxides are substantially minimized, which are generated during the combustion process. This is where special valves by Buschjost find their application. Our valves have the advantage to prevent the sticking of the valve's inner parts due to crystallization of the medium. In addition, our valves have a fail-safe function and secure full separation of the different fluids medium.

## Water, waste water / applications



### When simplifying a water/steam system of a black coal power station, it can be explained as follows:

Highly pressurised water is pumped from the water tank (the feed water storage tank) into the steam boiler. The combustion of the coal causes the water to evaporate. The highly pressurised and superheated steam is injected into a turbine. This powers the generator, which in turn produces the electricity. When the steam leaves the turbine, it is expanded, i.e., it is depressurised. Coolant from the cooling tower chills the steam inside a condenser until the steam returns to water and is returned to the feed water storage tank. Subsequently, the water is pumped back into the steam boiler. The cycle starts anew. A process such as that, where a system is returned to its original condition, is referred to as cyclic process.

For this type of application Buschjost produces diaphragm and piston valves in sizes ranging from 1/2" to 2" and DN 15 to DN 150 with electromagnetic activation and pressures up to 40 bar.

## Steam generation / applications



The steam generator's function is to convert the heat (derived during the combustion of the fuel's chemical energy) into steam; based on this function, the steam generator is actually a heat exchanger. The steam generator comprises two main systems: „combustion“ and „evaporator“. Combustion systems are divided into fixed-bed or grate-fired furnaces. Steam generating systems are divided into natural circulation, forced circulation, and forced flow systems. The picture shows a boiler with combustion burners (combined burner for coal, oil and gas) and forced circulation process. Together with the combustion air (oxygen supply), the finely ground coal from the coal mill is injected into the combustion chamber. Here, the pulverised coal is burned and the heat is transferred to the evaporator pipes in order to produce the steam. The light-weight combustion residue (fly-ash) is transported away by the flue gases, while the heavier residue (combustion ash) is removed by an extraction device from below the boiler and properly disposed.

For this application Buschjost produces solenoid valves and pneumatically activated valves, ranging from 1/2" to 2" and DN 15 to DN 100 for temperature ranges up to 200 °C.

## Condenser, condensate / applications



### Condenser

The condenser is the interface between the closed water/steam cycle of the steam turbine process and the coolant cycle, where water is used as coolant. The condenser consists of a large chamber, furnished with an elaborate pipeline system. It comprises several thousand brass tubes, measuring approximately 2 cm in diameter. Coolant is pumped through this piping system. The steam condensates on the exterior of the tubes and releases condensation heat to the cooling system. The condensate is purified and moves first to the feed water storage tank. The water is pumped back into the piping system of the steam generator and is available for further use. The water/steam cycle is closed. The condensation process creates a vacuum inside the condenser, and the steam is literally „sucked“ through the turbine. The larger the temperature difference of the steam between the intake and output of the turbine is, the larger the degree of efficiency.

### Condensate

Condensate is a substance that was brought through condensation from its gaseous state into its liquid state.

For this application Buschjost produces solenoid valves and pneumatically activated valves, ranging from 1/2" to 2" and DN 15 to DN 100 for temperature ranges up to 200 °C. Upon request, special designs up to 300 °C are available.

## Industrial and power station boiler cleaning / applications



Heat exchangers and reactive surfaces in fossil power stations, in reverse combustion, and other industrial facilities must be cleaned on a regular basis. Carbon black, ashes, and other types of caking cause the heat transfer to deteriorate and impair the usage of combustion energy.

For the so-called soot-blowers in industrial-type and power station boilers, Buschjost produces standard and special valves ranging from 1/2" to 3", electromagnetically or pneumatically activated.

## Flue gas purification / applications



90 % of all German combustion power stations use a wet process for the desulphurisation of flue gas. During this process, flue gases are saturated with steam and are cooled using an aqueous solution, which contains absorbing agents. Absorbing agents are available in several forms, such as ammonia or sodium sulphite. The most commonly applied method, however, is the use of calcium carbonate or limestone suspension. When using the limestone purification process, a mixture of water and lime (wash suspension) is used to spray the unclean flue gas inside the cleaning tower (also called absorber tower). The chemical reaction generated this way absorbs the sulphur dioxide to a large extent.

For this application Buschjost produces solenoid valves and pneumatically activated valves, ranging from 1/2" to 2" and DN 15 to DN 100.

## Generator cooling, systems / applications



### Generator cooling with hydrogen

In order to increase the efficiency, power plant turbo generators must be cooled. In spite of the associated strict safety requirements, hydrogen is used as coolant.

### When compared with water/air, this offers

- significantly better cooling properties (reaching much better values in heat capacity and thermal conductivity),
- reduced frictional losses on rotating components (lesser gas tightness) as well as
- a higher electrical dielectric strength.



Considering these features, hydrogen creates the prerequisites for an optimum degree of efficiency of the turbo generator. However, a mixture of air and hydrogen creates an ignitable mixture within a wide range of this combination (4 % to 77 %). Due to safety reasons, avoidance of such an occurrence is imperative during operation as well as during the maintenance (filling and emptying) of the turbo generators



### International standards

(EN 60034-3 or IEC 60842) require the adherence to a redundant safety monitoring system. Gas analysing meters are used as measuring devices, which will recognise the formation of ignitable mixtures and trigger an alarm.

For this application, Buschjost produces solenoid valves in backpressure-safe design, compliant with the necessary explosion protection according to ATEX. Connection sizes are available in 1/2" to 2" and DN 15 to DN 50.

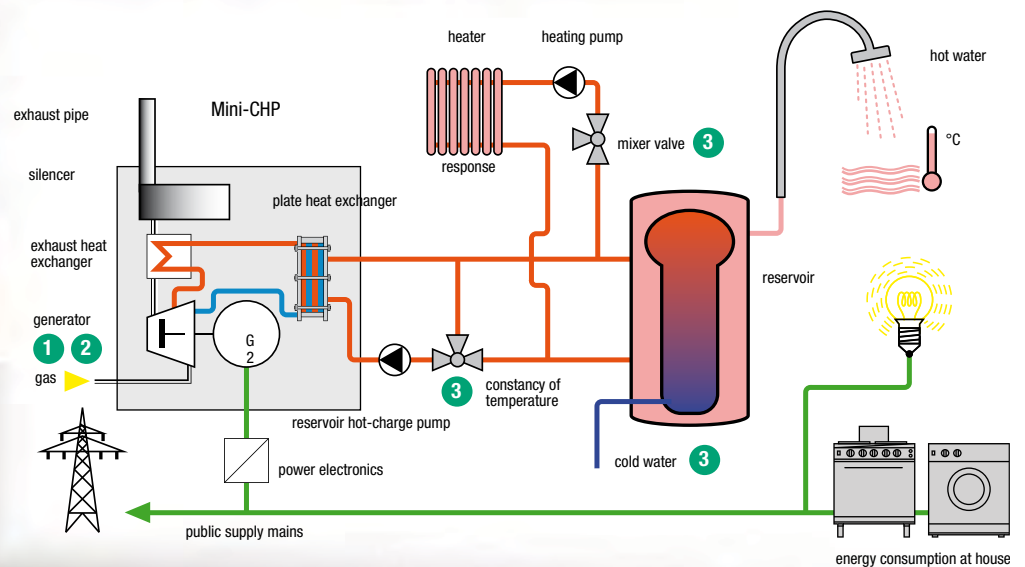
# Combined heat and power plants (CHP)

■ Autarkic, stationary, or mobile energy generation

■ **Methods /general functions:**

A block-type thermal power station (BTTP) is a modular facility for the generation of electrical energy and heat. Preferably, this type of unit is operated within the vicinity of the heat consumption. However, the BTTP can also feed the useful heat into a short-range supply grid. To do this, the principle of combined heat and power (CHP) is applied.

Common BTTP modules generate electrical power ranging between five kilowatt to five megawatts. External combustion technology, i. e., diesel or gas engines and also gas turbines, are used to power the energy generator. Combined heat and power is also utilized in heating plants, where typically an electrical power of several hundred megawatts can be generated.





No.	Picture	Series	Connection	Material	Page
<b>Gas and low pressure systems</b>					
1		82370	G 1/4 – G 1	Brass	18
		82580	G 1/2 – G 2	Brass	36
		82660	G 1/2 – G 2	Brass	40
		82670	G 1/2 – G 2	1.4408	44
		83860	DN 15 – DN 25	Cast Steel / 1.4581	78
		85700 / 85710	G 1/4 – G 2	Brass	136

No.	Picture	Series	Connection	Material	Page
<b>Fuels (diesel, petrol etc.)</b>					
2		82280	G 1/4 – G 2	Brass	On request
		83200	DN 15 – DN 100	Cast Steel	On request
		84100	DN 65 – DN 100	Cast Steel	116
		84240	DN 65 – DN 100	1.4581	124
<b>Further mediums</b>					
3		82400 / 82410	G 1/4 – G 2	Brass	22
		82540 / 82640	G 1/4 – G 2	Brass	30

## Gas and low pressure systems, fuels / applications



Here, valves for the BTPP are applied in the area of fuel media supply systems (gas, petrol, diesel, etc.) and cooling systems (water, oil, etc.).

A third application is the use of SCR systems in order to reduce NO<sub>x</sub>.

**This is where special valves by Buschjost find their application. Our valves have the advantage to prevent the sticking of the valve's inner parts during crystallization of the medium.**

**In addition, our valves have a fail-safe function.**

### Background

SCR System – the new technology applied for exhaust emission control. Only with the introduction of Euro 6 exhaust emission standards in the EU and the EPA-2010 limits in the USA, will it be possible to attain sizable emission regulation by law, which can only be achieved by using a sophisticated combination of engine design and the effective after-treatment of exhaust gases. According to expert opinion, these limits can be maintained with SCR systems (Selective Catalytic Reduction): by injecting ammonia (e. g., in form of aqueous urea), nitrogen oxides is substantially minimized, which is generated during the combustion process.

For this type of application Buschjost produces electromagnetically or pneumatically activated standard and special valves in sizes ranging from 1/2" to 2" and DN 15 to DN 100.



# Nuclear power plants

- Boiling water reactor
  - Pressurised water reactor
- Light water reactor

## Methods / general functions:

Nuclear power plants, the same as fossil fuel fired systems (using coal, oil or gas) are called thermal power stations. In these systems, heat is the output energy, which can be converted into electrical energy (power) by using several intermediate steps. Fossil fuel fired power stations use the combustion of carbonaceous energy carriers as the heat source, while nuclear power stations use the nuclear fission as heat source.

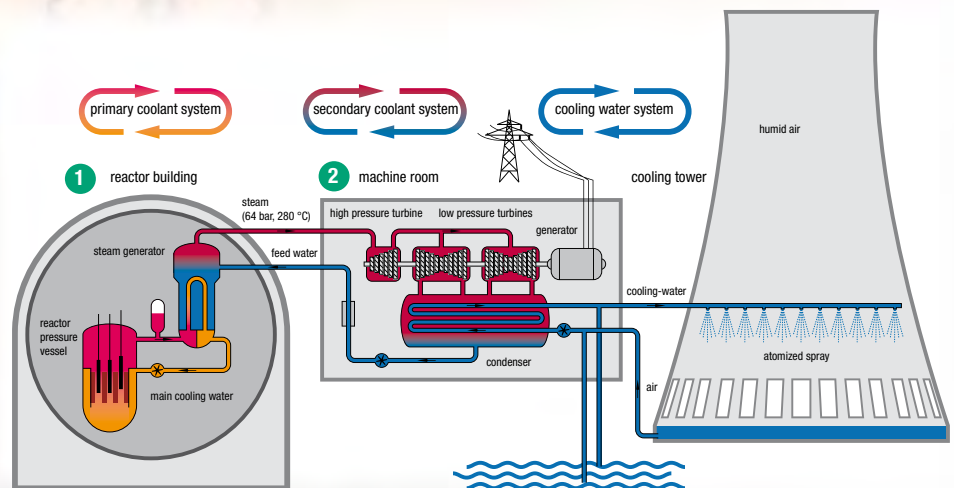
When heavy atomic nuclei (U 235) are split, nuclear binding energy is released, initially as kinetic energy of the fission products that are created. As these particles are decelerated very rapidly in the solid nuclear fuel, thermal energy is created from the kinetic energy. This energy is used to heat and evaporate the coolant (water). The steam is injected into the turbines, which are mounted onto a shaft including an electric generator (similar to a dynamometer). The kinetic energy of the turbines is converted into electrical energy, using the generator. From here, the energy is fed into the grid.

Since the energy is the result of nuclear fission, the proper physical term is nuclear energy and nuclear power.











By the end of 2008, there were 438 nuclear power stations operating in 31 countries, while 42 additional facilities in 14 other countries are under construction. Most nuclear power stations are equipped with light water, pressurised water or boiling water reactors.





### Global overview:

66 % of global nuclear energy is generated by pressurized water reactors and 23 % is generated by boiling water reactors.





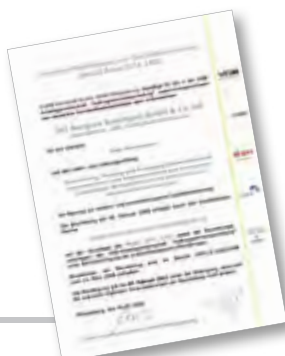
No.	Picture	Series	Connection	Material	Page
<b>Primary component—reactor (excluding special designs)</b>					
1		8499450	DN 15 (K4) Incl. earthquake test / - calculation	1.4581	On request
		8499774	DN 80 (K4) Incl. earthquake test / - calculation	1.4408	On request
		8499907	DN 15, NC (K3)	1.4571 + 1.4313	On request
		8499908	DN 15, NO (K3)	1.4571 + 1.4313	On request
		8499909	DN 50, NC (K3)	1.4571 + 1.4313	On request
		8499910	DN 50, NO (K3)	1.4571 + 1.4313	On request
<b>Secondary component—turbine house, pressurised reactor and boiling water reactor</b>					
2		85040	G 3/8 – G 1	1.4581	On request
		85540	DN 15 – DN 50	1.4408	124
		85580	DN 15 – DN 50	1.4408	
		84240	DN 65 – DN 100	1.4581	
		85740 / 85750	G 1/4 – G 2	1.4408	144
	8499767 bis 230 bar	G 3/4	1.4408	On request	

No.	Picture	Series	Connection	Material	Page
<b>Generator cooling (backpressure tight)</b>					
2		85340	DN 15 – DN 50	1.4408	110
		85440	G 1/2 – G 2	1.4408	113
		85600	G 1/2 – G 2	Brass	132
		8499698 8499697 8499699	Special designs – on request		

### In development



Buschjost is continuously expanding its valve product range for nuclear applications. This includes 2/2, 3/2, and 4/2 directional control valves and special designs for safety level K2 to K5, as well as valves with redundancy functions.



## Primary component / applications



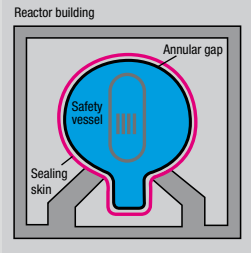
### Pressure water reactors and boiling water reactors/safety vessels

German pressurised water reactors (PWRs) have a spherical design using fine-grained structural steel. The reactor must be capable to resist the pressure that is generated during the evaporation of the primary coolant (high pressure containment).

Boiling water reactors (SBR) of the design category 69 use primarily spherical containment systems with a wall thickness of approximately 3 cm.

### Technology / safety measures in the circular gap of the safety vessel

In most cases a steel sealing skin, approximately 4 mm thick, is placed away from the outer wall leaving a gap of several centimetres. Air is constantly removed from this gap (annular space) in order to maintain a vacuum between this annulus and the atmosphere on the outside. This will also prevent the release of any uncontrolled activity.



For applications in the area of primary and secondary cycles, Buschjost produces special valves according to KSD 7021/50, 3021 and 3504 guidelines.

Buschjost is certified according to the Nuclear Safety Standards Commission (KTA 1401), and is a member of the German VGB (German Association of Power Plant Operators) and AREVA, a world energy expert.

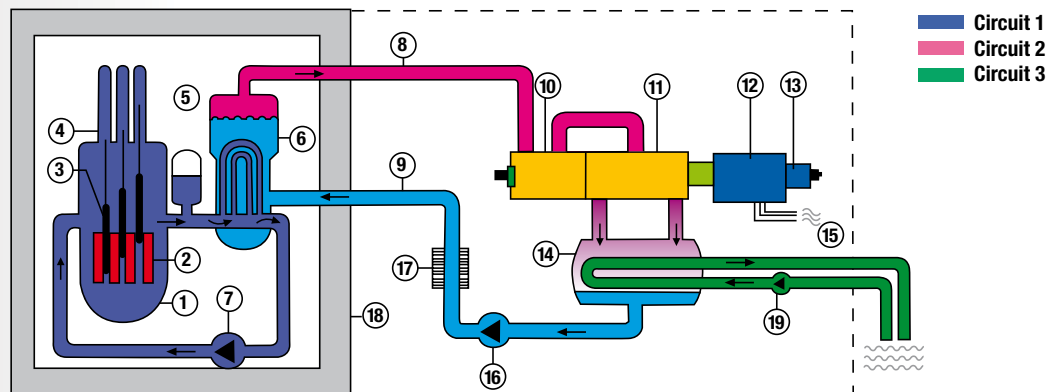
## Pressurised water reactor / functions

Heat that was generated by nuclear fission is absorbed by the moderator (which reduces the velocity of the neutrons) and by the coolant and subsequently fed to the turbine. The reactor pressure vessel is under a constant pressure of 150 to 160 bar. The high pressure prevents the water from boiling – in spite of the extreme high temperature of 320 °C.

A closed main cooling agent circuit, the primary circuit (safety levels K1 to K3), transfers the heat generated in the reactor to the steam generators where the water boils due to the low pressure of about 60 bar. The turbine, including the generator, is mounted on a shaft and is connected to this water/steam circuit (the secondary circuit). The steam generators separate the main cooling circuit and the water/steam circuit; thus, preventing radioactive substances from leaving the primary circuit (therefore here no special safety requirements, standard application).

The "used" water vapour is re-condensed into water via a third circuit, the condenser-cooling circuit.

- 1 Reactor pressure vessel
- 2 Uranium fuel element
- 3 Control rods
- 4 Control rod drives
- 5 Pressuriser
- 6 Steam generator
- 7 Coolant pump
- 8 Main steam
- 9 Feed water
- 10 High pressure component of the turbine
- 11 Low pressure component of the turbine
- 12 Generator
- 13 Exciter
- 14 Condenser
- 15 River water
- 16 Feed water pump
- 17 Preheater plant
- 18 Concrete enclosure
- 19 Coolant pump



### Design of a pressure water reactor

The three water circuits of a pressure water reactor are shown above:

**Circuit 1** circulates the reactor and releases its heat into **Circuit 2**. The heat vaporises the water; the steam propels the turbine. **Circuit 3** cools the steam in Circuit 2, and the steam is returned to water inside the condenser.



## Boiling water reactor / functions

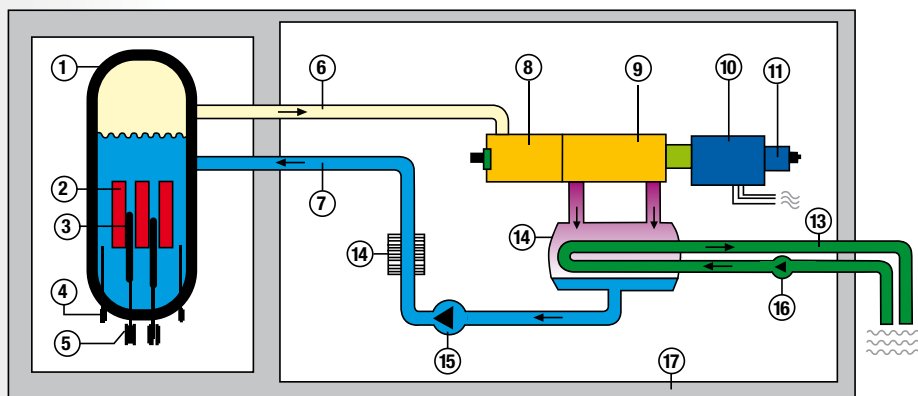
Boiling water reactors (BWR) are also light water reactors (LWR). Heat that was generated by the nuclear fission is absorbed by the moderator („light“ normal water) and coolant is fed to the turbine. At a temperature of approximately 290 °C, the water comes to a boil inside the reactor pressure vessel, which is pressurised to approximately 70 bar. The water vapour produced in the vessel is fed directly to the turbine, which is interconnected with the generator.

In the meantime, the „used“ steam has rendered most of its energy to the turbine. Inside the second circuit, the condenser circuit, the steam is condensed to water and fed back to the primary coolant circuit.

Special radiation protection equipment is installed in the turbine building of the boiling water reactors. It's a precautionary measure, as the steam pipes, the turbine, the condenser and the condensate pipes of the BWR may contain deposits of the slightly radioactive steam.

That means of that primary and secondary components of a nuclear power station are systems that require meeting the high safety requirements. Primary K1 to K3, secondary K3 to K5.

- 1 Reactor pressure vessel
- 2 Fuel element
- 3 Control rods
- 4 Circulating pumps
- 5 Control rod drive
- 6 Main steam
- 7 Feed water
- 8 High pressure component of the turbine
- 9 Low pressure component of the turbine
- 10 Generator
- 11 Exciter
- 12 Condenser
- 13 River water
- 14 Preheater plant
- 15 Feed water pump
- 16 Coolant pump
- 17 Concrete shielding



### Design of a boiling water reactor

The reactor vessel shown here on the left-hand side of the diagram is filled approximately 2/3 with water. Steam is collected in the upper part of the vessel and transferred to the turbine. After condensation it is returned to the reactor as water.

## Generator cooling, systems / applications



### Generator cooling with hydrogen

In order to increase the efficiency, power plant turbo generators must be cooled. In spite of the associated strict safety requirements, hydrogen is used as coolant.

### When compared with water/air, this offers

- significantly better cooling properties (reaching much better values in heat capacity and thermal conductivity),
- reduced frictional losses on rotating components (lesser gas tightness) as well as
- a higher electrical dielectric strength.



Considering these features, hydrogen creates the prerequisites for an optimum degree of efficiency of the turbo generator. However, a mixture of air and hydrogen creates an ignitable mixture within a wide range of this concentration (4 % to 77 %). Due to safety reasons, avoidance of such an occurrence is imperative during operation as well as during the maintenance (filling and emptying) of the turbo generators

### International standards

(EN 60034-3 or IEC 60842) require the adherence to a redundant safety monitoring system. Gas analysing meters are used as measuring devices, which will recognise the formation of ignitable mixtures and trigger an alarm.



For this application, Buschjost produces solenoid valves in backpressure-safe design, compliant with the necessary explosion protection according to ATEX. Connection sizes are available in 1/2" to 2" and DN 15 to DN 50.

## 2/2-way valves DN 8 to 25 with DVGW-approval

For neutral gases and liquid fuels  
Solenoid actuated with forced lifting  
Diaphragm valves  
Internal threads G 1/4 to G 1  
Operating pressure 0 to 4 / 8 bar



### Description (standard valve)

Solenoid valve for neutral gases and liquid fuels

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-10 °C up to max. +60 °C
Ambient temperature:	-10 °C up to max. +50 °C
Mounting position:	optional, preferably solenoid vertical on top

### Material

Body:	Brass (CW617N)
Seat seal:	FPM
Internal parts:	Stainless steel, Brass, PVDF

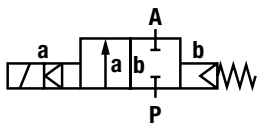


Strainer with maximum mesh size of 0.25 mm is necessary upstream of the valve.

### Features

- EC-Type Examination Certificate  
product ID-No.: CE-0085AU0323  
valve class A G 1/4 – G 1/2; B G 3/4 and G 1; valve group 2
- Qualification approval EN 161/3394 part 1 and EN 264
- High functional reliability
- Short response time < 1 s

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8237400.9381 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number solenoid with $\equiv$	Part Number solenoid with $\sim$	Nominal Diameter (mm)	Connection Size	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
				min. (bar)	max. (bar)		
8237000.9381 8237080.9381	8237000.9382 8237080.9382	8	G 1/4	0	4 8	1.6	1.00 1.20
8237100.9381 8237180.9381	8237100.9382 8237180.9382	10	G 3/8	0	4 8	2.0	0.90 1.10
8237200.9381 8237280.9381	8237200.9382 8237280.9382	12	G 1/2	0	4 8	2.3	0.90 1.10
8237300.9381 8237380.9381	8237300.9382 8237380.9382	20	G 3/4	0	4 8	5.8	1.55 1.85
8237400.9381 8237480.9381	8237400.9382 8237480.9382	25	G 1	0	4 8	6.1	1.45 1.75

\* for gases and liquid fluids up to 25 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

### Note:

Operating pressure exceeding 4 bars female threaded sealing connections are not allowed.  
Outer threaded version available on request (extra charge).

## Solenoid 9381 / 9382

### Standard voltage

DC $\equiv$	AC $\sim$ 40 Hz – 60 Hz	
	24 V	24 V
–	110 V	120 V
–	120 V	220 V

Design acc. to DIN VDE 0580

Voltage range  $\pm 10\%$

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

AC with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC $\equiv$	AC $\sim$	
		Inrush	Holding
9381 *	18 W	–	–
9382 *	–	20 VA	20 VA

\*  coil only

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

On request

Further versions

## Further Options (Solenoids)

XXXXXX.9356

Protection class

 II 2 GD EEx me II T3 T 140 °C

On request

Further versions

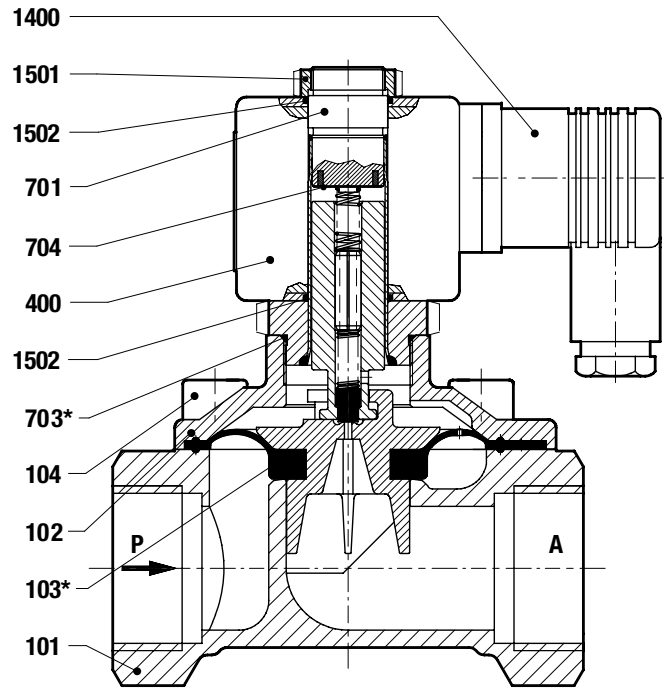
## Supplementary equipment

XXXXX80.XXXX

Valve with compression fitting

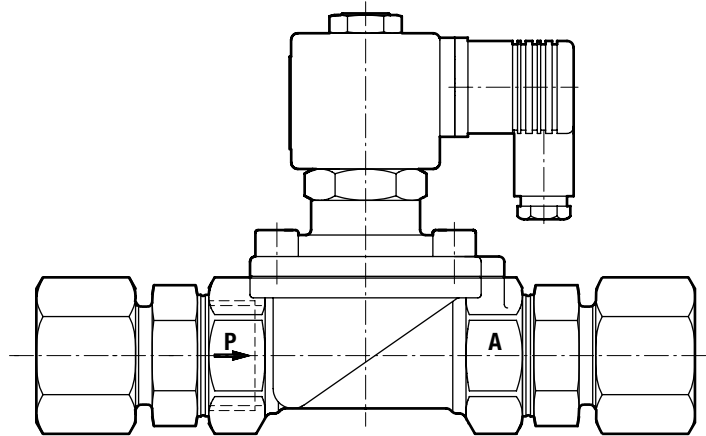
## Section View

- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm, complete
- 104 Oval head cap screw up to G 1/2  
Socket head cap screw from G 3/4
- 400 Solenoid
- 701 Core tube
- \*703 O-ring
- 704 Round plate
- 1400 Socket (included)
- 1501 Hexagon nut
- 1502 O-ring



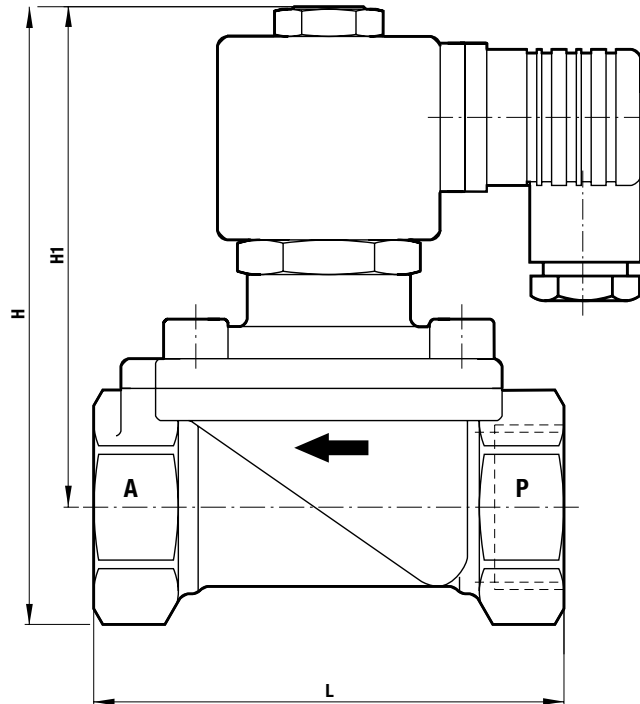
\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## Valve with compression fitting



## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)



Part Number	Nominal Diameter (mm)	Connection Size	L (mm)	B* (mm)	H (mm)	H1 (mm)
8237000.938x	8	G 1/4	67	54	105	90
8237100.938x	10	G 3/8	67	54	105	90
8237200.938x	12	G 1/2	67	54	105	90
8237300.938x	20	G 3/4	95	70	130	105
8237400.938x	25	G 1	95	70	130	105

\* B = max. width

## 2/2-way valves DN 8 to DN 50

For neutral gases and liquids

Indirectly solenoid actuated

Diaphragm valves

Internal threads G 1/4 to G 2 or 1/4 NPT to 2 NPT

Operating pressure 0.1 to 10 / 16 bar

**Click-on®**

### Description (standard valve)

Solenoid valve for e. g. air, water

Switching function:	normally closed
Flow direction:	determined
Differential pressure:	0.1 bar required (0.3 bar for EPDM)
Fluid temperature:	-10 °C to max. +90 °C
Ambient temperature:	-10 °C to max. +50 °C
Mounting position:	optional, preferably solenoid vertical on top



### Material

Body:	Brass (CW617N)
Seat seal:	NBR
Internal parts:	Stainless steel, PVDF

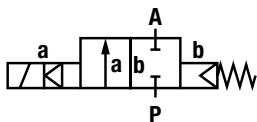
For contaminated fluids insertion of a strainer is recommended.

### Features

- High flow rate
- Damped operation
- Functional compact design
- Solenoid interchangeable without tools (**Click-on®**)
- Particular suitable as a water valve according to DIN EN 60730-2-8

EC type examination up to DN 25  
acc. to DIN EN 60730-2-8  
Solenoid Valves  
Test laboratory  
TÜV Rheinland / Brandenburg

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8240400.9101 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number with == or ~ solenoid	Nominal Diameter (mm)	Connection Size	Valve Length (mm)	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
				min. (bar)	max. (bar)		
8240000.9101 8241000.9101	8	G 1/4 1/4 NPT	60	0.1	16	1.9	0.47
8240100.9101 8241100.9101	10	G 3/8 3/8 NPT	60	0.1	16	3.0	0.45
8240200.9101 8241200.9101	12	G 1/2 1/2 NPT	67	0.1	16	3.8	0.50
8240300.9101 8241300.9101	20	G 3/4 3/4 NPT	80	0.1	16	6.1	0.65
8240400.9101 8241400.9101	25	G 1 1 NPT	95	0.1	16	9.5	0.95
8240500.9101 8241500.9101	32	G 1 1/4 1 1/4 NPT	132	0.1	10 (16***)	23.0	2.73
8240600.9101 8241600.9101	40	G 1 1/2 1 1/2 NPT	132	0.1	10 (16***)	25.0	2.53
8240700.9101 8241700.9101	50	G 2 2 NPT	160	0.1	10 (16***)	41.0	3.85

\* for gases and liquid fluids up to 25 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

\*\*\* with solenoid 9151

## Solenoid 9101 / 9151

### Standard voltages

DC ==	AC ~ 50 Hz	AC ~ 60 Hz
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

### Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ==	AC ~	
		Inrush	Holding
9101 *	8 W	15 VA	12 VA / 7 W
9151 *	18 W	45 VA	35 VA / 17 W

\*  coil only

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

- XXXXX01.XXXX Normally open (NO),  
from G 1 1/4 with solenoid 9151,  
0.1 up to 16 bar
  - XXXXX02.XXXX Manual override
  - XXXXX03.XXXX Seat seal FPM,  
max. fluid temperature –5 °C up to +110 °C
  - XXXXX14.XXXX Seat seal EPDM, for hot water,  
max. fluid temperature +110 °C,  
0.3 to 16 bar up to DN 25  
0.3 to 10 bar from DN 32
  - XXXXX50.XXXX Latching system,  
impulse time min. 30 ms,  
only for DC 6 V, 12 V and 24 V
- On request Further versions

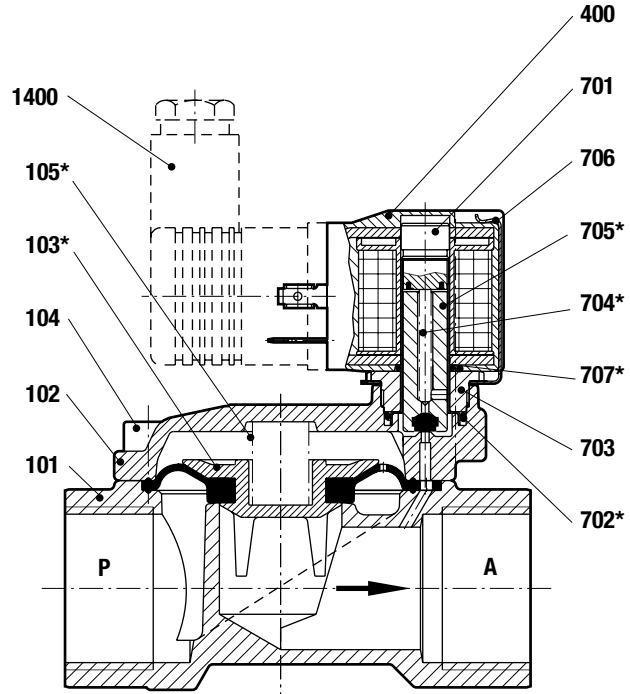
## Further Options (Solenoids)

- XXXXXXXX.9136 Solenoid in protection class  
⊕ II 2 GD EEx m II T4 T 110 °C  
with 3 m connection cable
- On request Further versions

## Section View

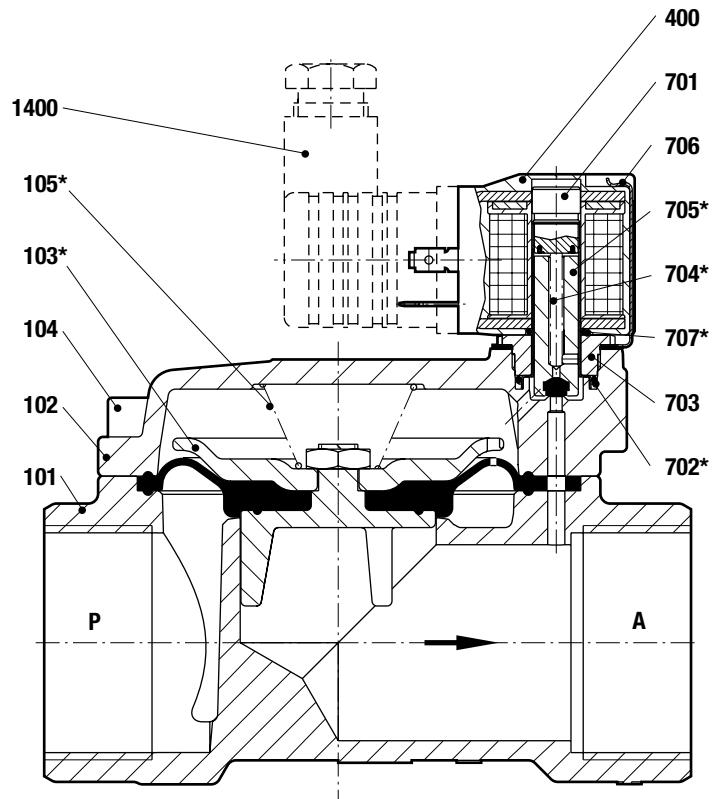
to G 1 e. g. 1 NPT

- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm
- 104 Allen head screw
- \*105 Pressure spring
- 400 Solenoid
- 701 Core tube
- \*702 O-ring
- 703 Screw piece
- \*704 Pressure spring
- \*705 Plunger
- 706 Spring clip
- \*707 O-ring
- 1400 Electrical connector (included)



up to G 1 1/4 e. g. 1 1/4 NPT

- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm
- 104 Allen head screw
- \*105 Pressure spring
- 400 Solenoid
- 701 Core tube
- \*702 O-ring
- 703 Screw piece
- \*704 Pressure spring
- \*705 Plunger
- 706 Spring clip
- \*707 O-ring
- 1400 Electrical connector (included)

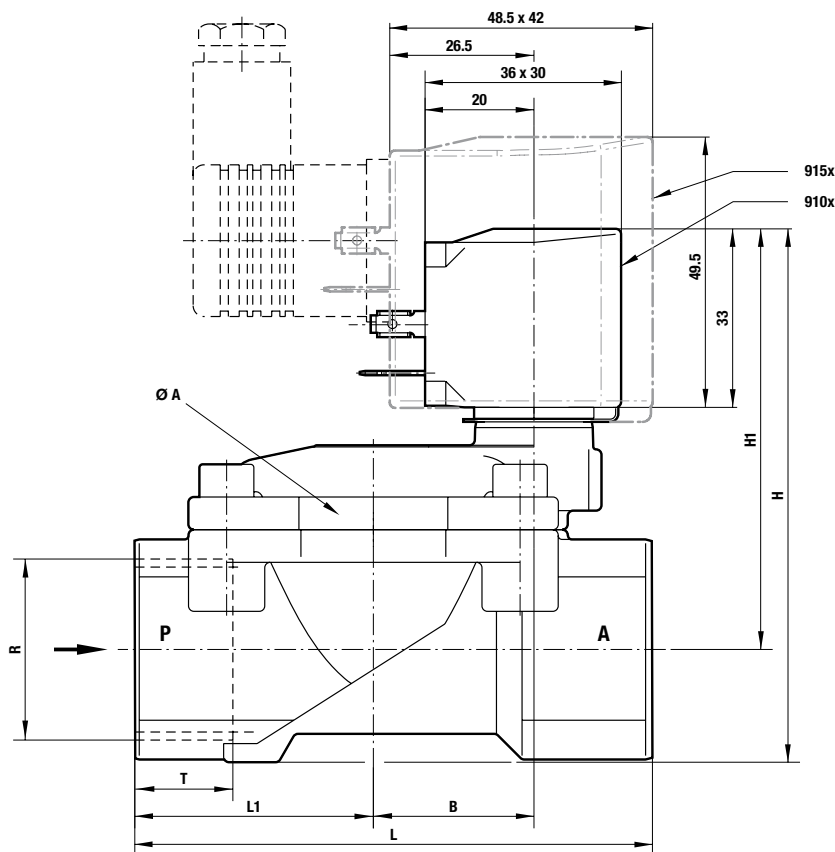


\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.



## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)



Solenoid

Part Number with ~ or ~ solenoid	Nominal Diameter (mm)	Connection Size	Ø A (mm)	B (mm)	H (mm)	H1 (mm)	L (mm)	L1 (mm)	T (mm)
8240000.9101 8241000.9101	8	G 1/4 1/4 NPT	44	19.5	78.5	67.0	60	27.5	12.0 10.0
8240100.9101 8241100.9101	10	G 3/8 3/8 NPT	44	19.5	78.5	67.0	60	27.5	12.0 10.5
8240200.9101 8241200.9101	12	G 1/2 1/2 NPT	44	19.5	81.0	67.0	67	31.0	14.0 13.5
8240300.9101 8241300.9101	20	G 3/4 3/4 NPT	50	24.0	88.0	71.5	80	36.5	16.0 14.0
8240400.9101 8241400.9101	25	G 1 1 NPT	62	29.5	97.5	77.0	95	44.0	18.0 17.0
8240500.9101 8241500.9101	32	G 1 1/4 1 1/4 NPT	92	44.5	124.5	95.5	132	60.0	20.0 17.0
8240600.9101 8241600.9101	40	G 1 1/2 1 1/2 NPT	92	44.5	124.5	95.5	132	60.0	22.0 17.0
8240700.9101 8241700.9101	50	G 2 2 NPT	109	54.5	142.5	108.0	160	74.0	24.0 17.5

## 2/2-way valves DN 15 to DN 50

For aggressive gases and liquids

Pressure actuated by external fluid

Seat valves

Internal thread G 1/2 to G 2 or 1/2 NPT to 2 NPT

Operation pressure 0 – 16 bar (see table)

### Description (standard valve)

Switching function:	normally closed
Flow direction:	determined
Mounting position:	as required

### Process fluid characteristics / Valve material

Fluid temperature:	-10 °C up to max. +180 °C
Ambient temperature:	-10 °C up to max. + 60 °C
Material body:	Stainless steel (1.4408)
Seat seal:	PTFE
Internal parts:	Stainless steel
Spindle sealing:	PTFE / FPM; self-adjustable

### Pilot fluid characteristics / Actuator material

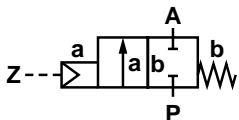
Pilot connection:	G 1/4 resp. 1/4 NPT
Pilot fluid:	neutral gases
Fluid temperature:	max. +60 °C
Actuator:	Body: Stainless steel, Aluminium
	Bottom: WEMA-Kor coated
Seat seals:	NBR
Internal parts:	Coated steel



### Features

- Suitable for contaminated process fluids
- High flow rate
- For robust industry applications
- Damped closing (valve closes against flow direction)
- Suitable for vacuum up to max. 90 %

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8238400.0000 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Connection Size	Operating Pressure *		K <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg) ***
			min. (bar)	max. (bar)		
Actuator Ø 70 mm						
8238200.0000 8239200.0000	15	G 1/2 1/2 NPT	0	16.0	4.8	1.3
8238300.0000 8239300.0000	20	G 3/4 3/4 NPT	0	10.0	10.0	1.4
8238400.0000 8239400.0000	25	G 1 1 NPT	0	10.0	14.0	1.7
8238500.0000 8239500.0000	32	G 1 1/4 1 1/4 NPT	0	7.0	23.0	2.4
8238600.0000 8239600.0000	40	G 1 1/2 1 1/2 NPT	0	4.5	30.0	2.6
8238700.0000 8239700.0000	50	G 2 2 NPT	0	3.0	37.0	3.8
Actuator Ø 125 mm						
8248500.0000 8249500.0000	32	G 1 1/4 1 1/4 NPT	0	16.0	27.0	5.1
8248600.0000 8249600.0000	40	G 1 1/2 1 1/2 NPT	0	10.0	37.0	5.5
8248700.0000 8249700.0000	50	G 2 2 NPT	0	10.0	53.0	7.0

\* for gases and liquid fluids up to 600 mm<sup>2</sup>/s (cSt)

\*\* C<sub>v</sub>-value (US) K<sub>v</sub>-value x 1.2

\*\*\* without pilot valve

State voltage [V] and frequency [Hz]

Note: **0000** without pilot valve

Pilot pressure 3.5 – 8 bar, Pilot connection Z2

Pilot pressure 1 – 6 bar, Pilot connection Z1

## Notes

### for 3/2-way pilot valve 84660 / 84680

Material body brass

Pilot fluid temperature max. +60 °C

Pilot pressure: 1 – 10 bar

Standard voltages: 24 V DC, 24 V AC, 230 V AC

## Electrical Data

### for 3/2-way pilot valve 84660 / 84680

Design acc. to DIN VDE 0580

Voltage range ±10 %

Duty cycle (ED) 100 %

Protection class to EN 60529 IP65 with mounted Socket

Socket acc. to DIN EN 175301-803A

## Further Options (Valves)

XXXXX01.XXXX Normally open, closes with pilot pressure and opens with spring force (pilot pressure 1 – 6 bar)

XXXXX03.XXXX Seat seals FPM T<sub>max.</sub> +180 °C

XXXXX22.XXXX Operating pressure G 1/2 25 bar, G 3/4 16 bar

XXXXX40.XXXX Double electrical position indicator with 2 solenoid switches

XXXXX52.XXXX Optical position indicator

XXXXX59.XXXX T<sub>max.</sub> +200 °C

XXXXX60.XXXX Stainless steel impulse

XXXXX80.XXXX Spindle seal with stainless steel

On request Further versions

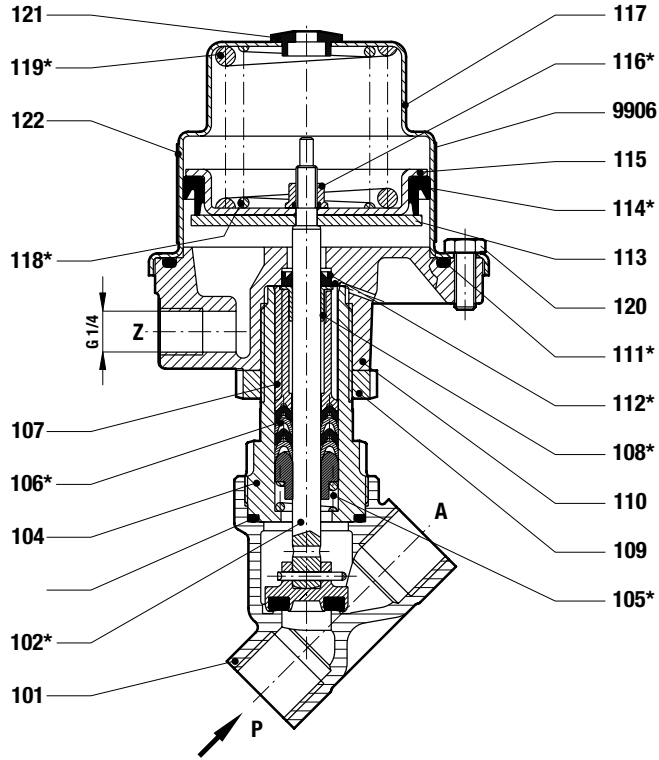
## Options (Solenoids)

XXXXXXX.9101 with assembled standard pilot valve 8466000.9101 DC / AC

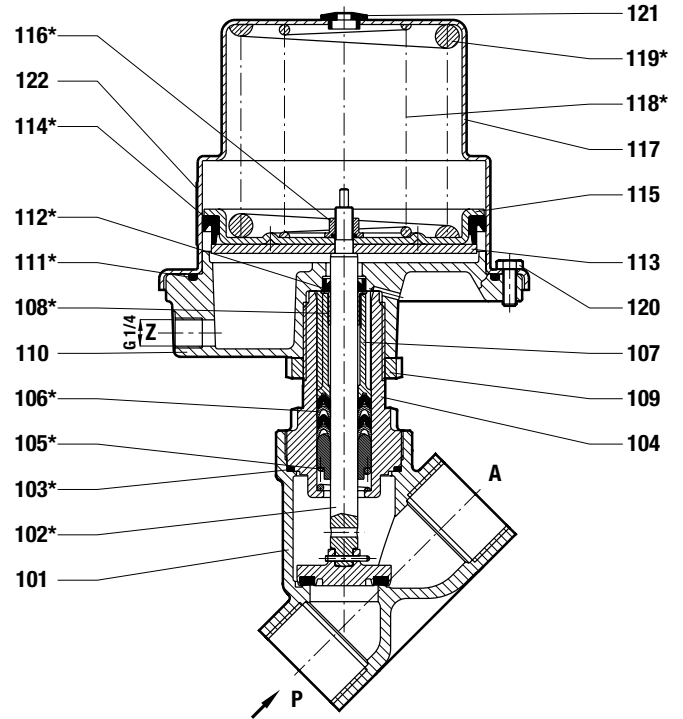
On request Further versions

## Section View

Actuator Ø 70 mm



Actuator Ø 125 mm



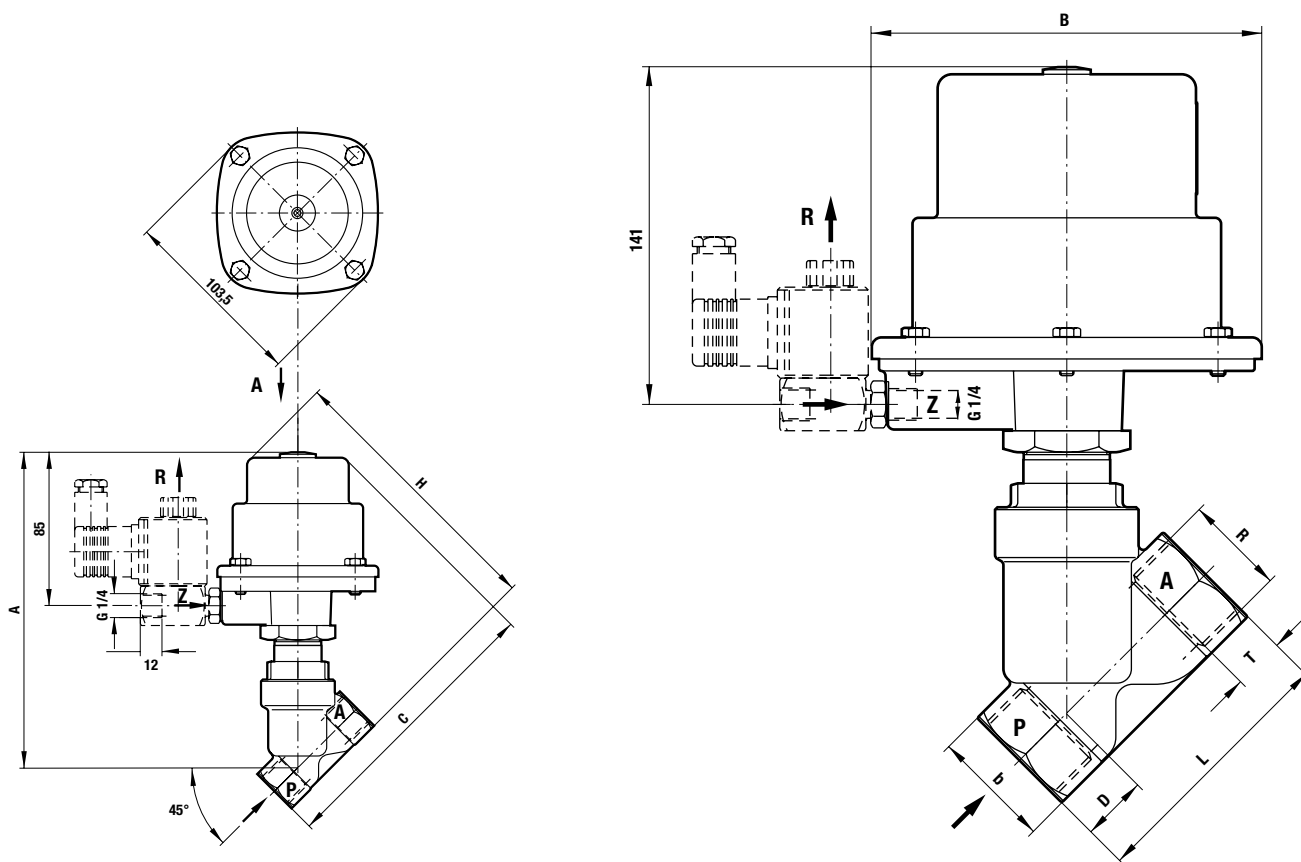
- 101 Valve body
- \*102 Valve spindle assembly
- \*103 Gasket
- 104 Screw piece
- \*105 Pressure spring
- \*106 Spindle sealing
- 107 Spacer sleeve
- \*108 Sleeve bearing
- 109 Nut
- 110 Bottom of control head housing
- \*111 O-ring
- \*112 FPM lip seal

- 113 Round plate
- \*114 Lip seal
- 115 Round plate
- \*116 Seal-Lock® nut
- 117 Control head housing
- \*118 Pressure spring - for G 1 and G 2 only
- \*119 Pressure spring
- 120 Hexagon screw
- 121 Plug

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

Actuator may be rotated 360°



Part Number	Nominal Diameter (mm)	Connection Size	A (mm)	b	B (mm)	C (mm)	H (mm)	L (mm)	T (mm)
Actuator Ø 70 mm									
8238200.0000 8239200.0000	15	G 1/2 1/2 NPT	175	SW 27	89.5	159	154	65	15.0
8238300.0000 8239300.0000	20	G 3/4 3/4 NPT	182	SW 32	89.5	165	160	75	16.5
8238400.0000 8239400.0000	25	G 1 1 NPT	190	SW 41	89.5	175	171	90	19.0
8238500.0000 8239500.0000	32	G 1 1/4 1 1/4 NPT	205	SW 50	89.5	189	186	110	21.5
8238600.0000 8239600.0000	40	G 1 1/2 1 1/2 NPT	207	SW 55	89.5	193	190	120	21.5
8238700.0000 8239700.0000	50	G 2 2 NPT	219	SW 70	89.5	211	206	150	26.0
Actuator Ø 125 mm									
8248500.0000 8249500.0000	32	G 1 1/4 1 1/4 NPT	270	SW 50	163.0	253	250	110	21.5
8248600.0000 8249600.0000	40	G 1 1/2 1 1/2 NPT	272	SW 55	163.0	257	255	120	21.5
8248700.0000 8249700.0000	50	G 2 2 NPT	284	SW 70	163.0	275	270	150	26.0

## 2/2-way valves DN 8 to DN 50

For neutral gases and liquid fluids

Solenoid actuated, with forced lifting

Diaphragm valves

Internal threads G 1/4 to G 2 or 1/4 NPT to 2 NPT

Operating pressure 0 to 10 / 16 bar

### Description (standard valve)

Solenoid valve for e. g. air, water, oil

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-10 °C up to max. +90 °C
Ambient temperature:	-10 °C up to max. +50 °C
Mounting position:	optional, preferably solenoid vertical on top

### Material

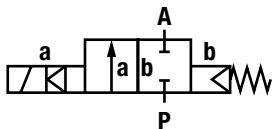
Body:	Brass (CW617N)
Seat seal:	NBR
Internal parts:	Stainless steel, PVDF, Brass

For contaminated fluids insertion of a strainer is recommended.

### Features

- High flow rate
- For robust industry solutions
- Damped operation
- Suitable for vacuum
- For systems with low or fluctuating pressure
- Valve operates without differential pressure
- Solenoid interchangeable without tools (**Click-on®**) only solenoid 915x and 940x

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8254400.9151 for a DN 25 valve.

**Click-on®**



## Characteristic Data

### Valves

Part Number Solenoid with ---	Part Number Solenoid with ~	Nominal Diameter (mm)	Connection Size	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
				min. (bar)	max. (bar)		
8254000.9151 8254000.9301 8264000.9151 8264000.9301	8254000.9154 8254000.9304 8264000.9154 8264000.9304	8	G 1/4 G 1/4 1/4 NPT 1/4 NPT	0	10 16 *** 10 16 ***	1.9	0.8
8254100.9151 8254100.9301 8264100.9151 8264100.9301	8254100.9154 8254100.9304 8264100.9154 8264100.9304	10	G 3/8 G 3/8 3/8 NPT 3/8 NPT	0	10 16 *** 10 16 ***	3.0	0.8
8254200.9151 8254200.9301 8264200.9151 8264200.9301	8254200.9154 8254200.9304 8264200.9154 8264200.9304	12	G 1/2 G 1/2 1/2 NPT 1/2 NPT	0	10 16 *** 10 16 ***	3.4	0.9
8254300.9151 8254300.9301 8264300.9151 8264300.9301	8254300.9154 8254300.9304 8264300.9154 8264300.9304	20	G 3/4 G 3/4 3/4 NPT 3/4 NPT	0	10 16 *** 10 16 ***	5.8	1.0
8254400.9151 8254400.9301 8264400.9151 8264400.9301	8254400.9154 8254400.9304 8264400.9154 8264400.9304	25	G 1 G 1 1 NPT 1 NPT	0	10 16 *** 10 16 ***	8.0	1.3
8254500.9401 8264500.9401	8254500.9404 8264500.9404	32	G 1 1/4 1 1/4 NPT	0	16 ***	23.0	4.3
8254600.9401 8264600.9401	8254600.9404 8264600.9404	40	G 1 1/2 1 1/2 NPT	0	16 ***	25.0	4.3
8254700.9401 8264700.9401	8254700.9404 8264700.9404	50	G 2 2 NPT	0	16 ***	41.0	5.4

\* for gases and liquid fluids up to 25 mm<sup>2</sup>/s (cSt)

State voltage [V] und frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

\*\*\* for liquid mediums and an operating pressure > 10 bar is the maximum allowed differential pressure limited to 2 bar.

## Solenoid 9151 / 9154; 9401 / 9404; 9301 / 9304

### Standard voltages

DC ---	AC ~ 40 Hz – 60 Hz	
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)


AC with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature +20 °C.  
In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
915x *	18 W	20 VA	20 VA
940x *	38 W	42 VA	42 VA
930x	18 W	20 VA	20 VA



\*  coil only

(with the exception of solenoid 94xx up to 41 V AC)

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

XXXXX01.XXXX Normally open, up to G 1 (1 NPT) with solenoid 9150 max. 10 bar,  
with solenoid 8300 max. 16 bar,  
from G 1 1/4 (1 1/4 NPT) only with solenoid 8400 max. 16 bar

XXXXX02.XXXX Manual override only from G 1 1/4 (1 1/4 NPT)

XXXXX03.XXXX Seat seal FPM,  
fluid temperature -5 °C up to max. +110 °C


XXXXX14.XXXX Seat seal EPDM, for hot water,  
fluid temperature -10 °C up to max. +110 °C

XXXXX17.XXXX Normally open, seat seal FPM,  
fluid temperature -5 °C up to max. +110 °C, from G 1 1/4  
(1 1/4 NPT) only with solenoid 8400 max. 16 bar

On request Further versions

**Accessoires:** - Manual override conversion kit  
- Mounting bracket conversion kit

## Further Options (Solenoids)

XXXXXX.9356 Protection class  II 2 GD EEx me II T3 T 140 °C


XXXXXX.8326 \* Protection class  II 3 GD EEx nA II T4 T 135 °C

XXXXXX.8426 \* Protection class  II 3 GD EEx nA II T4 T 135 °C

XXXXXX.8441 Protection class  II 2 GD EEx me II T3 T 140 °C

XXXXXX.9176 \* Protection class  II 3 GD EEx nA II T4 T 135 °C

XXXXXX.9191 Protection class  II 2 GD EEx me II T3 T 140 °C

XXXXXX.9426 \* Protection class  II 3 GD EEx nA II T4 T 135 °C

On request Further versions

\* DC only, for AC solenoids with design inspection certificate according to category 2,  
e. g. xxxxxxx.9191, xxxxxxx.8341 or xxxxxxx.8441



## Drawings

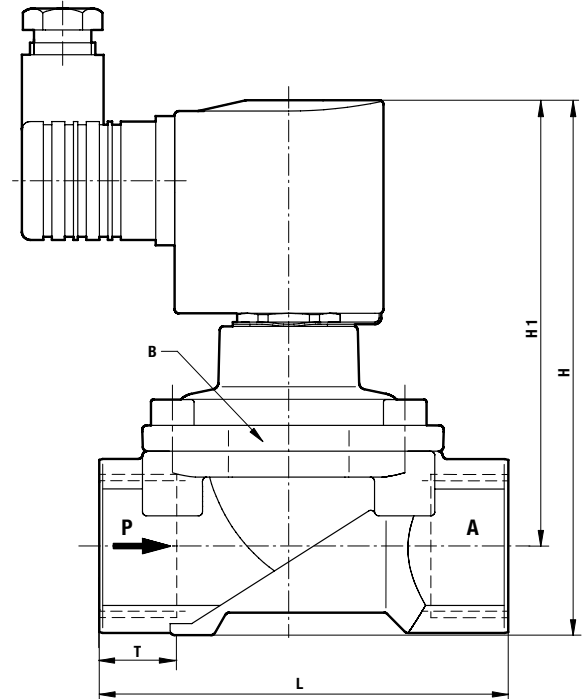
G 1/4 - G 1 with solenoid 915x (10 bar)  
 resp. 1/4 NPT - 1 NPT with solenoid 915x (10 bar)

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (socket included)

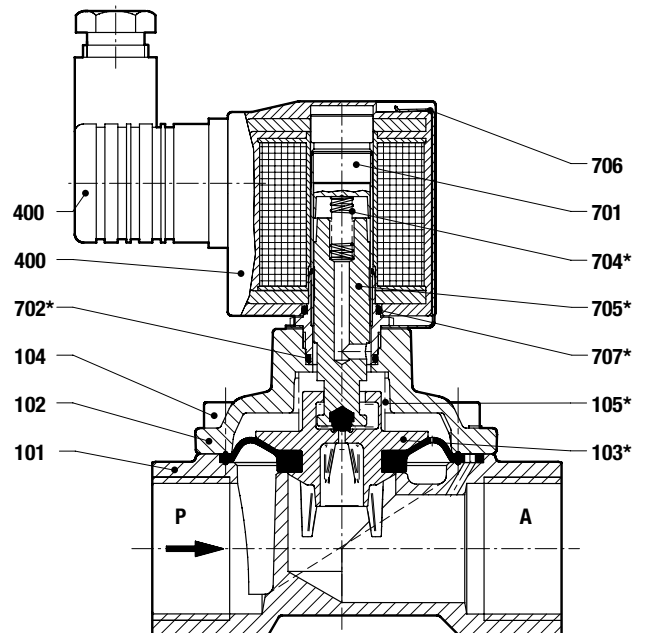
Part Number	Connection Size	L (mm)	H (mm)	H1 (mm)	B* (mm)	T (mm)
8254000.915x 8264000.915x	G 1/4 1/4 NPT	60	104	92.5	44	12.0 10.0
8254100.915x 8264100.915x	G 3/8 3/8 NPT	60	104	92.5	44	12.0 10.5
8254200.915x 8264200.915x	G 1/2 1/2 NPT	67	108	94.5	44	14.0 13.5
8254300.915x 8264300.915x	G 3/4 3/4 NPT	80	115	99.0	50	16.0 14.0
8254400.915x 8264400.915x	G 1 1 NPT	95	124	103.5	62	18.0 17.0

\* B = max. width



## Section View

- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm
- 104 Allen head screw
- \*105 Pressure spring
- 400 Solenoid
- 701 Core tube
- \*702 O-ring
- 703 Round plate
- \*704 Pressure spring
- \*705 Plunger
- 706 Spring clip
- \*707 O-ring
- 1400 Electrical connector (included)



\* These individual parts form a complete wearing unit.  
 When ordering spare parts please state Cat. No. and Series No.

## Drawings

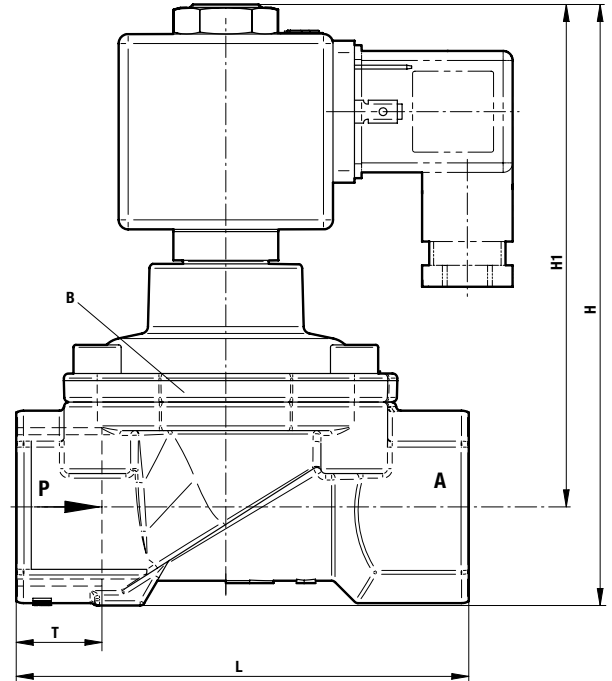
G 1/4 – G 1 with solenoid 930x (16 bar)  
 resp. 1/4 NPT – 1 NPT with solenoid 930x (16 bar)

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (socket included)

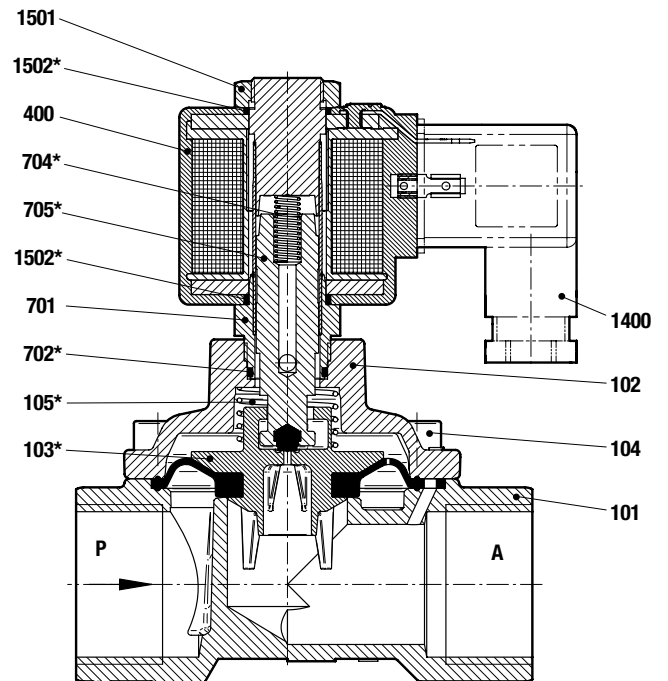
Part Number	Connection Size	L (mm)	H (mm)	H1 (mm)	B* (mm)	T (mm)
8254000.930x 8264000.930x	G 1/4 1/4 NPT	60	108	96	44	12.0 10.0
8254100.930x 8264000.930x	G 3/8 3/8 NPT	60	108	96	44	12.0 10.5
8254200.930x 8264200.930x	G 1/2 1/2 NPT	67	110	96	44	14.0 13.5
8254300.930x 8264300.930x	G 3/4 3/4 NPT	80	117	100	50	12.5 14.0
8254400.930x 8264400.930x	G 1 1 NPT	95	126	105	62	14.0 17.0

\* B = max. width



## Section View

- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm assembly
- 104 Allen head screw
- \*105 Pressure spring
- 400 Solenoid
- 701 Core tube
- \*702 O-ring
- \*704 Pressure spring
- \*705 Plunger
- 1400 Electrical connector (included)
- 1501 Hexagon screw
- \*1502 O-ring (2x)



\*These individual parts form a complete wearing unit.  
 When ordering spare parts please state Cat. No. and Series No.

## Drawings

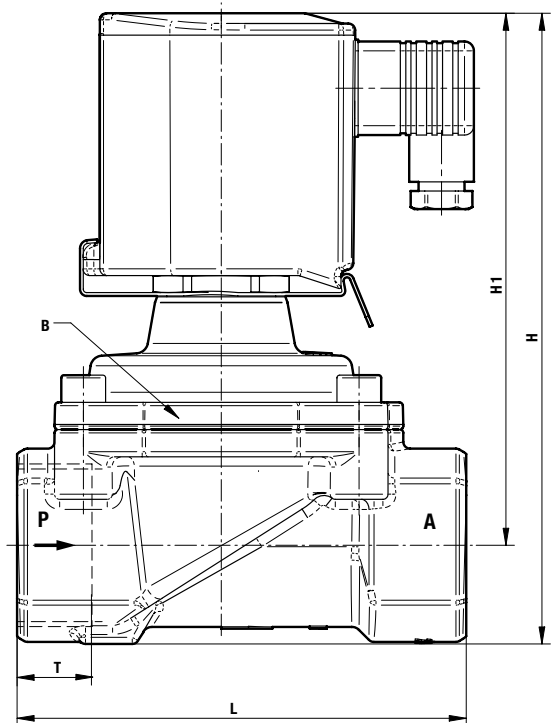
G 1 1/4 – G 2 with solenoid 940x (16 bar)  
 resp. 1 1/4 NPT – 2 NPT with solenoid 940x (16 bar)

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (socket included)

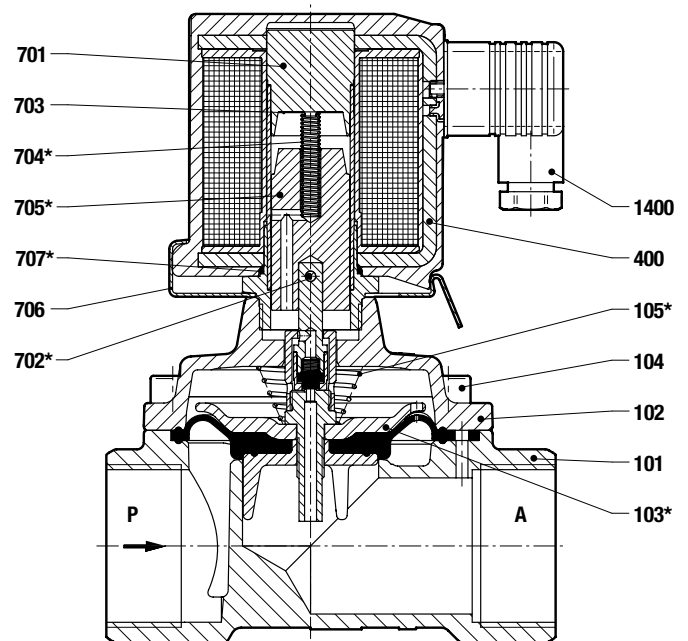
Part Number	Connection Size	L (mm)	H (mm)	H1 (mm)	B* (mm)	T (mm)
8254500.940x 8264500.940x	G 1 1/4 1 1/4 NPT	132	186	157	92	20.0 17.0
8254600.940x 8264600.940x	G 1 1/2 1 1/2 NPT	132	186	157	92	22.0 17.0
8254700.940x 8264700.940x	G 2 2 NPT	160	201	167	109	24.0 17.5

\* B = max. width



## Section View

- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm
- 104 Allen head screw
- \*105 Pressure spring
- 400 Solenoid
- 701 Core tube
- \*702 O-ring
- 703 Round plate
- \*704 Pressure spring
- \*705 Plunger
- 706 Spring clip
- \*707 O-ring
- 1400 Electrical connector (included)



\*These individual parts form a complete wearing unit.  
 When ordering spare parts please state Cat. No. and Series No.

## 2/2-way valves DN 15 to DN 50 with DVGW approval

For neutral burnable gases and other neutral gases

Pressure actuated by external fluid

Seat valves

Internal threads G 1/2 to G 2

Operating pressure 0 to 10 bar



### Description (standard valve)

Switching function:	normally closed
Flow direction:	determined
Mounting position:	optional

### Process fluid characteristics / Valve material

Fluid temperature:	-10 °C up to max. +60 °C
Ambient temperature:	-10 °C up to max. +60 °C
Body:	dezincification brass (CW602N)
Seat seal:	FPM
Body seal:	FPM
Internal parts:	Brass, Stainless steel
Spindle sealing:	PTFE / FPM, self-adjustable



### Pilot fluid characteristics / Actuator material

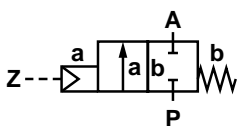
Pilot connection:	G 1/4
Antrieb:	Body: Stainless steel (1.4408)
	Bottom: Alu WEMA-Kor coated
Seat seal:	NBR
Internal parts:	Coated steel

For contaminated fluids insertion of a strainer is recommended.

### Features

- EC type examination certificate  
Product ID-No.: CE-0085 AT0091  
Valve class A Valve group 2
- High function reliability
- Short response time < 1 s
- For robust industry applications
- Qualification approval acc. to EN 161/3394 Part 1

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8258400.9151 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Connection Size	Operating Pressure *		Pilot Pressure		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total *** (kg)
			min. (bar)	max. (bar)	min. (bar)	max. (bar)		
8258200.0000	15	G 1/2	0	10	5	8	4.8	1.4
8258300.0000	20	G 3/4	0	10	5	8	10.0	1.5
8258400.0000	25	G 1	0	10	5	8	14.0	1.8
8258500.0000	32	G 1 1/4	0	10	5	8	23.0	2.4
8258600.0000	40	G 1 1/2	0	10	5	8	30.0	2.7
8258700.0000	50	G 2	0	10	5	8	37.0	3.9

\* for gases and liquid fluids up to 400 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

\*\*\* without pilot valve

Hinweis: **0000** without pilot valve  
**0247** with pilot valve for DC  
**0247** with pilot valve for AC

### Notes for 3/2-way pilot valve

Material body brass

Pilot fluid temperature -10 °C up to max. +80 °C

Pilot pressure: p<sub>max</sub> = 8 bar

### Further Options (Valves)

XXXXX**50**.XXXX Degreased version,  
housing blue painted

XXXXX**53**.XXXX Optical position indicator

On request Further versions

### Standard voltages

DC ==	AC ~ 50 Hz	AC ~ 60 Hz
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Note: This valve type is safety shut off valve and not available in the function „normally open“.

### Data for 3/2-way pilot valve

Design acc. to DIN VDE 0580

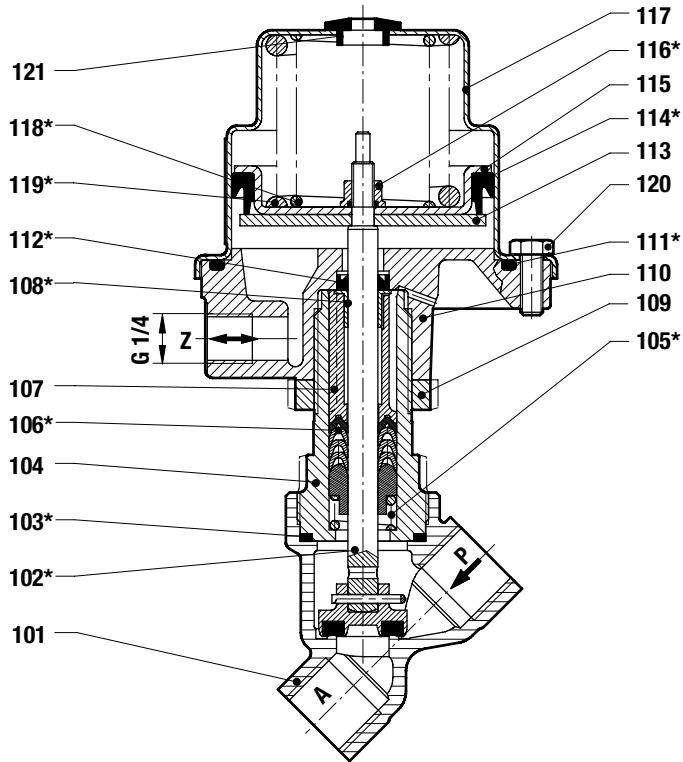
Voltage range ±10 %

Duty cycle (ED) 100 %

Protection class to EN 60529 IP 65 with mounted socket

Socket acc. to DIN EN 175301-803A

## Section View

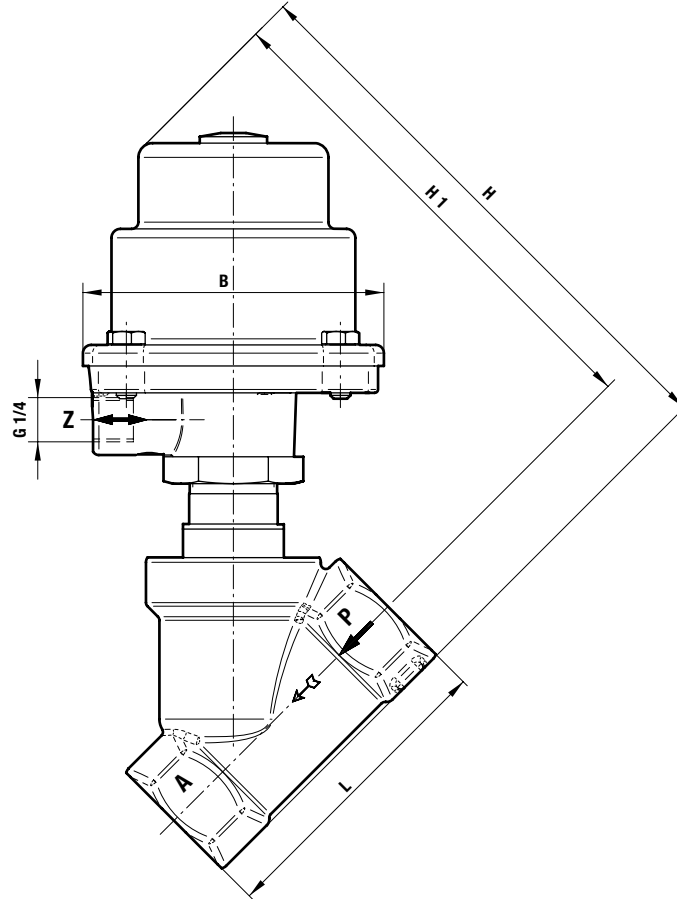


- |                                    |                                       |
|------------------------------------|---------------------------------------|
| 101 Valve body                     | *114 Lip seal                         |
| *102 Valve spindle assembly        | 115 Round plate                       |
| *103 Gasket                        | *116 Seal-Lock nut                    |
| 104 Screw piece                    | 117 Control head housing              |
| *105 Pressure spring               | *118 Pressure spring                  |
| *106 Spindle sealing               | *119 Pressure spring G 1 and G 2 only |
| 107 Spacer sleeve                  | 120 Hexagon screw                     |
| *108 Sleeve bearing                | 121 Screw tap                         |
| 109 Nut                            |                                       |
| 110 Bottom of control head housing |                                       |
| *111 O-Ring                        |                                       |
| *112 Lip seal                      |                                       |
| 113 Round plate                    |                                       |

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)



Part Number	Nominal Diameter (mm)	Connection Size	L (mm)	B (mm)	H (mm)	H1 (mm)
8258200.0000	15	G 1/2	65	89.5	154	140.5
8258300.0000	20	G 3/4	75	89.5	160	144.0
8258400.0000	25	G 1	90	89.5	171	150.5
8258500.0000	32	G 1 1/4	110	89.5	186	161.0
8258600.0000	40	G 1 1/2	120	89.5	190	162.5
8258700.0000	50	G 2	150	89.5	206	171.0

## 2/2-way-valves DN 15 to DN 50

For neutral and aggressive gases and liquids

Directly solenoid actuated

Seat valves

Internal threads G 1/2 to G 2

Operating pressure 0 up to 1.5 bar

**Click-on®**

### Description (standard valve)

Solenoid valve for e. g. natural gas, city gas

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-10 °C up to max. +90 °C
Ambient temperature:	-10 °C up to max. +50 °C
Mounting position:	valve standing or lying, solenoid at 45° angle



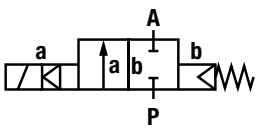
### Material

Body:	Brass (CW602N)
Seat seal:	NBR
Internal parts:	Stainless steel

### Features

- Easy, compact design
- High flow rate
- Solenoid interchangeable without tools (*Click-on®*)

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8266400.9401 for a DN 25 valve.



## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Connection Size	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
			min. (bar)	max. (bar)		
8266200.8301	15	G 1/2	0	0.60	3.0	1.28
8266200.9401	15	G 1/2	0	1.50	3.0	2.24
8266300.9401	20	G 3/4	0	1.00	5.5	2.35
8266400.9401	25	G 1	0	0.40	6.1	2.72
8566500.9401	32	G 1 1/4	0	0.25	8.7	3.26
8266600.8401	40	G 1 1/2	0	0.20	16.3	4.06
8266700.8401	50	G 2	0	0.15	27.6	5.02

\* for gases and liquid fluids up to 25 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

## Solenoid 8300 / 8301; 9401 / 9404 and 8401 / 8404

### Standard voltages

DC ===	AC ~ 40 Hz – 60 Hz	
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

AC with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %

Solenoid	DC ===	AC ~	
		Inrush	Holding
830X	22 W	25 VA	25 VA
840X *	40 W	42 VA	42 VA
940X	38 W	45 VA	45 VA

\*  coil only

(with the exception of solenoid 94xx up to 41 V AC)


### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

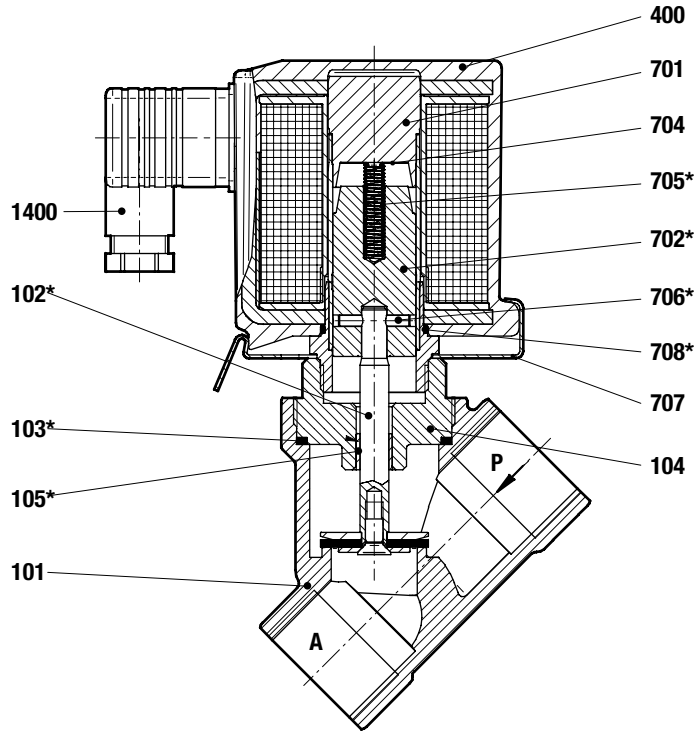
## Further Options (Valves)

On request further versions, e. g. NPT thread

## Further Options (Solenoids)

XXXXXXX.8441 Solenoid in protection class  
 II 2 GD EEx me II T3 T 140 °C

## Section View

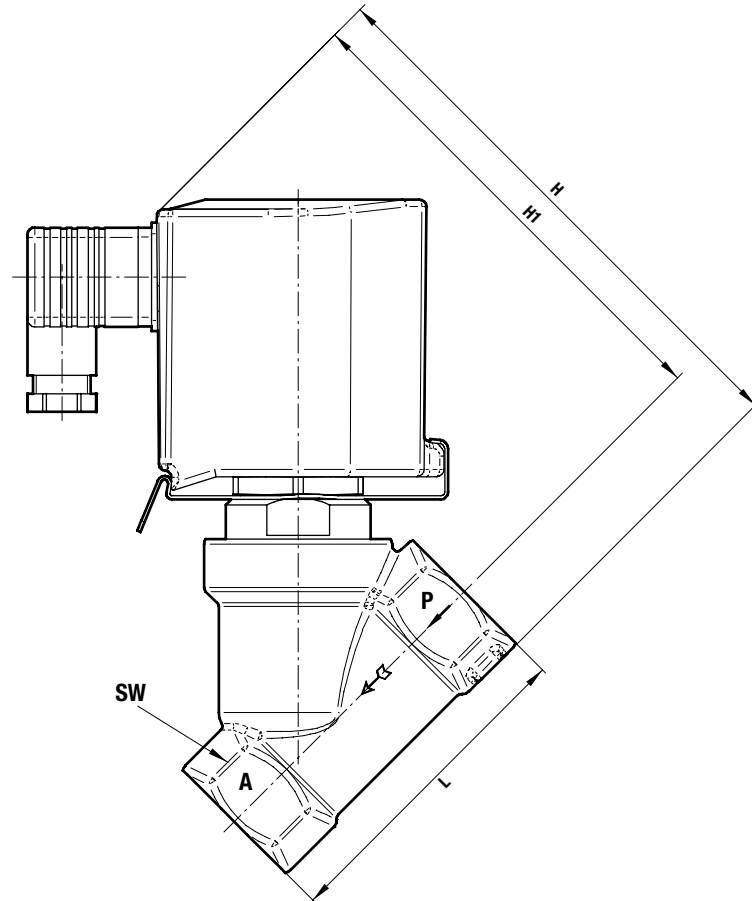


- 101 Valve body
- \*102 Valve spindle
- \*103 Seal ring
- 104 Screw piece
- \*105 Sleeve bearing
- 400 Solenoid
- 701 Core Tube
- \*702 Core
- 704 Round plate
- \*705 Pressure spring
- \*706 Dowel pin
- 707 Spring clip
- \*708 O-ring
- 1400 Socket (included)

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)



Part Number	Nominal Diameter (mm)	Connection Size	L (mm)	H (mm)	H1 (mm)
8266200.8301	15	G 1/2	65	123.40	109.90
8266200.9401	15	G 1/2	65	137.68	125.18
8266300.9401	20	G 3/4	75	145.42	129.92
8266400.9401	25	G 1	90	154.70	134.20
8566500.9401	32	G 1 1/4	110	175.99	151.49
8266600.8401	40	G 1 1/2	120	184.86	136.86
8266700.8401	50	G 2	150	195.58	163.58

## 2/2-way-valves DN 15 to DN 50

For neutral and aggressive gases and liquids

Directly solenoid actuated

Seat valves

Internal threads G 1/2 to G 2

Operating pressure 0 up to 1.5 bar

### Description (standard valve)

Solenoid valve for e. g. town gas, city gas

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-10 °C up to max. +90 °C
Ambient temperature:	-10 °C up to max. +50 °C
Mounting position:	valve standing or lying, solenoid at 45° angle

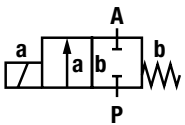
### Material

Body:	Stainless steel (1.4408)
Seat seal:	FPM
Internal parts:	Stainless steel

### Features

- Easy, compact design
- High flow rate
- Solenoid interchangeable without tools (*Click-on*<sup>®</sup>)

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8267403.9401 for a DN 25 valve.

**Click-on<sup>®</sup>**  
**Stainless Steel**



## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Connection Size	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
			min. (bar)	max. (bar)		
8267203.8301	15	G 1/2	0	0.60	3.0	1.28
8267203.9401	15	G 1/2	0	1.50	3.0	2.24
8267303.9401	20	G 3/4	0	1.00	5.5	2.35
8267403.9401	25	G 1	0	0.40	6.1	2.72
8267503.9401	32	G 1 1/4	0	0.25	8.7	3.26
8267603.8401	40	G 1 1/2	0	0.20	16.3	4.06
8267703.8401	50	G 2	0	0.15	27.6	5.02

\* for gases and liquid fluids up to 25 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

## Solenoid 8300 / 8301; 9401 / 9404 and 8401 / 8404

### Standard voltages

DC ===	AC ~ 40 Hz – 60 Hz	
	24 V	24 V
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

AC with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %

Solenoid	DC ===	AC ~	
		Inrush	Holding
<b>830x</b>	22 W	25 VA	25 VA
<b>840x *</b>	40 W	45 VA	45 VA
<b>940x</b>	38 W	45 VA	45 VA

\*  coil only

(with the exception of solenoid 94xx up to 41 V AC)

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

On request

Further versions, e. g. NPT thread

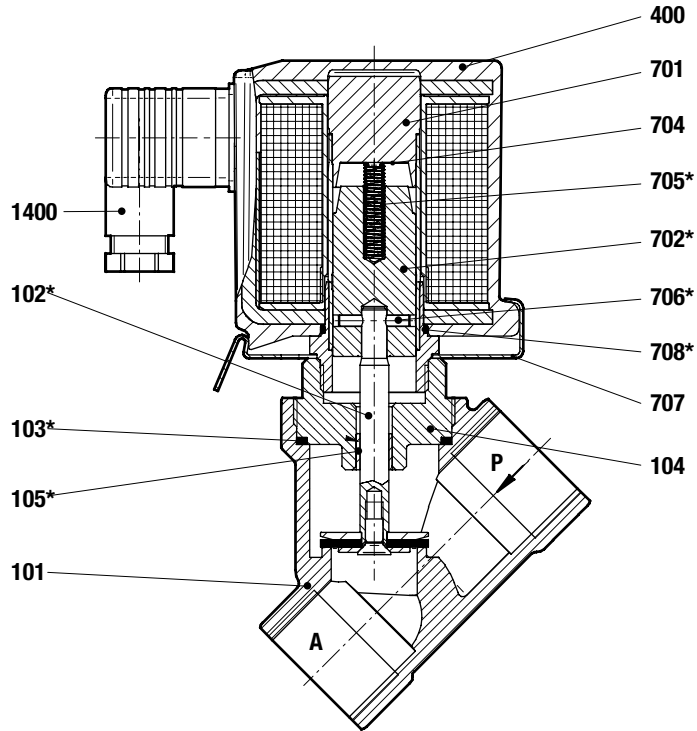
## Further Options (Solenoids)

XXXXXXXX.8441

Solenoid in protection class

⊕ II 2 GD EEx me II T3 T 140 °C

## Section View

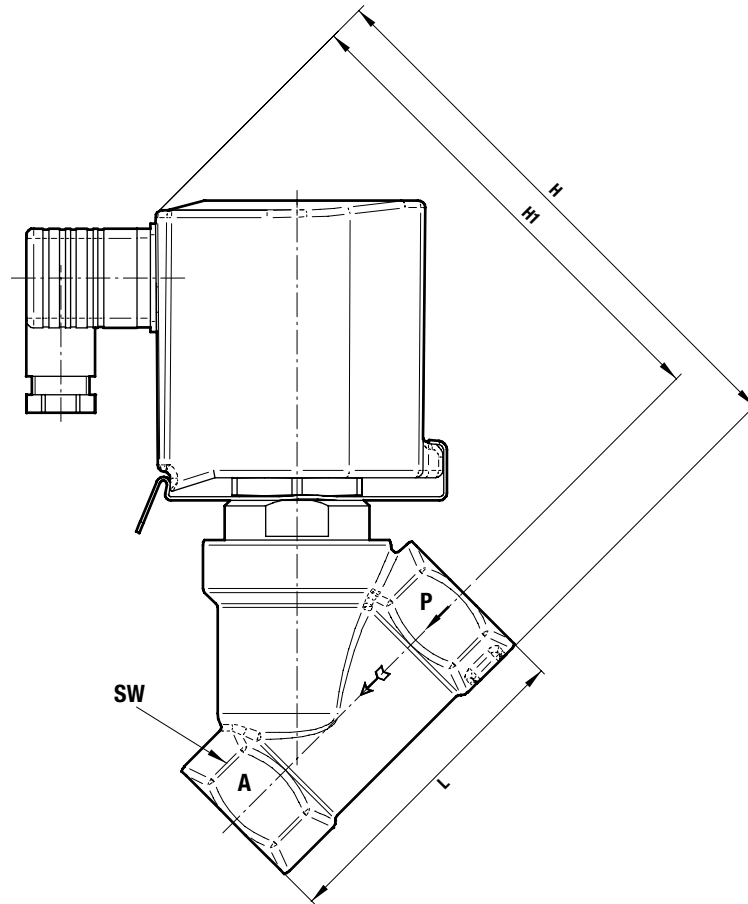


- 101 Valve body
- \*102 Valve spindle
- \*103 Seal ring
- 104 Screw piece
- \*105 Sleeve bearing
- 400 Solenoid
- 701 Core Tube
- \*702 Core
- 704 Round plate
- \*705 Pressure spring
- \*706 Dowel pin
- 707 Spring clip
- \*708 O-ring
- 1400 Socket (included)

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)



Part Number	Nominal Diameter (mm)	Connection Size	L (mm)	H (mm)	H1 (mm)
8267203.8301	15	G 1/2	65	123.40	109.90
8267203.9401	15	G 1/2	65	137.68	125.18
8267303.9401	20	G 3/4	75	145.42	129.92
8267403.9401	25	G 1	90	154.70	134.20
8267503.9401	32	G 1 1/4	110	175.99	151.49
8267603.8401	40	G 1 1/2	120	184.86	136.86
8267703.8401	50	G 2	150	195.58	163.58

## 2/2-way valves DN 20 to DN 80

For air

Remote pilot operated

Internal threads G 3/4 up to G 3 or 3/4 NPT up to 3 NPT

Operating pressure 0.4 to 8 bar

### Description (standard valve)

Control via separate pilot valve or pilot controller.

Switching function:	normally closed
Flow direction:	determined
Coil gas temperature:	-40 °C to max. +85 °C
Ambient temperature:	-20 °C to max. +85 °C
Mounting position:	optional
Pilot connection:	G 1/8 resp. 1/8 NPT



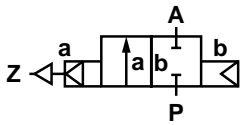
### Material

Body:	Aluminium
Seat seal:	TPE

### Features

- High flow rate
- Clear compact design
- One-piece diaphragm

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8290300.0000 for a G 3/4 valve.



## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Connection Size	Valve Length (mm)	Operating Pressure		k <sub>v</sub> -value * (Base m <sup>3</sup> /h)	Weight Total (kg)
				min.	max. (bar)		
8290300.0000 8291300.0000	20	G 3/4 3/4 NPT	95.0	0.4	8	18	0.32
8290400.0000 8291400.0000	25	G 1 1 NPT	95.0	0.4	8	22	0.29
8290600.0000 8291600.0000	40	G 1 1/2 1 1/2 NPT	135.0	0.4	8	59	0.97
8290700.0000 8291700.0000	50	G 2 2 NPT	170.0	0.4	8	80	1.79
8290800.0000 8291800.0000	65	G 2 1/2 2 1/2 NPT	170.0	0.4	8	93	2.07
8290900.0000 8291900.0000	80	G 3 3 NPT	239.5	0.4	7	172	3.70

\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

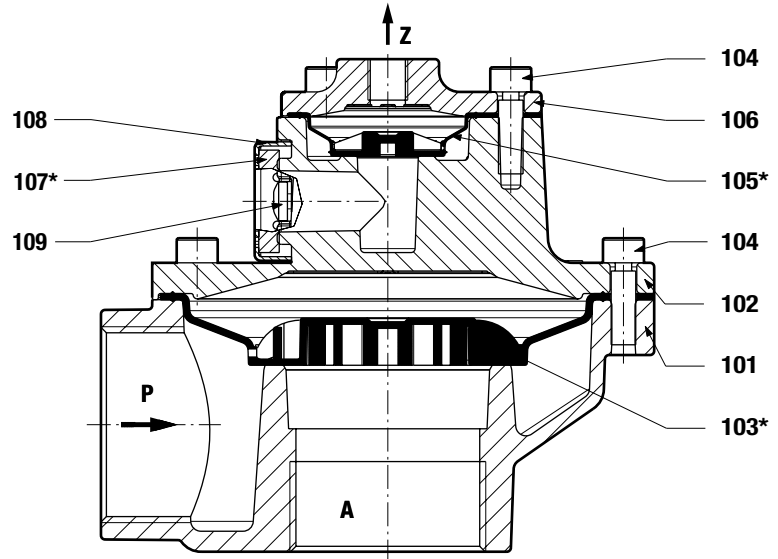
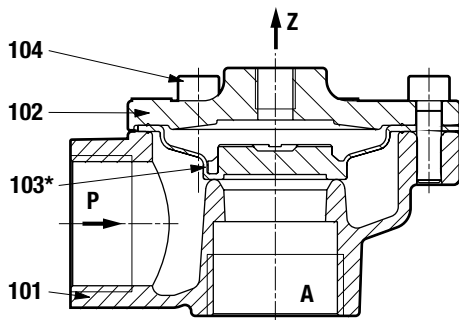
### Further Options (Valves)

- XXXXX**54**.XXXX Flange version without valve body
- XXXXX**62**.XXXX Crude gas temperature version -20 to +100 °C  
 Seat seal TPE  
 Ambient temperature -40 to +85 °C  
 Coil gas temperature -20 to +85 °C
- XXXXX**63**.XXXX Crude gas temperature version -20 to +140 °C  
 Seat seal TPE  
 Ambient temperature -40 to +85 °C  
 Coil gas temperature -20 to +85 °C
- On request Further versions

## Section View

G 3/4 and 3/4 NPT  
G 1 and 1 NPT

G 1 1/2 and 1 1/2 NPT  
G 2 and 2 NPT  
G 2 1/2 and 2 1/2 NPT  
G 3 and 3 NPT



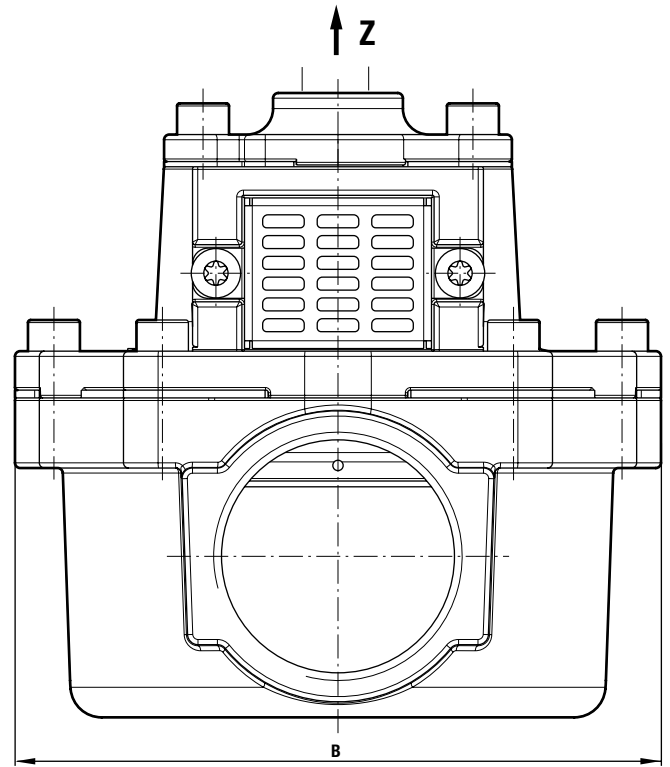
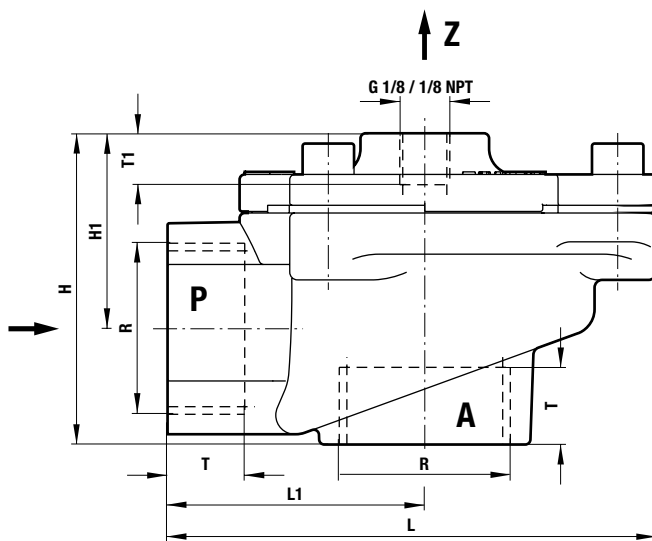
- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm
- 104 Socket head cap screw
- \*105 Diaphragm
- 106 Valve cover
- \*107 Silencer
- 108 Silencer housing
- 109 Socket head cap screw

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

G 3/4 and 3/4 NPT  
G 1 and 1 NPT

G 1 1/2 and 1 1/2 NPT  
G 2 and 2 NPT  
G 2 1/2 and 2 1/2 NPT  
G 3 and 3 NPT



Part Number	R Connection Size	T (mm)	T1 (mm)	B (mm)	H (mm)	H1 (mm)	L (mm)	L1 (mm)
8290300.0000 8291300.0000	G 3/4 3/4 NPT	16 14	10	80.0	61.5	39.0	95.0	50
8290400.0000 8291400.0000	G 1 1 NPT	18 17	10	80.0	61.5	39.0	95.0	50
8290600.0000 8291600.0000	G 1 1/2 1 1/2 NPT	22 18	10	124.5	122.0	91.0	135.0	70
8290700.0000 8291700.0000	G 2 2 NPT	25 18	10	140.0	145.0	104.0	170.0	95
8290800.0000 8291800.0000	G 2 1/2 2 1/2 NPT	25 24	10	140.0	160.0	115.0	170.0	95
8290900.0000 8291900.0000	G 3 3 NPT	33 28	10	196.0	176.0	123.5	239.5	143

## 2/2-way valves DN 20 to DN 80

For air

Solenoid pilot operated

Internal threads G 3/4 up to G 3 or 3/4 NPT up to 3 NPT

Operating pressure 0.4 to 8 bar

### Description (standard valve)

Switching function:	normally closed
Flow direction:	determined
Coil gas temperature:	-40 °C to max. +85 °C
Ambient temperature:	-20 °C to max. +85 °C
Mounting position:	optional, preferably solenoid vertical on top

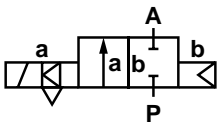
### Material

Body:	Aluminium
Seat seal:	TPE
Internal parts:	TPU

### Features

- High flow rate
- All internal components captive
- Simple compact design
- Solenoid interchangeable without tools
- Integrated silencer
- One-piece diaphragm

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8296300.8171 for a G 3/4 valve with standard solenoid.

**Twist-on<sup>®</sup>**



## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Connection Size	Valve Length (mm)	Operating Pressure		k <sub>v</sub> -value * (Base m <sup>3</sup> /h)	Weight Total (kg)
				min.	max. (bar)		
8296300.8171 8297300.8171	20	G 3/4 3/4 NPT	95.0	0.4	8	18	0.50
8296400.8171 8297400.8171	25	G 1 1 NPT	95.0	0.4	8	22	0.47
8296600.8171 8297600.8171	40	G 1 1/2 1 1/2 NPT	135.0	0.4	8	59	1.18
8296700.8171 8297700.8171	50	G 2 2 NPT	169.0	0.4	8	80	2.02
8296800.8171 8297800.8171	65	G 2 1/2 2 1/2 NPT	169.0	0.4	8	93	2.30
8296900.8171 8297900.8171	80	G 3 3 NPT	239.5	0.4	7	144	3.93

State voltage [V] and frequency [Hz]

\*C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

## Solenoid 8171


### Standard voltages

DC ---	AC ~	
	50 Hz	60 Hz
24 V	24 V	24 V
–	110 V	120 V
–	230 V	–

Design acc. to DIN VDE 0580  
Voltage range ±10 %  
100 % duty cycle  
Protection class acc. to EN 60529 IP65  
Socket Form A acc. to DIN EN 175301-803

## Power Consumption

According to DIN VDE 0580 at coil temperature +20 °C. In operating the solenoid coil decrease the power consumption appr. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
<b>8171</b> 	12 W	23 VA	16 VA / 8 W

## Further Options (Valves)

- XXXXX**54**.XXXX Flange version without valve body
- XXXXX**62**.XXXX Crude gas temperature version –20 to +100 °C  
Seat seal TPE  
Ambient temperature –40 to +85 °C  
Coil gas temperature –20 to +85 °C
- XXXXX**63**.XXXX Crude gas temperature version –20 to +140 °C  
Seat seal TPE  
Ambient temperature –40 to +85 °C  
Coil gas temperature –20 to +85 °C

On request

Further versions

## Further Options (Solenoids)

- XXXXXXX**.9151** Solenoid version for low temperature –40 °C
- XXXXXXX**.8176** Solenoid in protection class  
⊕ II 3 GD EEx nA II T4 T 135 °C
- XXXXXXX**.8186** Solenoid in protection class  
⊕ II 2 GD EEx me II T4 T 140 °C
- XXXXXXX**.8821** Pulse Solenoid

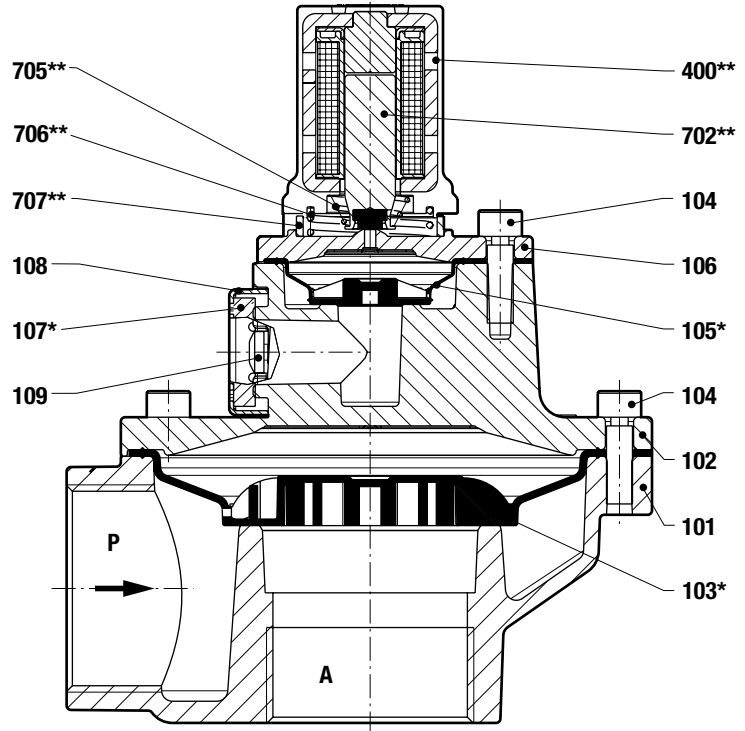
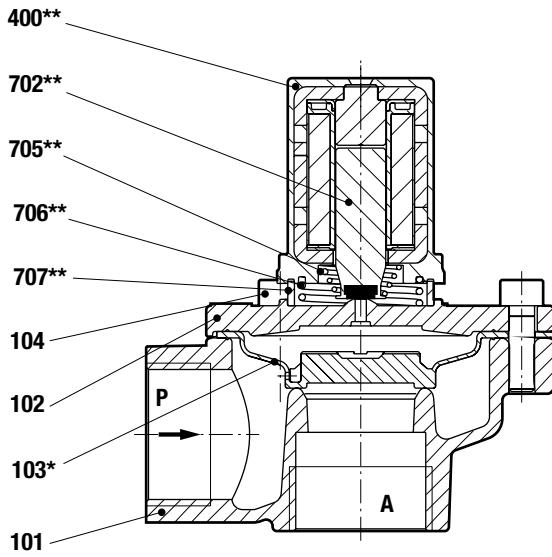
On request

Further versions

## Section View

G 3/4 and 3/4 NPT  
G 1 and 1 NPT

G 1 1/2 and 1 1/2 NPT  
G 2 and 2 NPT  
G 2 1/2 and 2 1/2 NPT  
G 3 and 3 NPT



- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm
- 104 Socket head cap screw
- \*105 Diaphragm
- 106 Valve cover
- \*107 Silencer
- 108 Silencer housing
- 109 Socket head cap screw
- \*\* Solenoid complete wearing unit, e. g. 8298000.8170.XXXXX for a solenoid 8170
- 400 Solenoid
- 702 Core
- 705 Pressure spring
- 706 Pressure spring
- 707 Silencer
- 1400 Socket (included)

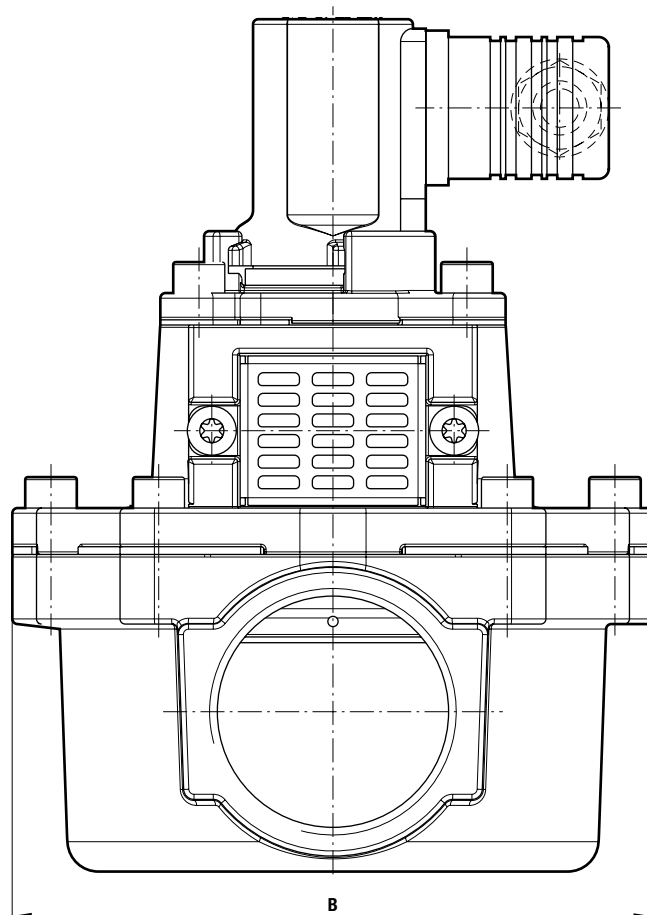
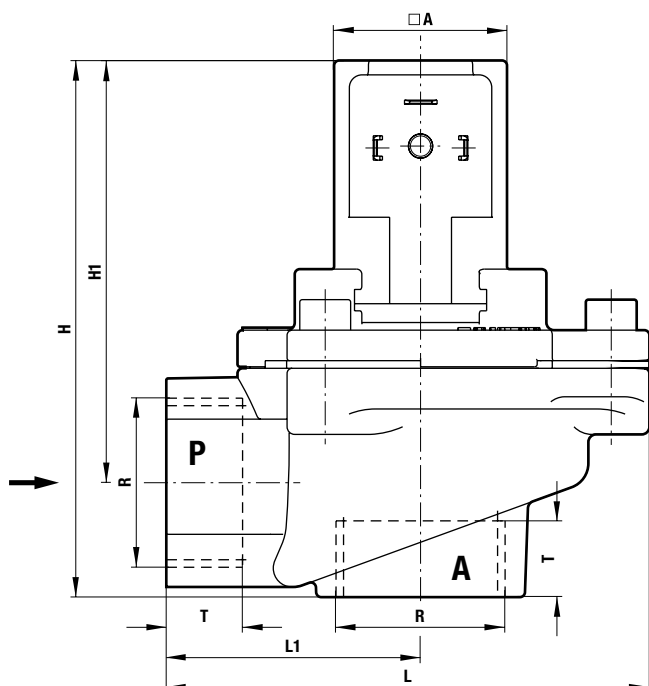
\*/\*\*These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

G 3/4 and 3/4 NPT  
G 1 and 1 NPT

G 1 1/2 and 1 1/2 NPT  
G 2 and 2 NPT  
G 2 1/2 and 2 1/2 NPT  
G 3 and 3 NPT

Solenoid rotatable 3 x 120°  
Socket turnable 4 x 90°  
(Socket included)



Part Number	R Connection Size	T (mm)	A (mm)	B (mm)	H (mm)	H1 (mm)	L (mm)	L1 (mm)
8296300.8171 8997300.8171	G 3/4 3/4 NPT	16 14	34	80.0	105.5	83	95.0	50
8296400.8171 8297400.8171	G 1 1 NPT	18 17	34	80.0	105.5	83	95.0	50
8296600.8171 8297600.8171	G 1 1/2 1 1/2 NPT	22 18	34	124.5	166.0	136	135.0	70
8296700.8171 8297700.8171	G 2 2 NPT	25 18	34	140.0	190.5	149	170.0	95
8296800.8171 8297800.8171	G 2 1/2 2 1/2 NPT	25 24	34	140.0	205.5	160	170.0	95
8296900.8171 8297900.8171	G 3 3 NPT	33 28	34	196.0	221.0	169	239.5	143

## Filter Cleaning System

For air

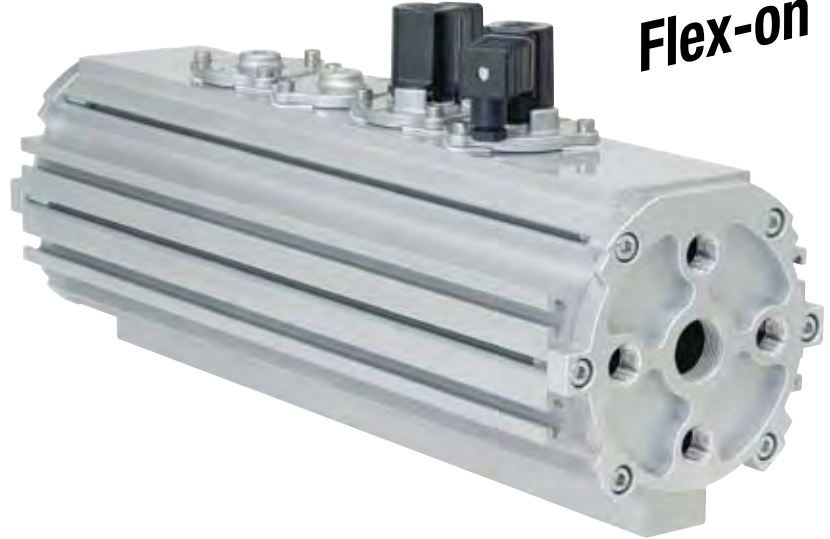
With integrated filter valves

Ø 135 mm diameter for DN 25 valves


Working pressure 0.4 to 8 bar

**NEW**

**Flex-on™**



### Description (standard)

- Choice of virtually any number of valves at spacing of at least 75 mm
- Different blow-tube connections available include pipe, thread, flange socket, etc.
- Modular system manufactured from aluminium to the Pressure Equipment Directive 97/23/EG
- Integrated filter pulse valve with TPE diaphragm for rapid response, high peak pressures and very good flow rates
- Actuating solenoids with  ATEX Zone 21/22 approvals available

Working pressure:	0.4 to 8 bar (pulsating)
Medium temperature:	-20 °C to max. +80 °C
Ambient temperature:	-20 °C to max. +80 °C
Mounting position:	as required
Diameter:	Ø 135 mm
Volume:	0.14 dm <sup>3</sup> / cm of tank length
Minimum spacing:	75 mm

### Materials

Housing:	Aluminium / PA 66
Seat seal:	TPE
Pilot seal:	TPU

### Features

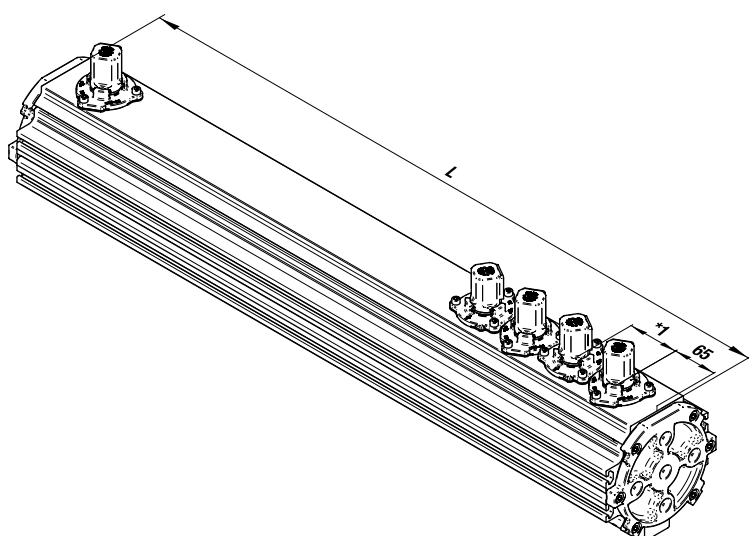
- High flow rate
- Individual length of the filter cleaning system up to max. 1.2 m completely mounted
- Flexible configurable filter cleaning system
- Mounting parts: electronic control, purge valve for measuring pipes of differential pressure regulator, differential pressure regulator, cable channel



## Examples for mounting parts



## Solenoid or externally actuated valve



\*1) Min. 75 mm, but max. to customer requirement

## Solenoid 8171


Standard voltages

DC ===	AC ~ 50 Hz	60 Hz
24 V	24 V	24 V
–	110 V	120 V
–	230 V	–

Design acc. to DIN VDE 0580  
Voltage range  $\pm 10\%$   
100 % duty cycle  
Protection class acc. to EN 60529 IP65  
Socket Form A acc. to DIN EN 175301-803

## Power Consumption

According to DIN VDE 0580 at coil temperature  $+20\text{ }^{\circ}\text{C}$ . In operating the solenoid coil decrease the power consumption appr. 30 %.

Solenoid	DC ===	AC ~ Inrush	Holding
8171 	12 W	23 VA	16 VA / 8 W

## Further Options (Solenoids)

xxxxxxx.8176 Solenoid in protection class  
⊕ II 3 GD EEx nA II T4 T 135 °C

xxxxxxx.8186 Solenoid in protection class  
⊕ II 2 GD EEx me II T4 T 140 °C

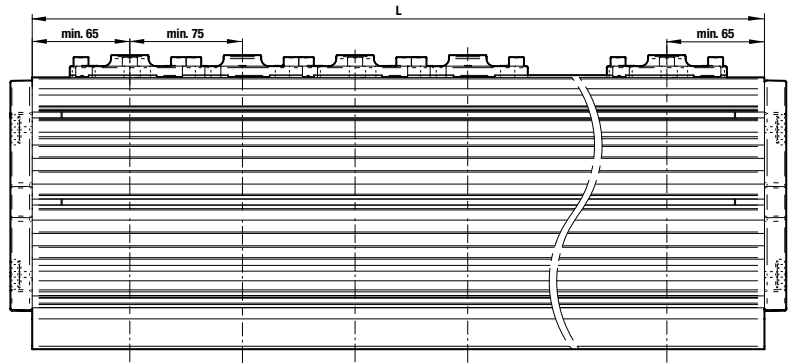
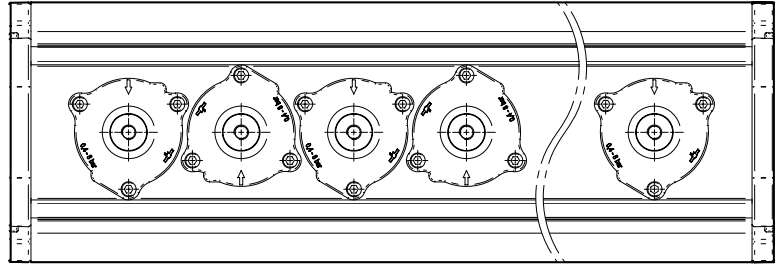
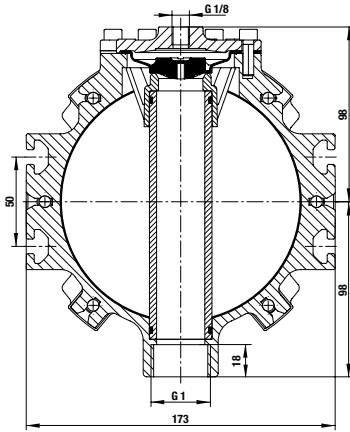
On request Further versions

## Further Options (Filter Cleaning System)

On request Connection for condensate drain

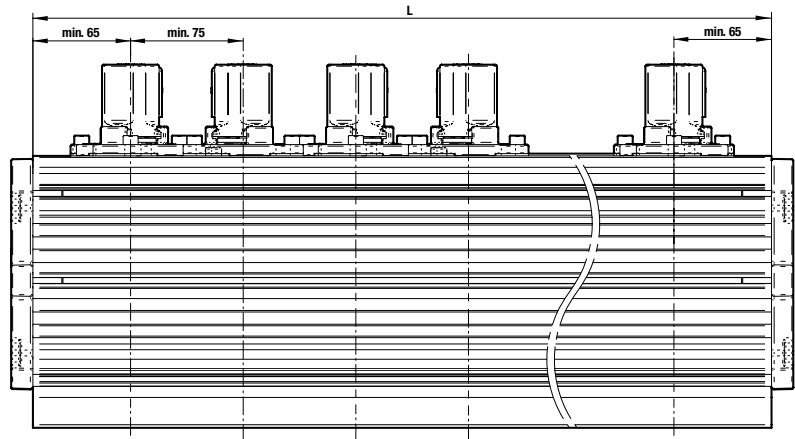
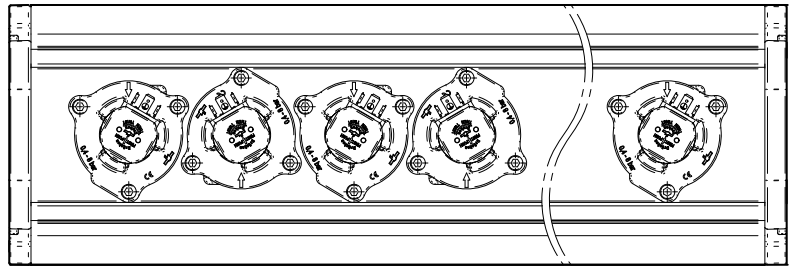
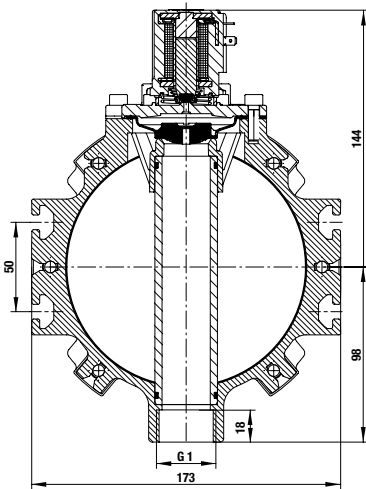
## Section View

Remote pilot operated



## Section View

Solenoid pilot operated



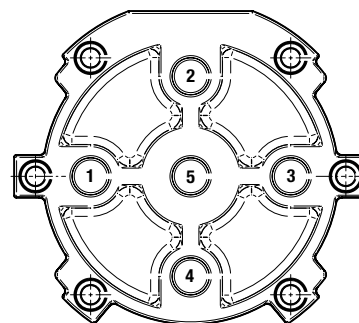
## Options Tank Cover

**Connection 1, 2, 3, 4:** 1/2" (G or NPT) port for

- condensate drain
- pressure gauge
- pressure switch
- reading point

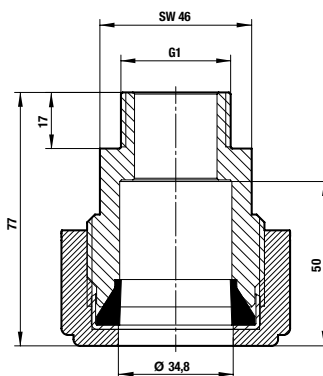
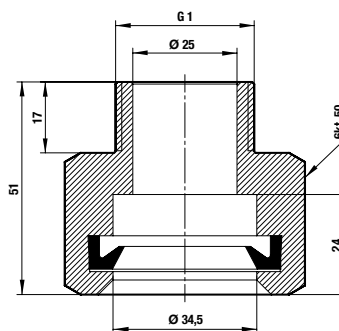
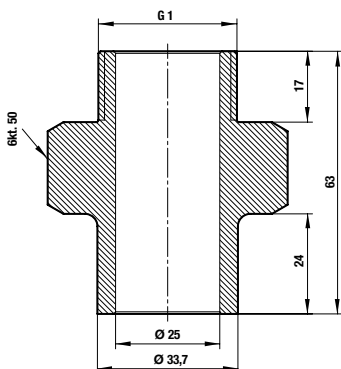
**Connection 5:** 1", optional 1/2" or 3/4" (G or NPT) port for

- compressed air supply
- input solenoid valve

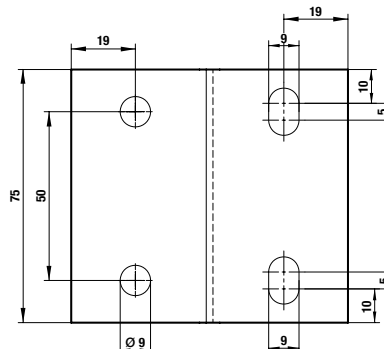
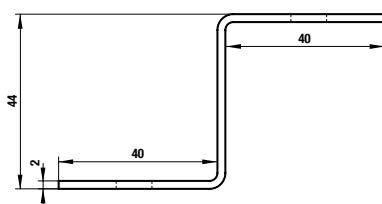


Groove with sliding block for mounting of

- electronic control
- purge valve for measuring pipes of differential pressure regulator
- differential pressure regulator
- cable channel



## Mounting Angle



## 2/2-way valves DN 15 to DN 50

For neutral gases and liquid fluids

Indirectly solenoid actuated

Diaphragm valves

Flange connection, pressure rating PN 16

Operating pressure 0.1 (0.5) to 10 / 16 bar

**NEW**

**Click-on®**

### Description (standard valve)

Solenoid valve for air, water

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-10 °C up to max. +90 °C
Ambient temperature:	-10 °C up to max. +50 °C
Mounting position:	optional, preferably solenoid vertical on top



**83030**

### Material

Body:	Cast steel, Brass
Seal seat:	NBR
Internal parts:	Stainless steel, PVDF resp. Brass from DN 32

For contaminated fluids insertion of a strainer is recommended.

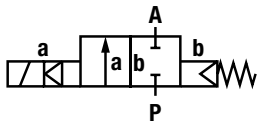
### Features

- High flow rate
- Damped operation
- Functional compact design
- Solenoid interchangeable without tools (**Click-on®**) (DN 15 - DN 50)
- Fluids of Group 2 acc. Pressure Equipment Directive 97/23/EC



**83580**

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8303400.9101 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number Solenoid with $\equiv$ or $\sim$	Nominal Diameter (mm)	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
		min. (bar)	max. (bar)		
8303200.9101	15	0.1	16	3.8	2.6
8303300.9101	20	0.1	16	6.1	2.8
8303400.9101	25	0.1	16	9.5	3.2
8303500.9101	32	0.1	10	23.0	5.8
8303500.9151	32	0.1	16	23.0	5.9
8303600.9101	40	0.1	10	25.0	6.1
8303600.9151	40	0.1	16	25.0	6.2
8303700.9101	50	0.1	10	41.0	8.4
8303700.9151	50	0.1	16	41.0	8.5
8358800.9366	65	0.5	10	56.0	21.3
8358900.9366	80	0.5	10	90.0	28.6
8359000.9366	100	0.5	10	150.0	40.2
8359100.9366	125	0.5	10	191.0	63.0
8359200.9366	150	0.5	10	277.0	93.0

\* for gases and liquid fluids up to 25 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

## Magnet 9101 / 9151; 9366

### Standard voltages

DC $\equiv$	AC $\sim$ 50 Hz	AC $\sim$ 60 Hz
24 V	24 V	–
–	110 V	120V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range  $\pm 10$  %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

## Power Consumption

According to DIN VDE 0580 at coil temperature +20 °C.

In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC $\equiv$	AC $\sim$	
		Inrush	Holding
9101 *	8 W	15 VA	12 VA / 7 W
9151 *	18 W	45 VA	35 VA / 17 W
9366 *	18 W	106 VA	35 VA / 17 W

\*  coil only

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

XXXXX01.XXXX Normally open (NO), 0.1 to 16 bar, from DN 32 only with solenoid 9151


XXXXX02.XXXX Manual override

XXXXX03.XXXX Seat seal FPM, fluid temperature  $-5$  °C up to  $+110$  °C


XXXXX14.XXXX Seat seal EPDM, for hot water, fluid temperature  $-20$  °C up to  $+110$  °C; 0.3 to 16 bar up to DN 25  
0.3 to 10 bar from DN 32


XXXXX47.XXXX Flanges acc. to ASME B 16.5 150 lb/sq.in.  
On request Further versions

## Further Options (Solenoids)

XXXXXXXX.9136 Protection class  
 II 2 GD EEx m II T4 T 130 °C, with 3 m connection cable for AC/DC

XXXXXXXX.9186 Protection class  
 II 2 GD EEx m II T4 T 140 °C

XXXXXXXX.4682 Solenoid in protection class  
 II 2 GD EEx md II C T4/T5 T 130 °C with cable gland for DC

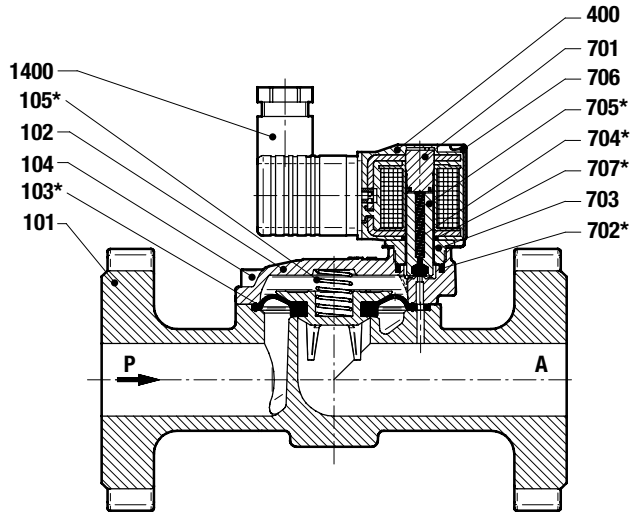
XXXXXXXX.4683 Solenoid in protection class  
 II 2 GD EEx md II C T4/T5 T 130 °C with cable gland for AC

On request Further versions

## Section View

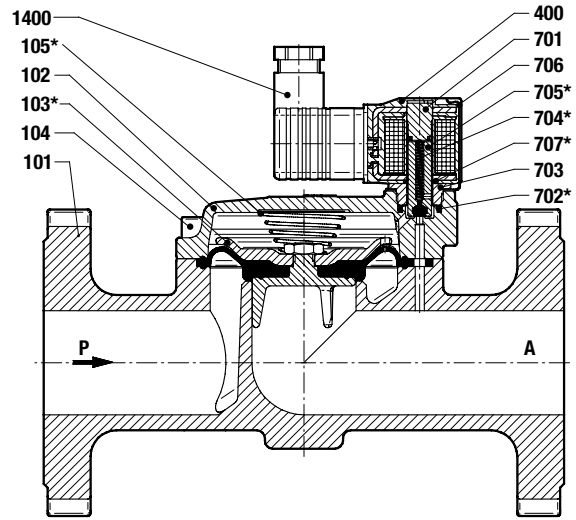
### 83030 up to DN 25

- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm
- 104 Straight pin
- \*105 Pressure spring
- 400 Solenoid
- 701 Core tube
- \*702 O-ring
- 703 Screw piece
- \*704 Pressure spring
- \*705 Core
- 706 Spring clip
- \*707 O-ring
- 1400 Socket (included)



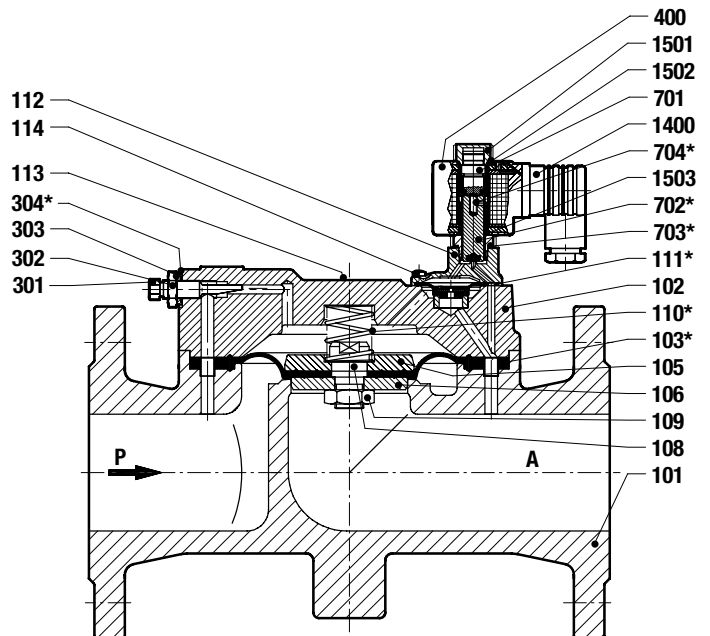
### 83030 from DN 32

- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm
- 104 Straight pin
- \*105 Pressure spring
- 400 Solenoid
- 701 Core tube
- \*702 O-ring
- 703 Screw piece
- \*704 Pressure spring
- \*705 Core
- 706 Spring clip
- \*707 O-ring
- 1400 Socket (included)



### 83580 from DN 65

- |                              |                      |
|------------------------------|----------------------|
| 101 Valve body               | 303 Round plate      |
| 102 Body cover*103 Diaphragm | *304 O-ring          |
| 105 Round plate              | 400 Solenoid         |
| 106 Round plate              | 701 Core tube        |
| 107 Bushing                  | *702 Core            |
| 108 Screw piece              | *703 O-ring          |
| 109 Hexagon nut              | *704 Pressure spring |
| *110 Pressure spring         | 1400 Socket          |
| *111 Diaphragm               | 1501 Hexagon screw   |
| 112 Body cover               | 1502 O-ring          |
| 113 Cheese head screw        | 1503 Gasket          |
| 114 Oval head cap screw      |                      |
| 301 Hexagon screw            |                      |
| 302 Hexagon nut              |                      |

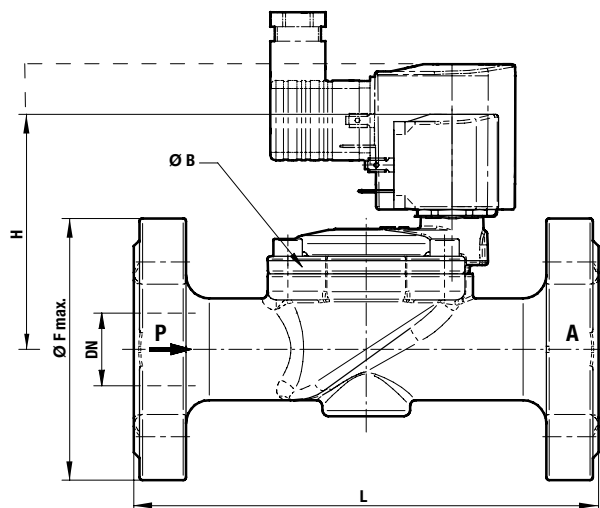


\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

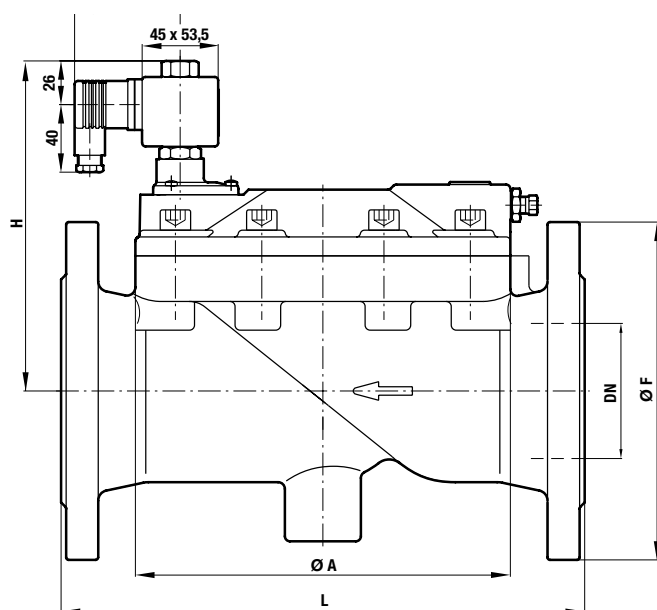
Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

### 83030



Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8303200.9101	15	130	69	96	44
8303300.9101	20	150	77	110	50
8303400.9101	25	160	81	115	62
8303500.9101	32	180	97	140	92
8303500.9151	32	180	114	140	92
8303600.9101	40	200	102	150	92
8303600.9151	40	200	119	150	92
8303700.9101	50	230	113	165	109
8303700.9151	50	230	131	165	109

### 83580 from DN 65



Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8358800.9366	65	290	185	185	190
8358900.9366	80	310	195	200	220
8359000.9366	100	350	220	220	250
8359100.9366	125	400	235	250	285
8359200.9366	150	480	265	285	330

Contact face acc. to DIN EN 1092-1/B

## 2/2-way valves DN 15 to DN 50

For neutral gases and liquid fluids  
Solenoid actuated, with forced lifting  
Diaphragm valves

Flange connection, pressure rating PN 16  
Operating pressure 0 to 10 / 16 bar

**NEW**

**Click-on®**

### Description (standard valve)

Solenoid valve for e. g. air, water, oil

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-10 °C up to max. +90 °C
Ambient temperature:	-10 °C up to max. +50 °C
Mounting position:	optional, preferably solenoid vertical on top



### Material

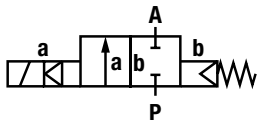
Body:	Cast steel, Brass
Seal seat:	NBR
Internal parts:	Stainless steel, PVDF, Brass

For contaminated fluids insertion of a strainer is recommended.

### Features

- High flow rate
- For robust industry solutions
- Damped operation
- Suitable for vacuum
- Valve operates without differential pressure
- Solenoid interchangeable without tools (**Click-on®**)
- Fluids of Group 2 acc. Pressure Equipment Directive 97/23/EC

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8304400.9151 for a DN 25 valve.



## Characteristic Data

### Valves

Part Number Solenoid with ≡	Part Number Solenoid with ~	Nominal Diameter (mm)	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
			min. (bar)	max. (bar)		
8304200.9151	8304200.9154	15	0	10	3.4	1.9
8304200.8301	8304200.8304	15	0	16	3.4	2.4
8304300.9151	8304300.9154	20	0	10	5.8	2.5
8304300.8301	8304300.8304	20	0	16	5.8	3.0
8304400.9151	8304400.9154	25	0	10	8.0	3.0
8304400.8301	8304400.8304	25	0	16	8.0	3.5
8304500.9401	8304500.9404	32	0	16	23.0	6.7
8304600.9401	8304600.9404	40	0	16	25.0	7.4
8304700.9401	8304700.9404	50	0	16	41.0	10.0

\* for gases and liquid fluids up to 25 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

## Solenoid 9101 / 9154; 9401 / 9404; 8301 / 8304; 8401 / 8404

### Standard voltages

DC ≡	AC ~ 40 Hz – 60 Hz
24 V	24 V
–	110 V
–	120 V
–	230 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)


AC with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature +20 °C.

In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ≡	AC ~	
		Inrush	Holding
<b>9151 *</b>	18 W	–	–
<b>9154 *</b>	–	20 VA	20 VA
<b>9401 *</b>	38 W	–	–
<b>9404 *</b>	–	42 VA	42 VA
<b>8301</b>	22 W	–	–
<b>8304</b>	–	25 VA	25 VA
<b>8401</b>	40 W	–	–
<b>8404</b>	–	45 VA	45 VA

\*  coil only  
(with the exception of solenoid 94xx up to 41 V AC)






### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

XXXXX01.XXXX	Normally open (NO), from DN 32 with solenoid 8400
XXXXX02.XXXX	Manual override only from DN 32
XXXXX03.XXXX	Seat seal FPM, fluid temperature -5 °C up to +110 °C
XXXXX14.XXXX	Seat seal EPDM, for hot water, fluid temperature -10 °C up to +110 °C
XXXXX17.XXXX	Normally open, seat seal FPM, fluid temperatur -5 °C up to +110 °C, from DN 32 only with solenoid 8400
XXXXX47.XXXX	Flanges acc.to ASME B 16.5 150 lb/sq.In.
On request	Further versions

## Further Options (Solenoids)

XXXXXXX.9191	Protection class  II 2 GD EEx me II T3 T 140 °C
XXXXXXX.8441	Protection class  II 2 GD EEx me II T3 T 140 °C
XXXXXXX.9176 *	Protection class  II 3 GD EEx nA II T4 T 135 °C
XXXXXXX.9426 *	Protection class  II 3 GD EEx nA II T4 T 135 °C
XXXXXXX.8426 *	Protection class  II 3 GD EEx nA II T4 T 135 °C
On request	Further versions

\* DC only, for AC solenoids with design certificate acc. to category 2, e. g. xxxxxxx.9191 or xxxxxxx.8441

Contact face acc to. DIN EN 1092-1/B

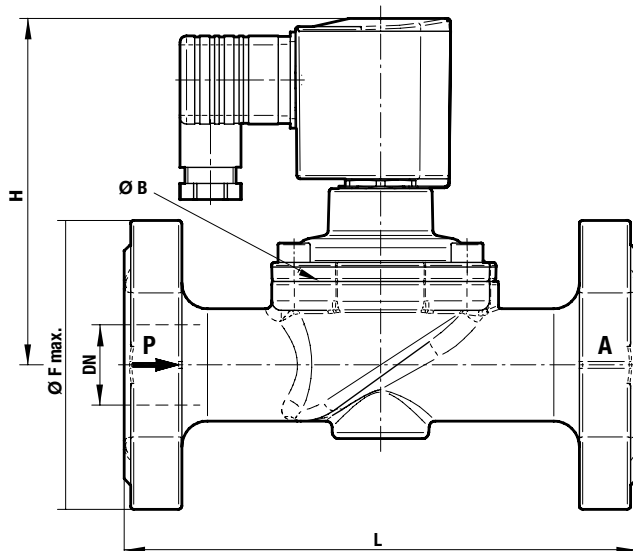
## Drawings

DN 15 – DN 25 with solenoid 915x (10 bar)

## General Dimensions

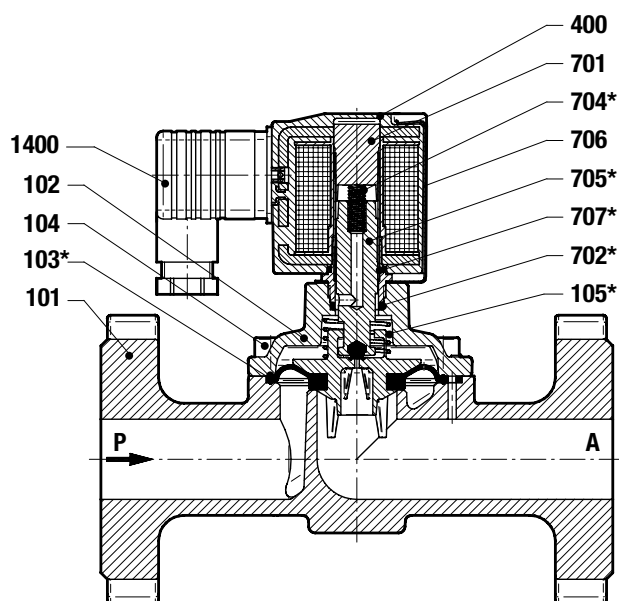
Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

Part Number	Nominal Diameter mm	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8304200.915x	15	130	97	96	44
8304300.915x	20	150	105	110	50
8304400.915x	25	160	108	115	62



## Section View

- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm
- 104 Straight pin
- \*105 Pressure spring
- 400 Solenoid
- 701 Core tube
- \*702 O-ring
- \*704 Pressure spring
- \*705 Core
- 706 Spring clip
- \*707 O-ring
- 1400 Socket (included)



\* These individual parts form a complete wearing unit.  
 When ordering spare parts please state Cat. No. and Series No.

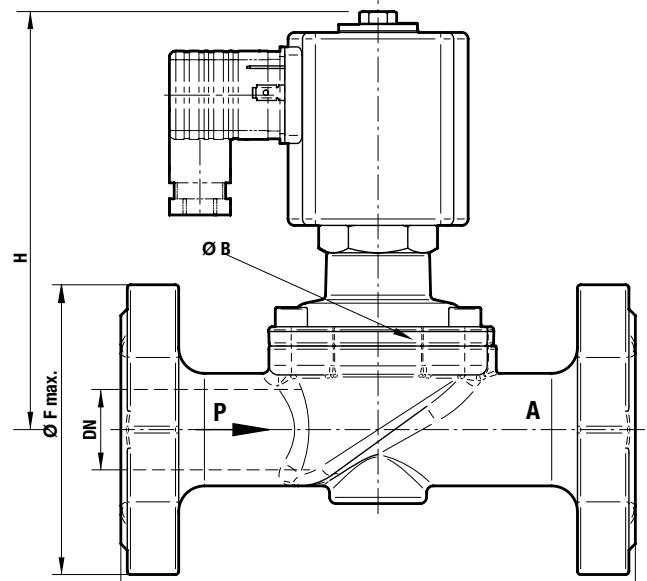
## Drawings

DN 15 – DN 25 with solenoid 830x (16 bar)

## General Dimensions

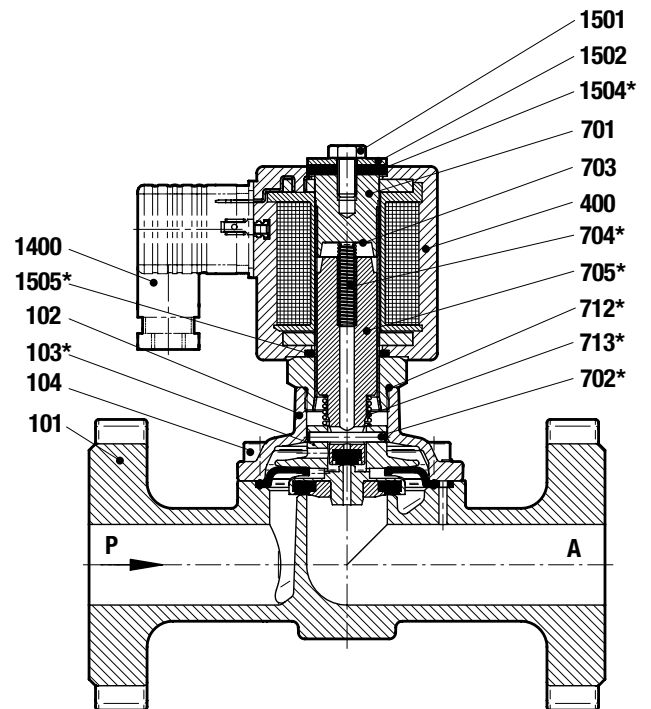
Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

Part Number	Nominal Diameter mm	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8304200.830x	15	130	157.5	77	44
8304300.830x	20	150	170.0	87	50
8304400.830x	25	160	175.0	90	62



## Section View

- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm
- 104 Socket head cap screw
- \*105 Pressure spring
- 400 Solenoid
- 701 Core tube
- \*702 Straight pin
- 703 Round plate
- \*704 Pressure spring
- \*705 Core
- \*712 O-ring
- \*713 Pressure spring
- 1400 Socket (included)
- 1501 Hexagon screw
- 1502 Round plate
- \*1504 Gasket
- \*1505 O-ring



\* These individual parts form a complete wearing unit.  
 When ordering spare parts please state Cat. No. and Series No.

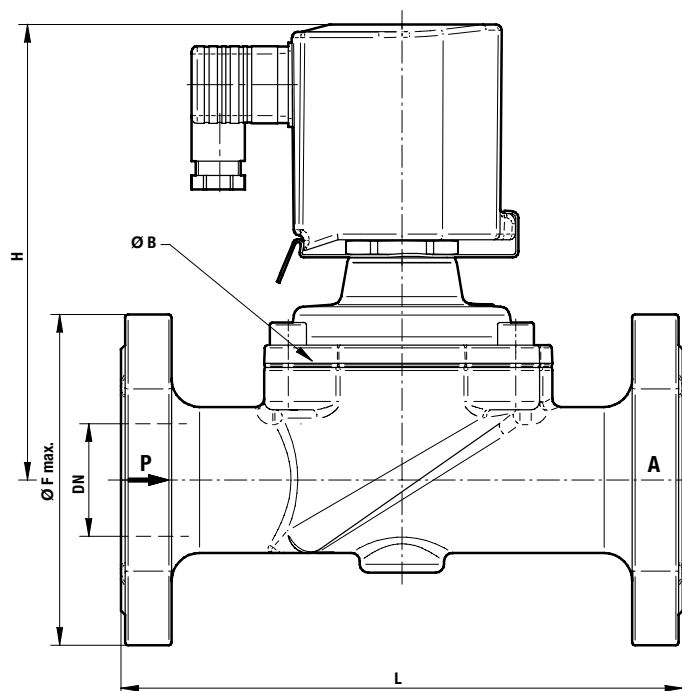
## Drawings

DN 32 – DN 50 with solenoid 940x (16 bar)

## General Dimensions

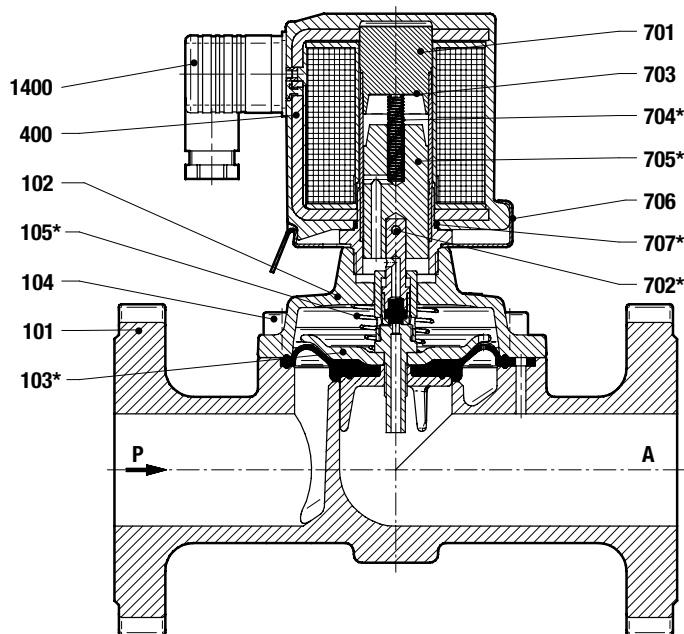
Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

Part Number	Nominal Diameter mm	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8304500.940x	32	180	158	140	92
8304600.940x	40	200	162	150	92
8304700.940x	50	230	171	165	109



## Section View

- 101 Valve body
- 102 Valve cover
- \*103 Diaphragm
- 104 Straight pin
- \*105 Pressure spring
- 400 Solenoid
- 701 Core tube
- \*702 Straight pin
- 703 Round plate
- \*704 Pressure spring
- \*705 Core
- 706 Spring clip
- \*707 O-ring
- 1400 Socket (included)



\* These individual parts form a complete wearing unit.  
 When ordering spare parts please state Cat. No. and Series No.

## 2/2-way valves DN 15 to 50

For neutral gases and liquids

Pressure actuated by external fluid

Diaphragm valves

Internal thread G 1/2 to G 2

Operating pressure 0 to 10 bar

### Description (standard valve)

Valve for high-viscosity and contaminated media

Switching function:	normally closed closed by spring force, opened by pilot pressure
Flow direction:	as required
Mounting position:	as required

### Process fluid characteristics / Valve material

Fluid temperature:	-10 °C up to max. +80 °C
Ambient temperature:	-10 °C up to max. +55 °C
Body:	Grey cast iron
Seat seal:	EPDM

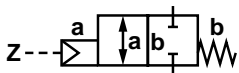
### Pilot fluid characteristics / Actuator material

Pilot fluid:	neutral gases
Fluid temperature:	max. +40 °C
Body:	Polymer material
Seal:	NBR
Internal parts:	Coated steel

### Features

- Any flow direction and mounting position
- Special seal materials are required for use with oil and oleiferous media

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8335400.0000 for a DN 25 valve.



## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Connection Size	Pilot Pressure		Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
			min. (bar)	max. (bar)	min. (bar)	max. (bar)		
8335200.0000	15	G 1/2	5.5	7	0	10	7.0	1.9
8335300.0000	20	G 3/4	5.5	7	0	10	15.0	2.0
8335400.0000	25	G 1	5.5	7	0	10	20.0	2.3
8335500.0000	32	G 1 1/4	5.5	7	0	10	37.0	4.5
8335600.0000	40	G 1 1/2	5.5	7	0	10	41.0	4.9
8335700.0000	50	G 2	5.5	7	0	10	82.0	8.6

\* for gases and liquid fluids up to 400 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

Note: **0000** without pilot valve

An electrical solenoid valve can be attach at the pilot connection Z.

Required Parts	Part Number
1 pcs. 3/2 way solenoid valve	8466000.9101 DC / AC

### Notes

#### for 3/2-way pilot valve 84660 / 84680

Material body brass

Pilot fluid temperature max. +60 °C

Pilot pressure: 1 – 10 bar

Standard voltages: 24 V DC, 24 V AC, 230 V AC

### Electrical Data

#### for 3/2-way pilot valve 84660 / 84680

Design acc. to DIN VDE 0580

Voltage range ±10 %

Duty cycle (ED) 100 %

Protection class to EN 60529 IP65 with mounted Socket

Socket acc. to DIN EN 175301-803A

### Further Options (Valves)

XXXXX01.XXXX Normally open, pilot pressure 1 up to max. 5.5 bar

XXXXX03.XXXX Seat seal FPM

XXXXX06.XXXX Seat seal PTFE

XXXXX50.XXXX Body material Stainless steel

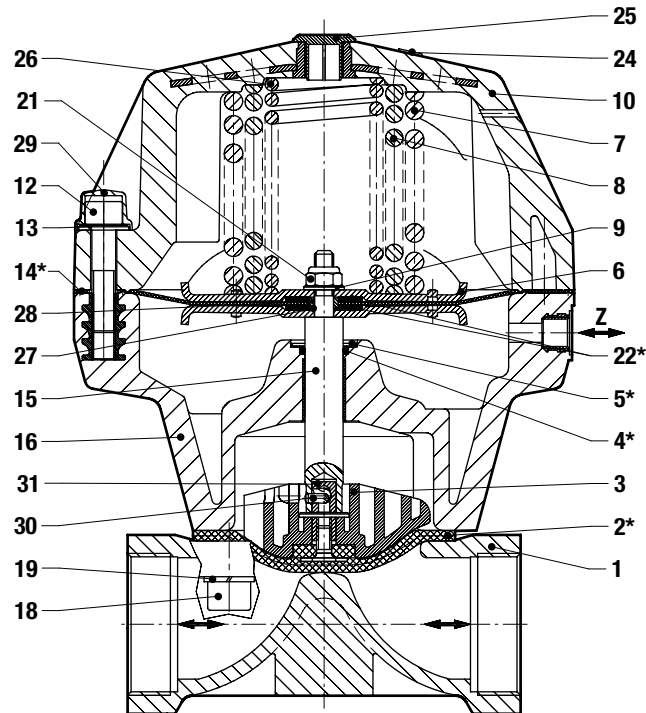
XXXXX57.XXXX Electrical position indicator AC/DC

XXXXX58.XXXX Electrical position indicator only DC max. 30 V

XXXXX64.XXXX Electrical position indicator EEx de IIC T6

On request Further versions

## Section View

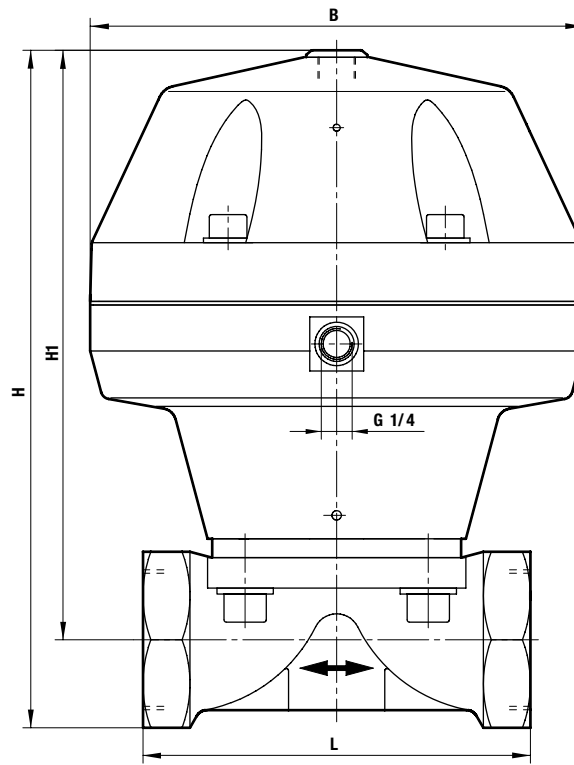


- |                   |                    |
|-------------------|--------------------|
| 1 Valve body      | 21 Uni-Stop-nut    |
| *2 Shut diaphragm | *22 Gasket         |
| 3 Thrust collar   | 24 Material plate  |
| *4 Quad-seal-ring | 25 Sealing cap     |
| *5 Lock washer    | 26 Pressure spring |
| 6 Diaphragm disk  | 27 O-ring          |
| 7 Pressure spring | 28 Distance ring   |
| 8 Pressure spring | 29 Cover           |
| 9 Washer          | 30 Straight pin    |
| 10 Upper part     | 31 Tappet          |
| 12 Screw          |                    |
| 13 Washer         |                    |
| *14 Diaphragm     |                    |
| 15 Spindle        |                    |
| 16 Base complete  |                    |
| 18 Screw          |                    |
| 19 Spring washer  |                    |

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.



## General Dimensions



Part Number	Nominal Diameter (mm)	Connection Size	L (mm)	B (mm)	H (mm)	H 1 (mm)
8335200.0000	15	G 1/2	5	125	164.0	148
8335300.0000	20	G 3/4	85	125	168.5	148
8335400.0000	25	G 1	110	125	171.0	148
8335500.0000	32	G 1 1/4	120	155	230.5	203
8335600.0000	40	G 1 1/2	140	155	235.5	203
8335700.0000	50	G 2	165	210	285.5	248

## 2/2-way valves DN 15 to 150

For neutral gases and liquids

Pressure actuated by external fluid

Diaphragm valves

Flange connection PN 16 / PN 10

Operating pressure 0 to 10 bar

### Description (standard valve)

Valve for high-viscosity and contaminated media

Switching function:	normally closed closed by spring force, opened by pilot pressure
Flow direction:	as required
Mounting position:	as required

### Process fluid characteristics / Valve material

Fluid temperature:	-10 °C up to max. +80 °C
Ambient temperature:	-10 °C up to max. +55 °C
Body:	Grey cast iron
Seat seal:	EPDM

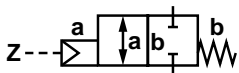
### Pilot fluid characteristics / Actuator material

Pilot fluid:	air
Fluid temperature:	max. +40 °C
Body:	Polymer material
Seal:	NBR
Internal parts:	Coated steel

### Features

- Any flow direction and mounting position
- Special seal materials are required for use with oil and oleiferous media

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8338400.0000 for a DN 25 valve.



## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Pilot Pressure		Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
		min. (bar)	max. (bar)	min. (bar)	max. (bar)		
8338200.0000	15	5.5	7	0	10	7.0	3.1
8338300.0000	20	5.5	7	0	10	14.0	3.7
8338400.0000	25	5.5	7	0	10	20.0	4.2
8338500.0000	32	5.5	7	0	10	37.0	7.7
8338600.0000	40	5.5	7	0	10	40.0	8.2
8338700.0000	50	5.5	7	0	10	82.0	13.7
8338800.0000	65	4.5	7	0	6	102.0	26.0
8338900.0000	80	5.5	7	0	8	165.0	30.0
8339000.0000	100	5.5	7	0	6	241.0	48.0
8339100.0000	125	5.5	7	0	8	378.0	91.0
8339200.0000	150	5.5	7	0	6	496.0	104.0

\* for gases and liquid fluids up to 400 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

Note: **0000** without pilot valve

An electrical solenoid valve can be attach at the pilot connection Z.

Required Parts DN 15 up to DN 50	Part Number
1 pcs. 3/2 way solenoid valve	8466000.9101 DC / AC

Required Parts DN 65 up to DN 150	Part Number
1 pcs. 3/2 way solenoid valve for gases fluids	8020750.0201
1 pcs. 3/2 way solenoid valve for liquid fluids	2401103.0801
1 St. connection complete	0562610.0000

## Notes

### for 3/2-way pilot valve 84660 / 84680

Material body brass

Pilot fluid temperature max. +60 °C

Pilot pressure: 1 – 10 bar

Standard voltages: 24 V DC, 24 V AC, 230 V AC

## Electrical Data

### for 3/2-way pilot valve 84660 / 84680

Design acc. to DIN VDE 0580

Voltage range ±10 %

Duty cycle (ED) 100 %

Protection class to EN 60529 IP65 with mounted Socket

Socket acc. to DIN EN 175301-803A

## Further Options (Valves)

XXXXX01.XXXX Normally open  
Pilot pressure DN 15 – DN 50  
1 up to max. 5.5 bar  
Pilot pressure DN 65 – DN 150  
6 up to 7 bar

XXXXX03.XXXX Seat seal FPM

XXXXX06.XXXX Seat seal PTFE

XXXXX50.XXXX Body EN-GSJ-400-18-LT (Spheroidal cast iron), PFA lined, seals PTFE, operating pressure 0 to 6 bar

XXXXX57.XXXX Electrical position indicator AC / DC

XXXXX58.XXXX Electrical position indicator only DC max. 30 V

XXXXX64.XXXX Electrical position indicator EEx de IIC T6

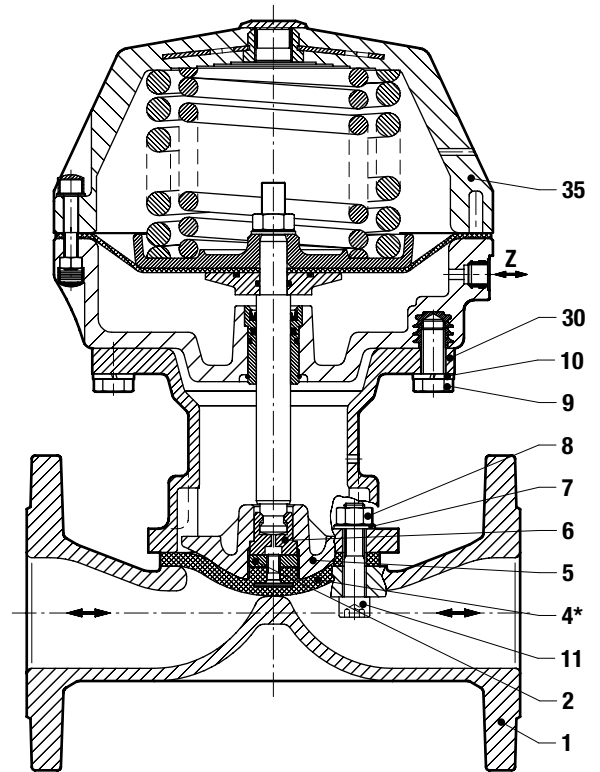
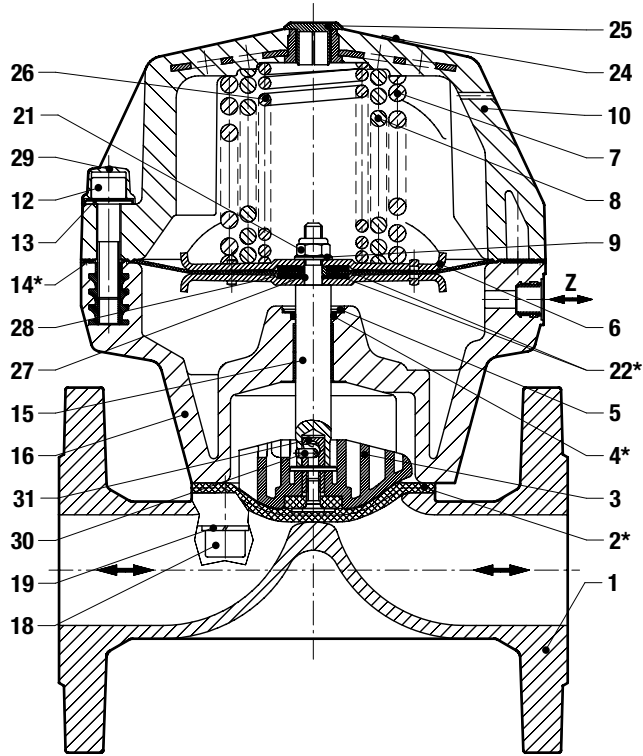
On request

Further versions

## Section View

to DN 15

up to DN 65

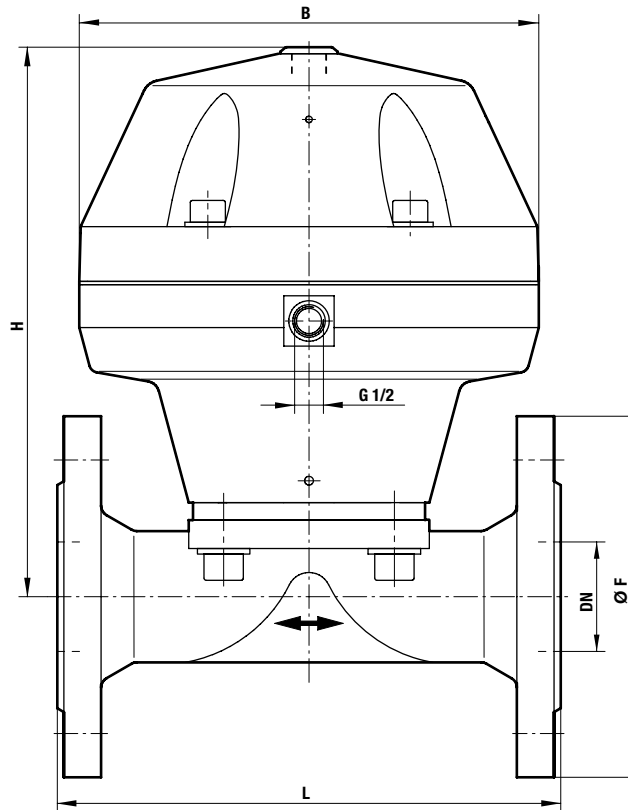


- 1 Valve body
- \*2 Diaphragm
- 3 Compression piece
- \*4 Quad ring
- \*5 Lock washer
- 6 Diaphragm disk
- 7 Pressure spring
- 8 Pressure spring
- 9 Washer
- 10 Upper valve body
- 12 Screw
- 13 Washer
- \*14 Diaphragm
- 15 Spindle
- 16 Lower valve body
- 18 Screw
- 19 Spring washer
- 21 Uni-stop-nut
- \*22 Gasket
- 24 Identification plate
- 25 Plug
- 26 Pressure spring
- 27 O-ring
- 28 Spacer
- 29 Cover
- 30 Dowel pin
- 31 Plunger

- 1 Valve body
- 2 Clamping nut
- \*4 Diaphragm
- 5 Compression piece
- 6 Half-shell
- 7 Spring washer
- 8 Nut
- 9 Hexagon screw
- 10 Spring washer
- 11 Allen head screw
- 30 Adapter
- 35 Valve head assembly

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions



Part Number	Nominal Diameter (mm)	L (mm)	B* (mm)	H (mm)	Ø F (mm)
8338200.0000	15	130	125	148	95
8338300.0000	20	150	125	148	105
8338400.0000	25	160	125	148	115
8338500.0000	32	180	155	203	140
8338600.0000	40	200	155	203	150
8338700.0000	50	230	210	248	165
8338800.0000	65	290	256	329	185
8338900.0000	80	310	256	339	200
8339000.0000	100	350	256	354	220
8339100.0000	125	400	360	519	250
8339200.0000	150	480	360	514	285

\* B = max. width

## 2/2-way-valves DN 15 to DN 25 with EC type examination

For natural gas, liquid gas (gaseous), heating oil EL, L, M, S

Electropneumatic directly actuated

Seat valves

Thread flange PN 40

Operating pressure 0 to 25 bar



### Description (Standard valve)

Solenoid valve for neutral gases and liquid fuels

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-10 °C up to max. +140 °C
Ambient temperature:	-10 °C up to max. +60 °C
Mounting position:	optional, preferable actuator vertical on top



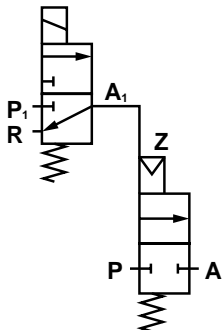
### Material

Body:	Cast steel, Stainless steel
Seat seal:	PTFE
Internal parts:	Brass, Stainless steel, Sandvik 1802
Pilot fluid:	neutral gaseous fluids
Temperature:	-10 °C up to max. +80 °C

### Features

- Qualification approval acc. to EN 264 / DIN 3394 T2 / EN 161
- Response time < 1s
- Low pressure drop
- Spindle duct acc. to TA-air
- High switching rate

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8386400.0247 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Actuating Pressure		Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total *** (kg)
		min. (bar)	max. (bar)	min. (bar)	max. (bar)		
8386200.0247	15	4	8	0	25	5.5	9.0
8386300.0247	20	4	8	0	25	10.0	9.2
8386300.0247	25	4	8	0	25	12.5	9.2

\* with gaseous and liquid fluids up to max. 600 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

\*\*\* without pilot valve

Note: **0000** without pilot valve  
**0247** with pilot valve for DC  
**0247** with pilot valve for AC

## Solenoid 0247

### Standard voltages

DC ===	AC ~ 50 Hz	AC ~ 60 Hz
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %

Solenoid	DC ===	AC ~	
		Inrush	Holding
<b>0247</b>	7 W	18 VA	10 VA

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

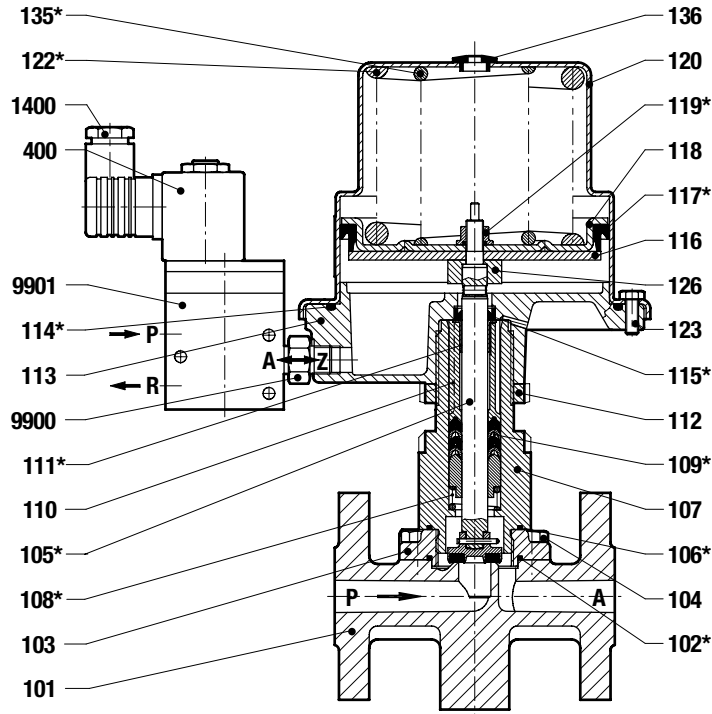
XXXXX**23**.XXXX

Electrical position indicator for NO and NC

On request

Solenoids in different EEx protection classes and other versions.  
 Inspection certificates acc. to DIN EN 10204-3.1

## Section View



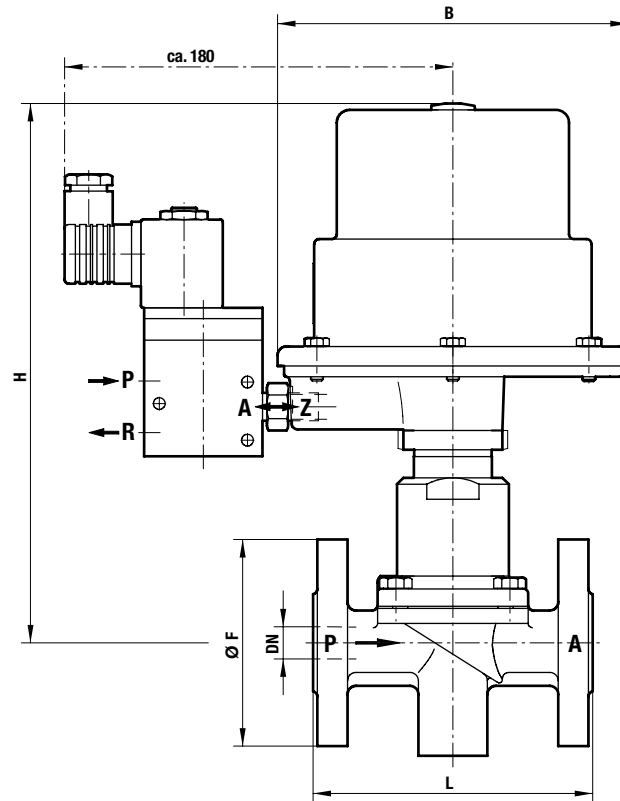
- |                                       |                            |
|---------------------------------------|----------------------------|
| 101 Valve body                        | *119 Seal-Lock-Nut         |
| *102 O-ring                           | 120 Control head housing   |
| 103 Valve cover                       | *122 Pressure spring       |
| 104 Hexagon screw                     | 123 Hexagon screw          |
| *105 Valve spindle                    | 124 Indicating label       |
| *106 Seal ring                        | 126 Bush                   |
| 107 Screw piece                       | *135 Pressure spring       |
| *108 Pressure spring                  | 136 Locking tappet         |
| *109 V-ring seals                     | 400 Solenoid               |
| 110 Spacer bush                       | 1400 Socket                |
| *111 Plain bearing                    | 9900 Double threaded point |
| 112 Nut                               | 9901 3/2-way-pilot valve   |
| 113 Control head housing, bottom part | 9902 Output plate          |
| *114 O-ring                           | 9903 Indicating label      |
| *115 Grooved ring profile 1           | 9904 Lidding foil          |
| 116 Round plate                       | 9905 Lidding foil          |
| *117 Grooved ring profile 1           |                            |
| 118 Round plate                       |                            |

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.



## General Dimensions

Pilot valve, control head housing and solenoid rotatable 360°  
 Socket turnable 4 x 90 °  
 (Socket included)



Part Number	Nominal Diameter (mm)	L (mm)	B (mm)	H (mm)	H1 (mm)
8386200.0247	15	130	163	250	96
8386300.0247	20	150	163	265	105
8386300.0247	25	160	163	265	115

## 2/2-way valves DN 15 to DN 50

For neutral gases and liquids

Pressure actuated by external fluid

Seat valves

Internal threads G 1/2 to G 2 or 1/2 NPT to 2 NPT

Operating pressure (see table)

### Description (standard valve)

Switching function: normally closed  
 Flow direction: determined  
 Mounting position: as required

### Flow fluid range

Fluid temperature: -10 °C up to max. +180 °C  
 Umgebungstemperatur: -10 °C up to max. +60 °C  
 Material body: dezincification brass (CW602N)  
 Seat seal: PTFE  
 Internal parts: Brass, Stainless steel  
 Spindle sealing: PTFE / FPM; self-adjustable

### Pilot fluid range

Pilot connection: G 1/4 resp. 1/4 NPT  
 Pilot fluid: neutral gases fluids  
 Fluid temperature: max. +60 °C  
 Material body: Polyamid 66 with glass fibre 30 %  
 Seat seals: NBR  
 Internal parts: Brass, Stainless steel

### Features

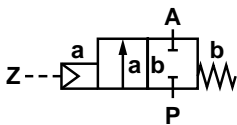
- Easy rebuilding into »normally open« or »double-acting« without tools
- Optical position indicator is standard
- Damped closing (Valves closes against flow direction)
- Suitable for contaminated flow fluid
- Suitable for vacuum up to max. 90 %
- Reversed flow direction optional
- High flow rate
- Option pressure actuated by external liquid fluid



**Note:** For hazardous areas, e. g. Zone 1/2 or 21/22, the kit 1264287 is required. It contains an additional sign, a silencer as dust shield and a conformity explanation. The maximum fluid temperature is reduced to 85 °C.



### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8450400.0000 for a DN 25 valve without pilot valve.

## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Connection Size	Pilot pressure		Operating Pressure *		K <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total *** (kg)
			min.	max. (bar)	min.	max. (bar)		
8450200.0000 8451200.0000	15	G 1/2 1/2 NPT	3.5	10	0	16.0 (25)	4.8	1.4
8450300.0000 8451300.0000	20	G 3/4 3/4 NPT	3.5	10	0	10.0 (16)	10.0	1.5
8450400.0000 8451400.0000	25	G 1 1 NPT	3.5	10	0	10.0	14.0	1.8
8450500.0000 8451500.0000	32	G 1 1/4 1 1/4 NPT	3.5	10	0	7.0	23.0	2.4
8450600.0000 8451600.0000	40	G 1 1/2 1 1/2 NPT	3.5	10	0	4.5	30.0	2.7
8450700.0000 8451700.0000	50	G 2 2 NPT	3.5	10	0	3.0	37.0	3.9

\* with gases and liquid fluids up to 600 mm<sup>2</sup>/s (cSt)

\*\* C<sub>v</sub>-value (US) K<sub>v</sub>-value x 1.2

\*\*\* without pilot valve

State voltage [V] and frequency [Hz]

Note: **0000** without pilot valve

## Notes

### for 3/2-way pilot valve 84660 / 84680

Material body brass

Pilot fluid temperature max. +60 °C

Pilot pressure: 1 – 10 bar

Standard voltages: 24 V DC, 24 V AC, 230 V AC

## Electrical Data

### for 3/2-way pilot valve 84660 / 84680

Design acc. to DIN VDE 0580

Voltage range ±10 %

Duty cycle (ED) 100 %

Protection class to EN 60529 IP65 with mounted Socket

Socket acc. to DIN EN 175301-803A

## Notes

### for 3/2-way pilot valve 97100 hole pattern NAMUR

Material body aluminium elox

Pilot fluid temperature –10 °C to +50 °C

Pilot pressure: 2 – 8 bar

Standard voltages 24 V DC, 24 V AC, 230 V AC

## Electrical Data

### for 3/2-way pilot valve 97100 hole pattern NAMUR

Design acc. to DIN VDE 0580

Voltage range ±10 %

Duty cycle (ED) 100 %

Protection class to EN 60529 IP65 with mounted Socket

Socket acc. to DIN EN 175301-803A

## Further Options (Valves)

XXXXX01.XXXX Normally open, closes with pilot pressure and opens with spring force (pilot pressure 1 – 10 bar)

XXXXX08.XXXX Double acting; 4/2 or 5/2-way-pilot valve required

XXXXX22.XXXX Higher operating pressure

XXXXX23.XXXX Double electrical position indicator

XXXXX50.XXXX NAMUR interface plate

On Request

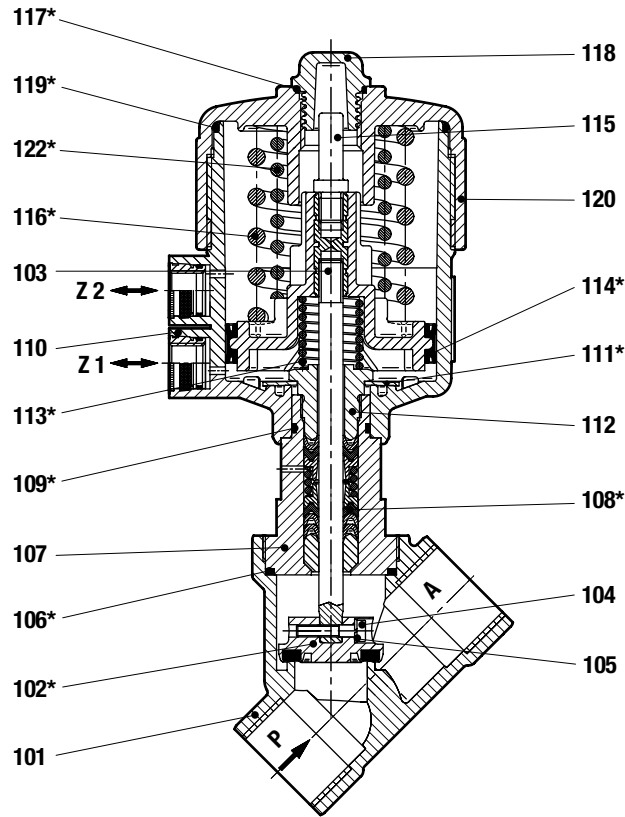
Further versions  
several seals: NBR, FPM, EPDM  
stroke limiter, silencer,  
electrical position indicator  
with magnet inductive operated

## Mounting accessories (NAMUR)

Interface plate NAMUR hole pattern for retrofit, (part number 1256566) consist of:

- 1x NAMUR interface plate
- 2x Adapter screw
- 2x O-ring

## Section View

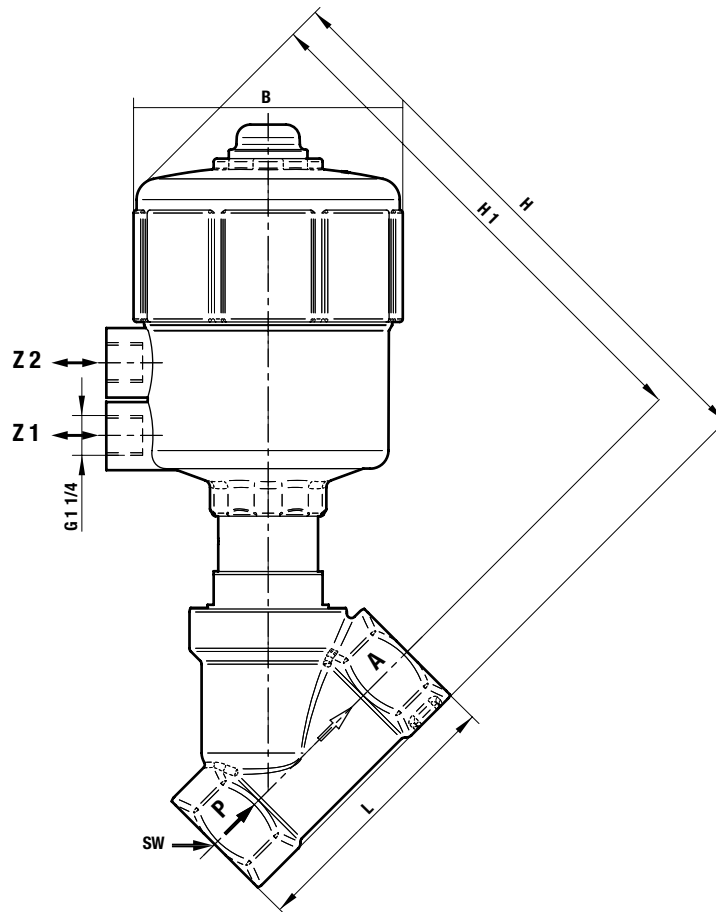


- |                                             |                                |
|---------------------------------------------|--------------------------------|
| 101 Valve body                              | *114 Cylinder packing          |
| *102 Valve plate                            | 115 Signal pin                 |
| 103 Valve spindle, complete                 | *116 Pressure spring           |
| 104 Cheese head cap screw                   | *117 O-ring                    |
| 105 Spring washer                           | 118 Cover cap                  |
| *106 Seal ring                              | *119 O-ring                    |
| 107 Screw piece                             | 120 Control head housing cover |
| *108 Seal packing                           | *122 Pressure spring           |
| *109 O-ring                                 |                                |
| 110 Control head housing cover, bottom part |                                |
| *111 Cup spring                             |                                |
| 112 Screw piece                             |                                |
| *113 Pressure spring                        |                                |

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

Actuator may be rotated 360°



Part Number	Nominal Diameter (mm)	Connection Size	L (mm)	B (mm)	H (mm)	H1 (mm)	SW (mm)
8450200.0000 8451200.0000	15	G 1/2 1/2 NPT	65	89.5	177.5	164.0	27
8450300.0000 8451300.0000	20	G 3/4 3/4 NPT	75	89.5	184.0	168.0	32
8450400.0000 8451400.0000	25	G 1 1 NPT	90	89.5	194.5	174.0	41
8450500.0000 8451500.0000	32	G 1 1/4 1 1/4 NPT	110	89.5	209.5	184.5	50
8450600.0000 8451600.0000	40	G 1 1/2 1 1/2 NPT	120	89.5	208.5	186.0	55
8450700.0000 8451700.0000	50	G 2 2 NPT	150	89.5	229.5	194.5	70

## 2/2-way valves DN 15 to DN 50

For aggressive gases and liquids

Pressure actuated by external fluid

Seat valves

Internal threads G 1/2 to G 2 or 1/2 NPT to 2 NPT

Operating pressure (see table)

### Description (standard valve)

Switching function:	normally closed
Flow direction:	determined
Mounting position:	optional

### Process fluid characteristics / Valve material

Fluid temperature:	-10 °C up to max. +180 °C
Ambient temperature:	-10 °C up to max. +60 °C
Material body:	Stainless steel (1.4581)
Seat seal:	PTFE
Internal parts:	Stainless steel
Spindle sealing:	PTFE / FPM, self-adjustable

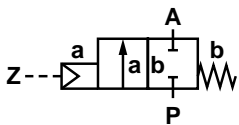
### Pilot fluid characteristics / Actuator material

Pilot fluid:	neutral gases fluids
Fluid temperature:	max. +60 °C
Material body:	Polyamid 66 with glass fibre 30 %
Seat seals:	NBR
Internal parts:	Brass, Stainless steel, 1.8159, 1.1200

### Features

- Easy rebuilding into »normally open« or »double-acting« without tools
- Optical position indicator is standard
- Damped closing (Valves closes against flow direction)
- Suitable for contaminated flow fluid
- Suitable for vacuum up to max. 90 %
- Reversed flow direction optional
- High flow rate
- With or without mounted pilot valve
- Option pressure actuated by external liquid fluid

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8452400.0000 for a DN 25 valve without pilot valve.



## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Connection Size	Pilot Pressure		Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total *** (kg)
			min.	max. (bar)	min.	max. (bar)		
8452200.0000 8453200.0000	15	G 1/2 1/2 NPT	3.5	10	0	16.0 (40)	4.8	1.4
8452300.0000 8453300.0000	20	G 3/4 3/4 NPT	3.5	10	0	10.0 (16)	10.0	1.5
8452400.0000 8453400.0000	25	G 1 1 NPT	3.5	10	0	10.0	14.0	1.8
8452500.0000 8453500.0000	32	G 1 1/4 1 1/4 NPT	3.5	10	0	7.0	23.0	2.4
8452600.0000 8453600.0000	40	G 1 1/2 1 1/2 NPT	3.5	10	0	4.5	30.0	2.7
8452700.0000 8453700.0000	50	G 2 2 NPT	3.5	10	0	3.0	37.0	3.9

\* with gases and liquid fluids up to 600 mm<sup>2</sup>/s (cSt)

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

\*\*\* without pilot valve

State voltage [V] and frequency [Hz]

Note: **0000** without pilot valve

## Notes

### for 3/2-way pilot valve 84660 / 84680

Material body brass

Pilot fluid temperature max. +60 °C

Pilot pressure: 1 – 10 bar

Standard voltages: 24 V DC, 24 V AC, 230 V AC

## Electrical Data

### for 3/2-way pilot valve 84660 / 84680

Design acc. to DIN VDE 0580

Voltage range ±10 %

Duty cycle (ED) 100 %

Protection class to EN 60529 IP65 with mounted Socket

Socket acc. to DIN EN 175301-803A

## Notes

### for 3/2-way pilot valve 97100 hole pattern NAMUR

Material body aluminium elox

Pilot fluid temperature –10 °C to +50 °C

Pilot pressure: 2 – 8 bar

Standard voltages 24 V DC, 24 V AC, 230 V AC

## Electrical Data

### for 3/2-way pilot valve 97100 hole pattern NAMUR

Design acc. to DIN VDE 0580

Voltage range ±10 %

Duty cycle (ED) 100 %

Protection class to EN 60529 IP65 with mounted Socket

Socket acc. to DIN EN 175301-803A

## Options (Valves)

XXXXX01.XXXX Normally open, closes with pilot pressure and opens with spring force (pilot pressure 1 – 10 bar)

XXXXX08.XXXX Double acting; 4/2 or 5/2-way-pilot valve required

XXXXX22.XXXX Higher operating pressure

XXXXX23.XXXX Double electrical position indicator

XXXXX50.XXXX NAMUR interface plate

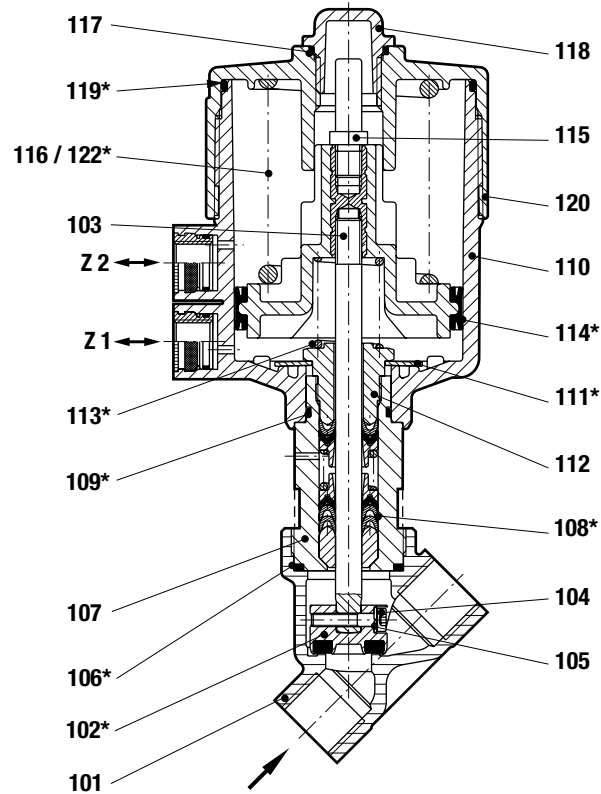
On Request Further versions  
several seals: NBR, FPM, EPDM  
stroke limiter, silencer,  
electrical position indicator  
with magnet inductive operated

## Mounting accessories (NAMUR)

Interface plate NAMUR hole pattern for retrofit, (part number **1256566**) consist of:

- 1x NAMUR interface plate
- 2x Adapter screw
- 2x O-ring

## Section View



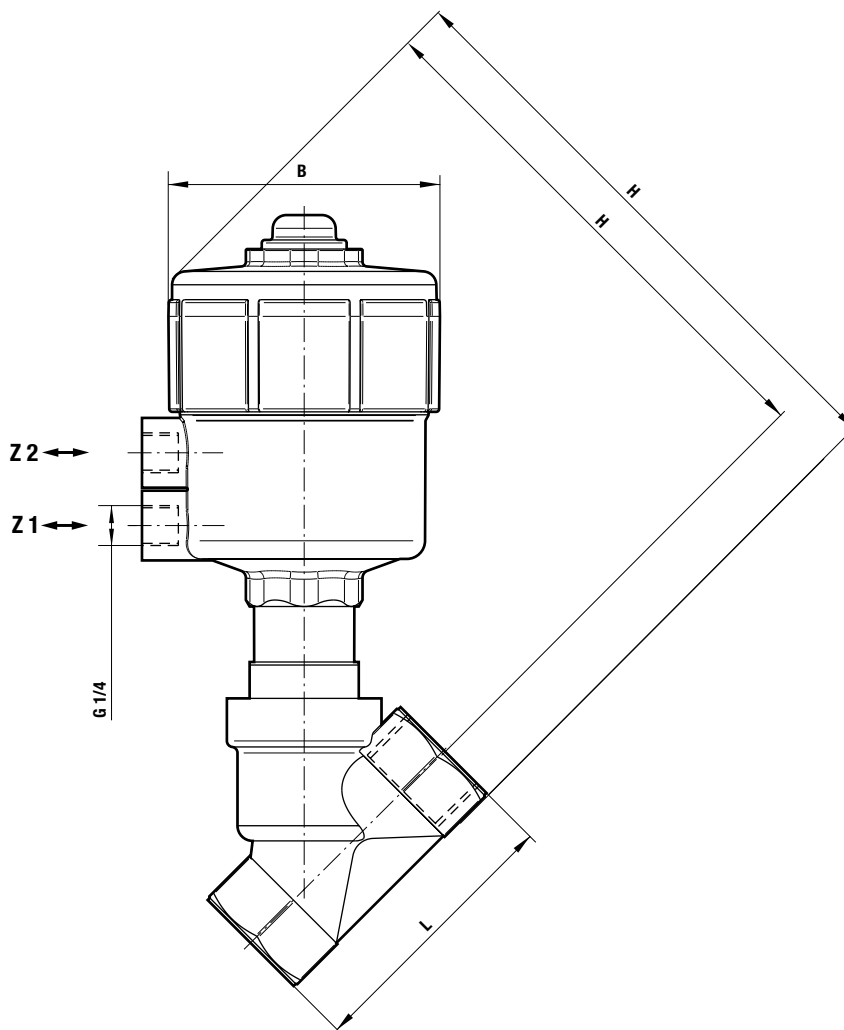
- |                                             |                                |
|---------------------------------------------|--------------------------------|
| 101 Valve body                              | *114 Cylinder packing          |
| *102 Valve plate                            | 115 Signal pin                 |
| 103 Valve spindle, complete                 | *116 Pressure spring           |
| 104 Cheese head cap screw                   | *117 O-ring                    |
| 105 Spring washer                           | 118 Cover cap                  |
| *106 Seal ring                              | *119 O-ring                    |
| 107 Screw piece                             | 120 Control head housing cover |
| *108 Seal packing                           | *122 Pressure spring           |
| *109 O-ring                                 |                                |
| 110 Control head housing cover, bottom part |                                |
| *111 Cup spring                             |                                |
| 112 Screw piece                             |                                |
| *113 Pressure spring                        |                                |

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.



## General Dimensions

Actuator may be rotated 360°



Part Number	Nominal Diameter (mm)	Connection Size	L (mm)	B (mm)	H (mm)	H1 (mm)
8452200.0000 8453200.0000	15	G 1/2 1/2 NPT	65	89.5	177.5	164.0
8452300.0000 8453300.0000	20	G 3/4 3/4 NPT	75	89.5	184.0	168.0
8452400.0000 8453400.0000	25	G 1 1 NPT	90	89.5	194.5	174.0
8452500.0000 8453500.0000	32	G 1 1/4 1 1/4 NPT	110	89.5	209.5	184.5
8452600.0000 8453600.0000	40	G 1 1/2 1 1/2 NPT	120	89.5	208.5	186.0
8452700.0000 8453700.0000	50	G 2 2 NPT	150	89.5	229.5	194.5

## Pneumatic actuated Angle Seat Valve

With digital electro-pneumatic positioner, 2/2-way valve DN 25, 40, 50

For aggressive, gaseous and liquid fluids

Pressure actuated by compressed air

Seat valve with cone for

Linear flow regulation according to IEC 534-2-4

Connection size (female thread) G 1, G 1 1/2, G 2 or 1 NPT, 1 1/2 NPT, 2 NPT

Operating pressure (see table)

### Description (standard valve)

Flow direction:	determined
Mounting position:	optional, preferable actuator on top

### Process fluid characteristics / Valve material

Fluid temperature:	-10 °C up to max. +180 °C
Ambient temperature:	-10 °C up to max. +60 °C
Material body:	Stainless steel (1.4581)
Valve plate and cone:	Stainless steel (1.4404)
Seat seal:	PTFE
Internal parts:	Stainless steel, Sandvik 1802
Seal packing:	PTFE, FPM selfadjusting



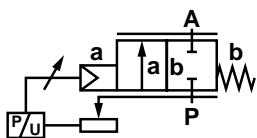
### Pilot fluid characteristics / Actuator material

Pilot fluid:	Compressed air, neutral gases, filtered 50 µm
Operating pressure:	4 – 6 bar
Fluid temperature:	max. +60 °C
Actuator: Body:	PA66 GF 30 (Polyamid with 30 % glass fibre)
Seat seal:	NBR
Internal parts:	Brass, Sandvik 1802, 1.4310, 1.8159, 1.1200
Volume:	76 cm <sup>3</sup>

### Features

- Compact design with NAMUR interface
- High level of reproducibility and linearity
- Easy handling and commissioning
- Automatic Optimization of valve control during initialization
- No air consumption in control position
- Position indicator control

### Symbol



### Ordering information

To order, quote model number from table overleaf, e g. 8452490.0000 for a DN 25 valve.

## Characteristics

Valves with inherent linear characteristics

Part Number	Nominal Diameter (mm)	Connection Size	Pilot Pressure		Operating Pressure		K <sub>v</sub> -value * (Base m <sup>3</sup> /h)	Weight Total (kg)
			min. (bar)	max. (bar)	min. (bar)	max. (bar)		
8452490.0000 8453490.0000	25	G 1 1 NPT	4	6	0	10.0	12	4.0
8452690.0000 8453690.0000	40	G 1 1/2 1 1/2 NPT	4	6	0	4.5	25	4.5
8452790.0000 8453790.0000	50	G 2 2 NPT	4	6	0	3.0	32	5.7

## Characteristics

Valves with inherent equal percentage characteristics 1:20

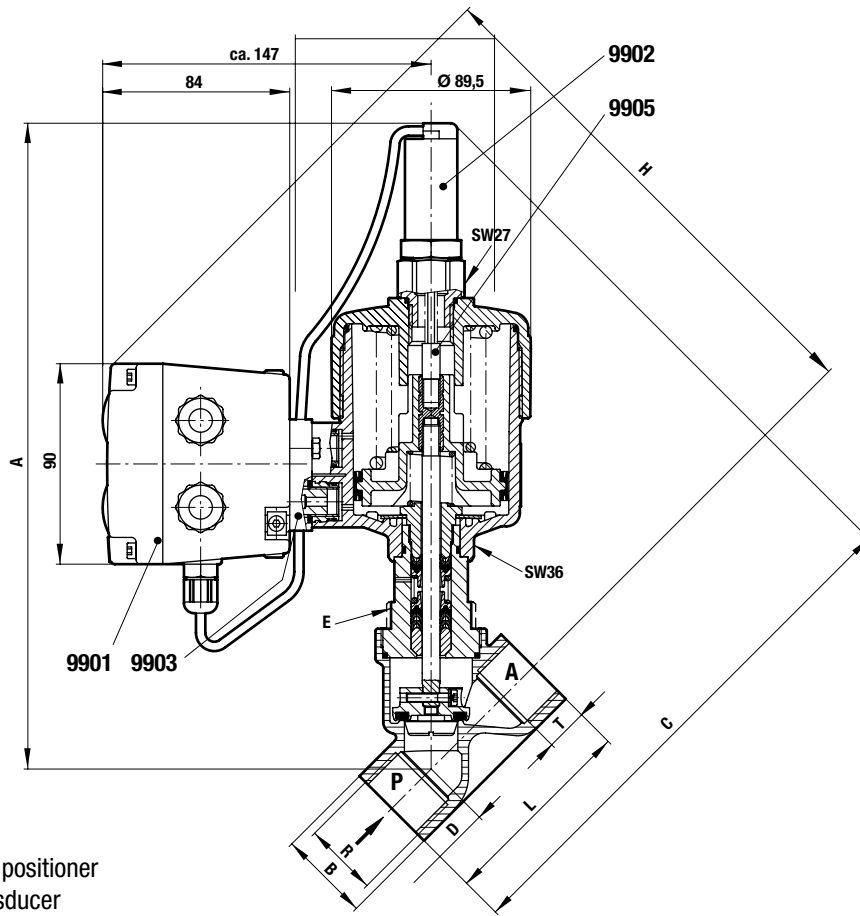
Part Number	Nominal Diameter (mm)	Connection Size	Pilot Pressure		Operating Pressure		K <sub>v</sub> -value * (Base m <sup>3</sup> /h)	Weight Total (kg)
			min. (bar)	max. (bar)	min. (bar)	max. (bar)		
8452491.0000 8453491.0000	25	G 1 1 NPT	4	6	0	10.0	9.0	4.0
8452691.0000 8453691.0000	40	G 1 1/2 1 1/2 NPT	4	6	0	4.5	17.5	4.5
8452791.0000 8453791.0000	50	G 2 2 NPT	4	6	0	3.0	26.0	5.7

\* deviates due to cone system  
K<sub>v</sub>-value (US) K<sub>v</sub>-value x 1.2

## Description of the electro-pneumatic positioner

Housing:	Aluminium, Epoxy coated
Display cover:	PMMA
Air consumption:	No air consumption in control position
Voltage supply:	24 V DC ±10 % (3 or 4 wire)
Protection class:	IP 65
Power consumption:	7.2 W in during operation 2.4 W when adjusted
Input signal:	a) 0 – 10 V or b) 0/4 – 20 mA
Input resistance:	a) 200 k or b) 250
Position indication:	0 – 10 V (4 – 20 mA optional)
Binary outputs:	2 alarm outputs 1 error message output
Electrical connection:	M16 cable entry
Inlet signal:	M16 cable entry
Position signal:	M12 cable entry
Function:	normally closed
Feature:	Safety Function during power or air failure valve closes with pressure spring
Connection:	NAMUR interface
Size L x W x H	160 x 90 x 84 mm
Operation:	Automatic calibration optional: automatic or manual

## General dimensions



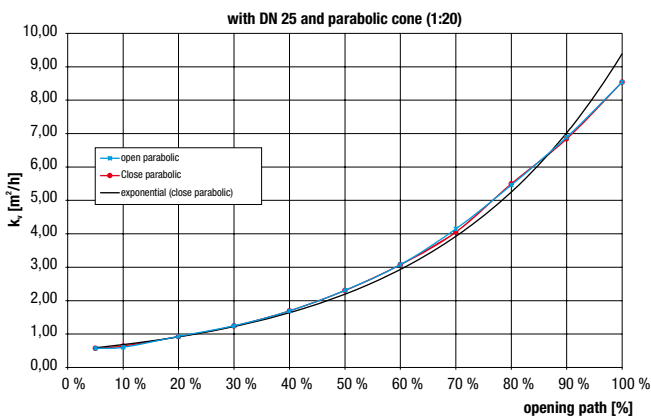
- 9901 Electro-pneumatic positioner
- 9902 Displacement transducer
- 9903 NAMUR interface
- 9905 Mounting kit

Part Number	Nominal Diameter (mm)	Connection Size	A (mm)	B (mm)	C (mm)	C (mm)	E (mm)	H (mm)	L (mm)	T (mm)
845249X.0000 845349X.0000	25	G 1 1 NPT	289	SW 41	199.0	25	SW 36	174.0	90	19.0 16.5
845269X.0000 845369X.0000	40	G 1 1/2 1 1/2 NPT	306	SW 55	217.0	31	SW 41	186.0	120	21.5 17.0
845279X.0000 845379X.0000	50	G 2 2 NPT	318	SW 70	234.5	40	SW 41	194.5	150	26.0 17.5

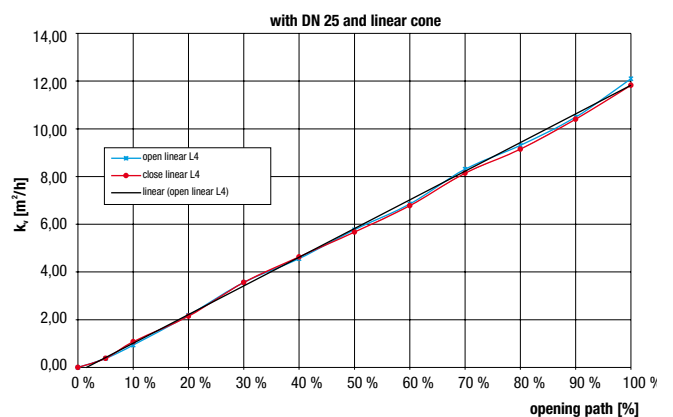
## Characteristics

Diagram based on: water 1 bar p; valve G 1

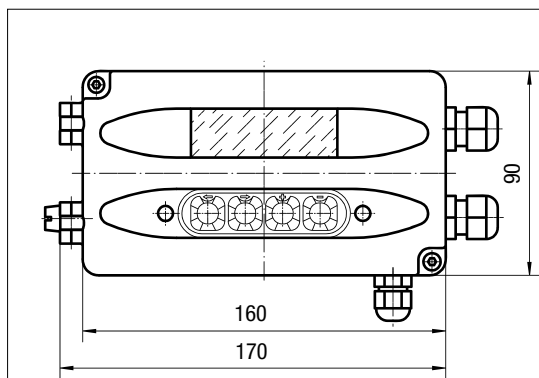
### Inherent equal percentage characteristics 1:20



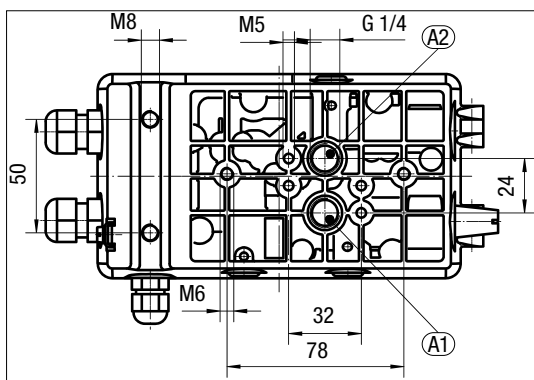
### Inherent linear characteristics



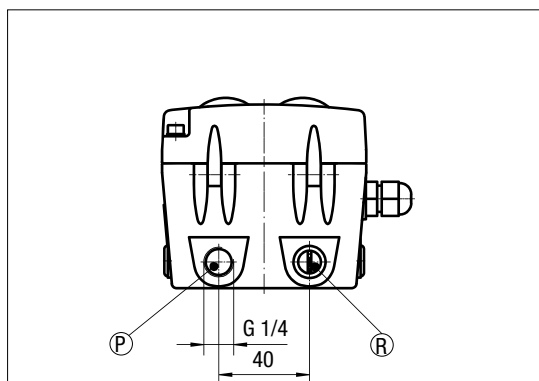
## General dimensions electro-pneumatic positioner



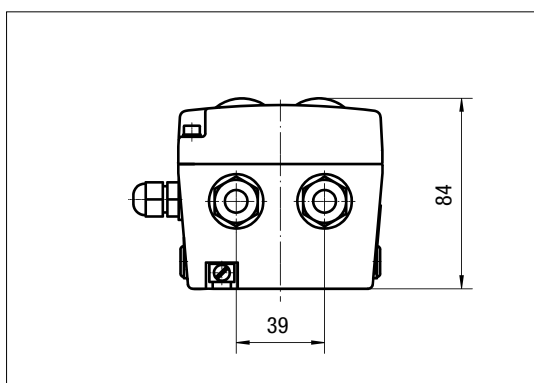
Front view



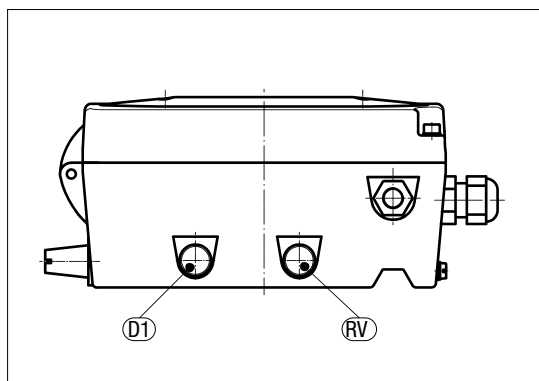
Rear view



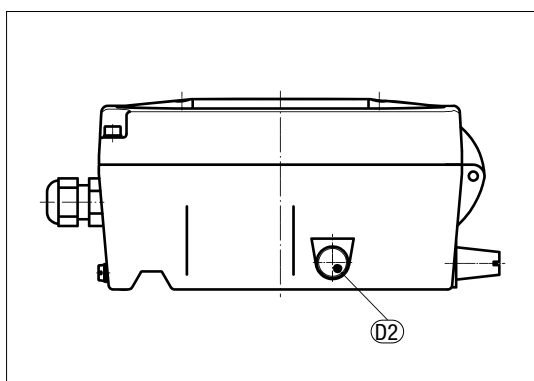
Side view (from the left)



Side view (from the right)



Side view (bottom view)



Side view (top view)

### Key

- A1: pneumatic outlet A1 (for single acting actuators)
- A2: pneumatic outlet A2 (for double acting actuators)
- P: air supply
- R: venting

- D1: throttle D1 → acts on A1
- D2: throttle D2 → acts on A2
- RV: non-return valve

Dimensions in mm

## 2/2-way valves DN 15 to DN 25

For aggressive gases and liquids

Pressure actuated by external fluid

Seat valves

Internal thread G 1/2 to G 1 or 1/2 NPT to 1 NPT

Operating pressure (see table)

### Description (standard valve)

Switching function:	normally closed
Flow direction:	determined
Mounting position:	as required

### Process fluid characteristics / Valve material

Fluid temperature:	-10 °C up to max. +180 °C
Ambient temperature:	-10 °C up to max. + 60 °C
Material body:	Stainless steel
Seat seal:	PTFE
Internal parts:	Stainless steel
Spindle sealing:	PTFE / FPM; self-adjustable

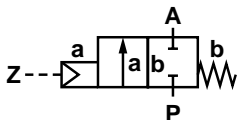
### Pilot fluid characteristics / Actuator material

Pilot fluid:	neutral gases
Fluid temperature:	max. +60 °C
Actuator body:	Polyamid 66 with 30 % fibre glass
Seat seals:	NBR
Internal parts:	Brass, Stainless steel

### Features

- Optical position indicator is standard
- Damped closing (valve closes against flow direction)
- Suitable for contaminated process fluids
- Suitable for vacuum up to max. 90 %
- Reversed flow direction optional
- High flow rate
- Optional pressure actuation by liquid pilot fluids

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8474400.0000 for a DN 25 valve.

**Stainless Steel**



## Characteristic Data

### Valves

Part-Number	Nominal Diameter (mm)	Connection Size	Pilot Pressure		Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total *** (kg)
			min. (bar)	max. (bar)	min. (bar)	max. (bar)		
8474200.0000 8475200.0000	15	G 1/2 1/2 NPT	3.5	10	0	16	4.8	1.3
8474300.0000 8475300.0000	20	G 3/4 3/4 NPT	3.5	10	0	8	10.0	1.4
8474400.0000 8475400.0000	25	G 1 1 NPT	3.5	10	0	5	14.0	1.7

Note: **0000** without pilot valve  
**9101** with pilot valve for DC and AC  
**3037** NAMUR- pilot valve 97100  
**9151** with pilot valve for DC and AC for quick exhausting

\* for gases and liquid fluids up to 600 mm<sup>2</sup>/s (cSt)

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

\*\*\* without pilot valve

State voltage [V] and frequency [Hz]

## Notes

### for 3/2-way pilot valve 84660 / 84680

Material body brass 2.0402

Pilot fluid temperature max. +60 °C

Pilot pressure: 1 – 10 bar

Standard voltages: 24 V DC, 24 V AC, 230 V AC

## Electrical Data

### for 3/2-way pilot valve 84660 / 84680

Design acc. to DIN VDE 0580

Voltage range ± 10 %

Duty cycle (ED) 100 %

Protection class to EN 60529 IP65

Socket acc. to DIN EN 175301-803 (included)

## Notes

### for 3/2-way pilot valve 97100 hole pattern NAMUR

Material body aluminium elox

Pilot fluid temperature –10 °C to +50 °C

Pilot pressure: 2 – 8 bar

Standard voltages 24 V DC, 24 V AC, 230 V AC

## Data

### for 3/2-way pilot valve 97100 hole pattern NAMUR

Design acc. to DIN VDE 0580

Voltage range ± 10 %

Duty cycle (ED) 100 %

Protection class to EN 60529 IP65

Socket acc. to DIN EN 175301-803 (included)

## Further Options (Valves)

XXXXX01.XXXX Normally open, closes with pilot pressure and opens with spring force (pilot pressure 1 – 6 bar)

XXXXX08.XXXX Double acting; 4/2 or 5/2-way-pilot valve required

XXXXX23.XXXX Double electrical position indicator with 2 solenoid switches

XXXXX50.XXXX NAMUR interface plate

On Request: Several seats NBR, FPM, EPDM  
stroke limiter  
silencer

## Mounting accessories NAMUR

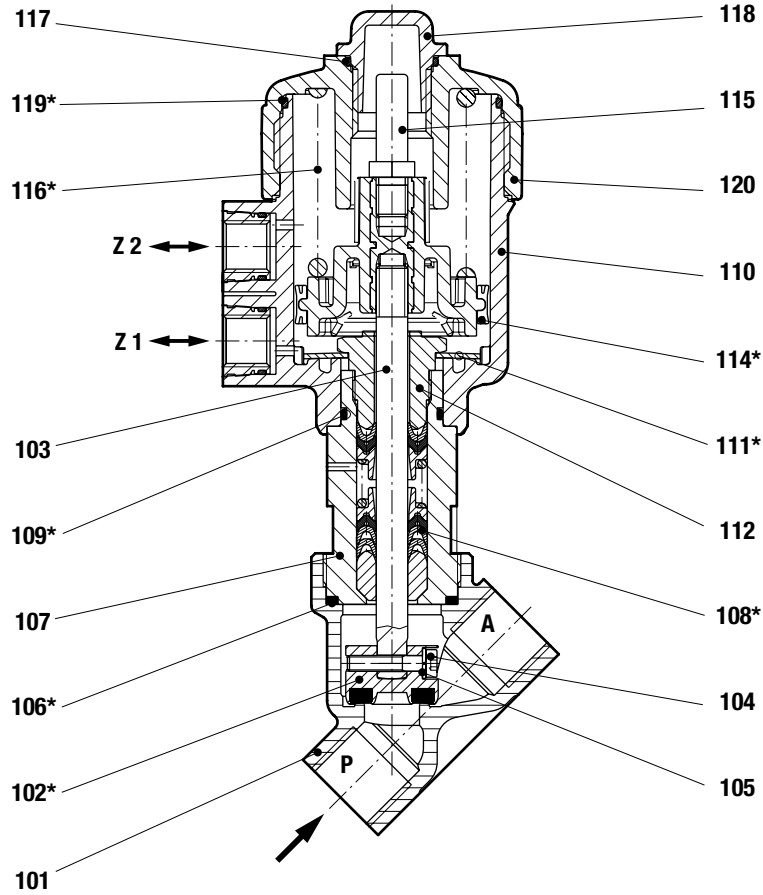
Interface plate NAMUR hole pattern for retrofit, (part number **1256566**) consist of:

1x NAMUR interface plate

2x Adapter screw

2x O-ring

## Section View



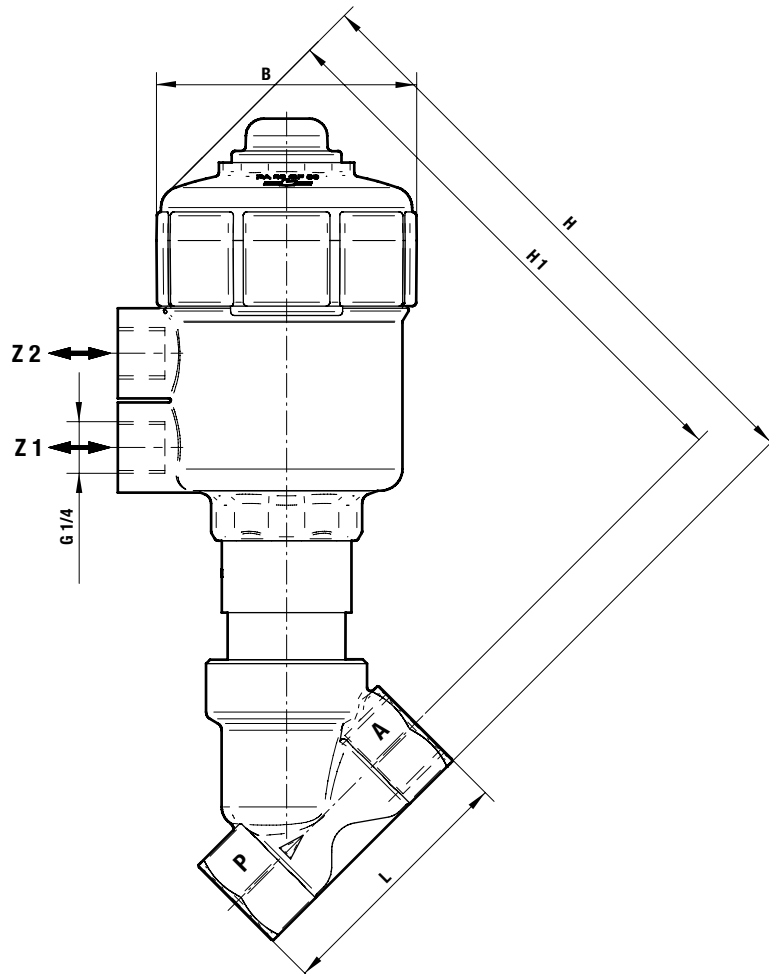
- |                                    |                                |
|------------------------------------|--------------------------------|
| 101 Valve body                     | *114 Piston seal               |
| *102 Valve plate                   | 115 Signal pin                 |
| 103 Valve spindle assembly         | *116 Pressure spring           |
| 104 Allen head screw               | 117 O-ring                     |
| 105 Spring washer                  | 118 End cap                    |
| *106 Gasket                        | *119 O-ring                    |
| 107 Screw piece                    | 120 Control head housing cover |
| *108 Spindle sealing               |                                |
| *109 O-ring                        |                                |
| 110 Bottom of control head housing |                                |
| *111 Cup spring                    |                                |
| 112 Screw piece                    |                                |
| *113 Pressure spring               |                                |

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.



## General Dimensions

Actuator may be rotated 360°



Part Number	Nominal Diameter (mm)	Connection Size	L (mm)	B (mm)	H (mm)	H1 (mm)
8474200.0000 8475200.0000	15	G 1/2 1/2 NPT	65	66	154	140.5
8474300.0000 8475300.0000	20	G 3/4 3/4 NPT	75	66	160	144.0
8474400.0000 8475400.0000	25	G 1 1 NPT	90	66	171	150.5

## 3/2-way valves DN 1.6

Pilot valve for pressure actuated valve by external fluid

Directly solenoid actuated

Seat valves

Connection P internal thread G 1/4; Connection A external thread G 1/4

Operating pressure 1 to 8 bar

### Description (standard valve)

Solenoid valve for filtered, lubricated resp. non-lubricated air or neutral liquid fluids

Switching function:	normally closed connection P normally closed
Flow direction:	determined
Fluid temperature:	-10 °C to max. +60°C
Ambient temperature:	-10 °C to max. +60°C
Mounting position:	optional, preferably solenoid vertical on top



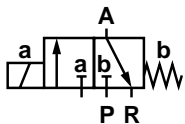
### Material

Body:	Stainless steel (Sandvik 1802)
Seat seal:	NBR
Internal parts:	1.4104, 1.4310

### Features

- Compact construction
- Complete with screw piece and gasket
- Exchangeable solenoid system
- Silenced ventilation
- Alternativly for calm air
- Low power consumption
- Reliable switch off at available residual voltage
- Long life PTFE coated core

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8495475.0164 for a G 1/4 valve.

## Characteristic Data

### Valves

Part Number	Body	Nominal Diameter (mm)	Connection Size			Operating Pressure *		Flow Q <sub>N 2</sub>	Switching Time 3) (ms)		Weight Total (kg)
			Internal	External		min. (bar)	max. (bar)	Base (l/min)	On	Off	
8496000.0164 ---	Sandvik 1802 Stainless Steel	1.6	G 1/4	1)	G 1/4	1	8	200	14	9	0.35
8496000.0165 ~	Sandvik 1802 Stainless Steel	1.6	G 1/4	1)	G 1/4	1	8	200	14	9	0.35

- 1) Silenced free ventilation, screw piece (Cat. No. 05 407 41) with O-ring (Part No. 06 599 37) for calm air in separate order
- 2) see curve down
- 3) At 6 bar acc. to DIN VDI 3290 with A.C. solenoid

State voltage [V] and frequency [Hz]

## Solenoid 016x

### Standard voltages

DC ---	AC ~ 40 Hz - 60 Hz
24 V	24 V
-	230 V

Design acc. to DIN VDE 0580

Voltage range  $\pm 10\%$

100 % duty cycle

Protection class acc. to EN 60529 IP65

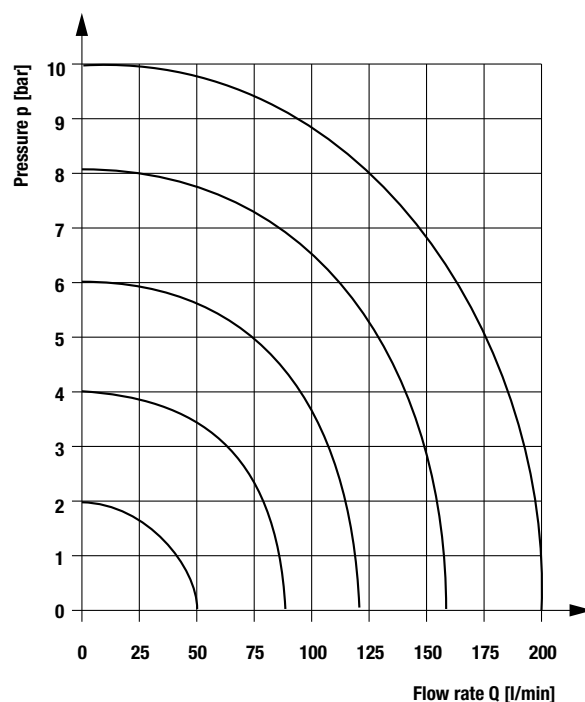
Socket Form A acc. to DIN EN 175301-803 (included)

## Power Consumption

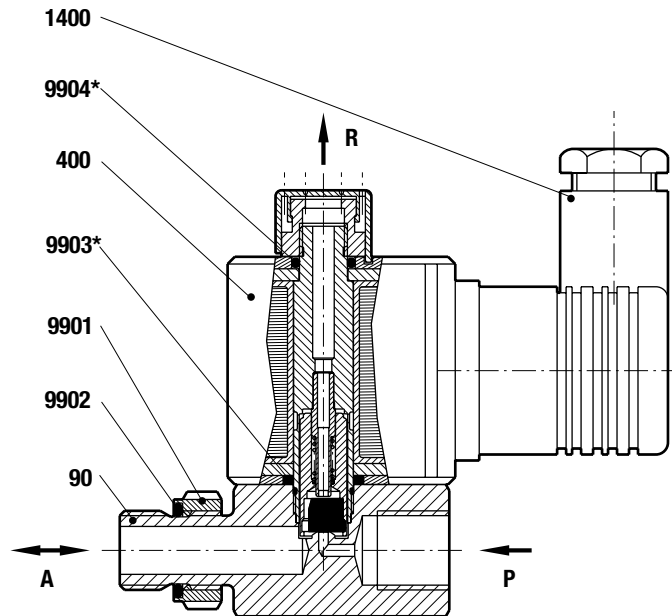
According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
016x	5 W	6 VA	6 VA

## Characteristics curve



## Section View

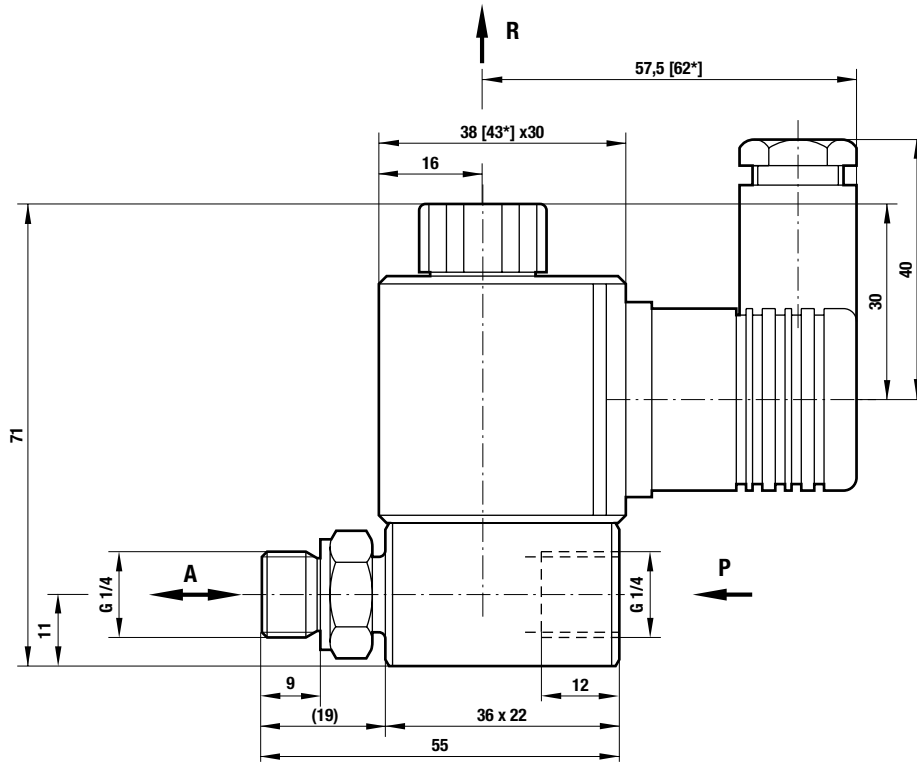


- 90 3/2-way valve without solenoid  
incl. Pos. 9001 Special hexagon nut  
and Pos. 9902 O-ring
- 400 Solenoid
- 1400 Socket
- 9901 Special hexagon nut
- 9902 O-ring
- \*9903 O-ring
- \*9904 O-ring

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)



## 2/2-way valves DN 8 to DN 50

For neutral gases and liquids

Indirectly solenoid actuated

Piston valves

Internal threads G 1/4 to G 2 or 1/4 NPT to 2 NPT

Operating pressure 0.5 to 40 bar

**Click-on<sup>®</sup>**

### Description (standard valve)

Solenoid valve for air, water and other neutral fluids

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-20 °C up to max. +90 °C
Ambient temperature:	-20 °C up to max. +50 °C
Mounting position:	optional, preferably solenoid vertical on top



### Material

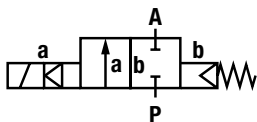
Body:	Brass (CW617N)
Seat seal:	NBR
Internal parts:	Stainless steel, Brass, PTFE

For contaminated fluids insertion of a strainer is recommended.

### Features

- Compact piston valve
- High flow rate
- Damped operation
- Functional compact design
- Solenoid interchangeable without tools (*Click-on<sup>®</sup>*)
- Stainless steel piston bushing

### Symbol



### Ordering information

To order, quote model number from table overleaf. e. g. 8530400.9151 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number Solenoid with ---	Nominal Diameter (mm)	Connection Size	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
			min. (bar)	max. (bar)		
8530000.9151 8531000.9151	8	G 1/4 1/4 NPT	0.5	40	2.2	0.83
8530100.9151 8531100.9151	10	G 3/8 3/8 NPT	0.5	40	3.4	0.82
8530200.9151 8531200.9151	12	G 1/2 1/2 NPT	0.5	40	4.4	0.85
8530300.9151 8531300.9151	20	G 3/4 3/4 NPT	0.5	40	7.0	1.25
8530400.9151 8531400.9151	25	G 1 1 NPT	0.5	40	10.5	1.70
8530500.9151 8531500.9151	32	G 1 1/4 1 1/4 NPT	0.5	40	25.0	4.10
8530600.9151 8531600.9151	40	G 1 1/2 1 1/2 NPT	0.5	40	27.0	3.85
8530700.9151 8531700.9151	50	G 2 2 NPT	0.5	40	43.0	5.60

\* for gases and liquid fluids up to 40 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

### Solenoid 9151

#### Standard voltage

DC ---	AC ~ 50 Hz	AC ~ 60 Hz
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

### Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
9151 *	18 W	45 VA	35 VA

\*  coil only

#### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

### Further Options (Valves)

XXXXX01.XXXX Normally open (NO);  
from DN 32: operating pressure 0.5 to 30 bar

XXXXX02.XXXX Manual override

XXXXX03.XXXX Seat seal FPM;  
fluid temperature –10 °C up to +110 °C

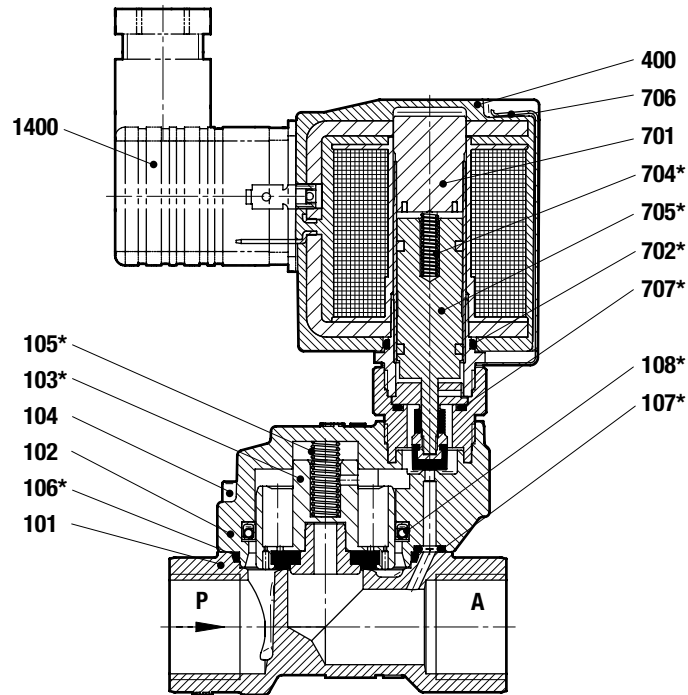
XXXXX14.XXXX Seat seal EPDM; for hot water.  
max. fluid temperature +110 °C

On request Further versions

### Further Options (Solenoids)

On request Further versions

## Section View



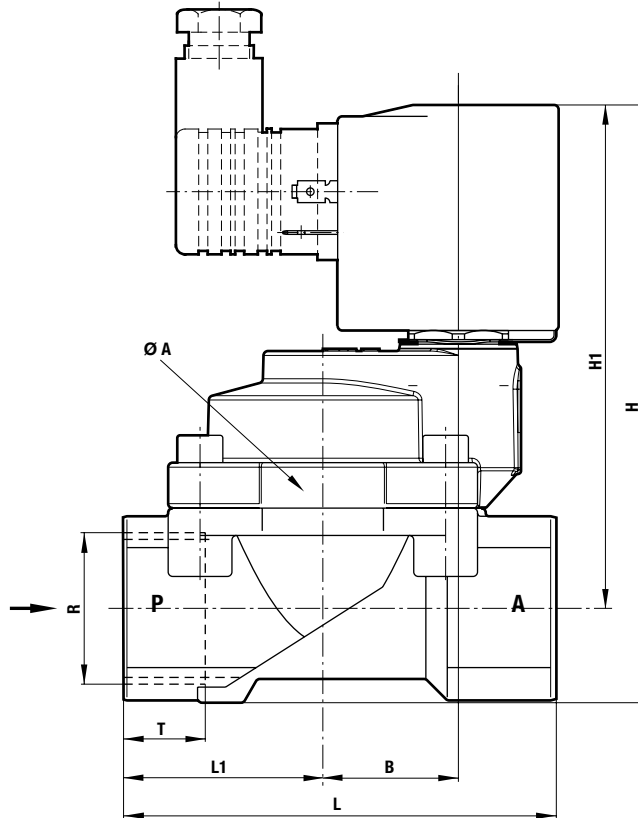
- 101 Valve body
- 102 Valve cover
- \*103 Valve plate
- 104 Allen head screw
- \*105 Pressure spring
- \*106 Gasket
- \*107 O-ring
- \*108 Lip seal
- 400 Solenoid
- 701 Core tube
- \*702 O-ring
- \*704 Pressure spring
- \*705 Plunger
- 706 Spring clip
- \*707 O-ring
- 1400 Electrical connector (included)

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.



## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)



Part Number	Nominal Diameter (mm)	Connection Size	$\varnothing A$ (mm)	H (mm)	H 1 (mm)	L (mm)	L 1 (mm)	T (mm)
8530000.9151 8531000.9151	8	G 1/4 1/4 NPT	44	105.0	93.5	60	27.5	12
8530100.9151 8531100.9151	10	G 3/8 3/8 NPT	44	105.0	93.5	60	27.5	12
8530200.9151 8531200.9151	12	G 1/2 1/2 NPT	44	107.5	93.5	67	31.0	14
8530300.9151 8531300.9151	20	G 3/4 3/4 NPT	50	119.0	102.5	80	36.5	16
8530400.9151 8531400.9151	25	G 1 1 NPT	62	131.5	110.5	95	44.0	18
8530500.9151 8531500.9151	32	G 1 1/4 1 1/4 NPT	92	166.0	137.0	132	60.0	20
8530600.9151 8531600.9151	40	G 1 1/2 1 1/2 NPT	92	166.0	137.0	132	60.0	22
8530700.9151 8531700.9151	50	G 2 2 NPT	109	186.0	151.5	160	74.0	24

## 2/2-way valves DN 8 to DN 25

For neutral steam and liquids

Indirectly solenoid actuated

Piston valves

Internal threads G 1/4 to G 1 or 1/4 NPT to 1 NPT

Operating pressure 1 to 25 bar

**Click-on<sup>®</sup>**

### Description (standard valve)

Solenoid valve for steam, hot water and other neutral fluids

Switching function:	normally closed
Flow direction:	determined
Differential pressure:	1 bar required
Fluid temperature:	-10 °C up to max. +200 °C
Ambient temperature:	-10 °C up to max. +50 °C, with solenoid mounted vertical underneath max. +60 °C
Mounting position:	optional, preferably solenoid vertical on top



### Material

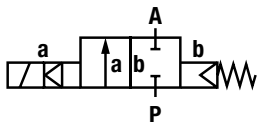
Body:	Brass (CW617N)
Seat seal:	PTFE
Internal parts:	Stainless steel, FPM, PTFE

For contaminated fluids insertion of a strainer is recommended.

### Features

- Compact piston valve
- High flow rate
- Damped operation
- Functional compact design
- Solenoid interchangeable without tools (*Click-on<sup>®</sup>*)
- Stainless steel piston bushing

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8532400.9152 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Connection Size	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
			min. (bar)	max. (bar)		
8532000.9152 8533000.9152	8	G 1/4 1/4 NPT	1	25	2.2	0.83
8532100.9152 8533100.9152	10	G 3/8 3/8 NPT	1	25	3.4	0.82
8532200.9152 8533200.9152	12	G 1/2 1/2 NPT	1	25	4.4	0.85
8532300.9152 8533300.9152	20	G 3/4 3/4 NPT	1	25	7.0	1.25
8532400.9152 8533400.9152	25	G 1 1 NPT	1	25	10.5	1.70

\* for gases and liquid fluids up to 40 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

## Solenoid 9152

### Standard voltage

DC ---	AC ~ 50 Hz	AC ~ 60 Hz
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
9152 *	10 W	15 VA	10 VA

\*  coil only

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

XXXXX01.XXXX Normally open,  
Operating pressure 1 up to 16 bar

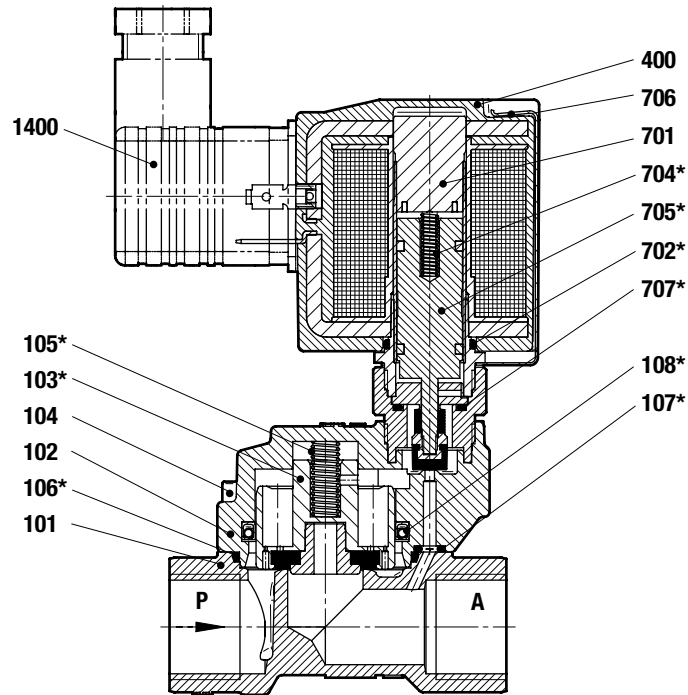
XXXXX02.XXXX Manual override

On request Further versions

## Further Options (Solenoids)

On request Further versions

## Section View

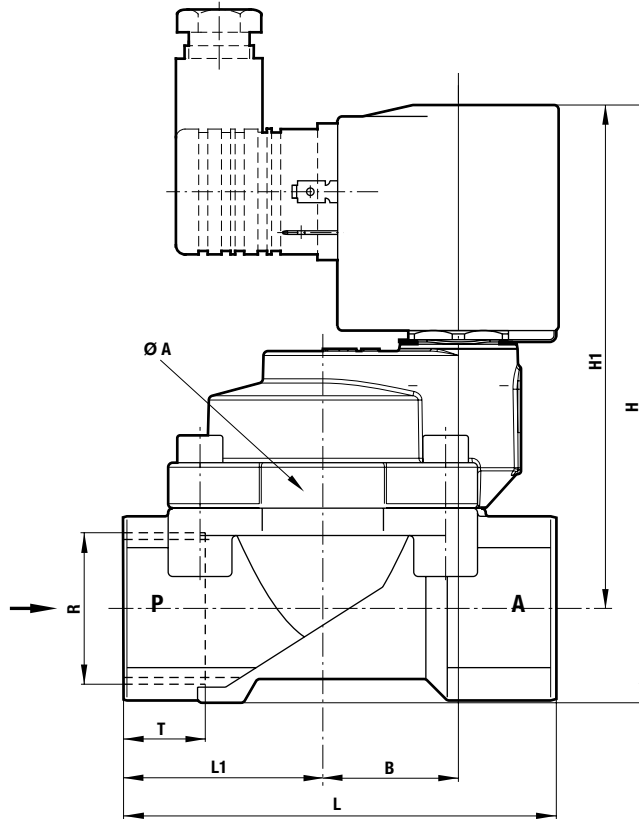


- 101 Valve body
- 102 Valve cover
- \*103 Valve plate
- 104 Allen head screw
- \*105 Pressure spring
- \*106 Gasket
- \*107 O-ring
- \*108 Lip seal
- 400 Solenoid
- 701 Core tube
- \*702 O-ring
- \*704 Pressure spring
- \*705 Plunger
- 706 Spring clip
- \*707 O-ring
- 1400 Electrical connector (included)

\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)



Part Number	Nominal Diameter (mm)	Connection Size	$\varnothing A$ (mm)	H (mm)	H 1 (mm)	L (mm)	L 1 (mm)	T (mm)
8532000.9152 8533000.9152	8	G 1/4 1/4 NPT	44	105.0	93.5	60	27.5	12
8532100.9152 8533100.9152	10	G 3/8 3/8 NPT	44	105.0	93.5	60	27.5	12
8532200.9152 8533200.9152	12	G 1/2 1/2 NPT	44	107.5	93.5	67	31.0	14
8532300.9152 8533300.9152	20	G 3/4 3/4 NPT	50	119.0	102.5	80	36.5	16
8532400.9152 8533400.9152	25	G 1 1 NPT	62	131.5	110.5	95	44.0	18

## 2/2-way valves DN 15 to DN 50

For slightly aggressive gases and liquid fluids  
Solenoid actuated, with forced lifting

Piston valves

Flange connection, pressure rating PN 40

Operating pressure P→A: 0 bis 25 bar, backpressure tight A→P: 0 – 16 bar

Leakage rate acc. to DIN EN 12266-1

**NEW**

**Backpressure tight**

### Description (standard valve)

Solenoid valve for e. g. slightly aggressive fluids

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	0 °C up to max. +90 °C
Ambient temperature:	0 °C up to max. +50 °C
Mounting position:	solenoid vertical on top

### Material

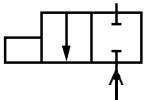
Body:	Stainless steel (1.4408)
Seal seat:	NBR
Internal parts:	Stainless steel

For contaminated fluids insertion of a strainer is recommended.

### Features

- High flow rate
- Damped operation
- Fluids of Group 1 and 2 acc. to Pressure Equipment Directive 97/23/EC
- No switching function at back pressure

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8534400.8401 for a DN 25 valve.

**Stainless Steel**



## Characteristic Data

### Valves

Part Number Solenoid with ---	Part Number Solenoid with ~	Nominal Diameter (mm)	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
			min. (bar)	max. (bar)		
8534200.8401***	8534200.8404	15	0	25	4.4	3.8
8534300.8401	8534300.8404	20	0	25	7.0	4.2
8534400.8401	8534400.8404	25	0	25	10.5	4.8
8534500.9501	8534500.9504	32	0	25	25.0	9.6
8534600.9501	8534600.9504	40	0	25	27.0	10.0
8534700.9501	8534700.9504	50	0	25	43.0	11.5

\* for gases and liquid fluids up to 60 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

\*\*\* manifold of Stainless steel (1.4408)

## Solenoid 8401 / 8404 and 9501 / 9504

### Standard voltages

DC ---	AC ~ 40 Hz – 60 Hz	
	24 V	110 V / 230 V
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

AC with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the solenoid coil decrease the power consumption approx. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
8401	40 W	–	–
8404	–	45 VA	45 VA
9501	80 W	–	–
9504	–	89 VA	89 VA

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

XXXXX02.XXXX Manual override

XXXXX03.XXXX Seat seal FPM,  
fluid temperatur 0 °C up to +110 °C

XXXXX06.XXXX Seat seal PTFE,  
fluid temperatur 0 °C up to +110 °C

XXXXX23.XXXX Position indicator with two magnetic field sensors

XXXXX47.XXXX Flanges acc.to ASME B 16.5 150 lb/sq.In.

XXXXX48.XXXX Flanges acc.to ASME B 16.5 300 lb/sq.In.

On request Further versions

## Further Options (Solenoids)

XXXXXXXX.8441 Protection class  
⊕ II 2 GD EEx me II T3 T 140 °C (up to G 1)

XXXXXXXX.8426 \* Protection class  
⊕ II 3 GD EEx nA II T4 T 135 °C

XXXXXXXX.9540 Protection class  
⊕ II 2 GD EEx me II T3 and T4 T 140 °C  
(from G 1 1/4)

XXXXXXXX.8920 Protection class  
⊕ II 2 GD EEx d II C T4 and T5  
T 130 °C / 95 °C (up to G 1)

On request Further versions

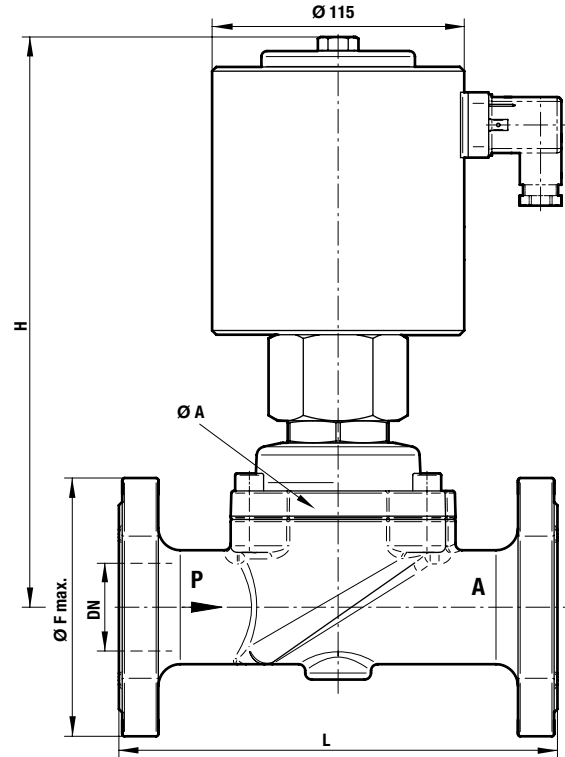
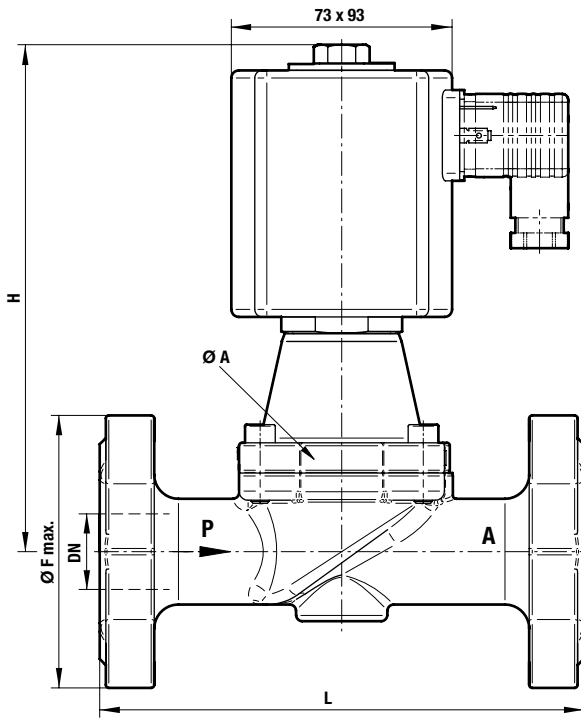
\* DC only, for AC solenoids with design inspection certificate acc.to category 2,  
e. g. xxxxxxx.8441

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

up to DN 25

from DN 32



Part Number	Nominal Diameter (mm)	Ø A (mm)	Ø F max. (mm)	H (mm)	L (mm)
8534200.840x***	15	44	96	154.0	130
8534300.840x	20	50	110	162.0	150
8534400.840x	25	62	115	167.5	160
8534500.950x	32	92	140	260.0	180
8534600.950x	40	92	150	260.0	200
8534700.950x	50	109	165	N.D.	230

\*\*\* manifold of Stainless steel (1.4408)



## 2/2-way valves DN 12 to DN 50

For slightly aggressive gases and liquids

Solenoid actuated, with forced lifting

Piston valves

Internal threads G 1/2 to G 2

Operating pressure P→A: 0 to 25 bar, backpressure tight A→P: 0 – 16 bar

Leakage rate acc. to DIN EN 12266-1

**NEW**

**Backpressure tight**

**Stainless Steel**



### Description (standard valve)

Solenoid valve for slightly aggressive gases and liquids

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	0 °C up to max. +90 °C
Ambient temperature:	0 °C up to max. +50 °C
Mounting position:	solenoid vertical on top

### Material

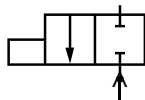
Body:	Stainless steel (1.4408)
Seat seal:	NBR-K
Internal parts:	Stainless steel, PTFE/Carbon

For contaminated fluids insertion of a strainer is recommended.

### Features

- High flow rate
- Damped operation
- No switching function at back pressure

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8544400.8401 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number Solenoid with ==	Part Number Solenoid with ~	Nominal Diameter (mm)	Connection Size	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
				min.	max. (bar)		
8544200.8401***	8544200.8404	12	G 1/2	0	25	4.4	2.5
8544300.8401	8544300.8404	20	G 3/4	0	25	7.0	2.7
8544400.8401	8544400.8404	25	G 1	0	25	10.5	3.1
8544500.9501	8544500.9504	32	G 1 1/4	0	25	25.0	5.6
8544600.9501	8544600.9504	40	G 1 1/2	0	25	27.0	5.4
8544700.9501	8544700.9504	50	G 2	0	25	43.0	6.8

\* for gases and liquid fluids up to 60 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

\*\*\* manifold of Stainless steel (1.4408)

## Solenoid 8401 / 8404 and 9501 / 9504

### Standard voltage

DC ==	AC ~	
	40 Hz – 60 Hz	
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

AC with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ==	AC ~	
		Inrush	Holding
8401	40 W	–	–
8404	–	45 VA	45 VA
9501	80 W	–	–
9504	–	89 VA	89 VA

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

XXXXX02.XXXX Manual override

XXXXX03.XXXX Seat seal FPM,  
fluid temperature 0 °C up to max. +110 °C

XXXXX14.XXXX Seat seal EPDM,  
fluid temperature 0 °C up to max. +110 °C

XXXXX23.XXXX Position indicator with two solenoid switches

On request Further versions

## Further Options (Solenoids)

XXXXXXXX.8441 Protection class  
⊕ II 2 GD EEx me II T3 T 140 °C (up to G1)

XXXXXXXX.8426\* Protection class  
⊕ II 3 GD EEx nA II T4 T 135 °C

XXXXXXXX.9540 Protection class  
⊕ II 2 GD EEx me II T3 und T4 T 140 °C  
(from G 1 1/4)

XXXXXXXX.8920 Protection class  
⊕ II 2 GD EEx d II C T4 and T5  
T 130 °C / 95 °C (up to G 1)

On request Further versions

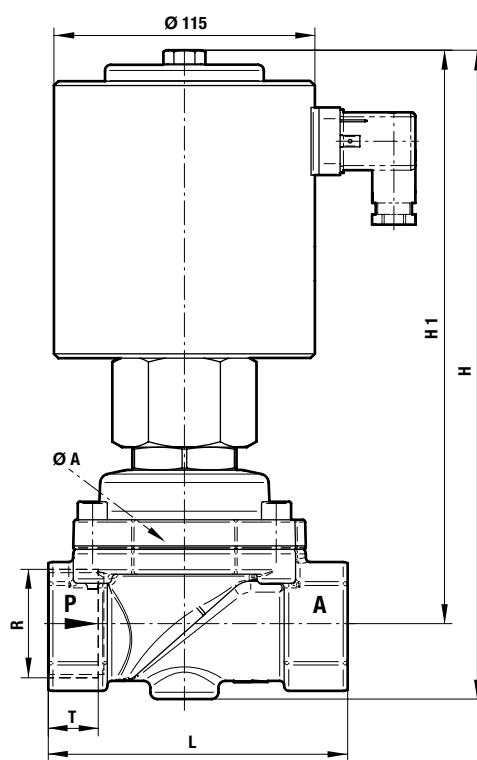
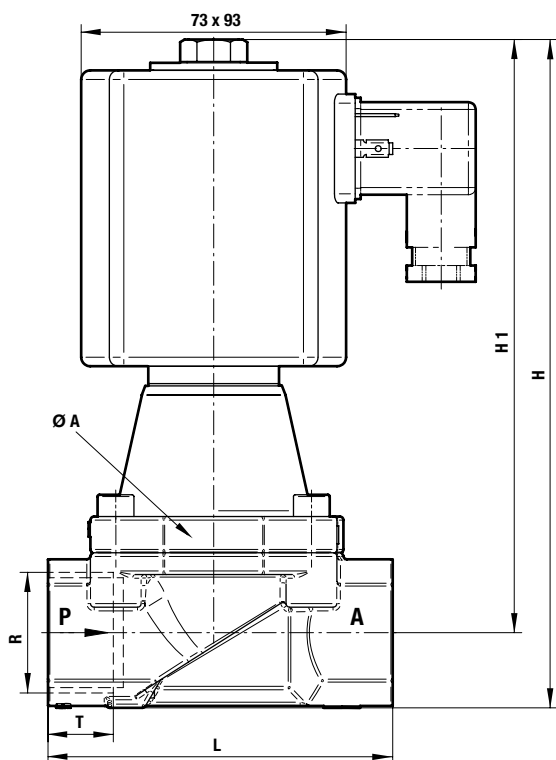
\* DC only, for AC solenoids with design inspection certificate acc. to category 2,  
e. g. xxxxxx.8441

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

up to G 1

from G 1 1/4



Part Number	Nominal Diameter (mm)	Connection Size	Ø A (mm)	H (mm)	H 1 (mm)	L (mm)	T (mm)
8544200.840x***	12	G 1/2	44	166.5	150	67	14
8544300.840x	20	G 3/4	50	166.5	150	80	16
8544400.840x	25	G 1	62	184.0	164	95	18
8544500.950x	32	G 1 1/4	92	186.0	253	132	20
8544600.950x	40	G 1 1/2	92	286.0	253	132	22
8544700.950x	50	G 2	109	N.D.	N.D.	160	24

\*\*\* manifold of Stainless steel (1.4408)

## 2/2-way-valves DN 15 to DN 50

For neutral gases and liquid fluids  
Solenoid actuated, with forced lifting

Piston valves

Flange connection

Pressure rating PN 40 (84100 - PN 16)

Operating pressure 0 to 25 bar (40 bar)

**NEW**

**Click-on®**

### Description (standard valve)

Solenoid valve for e. g. air, water, oil

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-20 °C up to max. +90 °C
Ambient temperature:	-20 °C up to max. +50 °C
Mounting position:	optional, preferably solenoid vertical on top



**85500**

### Material

Body:	Cast Steel / Grey Cast Iron, Brass
Seat seal:	NBR
Internal parts:	Stainless steel, PTFE / Carbon

For contaminated fluids insertion of a strainer is recommended.

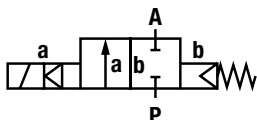
### Features

- High flow rate
- For robust industry solutions
- Damped operation
- Suitable for vacuum
- For systems with low or fluctuating pressure
- Stainless steel piston
- Valve operates without differential pressure (Zero Delta P)
- Solenoid interchangeable without tools (**Click-on®**) up to DN 25
- Fluids of Group 2 acc. Pressure Equipment Directive 97/23/EC



**84100  
84200**

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8550400.9401 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number Solenoid with ---	Part Number Solenoid with ~	Nominal Diameter (mm)	Material	Operating Pressure *		Pressure Rating PN	k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
				min. (bar)	max. (bar)			
8550200.9401	8550200.9404	15	GS	0	25	40	4.4	3.8
8550300.9401	8550300.9404	20	GS	0	25	40	7.0	4.2
8550400.9401	8550400.9404	25	GS	0	25	40	10.5	4.8
8550500.8401	8550500.8404	32	GS	0	25	40	25.0	9.6
8550600.8401	8550600.8404	40	GS	0	25	40	27.0	10.0
8550700.8401	8550700.8404	50	GS	0	25	40	43.0	11.5
8410800.9501	8410800.9504	65	GG	0	16	16	67.0	34.0
8410900.9501	8410900.9504	80	GG	0	16	16	94.0	42.4
8411000.9501	8411000.9504	100	GG	0	16	16	144.0	61.2
8420800.9501	8420800.9504	65	GS	0	25	40	67.0	36.5
8420900.9501	8420900.9504	80	GS	0	25	40	94.0	46.5
8421000.9501	8421000.9504	100	GS	0	25	40	144.0	70.0

\* for gases and liquid fluids up to 60 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

### Solenoid 9401 / 9404 and 8401 / 8404

#### Standard voltages

DC ---	AC ~ 40 Hz – 60 Hz
24 V	24 V
–	110 V
–	120 V
–	230 V

Design acc.to DIN VDE 0580

voltage range ±10 %

100 % duty cycle

Protection class acc.to EN 60529 IP65

Socket Form A acc.to DIN EN 175301-803 (included)

AC solenoid with rectifier plug

### Power Consumption

According to DIN VDE 0580 at coil temperature +20 °C.

In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
9401 *	38 W		
9404 *		42 VA	42 VA
8401	40 W		
8404		45 VA	45 VA

\*  coil only

(With the exception of solenoid 94xx up to 41 V AC)

#### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the case of explosion protected solenoids.





### Further Options (Valves)

- XXXXX01.XXXX Normally open (NO), only with solenoid 8400, mounting position: solenoid vertical on top
- XXXXX02.XXXX Manual override
- XXXXX03.XXXX Seat seal FPM, fluid temperature –10 °C up to +110 °C <sup>1)</sup>
- XXXXX06.XXXX Seat seal PTFE, fluid temperature –20 °C up to +110 °C <sup>1)</sup>, leakage rate E acc. to DIN EN 12266-1
- XXXXX14.XXXX Seat seal EPDM, fluid temperature –20 °C up to +110 °C
- XXXXX17.XXXX Normally open, Seat seal FPM, fluid temperature –10 °C up to +110 °C, mounting position: solenoid vertical on top <sup>1)</sup>, only with solenoid 8400
- XXXXX22.XXXX max. operating pressure 40 bar
- XXXXX23.XXXX Electrical position indicator with two magnetic field sensors (only solenoid 8400)
- XXXXX25.XXXX Seat seal FPM, with larger bleed orifices in the piston, for e. g. fuel and oil, max. viscosity 80 mm<sup>2</sup>/s (cSt), fluid temperature –10 °C up to +110 °C <sup>1)</sup>
- XXXXX47.XXXX Flanges acc. to ASME B 16.5 150 lb/sq. In.
- XXXXX48.XXXX Flanges acc. to ASME B 16.5 300 lb/sq. In.

On request

Further versions

### Further Options (Solenoids)

- XXXXXXX.8441 Protection class  II 2 GD EEx me II T3 T 140 °C
- XXXXXXX.9426 \* Protection class  II 3 GD EEx nA II T4 T 135 °C
- XXXXXXX.8426 \* Protection class  II 3 GD EEx nA II T4 T 135 °C
- XXXXXXX.8920 Protection class  II 2 GD EEx d II C T4 and T5 T 130 °C / 95 °C

On request

Further versions

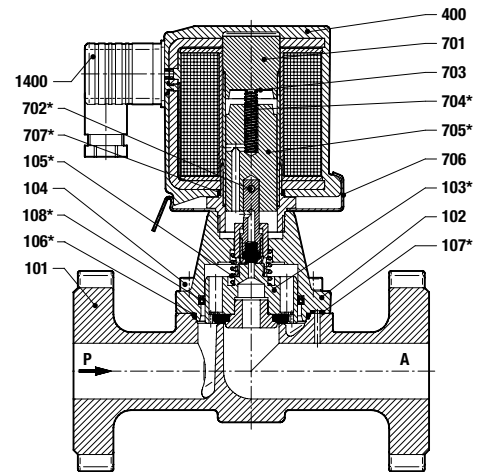
\* DC only, for AC solenoids with design inspection certificate acc. to category 2, e. g. xxxxxxx.8441

<sup>1)</sup> Up to max. +200 °C fluid temperature with solenoid for higher temperature

## Section View

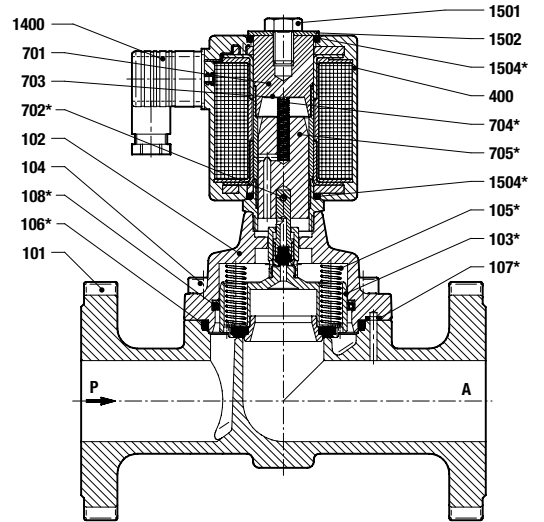
### 85500 up to DN 25

- |                      |                        |
|----------------------|------------------------|
| 101 Valve body       | 703 Round plate        |
| 102 Valve cover      | *704 Pressure spring   |
| *103 Valve piston    | *705 Core              |
| 104 Straight pin     | 706 Spring clip        |
| *105 Pressure spring | *707 O-ring            |
| *106 Seal ring       | 1400 Socket (included) |
| *107 O-ring          |                        |
| *108 Grooved ring    |                        |
| 400 Solenoid         |                        |
| 701 Core tube        |                        |
| *702 Straight pin    |                        |



### 85500 from DN 32

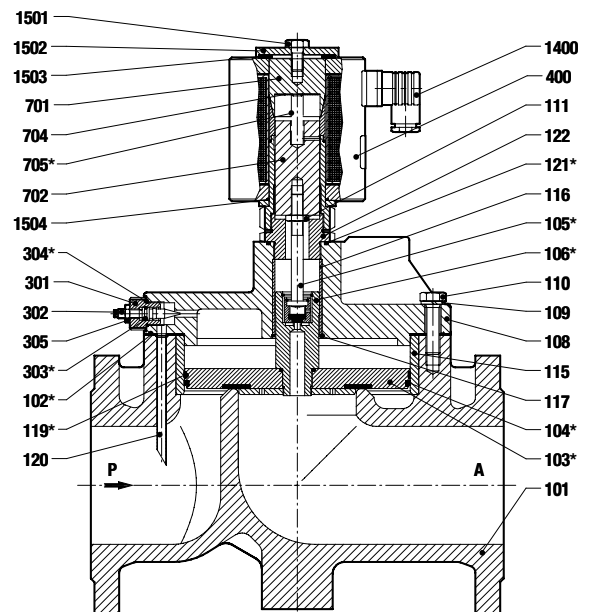
- |                           |                        |
|---------------------------|------------------------|
| 101 Valve body            | *702 Straight pin      |
| 102 Valve cover           | 703 Round plate        |
| *103 Valve piston         | *704 Pressure spring   |
| 104 Straight pin          | *705 Core              |
| *105 Pressure spring (2x) | 1400 Socket (included) |
| *106 Seal ring            | 1501 Hexagon screw     |
| *107 O-ring               | 1502 Round plate       |
| *108 Grooved ring         | *1504 O-ring (2x)      |
| 400 Solenoid              |                        |
| 701 Core tube             |                        |



### 84100 / 84200 from DN 65

- |                    |                      |
|--------------------|----------------------|
| 101 Valve body     | *304 O-ring          |
| *102 Gasket        | 305 Hexagon screw    |
| *103 Valve piston  | 306 Grooved ring     |
| *104 Grooved ring  | 400 Solenoid         |
| *105 Valve spindle | 701 Core tube        |
| *106 Locking ring  | 702 Core             |
| 108 Valve cover    | 704 Round plate      |
| 109 Spring washer  | *705 Pressure spring |
| 110 Hexagon screw  | 1400 Socket          |
| 111 Hexagon nut    | 1501 Hexagon screw   |
| 115 Bushing        | 1502 Round plate     |
| 116 Bushing        | 1503 Gasket          |
| 117 Snap ring      | 1504 O-ring          |
| *119 Guide foil    |                      |
| 120 Tube           |                      |
| *121 O-ring        |                      |
| 122 Screw piece    |                      |
| 301 Screw piece    |                      |
| 302 Valve spindle  |                      |
| *303 O-ring        |                      |

From DN 65: To avoid high shock pressure, you can control the closing time with the adjusting stem pos. 302. Turning clockwise pos. 302 increases restriction and slows down the speed. A totally closed restriction would result in a malfunction.

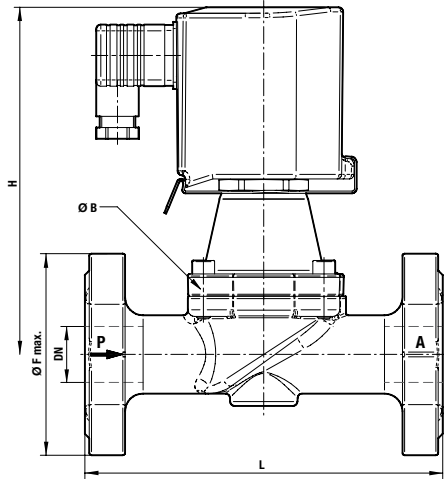


\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

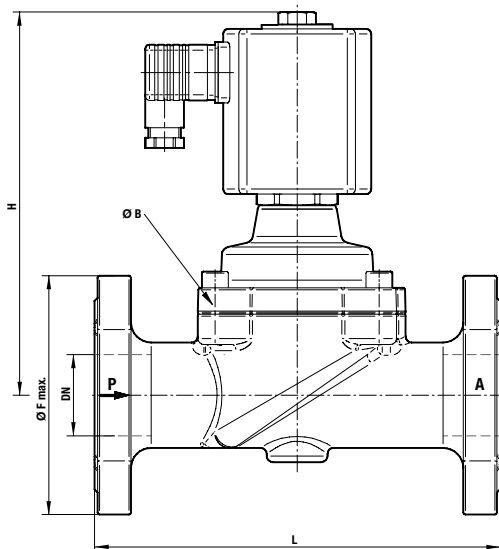
Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

**85500 up to DN 25**



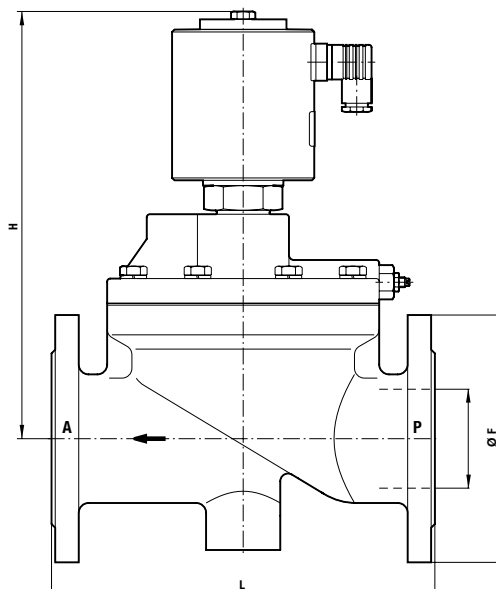
Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8550200.940x	15	130	142	96	44
8550300.940x	20	150	150	110	50
8550400.940x	25	160	155	115	62

**85500 from DN 32**



Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8550500.840x	32	180	184	140	92
8550600.840x	40	200	189	150	92
8550700.840x	50	230	197	165	109

**84100 / 84200  
 from DN 65**



Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8420800.950x	65	290	195	185	185
8420900.950x	80	310	220	200	200
8421000.950x	100	350	260	220	235

Contact face acc. to DIN EN 1092-1/B

## 2/2-way valves DN 15 to DN 50

For neutral steam and liquid fluids  
 Solenoid actuated, with forced lifting  
 Piston valves  
 Flange connection  
 Pressure rating PN 40 (84120 – PN 16)  
 Operating pressure 0 to 16 bar

**NEW**

**Click-on®**

**Stainless Steel**



**85520**

### Description (standard valve)

Solenoid valve for e. g. hot water and steam

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	0 °C up to max. +200 °C
Ambient temperature:	0 °C up to max. +60 °C
Mounting position:	solenoid mounted underneath, fluid temperature up to max. +150 °C Solenoid preferred vertical on top

### Material

Body:	Stainless steel (1.4408) / Cast Steel / Grey Cast Iron, Brass
Seal seat:	PTFE
Internal parts:	Stainless steel, PTFE / Carbon / FPM

For contaminated fluids insertion of a strainer is recommended.

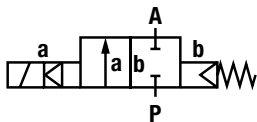
### Features

- High flow rate
- For robust industry solutions
- Damped operation
- Leakage rate E acc. to DIN EN 12266-1
- Solenoid interchangeable without tools (**Click-on®**) up to DN 25 thread
- Valve operates without differential pressure (Zero Delta P)
- Fluids of Group 2 acc. to Pressure Equipment Directive 97/23/EC



**84120  
84220**

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8552400.9402 for a DN 25 valve.



## Characteristic Data

### Valves

Part Number Solenoid with ---	Part Number Solenoid with ~	Nominal Diameter (mm)	Material	Operating Pressure *		Pressure Rating PN	k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
				min. (bar)	max. (bar)			
8552200.9402	8552200.9406	15	VA	0	16	40	3.8	3.8
8552300.9402	8552300.9406	20	VA	0	16	40	6.1	4.2
8552400.9402	8552400.9406	25	VA	0	16	40	9.5	4.8
8552500.8402	8552500.8406	32	VA	0	16	40	23.0	9.6
8552600.8402	8552600.8406	40	VA	0	16	40	25.0	10.0
8552700.8402	8552700.8406	50	VA	0	16	40	41.0	11.5
8412800.9502	8412800.9506	65	GG	0	16	16	67.0	34.0
8412900.9502	8412900.9506	80	GG	0	16	16	94.0	42.0
8413000.9502	8413000.9506	100	GG	0	16	16	144.0	61.0
8422800.9502	8422800.9506	65	GS	0	16	40	67.0	35.8
8422900.9502	8422900.9506	80	GS	0	16	40	94.0	46.5
8423000.9502	8423000.9506	100	GS	0	16	40	144.0	67.5

\* for gases and liquid fluids up to 80 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

## Solenoid 9402 / 9406 and 8402 / 8406

### Standard voltages

DC ---	AC ~ 40 Hz – 60 Hz
24 V	24 V
–	110 V
–	120 V
–	230 V

Design acc.to DIN VDE 0580

voltage range ±10 %

100 % duty cycle

Protection class acc.to EN 60529 IP65

Socket Form A acc.to DIN EN 175301-803 (included)

AC solenoid with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature +20 °C.

In operation the power consumption of the solenoid

decreases by approx. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
9402 *	29 W	–	–
9406 *	–	33 VA	33 VA
8402	29 W	–	–
8406	–	33 VA	33 VA

\*  coil only

(with the exception of solenoid 94xx up to 41 V AC)

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

XXXXX01.XXXX Normally open (NO),  
only with solenoid 8407,  
Mounting position and fluid temperature:  
max.+150 °C solenoid vertical on top,  
max.+200 °C solenoid vertical underneath,  
from DN 32 only vertical on top

XXXXX02.XXXX Manual override

XXXXX14.XXXX Seat seal EPDM,  
fluid temperature 0 °C up to +130 °C

XXXXX22.XXXX max. operation pressure 25 bar

XXXXX23.XXXX Electrical position indicator with two magnetic field  
sensors; only with solenoid 8407

XXXXX47.XXXX Flanges acc. to ASME B 16.5 150 lb/sq.in.

XXXXX48.XXXX Flanges acc. to ASME B 16.5 300 lb/sq.in.

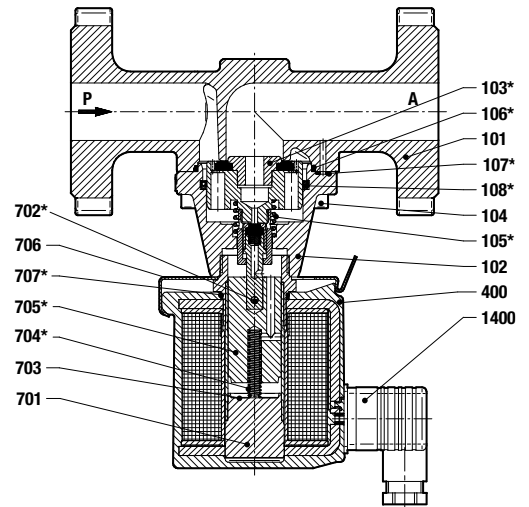
On request Further versions

Accessoires: - Manual override conversion kit

## Section View

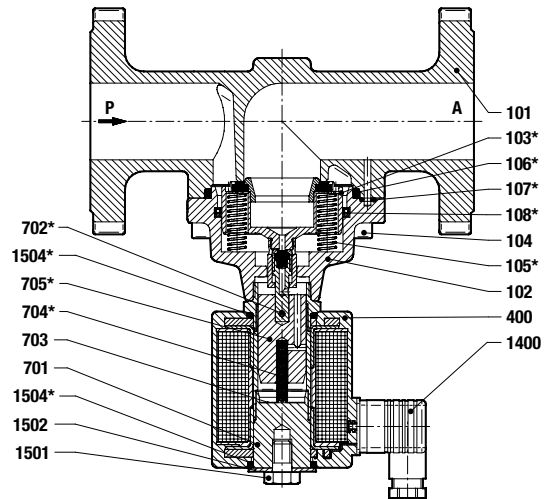
### 85520 up to DN 25

- |                         |                                   |
|-------------------------|-----------------------------------|
| 101 Ventilgehäuse       | 703 Rundplatte                    |
| 102 Ventilgehäusedeckel | *704 Druckfeder                   |
| *103 Ventilkolben       | *705 Anker                        |
| 104 Zylinderschraube    | 706 Federbügel                    |
| *105 Druckfeder         | *707 O-Ring                       |
| *106 O-Ring             | 1400 Gerätesteckdose (im Beipack) |
| *107 O-Ring             |                                   |
| *108 Nutring            |                                   |
| 400 Magnetkörper        |                                   |
| 701 Magnethülse         |                                   |
| *702 Zylinderstift      |                                   |



### 85520 from DN 32

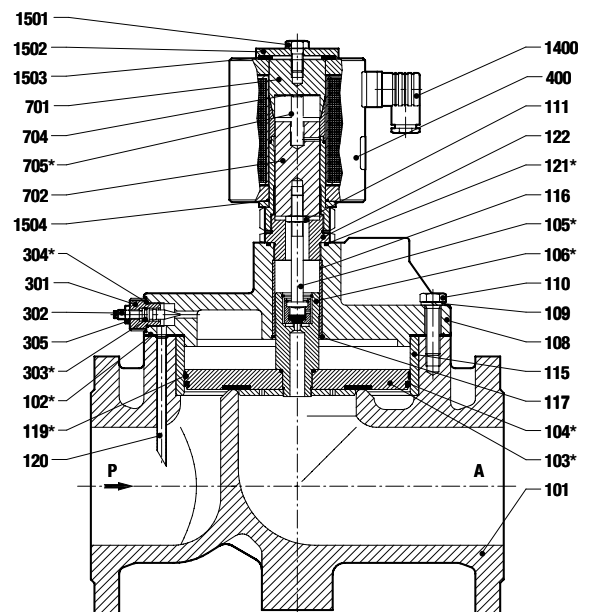
- |                         |                                   |
|-------------------------|-----------------------------------|
| 101 Ventilgehäuse       | 703 Rundplatte                    |
| 102 Ventilgehäusedeckel | *704 Druckfeder                   |
| *103 Ventilkolben       | *705 Anker                        |
| 104 Zylinderschraube    | 1400 Gerätesteckdose (im Beipack) |
| *105 Druckfeder (2x)    | 1501 Sechskantschraube            |
| *106 O-Ring             | 1502 Rundplatte                   |
| *107 O-Ring             | *1504 O-Ring (2x)                 |
| *108 Nutring            |                                   |
| 400 Magnetkörper        |                                   |
| 701 Magnethülse         |                                   |
| *702 Zylinderstift      |                                   |



### 84120 /84220 from DN 65

- |                    |                      |
|--------------------|----------------------|
| 101 Valve body     | *304 O-ring          |
| *102 Gasket        | 305 Hexagon screw    |
| *103 Valve piston  | 306 Grooved ring     |
| *104 Grooved ring  | 400 Solenoid         |
| *105 Valve spindle | 701 Core tube        |
| *106 Locking ring  | 702 Core             |
| 108 Valve cover    | 704 Round plate      |
| 109 Spring washer  | *705 Pressure spring |
| 110 Hexagon screw  | 1400 Socket          |
| 111 Hexagon nut    | 1501 Hexagon screw   |
| 115 Bushing        | 1502 Round plate     |
| 116 Bushing        | 1503 Gasket          |
| 117 Snap ring      | 1504 O-ring          |
| *119 Guide foil    |                      |
| 120 Tube           |                      |
| *121 O-ring        |                      |
| 122 Screw piece    |                      |
| 301 Screw piece    |                      |
| 302 Valve spindle  |                      |
| *303 O-ring        |                      |

From DN 65: To avoid high shock pressure, you can control the closing time with the adjusting stem pos. 302. Turning clockwise pos. 302 increases restriction and slows down the speed. A totally closed restriction would result in a malfunction.

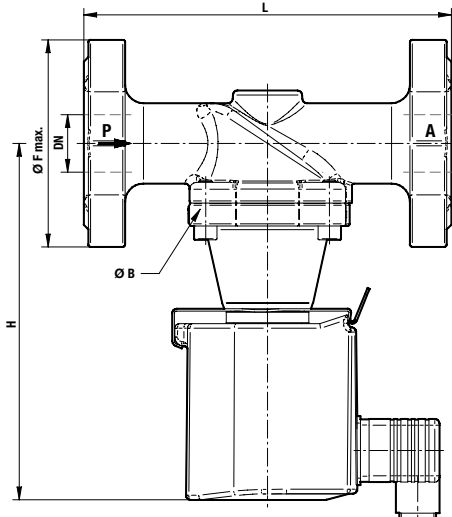


\*These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

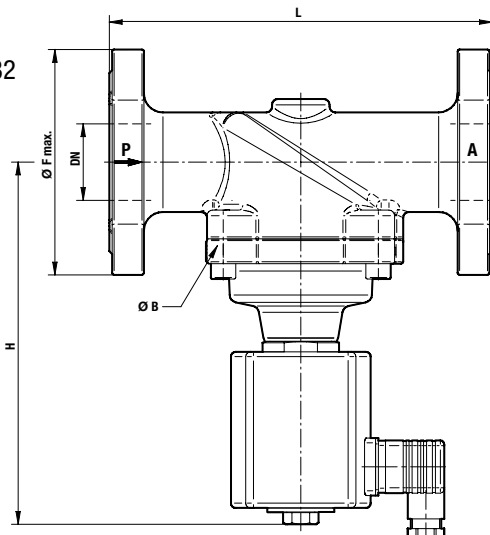
Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

**85520 up to DN 25**



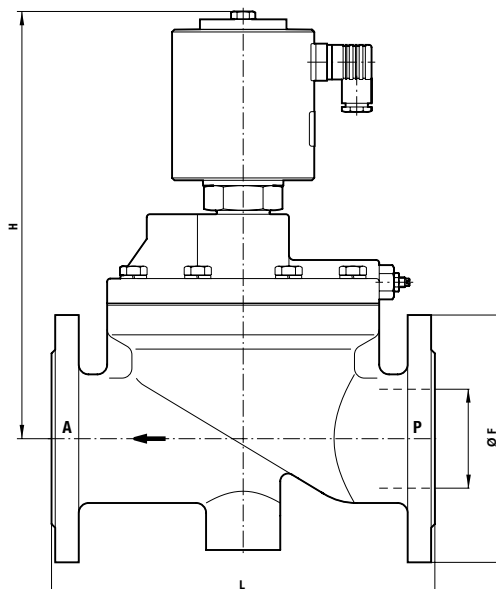
Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8552200.940x	15	130	142	96	44
8552300.940x	20	150	150	110	50
8552400.940x	25	160	155	115	62

**85520 from DN 32**



Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8552500.840x	32	180	184	140	92
8552600.840x	40	200	189	150	92
8552700.840x	50	230	197	165	109

**84120 / 84220 from DN 65**



Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8412800.950x	65	290	195	327	185
8412900.950x	80	310	220	347	200
8413000.950x	100	350	260	376	235

Contact face acc. to DIN EN 1092-1/B

## 2/2-way valves DN 15 to DN 50

For slightly aggressive gases and liquid fluids

Solenoid actuated, with forced lifting

Piston valves

Flange connection

Pressure rating PN 40 (84140 – PN 16)

Operating pressure 0 to 25 (40 bar)

**NEW**

**Click-on®**

**Stainless Steel**



85540

### Description (standard valve)

Solenoid valve for e. g. slightly aggressive fluids

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-20 °C up to max. +90 °C
Ambient temperature:	-20 °C up to max. +50 °C
Mounting position:	optional, preferably solenoid vertical on top

### Material

Body:	Stainless steel
Seal seat:	NBR (85540, 85240) PTFE (84140)
Internal parts:	Stainless steel

For contaminated fluids insertion of a strainer is recommended.

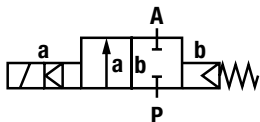
### Features

- High flow rate
- For robust industry solutions
- Damped operation
- Suitable for vacuum
- Valve operates without differential pressure
- Solenoid interchangeable without tools (**Click-on®**) up to DN 25
- Fluids of Group 1 and 2 acc. to Pressure Equipment Directive 97/23/EC



84140  
84240

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8554400.9401 for a DN 25 valve.

**This valve is also available with inspection certificate DIN EN 10204 - 3.1, series 85580**

Please order the datasheet separately.

## Characteristic Data

### Valves

Part Number Solenoid with ≡	Part Number Solenoid with ~	Nominal Diameter (mm)	Material	Operating Pressure *		Pressure Rating PN	k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
				min. (bar)	max. (bar)			
8554200.9401	8554200.9404	15	1.4408	0	25	40	4.4	3.8
8554300.9401	8554300.9404	20	1.4408	0	25	40	7.0	4.2
8554400.9401	8554400.9404	25	1.4408	0	25	40	10.5	4.8
8554500.8401	8554500.8404	32	1.4408	0	25	40	25.0	9.6
8554600.8401	8554600.8404	40	1.4408	0	25	40	27.0	10.0
8554700.8401	8554700.8404	50	1.4408	0	25	40	43.0	11.5
8414800.9501	8414800.9504	65	1.4581	0	16	16	67.0	36.5
8414900.9501	8414900.9504	80	1.4581	0	16	16	94.0	45.6
8415000.9501	8415000.9504	100	1.4581	0	16	16	144.0	65.6
8424800.9501	8424800.9504	65	1.4581	0	25	40	67.0	36.5
8424900.9501	8424900.9504	80	1.4581	0	25	40	94.0	45.6
8425000.9501	8425000.9504	100	1.4581	0	25	40	144.0	65.6

\* for gases and liquid fluids up to 60 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

### Solenoid 9401 / 9404 and 8401 / 8404

#### Standard voltages

DC ≡	AC ~ 40 Hz – 60 Hz
24 V	24 V
–	110 V
–	120 V
–	230 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

AC with rectifier plug

### Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the solenoid coil decrease the power consumption approx. 30 %.

Solenoid	DC ≡	AC ~	
		Inrush	Holding
9401 *	38 W	–	–
9404 *	–	42 VA	42 VA
8401	40 W	–	–
8404	–	45 VA	45 VA

\*  coil only

(with the exception of solenoid 94xx up to 41 V AC)

#### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

### Further Options (Valves)

XXXXX01.XXXX Normally open (NO), only with solenoid 8400, mounting position solenoid vertical on top

XXXXX02.XXXX Manual override

XXXXX03.XXXX Seat seal FPM, fluid temperature –10 °C up to +110 °C <sup>1)</sup>

XXXXX06.XXXX Seat seal PTFE, fluid temperature –20 °C up to +110 °C <sup>1)</sup>, leakage rate E acc.to DIN EN 12266-1; for fluids of group 1 and 2 of the Pressure Equipment Directive 97/23/EC

XXXXX14.XXXX Seat seal EPDM, for hot water, fluid temperature –20 °C up to +110 °C

XXXXX17.XXXX Normally open, fluid temperature –10 °C up to +110 °C, Seat seal FPM, only with solenoid 8400, mounting position solenoid vertical on top <sup>1)</sup>

XXXXX22.XXXX max. operating pressure 40 bar

XXXXX23.XXXX Position indicator with two magnetic field sensors (only with solenoid 8400)

XXXXX25.XXXX Seat seal FPM, with larger bleed orifices in the piston, for e. g. fuel and oil, max. viscosity 80 mm<sup>2</sup>/s (cSt), fluid temperature –10 °C up to +110 °C <sup>1)</sup>


XXXXX47.XXXX Flanges acc.to ASME B 16.5 150 lb/sq.In.

XXXXX48.XXXX Flanges acc.to ASME B 16.5 300 lb/sq.In.

On request

Further versions

### Further Options (Solenoids)

XXXXXXX.8441 Protection class  II 2 GD EEx me II T3 T 140 °C

XXXXXXX.9426 \* Protection class  II 3 GD EEx nA II T4 T 135 °C

XXXXXXX.8426 \* Protection class  II 3 GD EEx nA II T4 T 135 °C

XXXXXXX.8920 Protection class  II 2 GD EEx d II C T4 and T5 T 130 °C / 95 °C

On request

Further versions

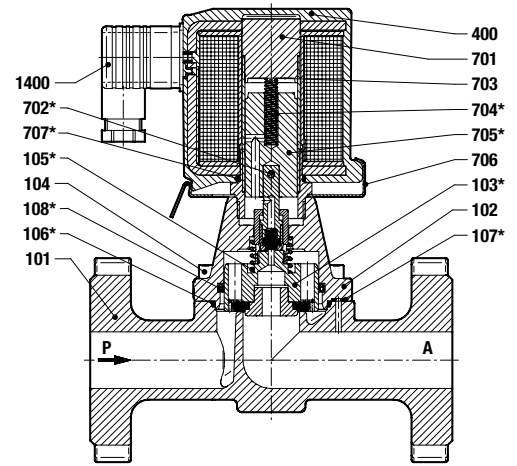
\* DC only, for AC solenoids with design inspection certificate acc.to category 2, e. g. xxxxxxx.8441

<sup>1)</sup> Up to max.+200 °C fluid temperature with solenoid for higher temperature

## Section View

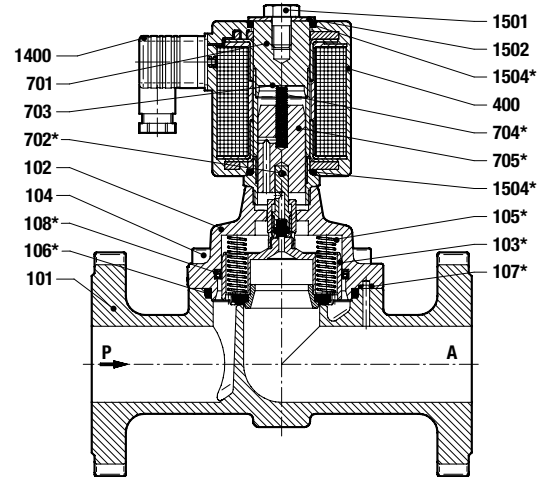
### 85540 up to DN 25

- |                      |                        |
|----------------------|------------------------|
| 101 Valve body       | 703 Round plate        |
| 102 Valve cover      | *704 Pressure spring   |
| *103 Valve piston    | *705 Core              |
| 104 Straight pin     | 706 Spring clip        |
| *105 Pressure spring | *707 O-ring            |
| *106 Seal ring       | 1400 Socket (included) |
| *107 O-ring          |                        |
| *108 Grooved ring    |                        |
| 400 Solenoid         |                        |
| 701 Core tube        |                        |
| *702 Straight pin    |                        |



### 85540 from DN 32

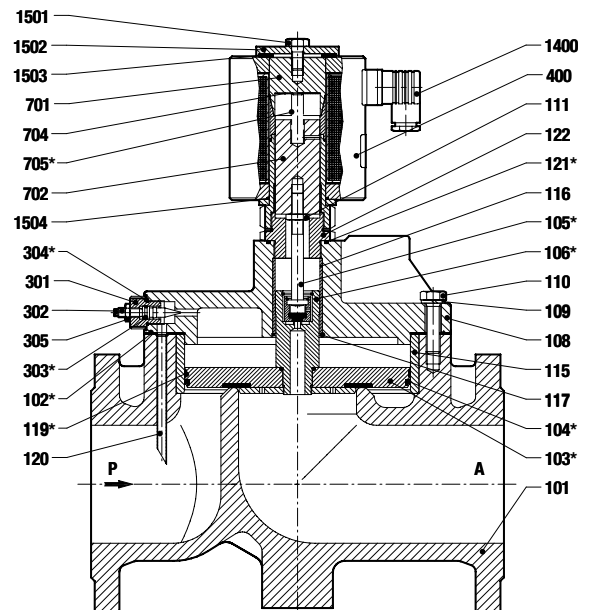
- |                      |                        |
|----------------------|------------------------|
| 101 Valve body       | 703 Round plate        |
| 102 Valve cover      | *704 Pressure spring   |
| *103 Valve piston    | *705 Core              |
| 104 Straight pin     | 1400 Socket (included) |
| *105 Pressure spring | 1501 Hexagon screw     |
| *106 Seal ring       | 1502 Round plate       |
| *107 O-ring          | *1504 O-Ring (2x)      |
| *108 Grooved ring    |                        |
| 400 Solenoid         |                        |
| 701 Core tube        |                        |
| *702 Straight pin    |                        |



### 84140 / 84240 from DN 32

- |                    |                      |
|--------------------|----------------------|
| 101 Valve body     | *304 O-ring          |
| *102 Gasket        | 305 Hexagon screw    |
| *103 Valve piston  | 306 Grooved ring     |
| *104 Grooved ring  | 400 Solenoid         |
| *105 Valve spindle | 701 Core tube        |
| *106 Locking ring  | 702 Core             |
| 108 Valve cover    | 704 Round plate      |
| 109 Spring washer  | *705 Pressure spring |
| 110 Hexagon screw  | 1400 Socket          |
| 111 Hexagon nut    | 1501 Hexagon screw   |
| 115 Bushing        | 1502 Round plate     |
| 116 Bushing        | 1503 Gasket          |
| 117 Snap ring      | 1504 O-ring          |
| *119 Guide foil    |                      |
| 120 Tube           |                      |
| *121 O-ring        |                      |
| 122 Screw piece    |                      |
| 301 Screw piece    |                      |
| 302 Valve spindle  |                      |
| *303 O-ring        |                      |

From DN 65: To avoid high shock pressure, you can control the closing time with the adjusting stem pos. 302. Turning clockwise pos. 302 increases restriction and slows down the speed. A totally closed restriction would result in a malfunction.

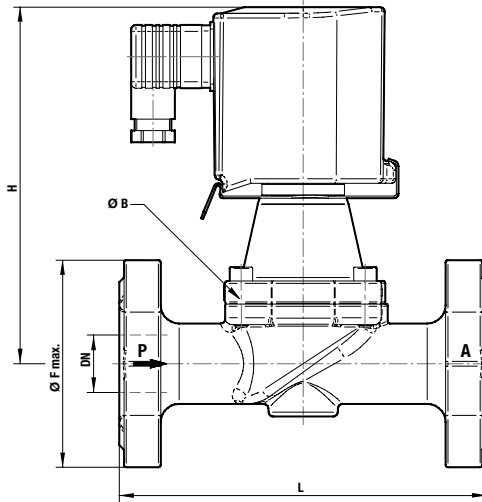


\*These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

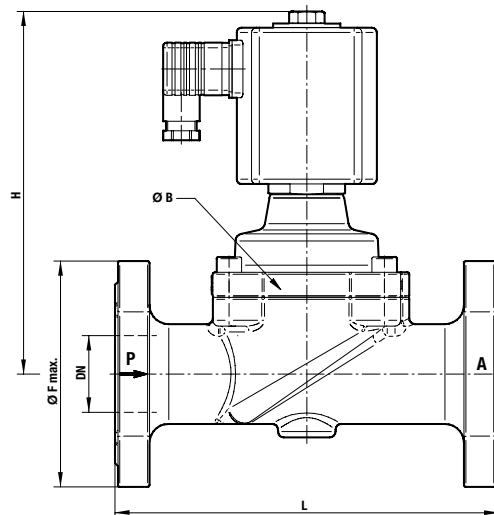
Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

**85540 up to DN 25**



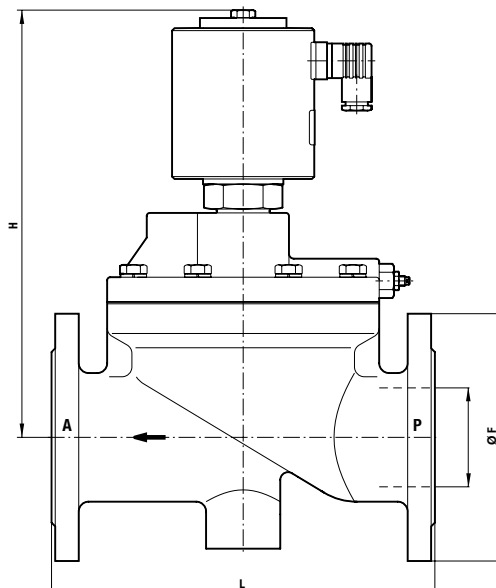
Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8554200.940x	15	130	142	96	44
8554300.940x	20	150	150	110	50
8554400.940x	25	160	155	115	62

**85540 from DN 32**



Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8554500.840x	32	180	184	140	92
8554600.840x	40	200	190	150	92
8554700.840x	50	230	197	165	109

**84140 / 84240 from DN 65**



Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8424800.9501	65	290	195	327	185
8424900.9501	80	310	220	347	200
8425000.9501	100	350	265	376	235

Contact face acc. to DIN EN 1092-1/B

## 2/2-way-valves DN 15 to DN 50

For neutral gases and liquid fluids

Indirectly solenoid actuated

Piston valves

Flange connection

Pressure rating PN 40 (84320 – PN 16)

Operating pressure 0.5 to 40 bar

**NEW**

**Click-on®**

### Description (standard valve)

Solenoid valve for air, water and other neutral fluids

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-20 °C up to max. +90 °C
Ambient temperature:	-20 °C up to max. +50 °C
Mounting position:	optional, preferably solenoid vertical on top



85560

### Material

Body:	Cast Steel / Grey Cast Iron, Brass
Seat seal:	NBR
Internal parts:	Stainless steel, Brass, PTFE

For contaminated fluids insertion of a strainer is recommended.

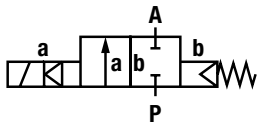
### Features

- Compact piston valve
- High flow rate
- Damped operation
- Solenoid interchangeable without tools (**Click-on®**)
- Fluids of Group 2 acc. to Pressure Equipment Directive 97/23/EC



84320  
84340

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8556400.9151 for a DN 25 valve.



## Characteristic Data

### Valves

Part Number	Nominal Diameter (mm)	Material	Operating Pressure *		Pressure Rating PN	k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
			min. (bar)	max. (bar)			
8556200.9151	15	GS	0,5	40	40	4.4	3.2
8556300.9151	20	GS	0,5	40	40	7.0	3.6
8556400.9151	25	GS	0,5	40	40	10.5	4.2
8556500.9151	32	GS	0,5	40	40	25.0	7.2
8556600.9151	40	GS	0,5	40	40	27.0	7.6
8556700.9151	50	GS	0,5	40	40	43.0	8.8
8432800.8401	65	GG	0,5	16	16	70.0	28.0
8432900.8401	80	GG	0,5	16	16	98.0	35.0
8433000.8401	100	GG	0,5	16	16	157.0	53.0
8434800.8401	65	GS	0,5	40	40	70.0	30.5
8434900.8401	80	GS	0,5	40	40	98.0	39.5
8435000.8401	100	GS	0,5	40	40	157.0	62.0

\* for gases and liquid fluids up to 60 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

## Solenoid 9151

### Standard voltages

DC ---	AC ~	
	50 Hz	60 Hz
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
9151 *	18 W	45 VA	35 VA / 17 W

\*  coil only



### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

- XXXX01.XXXX Normally open (NO)
- XXXX02.XXXX Manual override
- XXXX03.XXXX Seat seal FPM, fluid temperature –10 °C up to +110 °C
- XXXX14.XXXX Seat seal EPDM, for hot water etc., fluid temperature –20 °C up to +110 °C
- XXXX47.XXXX Flanges acc. to ASME B 16.5 150 lb/sq. In.
- XXXX48.XXXX Flanges acc. to ASME B 16.5 300 lb/sq. In.
- On request further versions

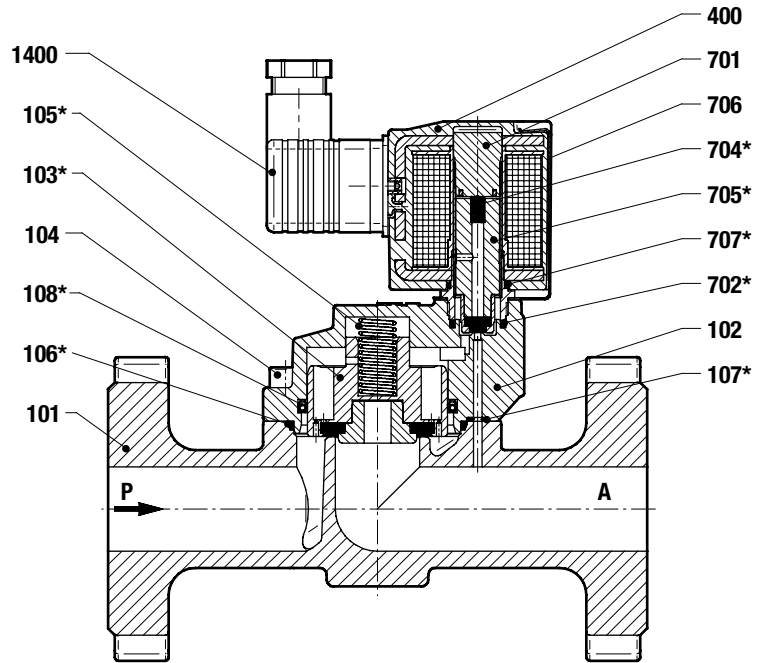
## Further Options (Solenoids)

- XXXXXXX.4682 Solenoid in protection class  II 2 GD EEx md II C T4/T5 T 130 °C with cable gland for DC
- XXXXXXX.4683 Solenoid in protection class  II 2 GD EEx md II C T4/T5 T 130 °C with cable gland for AC

## Section View

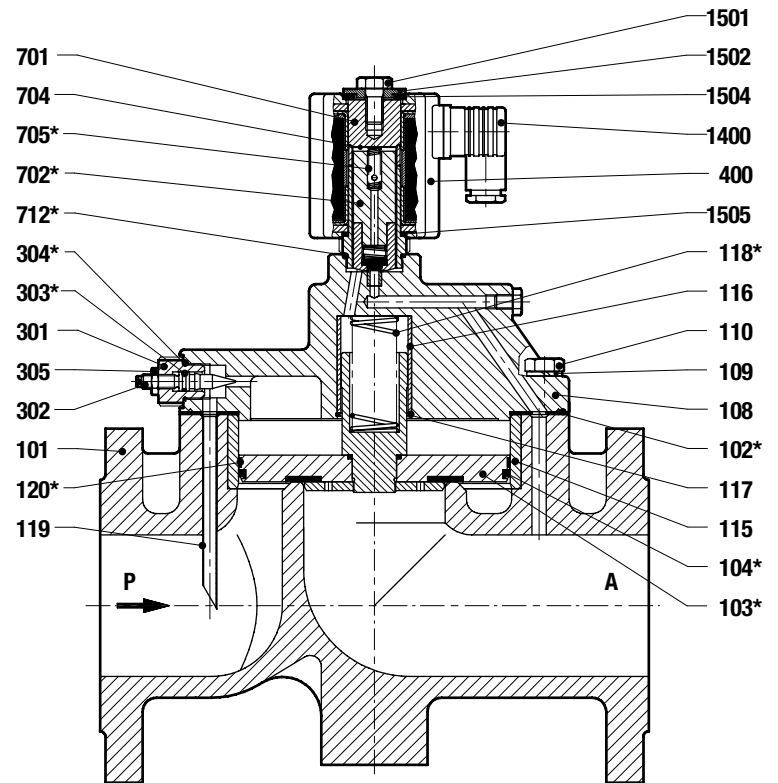
### 85560

- 101 Valve body
- 102 Valve cover
- \*103 Valve piston
- 104 Straight pin
- \*105 Pressure spring
- \*106 Seal ring
- \*107 O-ring
- \*108 Grooved ring
- 400 Solenoid
- 701 Core tube
- \*702 O-ring
- \*704 Pressure spring
- \*705 Core
- 706 Spring clip
- \*707 O-ring
- 1400 Socket (included)



### 84320 / 84340

- 101 Valve body
- \*102 Gasket
- \*103 Valve piston
- \*104 Grooved ring
- 108 Body cover
- 109 Spring washer
- 110 Hexagon screw
- 115 Bushing
- 116 Bushing
- 117 Circlip
- \*118 Pressure spring
- 119 Tube
- \*120 Guide foil
- 301 Screw piece
- 302 Valve spindle
- \*303 O-Ring
- \*304 O-Ring
- 305 Hexagon nut
- 400 Solenoid
- 701 Core tube
- \*702 Core
- 704 Round plate
- \*705 Pressure spring
- \*712 O-ring
- 1400 Socket
- 1501 Hexagon screw
- 1502 Round plate
- 1504 Gasket
- 1505 O-ring

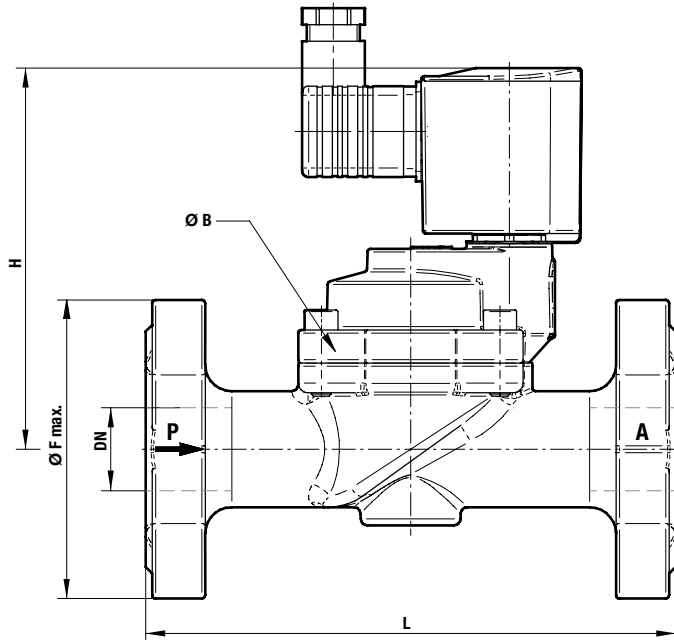


\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

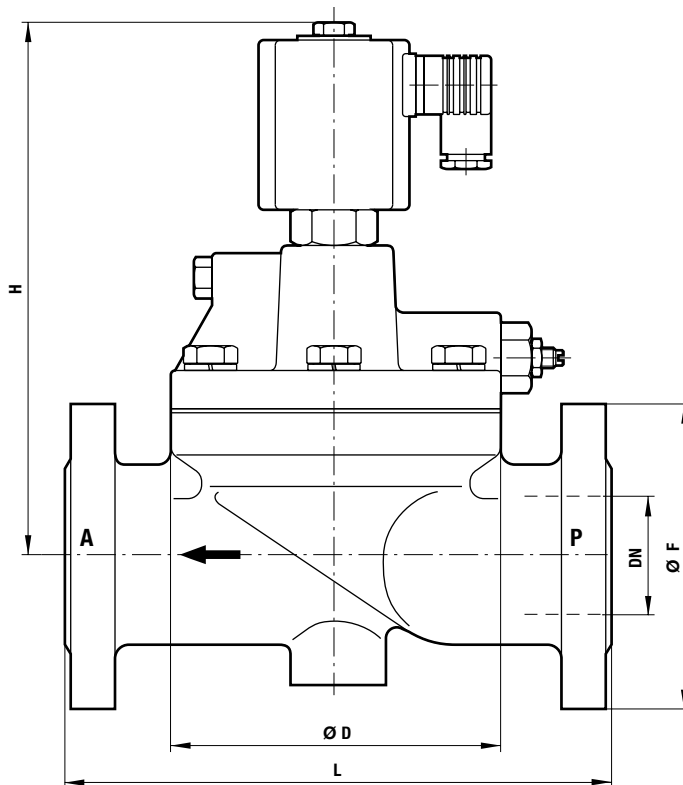
Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

### 85560



Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8556200.9151	15	130	96,0	96	44
8556300.9151	20	150	108,5	110	50
8556400.9151	25	160	115,0	115	62
8556500.9151	32	180	138,5	140	92
8556600.9151	40	200	143,5	150	92
8556700.9151	50	230	156,5	165	109

### 84320 / 84340



Part Number	Nominal Diameter (mm)	L (mm)	H (mm)	Ø F max. (mm)	Ø B (mm)
8432800.8401	65	290	280	185	195
8432900.8401	80	310	300	200	220
8433000.8401	100	350	330	220	260
8434800.8401	65	290	280	185	195
8434900.8401	80	310	300	200	220
8435000.8401	100	350	330	235	260

Contact face acc. to DIN EN 1092-1/B

## 2/2-way valves DN 12 to DN 50

For neutral gases and liquids

Solenoid actuated, with forced lifting

Piston valves

Internal threads G 1/2 to G 2

Operating pressure P→A: 0 bis 25 bar, backpressure tight A→P: 0 – 16 bar

Leakage rate acc. to DIN EN 12266-1

**NEW**

**Backpressure tight**

### Description (standard valve)

Solenoid valve for e. g. air, water, oil

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	0 °C up to max. +90 °C
Ambient temperature:	0 °C up to max. +50 °C
Mounting position:	preferably solenoid vertical on top

### Material

Body:	Brass (CW617N)
Seat seal:	NBR
Internal parts:	Stainless steel, PTFE/Carbon

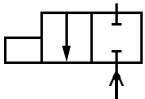


For contaminated fluids insertion of a strainer is recommended.

### Features

- High flow rate
- Damped operation
- Stainless steel piston
- No switching function at back pressure

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8560400.8401 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number Solenoid with $\equiv$	Part Number Solenoid with $\sim$	Nominal Diameter (mm)	Connection Size	Operating Pressure *		$k_V$ -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
				min.	max. (bar)		
8560200.8401***	8560200.8404	12	G 1/2	0	25	4.4	2.5
8560300.8401	8560300.8404	20	G 3/4	0	25	7.0	2.7
8560400.8401	8560400.8404	25	G 1	0	25	10.5	3.1
8560500.9501	8560500.9504	32	G 1 1/4	0	25	25.0	5.6
8560600.9501	8560600.9504	40	G 1 1/2	0	25	27.0	5.4
8560700.9501	8560700.9504	50	G 2	0	25	43.0	6.8

\* for gases and liquid fluids up to 60 mm<sup>2</sup>/s (cSt)

\*\*  $C_V$ -value (US)  $k_V$ -value x 1.2

\*\*\* manifold of brass (CW617N)

State voltage [V] and frequency [Hz]

## Solenoid 8401 / 8404 and 9501 / 9504

### Standard voltage

DC $\equiv$	AC $\sim$ 40 Hz – 60 Hz	
	24 V	–
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range  $\pm 10$  %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

AC with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC $\equiv$	AC $\sim$	
		Inrush	Holding
8401	40 W	–	–
8404	–	45 VA	45 VA
9501	80 W	–	–
9504	–	89 VA	89 VA

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

XXXXX02.XXXX Manual override

XXXXX03.XXXX Seat seal FPM,  
fluid temperature 0 °C up to max. +110 °C

XXXXX14.XXXX Seat seal EPDM,  
fluid temperature 0 °C up to max. +110 °C

XXXXX23.XXXX Position indicator with two solenoid sensors,  
On request Further versions

## Further Options (Solenoids)

XXXXXXX.8441 Protection class  
⊕ II 2 GD EEx me II T3 T 140 °C (up to G 1)

XXXXXXX.8426\* Protection class  
⊕ II 3 GD EEx nA II T4 T 135 °C

XXXXXXX.9540 Protection class  
⊕ II 2 GD EEx me II T3 and T4 T 140 °C  
(from G 1 1/4)

XXXXXXX.8920 Protection class  
⊕ II 2 GD EEx d II C T4 and T5  
T 130 °C / 95 °C (up to G 1)

On request Further versions

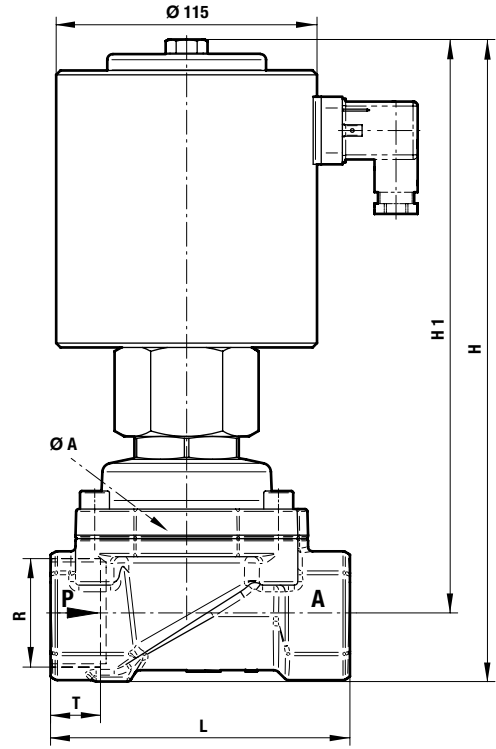
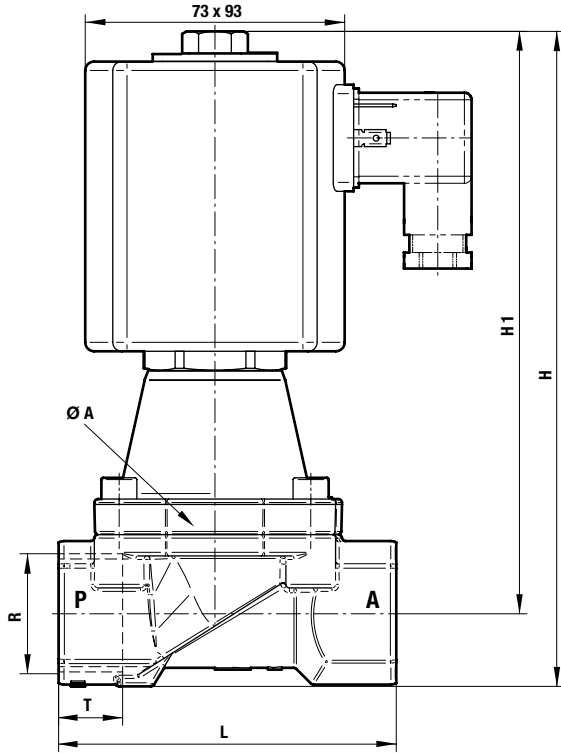
\* DC only, for AC solenoids with design inspection certificate acc. to category 2,  
e. g. xxxxxxx.8441

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

up to G 1

from G 1 1/4



Part Number	Nominal Diameter (mm)	Connection Size	Ø A (mm)	H (mm)	H 1 (mm)	L (mm)	T (mm)
8560200.840x***	12	G 1/2	44	166.5	150	67	14
8560300.840x	20	G 3/4	50	166.5	150	80	16
8560400.840x	25	G 1	62	184.0	164	95	18
8560500.950x	32	G 1 1/4	92	283.0	283	132	20
8560600.950x	40	G 1 1/2	92	283.0	283	132	22
8560700.950x	50	G 2	109	N.D.	N.D.	160	24

\*\*\* manifold of brass (CW617N)



■ Annular gap evacuation (K3)



■ Generator cooling (backpressure tight K4)



■ Clean water (K4)



■ Generator lubrication (Oil, K4)



■ Generator cooling (backpressure tight K4)



## 2/2-way valves DN 8 to DN 50

For neutral gases and liquids

Solenoid actuated, with forced lifting

Piston valves

Internal threads G 1/4 to G 2 or 1/4 NPT to 2 NPT

Operating pressure 0 to 25 bar (40 bar)

**Click-on<sup>®</sup>**

### Description (standard valve)

Solenoid valve for e. g. air, water, oil

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-20 °C up to max. +90 °C
Ambient temperature:	-20 °C up to max. +50 °C
Mounting position:	optional, preferably solenoid vertical on top

### Material

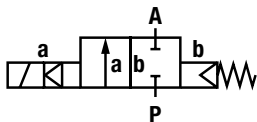
Body:	Brass (CW617N)
Seat seal:	NBR
Internal parts:	Stainless steel, PTFE/Carbon

For contaminated fluids insertion of a strainer is recommended.

### Features

- High flow rate
- For robust industry solutions
- Damped operation
- Suitable for vacuum
- For systems with low or fluctuating pressure
- Valve operates without differential pressure
- Solenoid interchangeable without tools (**Click-on<sup>®</sup>**) up to G 1 thread
- Stainless steel piston

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8570400.9401 for a DN 25 valve.





## Characteristic Data

### Valves

Part Number Solenoid with ---	Part Number Solenoid with ~	Nominal Diameter (mm)	Connection Size	Operating Pressure *		K <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
				min.	max. (bar)		
8570000.9401 8571000.9401	8570000.9404 8571000.9404	8	G 1/4 1/4 NPT	0	25	2.2	2.4
8570100.9401 8571100.9401	8570100.9404 8571100.9404	10	G 3/8 3/8 NPT	0	25	3.4	2.4
8570200.9401 8571200.9401	8570200.9404 8571200.9404	12	G 1/2 1/2 NPT	0	25	4.4	2.5
8570300.9401 8571300.9401	8570300.9404 8571300.9404	20	G 3/4 3/4 NPT	0	25	7.0	2.7
8570400.9401 8571400.9401	8570400.9404 8571400.9404	25	G 1 1 NPT	0	25	10.5	3.1
8570500.8401 8571500.8401	8570500.8404 8571500.8404	32	G 1 1/4 1 1/4 NPT	0	25	25.0	5.6
8570600.8401 8571600.8401	8570600.8404 8571600.8404	40	G 1 1/2 1 1/2 NPT	0	25	27.0	5.4
8570700.8401 8571700.8401	8570700.8404 8571700.8404	50	G 2 2 NPT	0	25	43.0	6.8

\* for gases and liquid fluids up to 40 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) K<sub>v</sub>-value x 1.2

## Solenoid 9401 / 9404 and 8401 / 8404

### Standard voltage

DC ---	AC ~ 40 Hz – 60 Hz	
	24 V	110 V / 120 V
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

AC with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
9401 *	38 W		
9404 *		42 VA	42 VA
8401	40 W		
8404		45 VA	45 VA

\*  coil only

(with the exception of solenoid 94xx up to 41 V AC)

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.




## Further Options (Valves)

- XXXXX01.XXXX Normally open, vertical on top, only with solenoid 8400
- XXXXX02.XXXX Manual override
- XXXXX03.XXXX Seat seal FPM, Fluid temperature –10 °C up to max. +110 °C <sup>1)</sup>
- XXXXX06.XXXX Seat seal PTFE, Fluid temperature max. + 110 °C <sup>1)</sup>, operating pressure max. 16 bar
- XXXXX14.XXXX Seat seal EPDM, max. Fluid temperature +110 °C
- XXXXX17.XXXX Normally open, Seat seal FPM, Fluid temperature –10 °C up to max. +110 °C <sup>1)</sup>, Mounting position: vertical on top, only with solenoid 8400
- XXXXX22.XXXX max. operating pressure 40 bar
- XXXXX23.XXXX Position indicator with two solenoid sensors, only with solenoid 8400
- XXXXX25.XXXX Seat seal FPM, with larger bleed orifices in the piston, for fluids such as fuel and oil , viscosity max. 80 mm<sup>2</sup>/s (cSt), Fluid temperature –10 °C up to max. +110 °C
- XXXXX92.XXXX Degreased version, suitable for oxygen operating, the BAM approval up to 25 bar for oxygen is available.

On request

Further versions

## Further Options (Solenoids)

- XXXXXXXX.8441 Protection class  II 2 GD EEx me II T3 T 140 °C
- XXXXXXXX.9426\* Protection class  II 3 GD EEx nA II T4 T 135 °C
- XXXXXXXX.8426\* Protection class  II 3 GD EEx nA II T4 T 135 °C

On request

Further versions

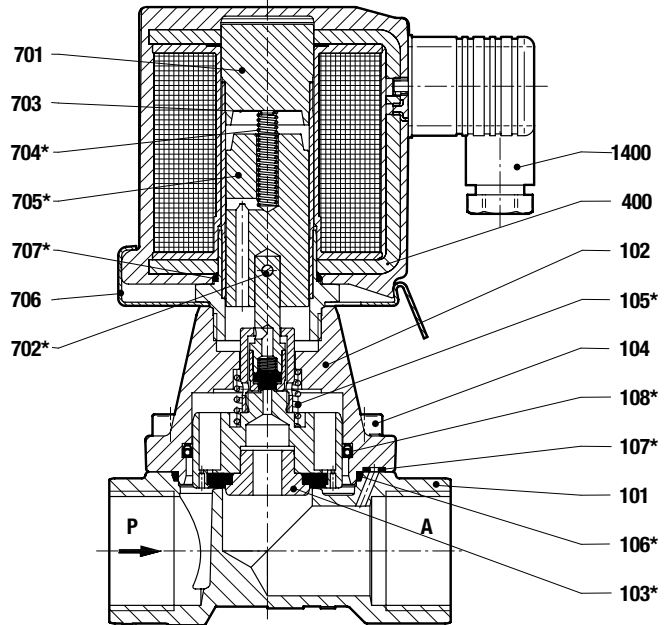
\* DC only, for AC solenoids with design inspection certificate acc. to category 2, e. g. xxxxxxx.8441

<sup>1)</sup> Up to max. 200 °C fluid temperature with solenoid for higher temperature

## Section View

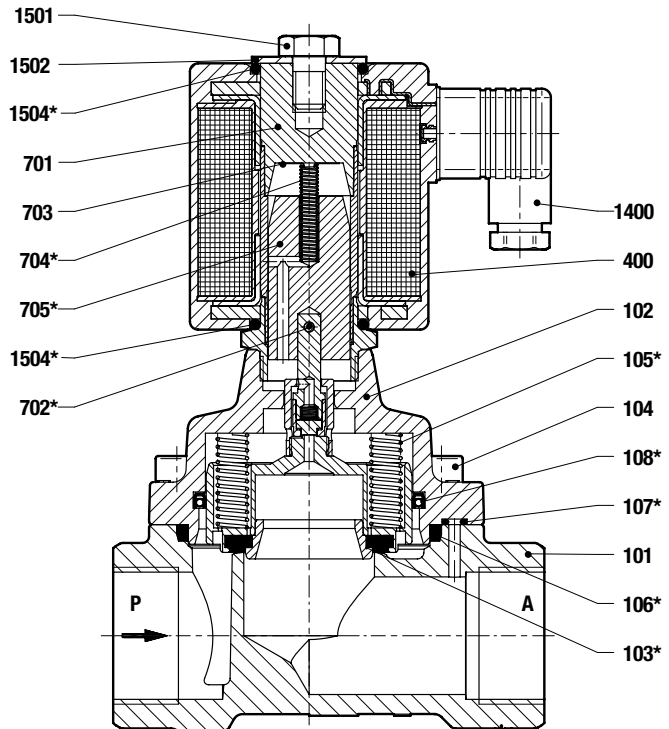
up to G 1 resp. 1 NPT

- 101 Valve body
- 102 Valve cover
- \*103 Valve piston
- 104 Socket head cap screw
- \*105 Pressure spring
- \*106 O-ring
- \*107 O-ring
- \*108 Grooved ring
- 400 Solenoid
- 701 Core tube
- \*702 Straight pin
- 703 Round plate
- \*704 Pressure spring
- \*705 Core
- 706 Spring clip
- \*707 O-ring
- 1400 Socket (included)



from G 1 1/4 resp. 1 1/4 NPT

- 101 Valve body
- 102 Valve cover
- \*103 Valve piston
- 104 Socket head cap screw
- \*105 Pressure spring (2x)
- \*106 O-ring
- \*107 O-ring
- \*108 Grooved ring
- 400 Solenoid
- 701 Core tube
- \*702 Straight pin
- 703 Round plate
- \*704 Pressure spring
- \*705 Core
- 1400 Socket (included)
- 1501 Hexagon screw
- 1502 Round plate
- \*1504 O-ring (2x)



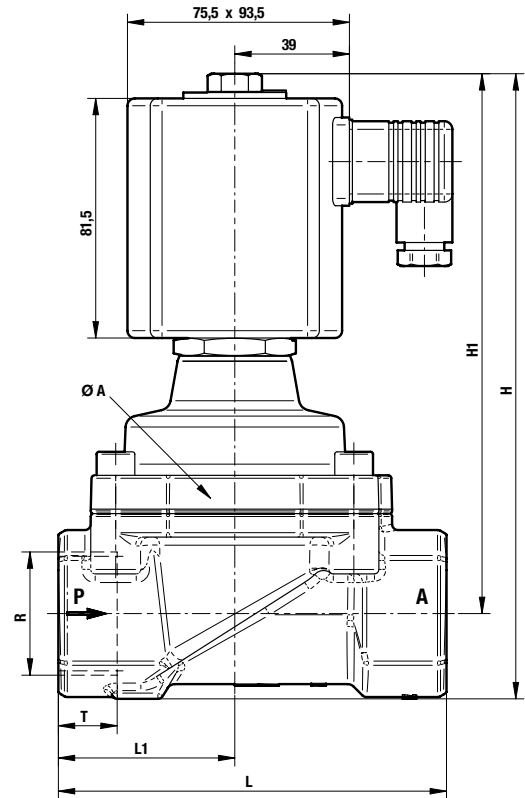
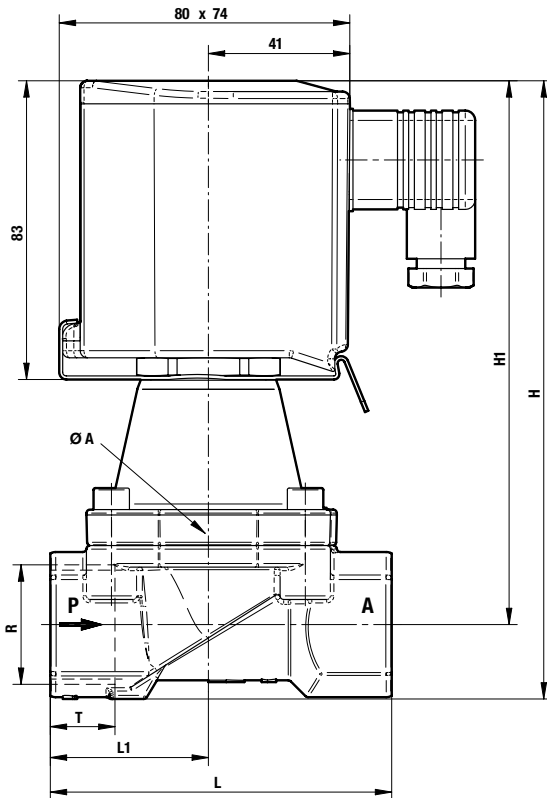
\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

up to G 1 resp. 1 NPT

from G 1 1/4 rep. 1 1/4 NPT



Part Number	Nominal Diameter (mm)	Connection Size	A (mm)	H (mm)	H 1 (mm)	L (mm)	L 1 (mm)	T (mm)
8570000.940x 8571000.940x	8	G 1/4 1/4 NPT	44	152.0	140.5	60	27.5	12.0 10.0
8570100.940x 8571100.940x	10	G 3/8 3/8 NPT	44	152.0	140.5	60	27.5	12.0 10.5
8570200.940x 8571200.940x	12	G 1/2 1/2 NPT	44	154.5	140.5	67	31.0	14.0 13.5
8570300.940x 8571300.940x	20	G 3/4 3/4 NPT	50	162.0	146.5	80	35.5	16.0 14.0
8570400.940x 8571400.940x	25	G 1 1 NPT	62	183.0	162.0	95	44.0	18.0 17.0
8570500.840x 8571500.840x	32	G 1 1/4 1 1/4 NPT	92	212.5	183.5	132	60.0	20.0 17.0
8570600.840x 8571600.840x	40	G 1 1/2 1 1/2 NPT	92	212.5	183.5	132	60.0	22.0 17.0
8570700.840x 8571700.840x	50	G 2 2 NPT	109	226.5	192.0	160	74.0	24.0 17.5

## 2/2-way valves DN 8 to DN 50

For neutral steam and liquids

Solenoid actuated, with forced lifting

Piston valves

Internal threads G 1/4 to G 2 or 1/4 NPT to 2 NPT

Operating pressure 0 to 16 bar

**Click-on®**

### Description (standard valve)

Solenoid valve for steam, hot water, and other neutral liquids

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	0 °C up to max. +200 °C
Ambient temperature:	0 °C up to max. +60 °C
Mounting position:	Solenoid mounted underneath (up to max. +150 °C preferably solenoid vertical on top)

### Material

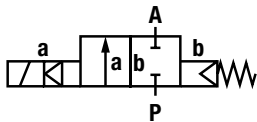
Body:	Brass (CW617N)
Seat seal:	PTFE
Internal parts:	Stainless steel, PTFE/Carbon/FPM

For contaminated fluids insertion of a strainer is recommended.

### Features

- High flow rate
- For robust industry applications
- Damped operation
- Valve operates without differential pressure
- Solenoid interchangeable without tools (**Click-on®**) up to G 1 thread

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8572400.9402 for a DN 25 valve.

## Characteristic Data

### Valves

Part Number Solenoid with ---	Part Number Solenoid with ~	Nominal Diameter (mm)	Connection Size	Operating Pressure *		k <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
				min.	max. (bar)		
8572000.9402 8573000.9402	8572000.9406 8573000.9406	8	G 1/4 1/4 NPT	0	16	1.9	2.4
8572100.9402 8573100.9402	8572100.9406 8573100.9406	10	G 3/8 3/8 NPT	0	16	3.0	2.4
8572200.9402 8573200.9402	8572200.9406 8573200.9406	12	G 1/2 1/2 NPT	0	16	3.8	2.5
8572300.9402 8573300.9402	8572300.9406 8573300.9406	20	G 3/4 3/4 NPT	0	16	6.1	2.7
8572400.9402 8573400.9402	8572400.9406 8573400.9406	25	G 1 1 NPT	0	16	9.5	3.1
8572500.8402 8573500.8402	8572500.8406 8573500.8406	32	G 1 1/4 1 1/4 NPT	0	16	23.0	5.6
8572600.8402 8573600.8402	8572600.8406 8573600.8406	40	G 1 1/2 1 1/2 NPT	0	16	25.0	5.4
8572700.8402 8573700.8402	8572700.8406 8573700.8406	50	G 2 2 NPT	0	16	41.0	6.8

\* for gases and liquid fluids up to 40 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) k<sub>v</sub>-value x 1.2

## Solenoid 9402 / 9406 and 8402 / 8406

### Standard voltage

DC ---	AC ~ 40 Hz – 60 Hz	
	24 V	–
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

AC with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
9402 *	29 W	–	–
9406 *	–	33 VA	33 VA
8402	29 W	–	–
8406	–	33 VA	33 VA

\*  coil only

(with the exception of solenoid 94xx up to 41 V AC)

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

XXXXX01.XXXX Normally open,  
from G 1/2 with solenoid 8402 / 8406  
Mounting position and Fluid temperature  
max. +150 °C solenoid vertical on top,  
max. +200 °C solenoid vertical underneath;  
G 1 1/4 only vertical on top

XXXXX02.XXXX Manual override

XXXXX14.XXXX Seat seal EPDM,  
max. Fluid temperature +130 °C

XXXXX22.XXXX max. operating pressure 25 bar

XXXXX23.XXXX Position indicator with two solenoid sensors,  
only with solenoid 8400

On request Further versions

Accessories :  
- Manual override conversion kit  
- Mounting bracket conversion kit

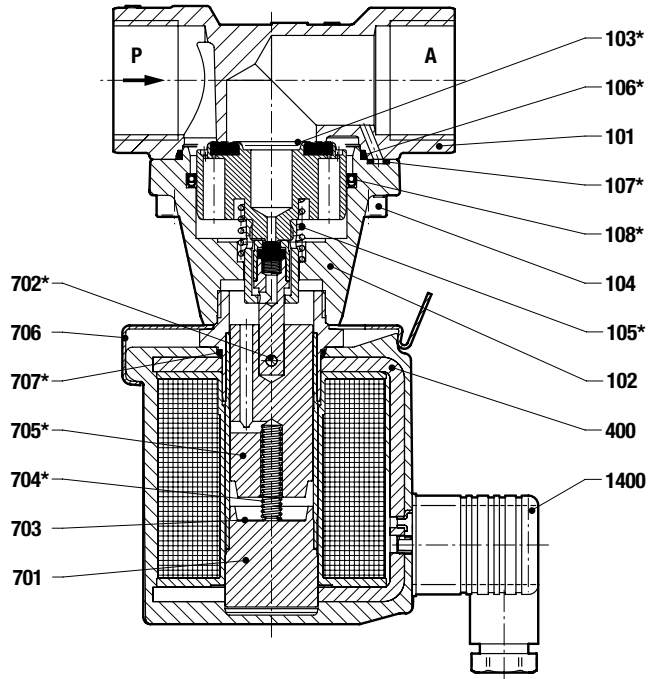
## Further Options (Solenoids)

On request Further versions

## Section View

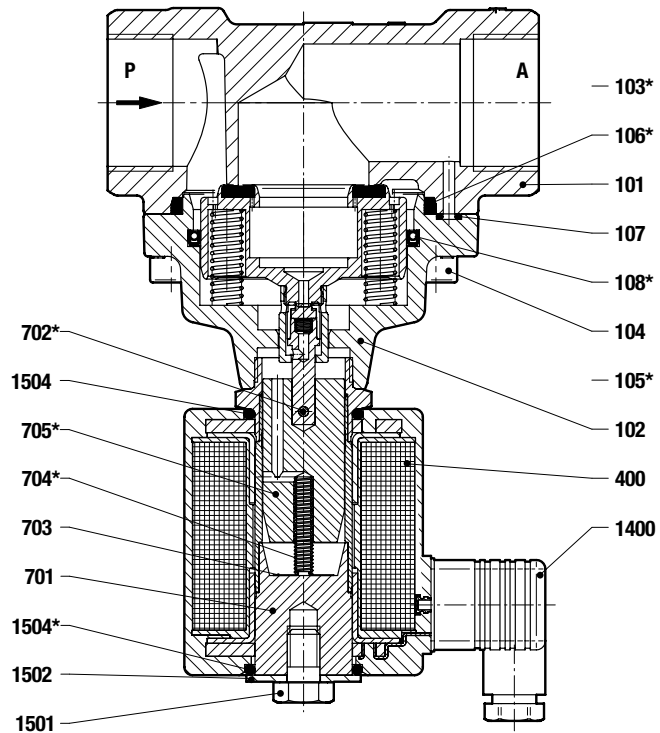
up to G 1 resp. 1 NPT

- 101 Valve body
- 102 Valve cover
- \*103 Valve piston
- 104 Socket head cap screw
- \*105 Pressure spring
- \*106 O-ring
- \*107 O-ring
- \*108 Grooved ring
- 400 Solenoid
- 701 Core tube
- \*702 Straight pin
- 703 Round plate
- \*704 Pressure spring
- \*705 Core
- 706 Spring clip
- \*707 O-ring
- 1400 Socket (included)



from G 1 1/4 resp. 1 1/4 NPT

- 101 Valve body
- 102 Valve cover
- \*103 Valve piston
- 104 Socket head cap screw
- \*105 Pressure spring (2x)
- \*106 O-ring
- \*107 O-ring
- \*108 Grooved ring
- 400 Solenoid
- 701 Core tube
- \*702 Straight pin
- 703 Round plate
- \*704 Pressure spring
- \*705 Core
- 1400 Socket (included)
- 1501 Hexagon screw
- 1502 Round plate
- \*1504 O-ring (2x)



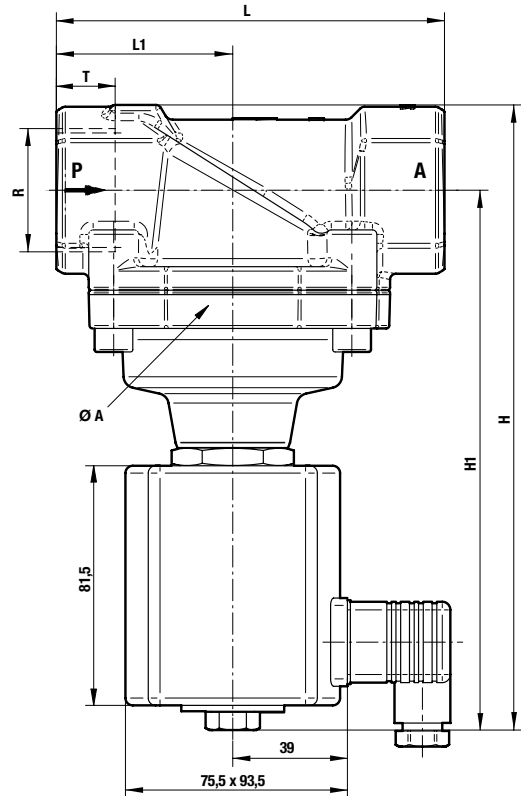
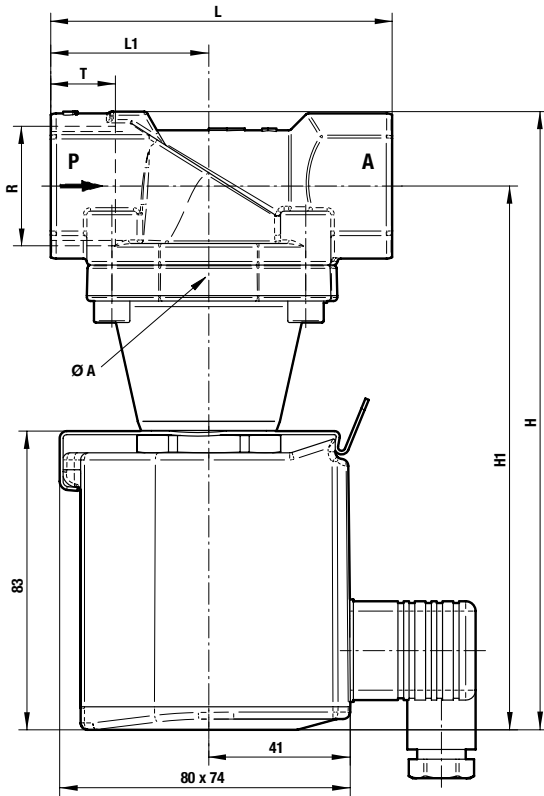
\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

up to G 1 resp. 1 NPT

from G 1 1/4 rep. 1 1/4 NPT



Part Number	Nominal Diameter (mm)	Connection Size	A (mm)	H (mm)	H 1 (mm)	L (mm)	L 1 (mm)	T (mm)
8572000.940x 8573000.940x	8	G 1/4 1/4 NPT	44	152.0	140.5	60	27.5	12.0 10.0
8572100.940x 8573100.940x	10	G 3/8 3/8 NPT	44	152.0	140.5	60	27.5	12.0 10.5
8572200.940x 8573200.940x	12	G 1/2 1/2 NPT	44	154.5	140.5	67	31.0	14.0 13.5
8572300.940x 8573300.940x	20	G 3/4 3/4 NPT	50	162.0	146.5	80	35.5	16.0 14.0
8572400.940x 8573400.940x	25	G 1 1 NPT	62	183.0	162.0	95	44.0	18.0 17.0
8572500.840x 8573500.840x	32	G 1 1/4 1 1/4 NPT	92	212.5	183.5	132	60.0	20.0 17.0
8572600.840x 8573600.840x	40	G 1 1/2 1 1/2 NPT	92	212.5	183.5	132	60.0	22.0 17.0
8572700.840x 8573700.840x	50	G 2 2 NPT	109	226.5	192.0	160	74.0	24.0 17.5

## 2/2-way valves DN 8 to DN 50

For slightly aggressive gases and liquids

Solenoid actuated, with forced lifting

Piston valves

Internal threads G 1/4 to G 2 or 1/4 NPT to 2 NPT

Operating pressure 0 to 25 bar (40 bar)

### Description (standard valve)

Solenoid valve for slightly aggressive gases and liquids

Switching function:	normally closed
Flow direction:	determined
Fluid temperature:	-20 °C up to max. +90 °C
Ambient temperature:	-20 °C up to max. +50 °C
Mounting position:	optional, preferably solenoid vertical on top

### Material

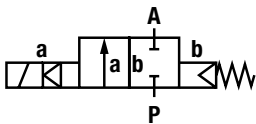
Body:	Stainless steel (1.4408)
Seat seal:	NBR-K
Internal parts:	Stainless steel, PTFE/Carbon

For contaminated fluids insertion of a strainer is recommended.

### Features

- High flow rate
- For robust industry solutions
- Damped operation
- Suitable for vacuum
- For systems with low or fluctuating pressure
- Valve operates without differential pressure
- Solenoid interchangeable without tools (*Click-on*<sup>®</sup>) up to G 1 thread

### Symbol



### Ordering information

To order, quote model number from table overleaf, e. g. 8574400.9401 for a DN 25 valve.

**Click-on<sup>®</sup>**  
**Stainless Steel**





## Characteristic Data

### Valves

Part Number Solenoid with ---	Part Number Solenoid with ~	Nominal Diameter (mm)	Connection Size	Operating Pressure *		K <sub>v</sub> -value ** (Base m <sup>3</sup> /h)	Weight Total (kg)
				min.	max. (bar)		
8574000.9401 8575000.9401	8574000.9404 8575000.9404	8	G 1/4 1/4 NPT	0	25	2.2	2.4
8574100.9401 8575100.9401	8574100.9404 8575100.9404	10	G 3/8 3/8 NPT	0	25	3.4	2.4
8574200.9401 8575200.9401	8574200.9404 8575200.9404	12	G 1/2 1/2 NPT	0	25	4.4	2.5
8574300.9401 8575300.9401	8574300.9404 8575300.9404	20	G 3/4 3/4 NPT	0	25	7.0	2.7
8574400.9401 8575400.9401	8574400.9404 8575400.9404	25	G 1 1 NPT	0	25	10.5	3.1
8574500.8401 8575500.8401	8574500.8404 8575500.8404	32	G 1 1/4 1 1/4 NPT	0	25	25.0	5.6
8574600.8401 8575600.8401	8574600.8404 8575600.8404	40	G 1 1/2 1 1/2 NPT	0	25	27.0	5.4
8574700.8401 8575700.8401	8574700.8404 8575700.8404	50	G 2 2 NPT	0	25	43.0	6.8

\* for gases and liquid fluids up to 40 mm<sup>2</sup>/s (cSt)

State voltage [V] and frequency [Hz]

\*\* C<sub>v</sub>-value (US) K<sub>v</sub>-value x 1.2

## Solenoid 9401 / 9404 and 8401 / 8404

### Standard voltage

DC ---	AC ~ 40 Hz – 60 Hz	
24 V	24 V	–
–	110 V	120 V
–	230 V	220 V

Design acc. to DIN VDE 0580

Voltage range ±10 %

100 % duty cycle

Protection class acc. to EN 60529 IP65

Socket Form A acc. to DIN EN 175301-803 (included)

AC with rectifier plug

## Power Consumption

According to DIN VDE 0580 at coil temperature of +20 °C. In operation the power consumption of the solenoid decreases by approx. 30 %.

Solenoid	DC ---	AC ~	
		Inrush	Holding
9401 *	38 W	–	–
9404 *	–	42 VA	42 VA
8401	40 W	–	–
8404	–	45 VA	45 VA

\* coil only

(with the exception of solenoid 94xx up to 41 V AC)

### Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

## Further Options (Valves)

XXXXX01.XXXX Normally open, vertical on top, only with solenoid 8400

XXXXX02.XXXX Manual override

XXXXX03.XXXX Seat seal FPM, Fluid temperature –10 °C up to max. +110 °C <sup>1)</sup>

XXXXX06.XXXX Seat seal PTFE, Fluid temperature max. + 110 °C <sup>1)</sup>,

XXXXX14.XXXX Seat seal EPDM, max. Fluid temperature +110 °C

XXXXX17.XXXX Normally open, Seat seal FPM, Fluid temperature –10 °C up to max. +110 °C <sup>1)</sup>, Mounting position: vertical on top, only with solenoid 8400

XXXXX22.XXXX max. operating pressure 40 bar

XXXXX23.XXXX Position indicator with two solenoid sensors, only with solenoid 8400

XXXXX25.XXXX Seat seal FPM, with larger bleed orifices in the piston, for fluids such as fuel and oil, viscosity max. 80 mm<sup>2</sup>/s (cSt), Fluid temperature –10 °C up to max. +110 °C <sup>1)</sup>

On request Further versions

## Further Options (Solenoids)

XXXXXXXX.8441 Protection class EEx me II T3 T 140 °C

XXXXXXXX.9426\* Protection class EEx nA II T4 T 135 °C

XXXXXXXX.8426\* Protection class EEx nA II T4 T 135 °C

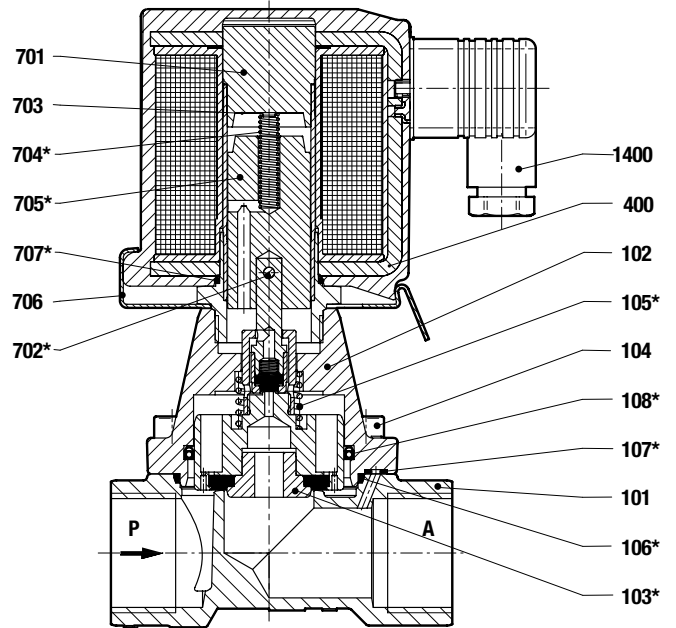
On request Further versions

\* DC only, for AC solenoids with design inspection certificate acc. to category 2, e. g. xxxxxx.8441 <sup>1)</sup> Up to max. 200 °C fluid temperature with solenoid for higher temperature

## Section View

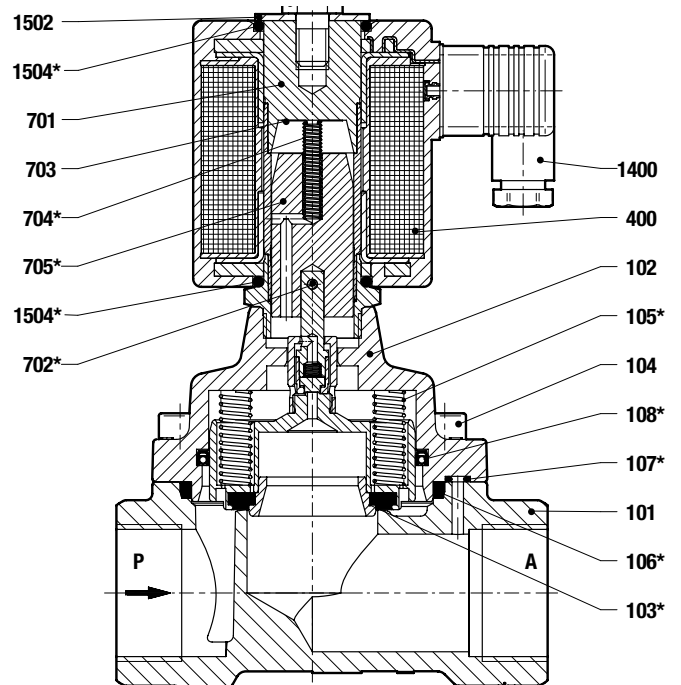
up to G 1 resp. 1 NPT

- 101 Valve body
- 102 Valve cover
- \*103 Valve piston
- 104 Socket head cap screw
- \*105 Pressure spring
- \*106 O-ring
- \*107 O-ring
- \*108 Grooved ring
- 400 Solenoid
- 701 Core tube
- \*702 Straight pin
- 703 Round plate
- \*704 Pressure spring
- \*705 Core
- 706 Spring clip
- \*707 O-ring
- 1400 Socket (included)



from G 1 1/4 resp. 1 1/4 NPT

- 101 Valve body
- 102 Valve cover
- \*103 Valve piston
- 104 Socket head cap screw
- \*105 Pressure spring (2x)
- \*106 O-ring
- \*107 O-ring
- \*108 Grooved ring
- 400 Solenoid
- 701 Core tube
- \*702 Straight pin
- 703 Round plate
- \*704 Pressure spring
- \*705 Core
- 1400 Socket (included)
- 1501 Hexagon screw
- 1502 Round plate
- \*1504 O-ring (2x)



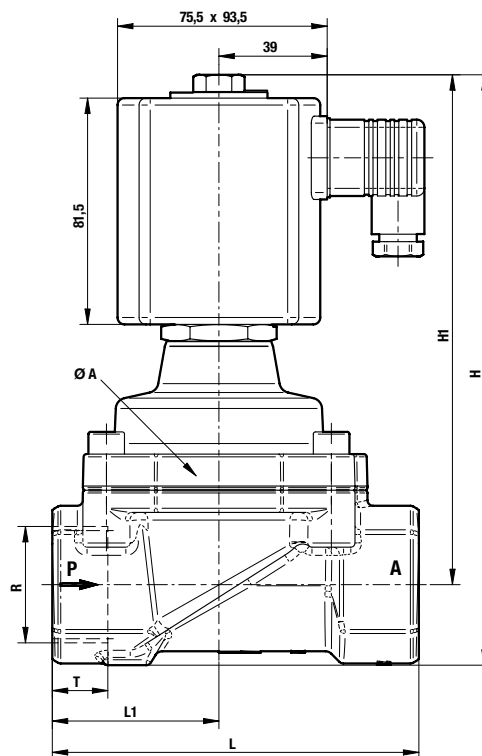
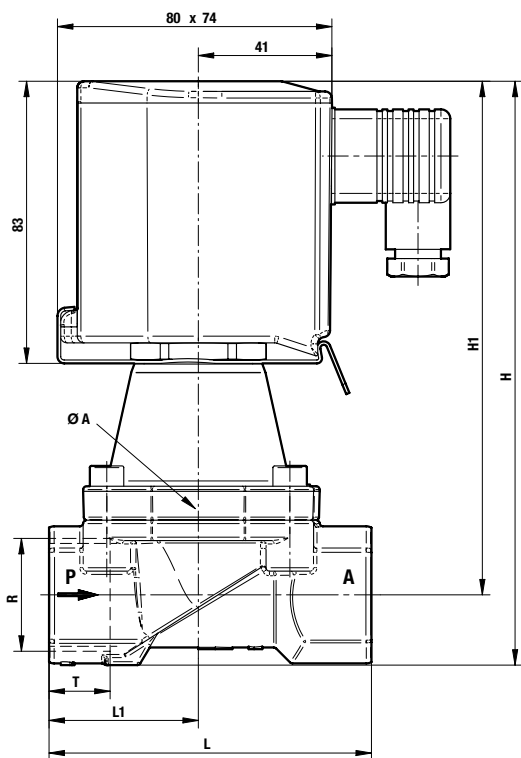
\* These individual parts form a complete wearing unit.  
When ordering spare parts please state Cat. No. and Series No.

## General Dimensions

Solenoid rotatable 360°  
 Socket turnable 4 x 90°  
 (Socket included)

up to G 1 resp. 1 NPT

from G 1 1/4 rep. 1 1/4 NPT



Part Number	Nominal Diameter (mm)	Connection Size	A (mm)	H (mm)	H 1 (mm)	L (mm)	L 1 (mm)	T (mm)
8574000.940x 8575000.940x	8	G 1/4 1/4 NPT	44	152.0	140.5	60	27.5	12.0 10.0
8574100.940x 8575100.940x	10	G 3/8 3/8 NPT	44	152.0	140.5	60	27.5	12.0 10.5
8574200.940x 8575200.940x	12	G 1/2 1/2 NPT	44	154.5	140.5	67	31.0	14.0 13.5
8574300.940x 8575300.940x	20	G 3/4 3/4 NPT	50	162.0	146.5	80	35.5	16.0 14.0
8574400.940x 8575400.940x	25	G 1 1 NPT	62	183.0	162.0	95	44.0	18.0 17.0
8574500.840x 8575500.840x	32	G 1 1/4 1 1/4 NPT	92	212.5	183.5	132	60.0	20.0 17.0
8574600.840x 8575600.840x	40	G 1 1/2 1 1/2 NPT	92	212.5	183.5	132	60.0	22.0 17.0
8574700.840x 8575700.840x	50	G 2 2 NPT	109	226.5	192.0	160	74.0	24.0 17.5

## Operating voltage

We differ basically between DC and AC solenoids. As alternating voltage is more frequently available, it would seem obvious to give preference to the AC solenoids.

However, from a certain size the latter have definite disadvantages in comparison to the DC solenoids in terms of lifetime and magnetic force, so that DC solenoids with intermediate rectifiers are preferred.

This voltage rectifier is integrated in the electrical connector or within the solenoid.

The main advantage of the DC solenoid is its constant current consumption, which leads to smooth switching and a coil that can cope with mechanical obstructions.

Voltage surges (inductive peaks) can be avoided by connecting a varistor, diode or RC-network in parallel.

The voltage tolerances permitted are  $\pm 10\%$ . If AC solenoids designed for 50 Hz have to be used with 60 Hz, this entails a reduction in performance. In such cases our technical services should be consulted beforehand.

DC coils supplied via rectifiers can be operated between 40 and 60 Hz.

## Electrical connection

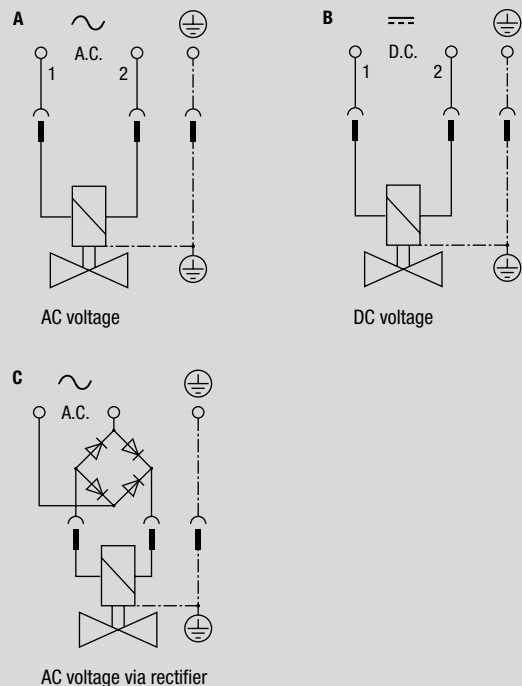
Connect solenoid in accordance with the electrical regulations. Then close the terminal compartment carefully to maintain protection. Make sure the cable entry is sealed properly. Tighten central screw of the power lead socket to a maximum of 60 N cm. The housing must not show signs of deformation. Ensure correct polarity of terminals marked + and -. If unmarked the live wires can be connected either way round. It is absolutely essential to connect the earth wire to the marked terminal provided.

### DANGER: Earth connection essential

It is advisable to carry out an operating test before pressurising. The clicking of the plunger must be audible during switching. The power lead socket may only be connected with the power disconnected. Operation of AC solenoids without the plunger causes irreparable damage.

The surface of the solenoid will heat up to a maximum of  $+120\text{ }^{\circ}\text{C}$  during continuous duty.

### Wiring



## Solenoids

### General

Valve actuating solenoids are designed for the service conditions and conform to VDE 0580.

### Power supply, voltage ranges

The preferred voltages are specified in the separate publications. Special voltages are possible on request.

The permissible voltage range is  $\pm 10\%$  of the nominal value.

### Type of supply

Solenoids are available for connection to a DC or AC supply. Those designed for AC may only be used at the specified frequency. The more powerful solenoids are a DC design. They can be operated off an AC supply via a rectifier, which is connected in series as standard. The permissible frequency is then 40 to 60Hz.

### Duty cycle

All standard solenoids are designed for continuous duty in order to rule out the possibility of the winding overheating during normal service conditions.

### DC solenoids

The main advantage of this type is constant current consumption. This gives soft switching and makes the winding less sensitive to binding of the plunger. The maximum frequency of operation is only limited by the system's electrical and mechanical inertia.

### AC solenoids

The current consumption of this system depends on the position of the plunger. The plunger must be able to reach its limit unhindered, otherwise the winding will overheat. Special spark quenching is generally not necessary.

Ensure that the mains frequency agrees with the value specified on the name plate. If it is higher, the solenoid will develop less force and may burn out, since the plunger cannot reach its limit. At a lower frequency the smaller inductive reactance causes more heating, which can influence the lifetime of the coil.

## Solenoids - Heating

The solenoids are normally designed for continuous duty, so under normal conditions there is no danger of the permanent operating temperature of the coil reaching an impermissible value.

The coil temperature that is reached during operation is influenced by 3 factors:

- the self-heating
- the temperature of the fluid flowing through
- the ambient temperature

The highest permissible solenoid temperature is generally determined by the thermal durability of the material used for insulation.

In order to ensure that there is no thermal damage, the specifications for the maximum permitted fluid and ambient temperatures should not be exceeded.

In this context, particular attention should be paid to the power consumption of the solenoids. Many valve manufacturers give their power consumption at operating temperature, which is lower than the specifications given in this catalogue, because of the high coil resistance.

Particular attention should be paid to the passage in the Buschjost Data sheets:

**The power consumption is measured according to VDE 0580 at a coil temperature of +20 °C. Physical factors reduce the value by up to about 30 % when the DC solenoid coil has reached normal operating temperature.**

The actuating solenoids are offered with a range of different connections. The most common are the sockets to DIN EN175 301-803, terminals in the terminal compartment with cable passing through a gland or directly encapsulated in the coil area (moulded cable).

At continuous duty the surface temperature of the solenoid can reach up to 120 °C.

## Materials - Metals

### Material selection

Information about the concentration, temperature and the degree of contamination of the fluid is important in making the right choice of materials. Further criteria are the operating pressure and maximum flow rate.

### Brass (Ms 58)

Has many applications, not suitable for aggressive and ammoniacal fluids.

### Brass

(CuZn36Pb2As)

Suitable in aggressive fluids and seawater.

### Grey cast iron (G 1/4-25)

Mainly for flanged valve bodies up to PN 16, the temperature range is limited, suitable for neutral fluids.

### Spheroidal cast iron (GGG-40.3)

Mainly for flanged valve bodies up to PN 16, suitable for neutral fluids.

### Cast steel (GS-C 25)

Mainly for flanged valve bodies up to PN 40, high temperature range, suitable for neutral fluids.

### Gun metal (Rg 5)

(CuSn 5 ZnPb)

Seawater, mildly aggressive water or steam.

### Cast Stainless steel

(G-X 7 CrNiMo 18 10)

Austenitic high-alloy steel for aggressive fluids.

### Stainless steel - Ingot material

(X 10 CrNiMoTi 18 10)

Austenitic high-alloy steel for aggressive fluids.

### Stainless steel

(X 5 CrNi 18 9)

Low-alloy austenitic Stainless steel for valve's internal parts.

### Stainless steel

(X 12 CrMo S 17)

- Corrosion-resistant magnetisable Stainless steel, not suitable aggressive fluids or seawater.
- Sandvik Stainless steel 1802.
- Magnetic Stainless steel, suitable for aggressive fluids.

### Aluminium

(AlSi 8 Cu 3)

Aluminium die casting for bodies up to PN 16, suitable for neutral fluids.

## Materials - Seals

### Material selection

Information about the concentration, temperature and the degree of contamination of the fluid is important in making the right choice of materials. Further criteria are the operating pressure and maximum flow rate. Besides extreme temperatures, pressures and flow rates must be taken into consideration when choosing a material.

### NBR

### Nitrile Butadiene Rubber

Standard flexible material for neutral fluids such as air, water, oil. Good resistance to mechanical loads. Temperature range depending on working conditions from -10 to +90 °C.

### HNBR

### Hydrogenated Nitrile Rubber

Similar in many features to NBR. Particularly suitable for hot water and steam. Temperature range depending on working conditions from -20 to +150 °C.

### EPDM

### Ethylene Propylene Diene Monomer Rubber

Resistant to alkalis and acids of mid-range concentration, water, hot water and steam. Not resistant to oils and greases. Temperature range depending on working conditions from -20 to +130 °C.

### FPM

### Fluorocarbon Rubber

A highly temperature and weatherproof elastomer. Suitable for many acids, bases, fuels and oils (including synthetic). Not resistant to steam. Temperature range depending on working conditions from -10 to +180 °C.

### CR

### Polychloroprene Rubber

Similar in many features to NBR. Particularly suitable for most refrigerants. Temperature range depending on working conditions from -20 to +90 °C.

### PTFE

### Polytetrafluoroethylene

A duroplastic, not a flexible material and therefore not suitable for the conventional diaphragms (separating membranes are possible). Resistance is almost universal in the temperature ranges from -20 to +200 °C. Valve bodies and internal parts are also made of this material.

### FFPM

### Perfluoropolyether Elastomer

A flexible material with the same resistance as PTFE and excellent sealing qualities. Temperature range depending on working conditions from -30 to +200 °C.

### TPE

### Thermoplastic elastomers

Very durable yet flexible over a wide temperature range. Resist oils, grease, many solvents and weathering.

## Position Indicators

### Noncontact electric type

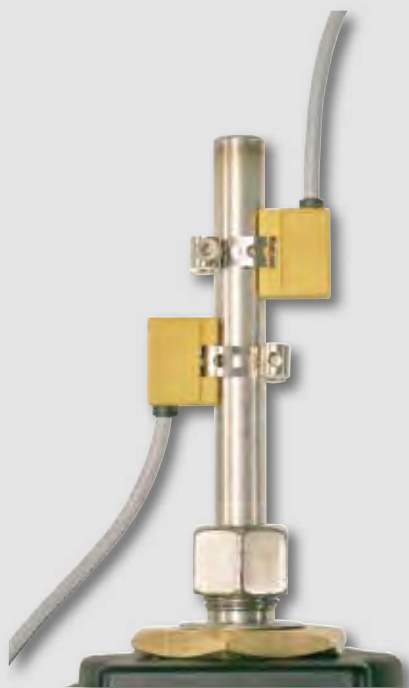
This indicator has two magnetic switches; one for the CLOSED and one for the OPEN position of solenoid and pressure actuated valves.

The reed contact of the switch is deflected by a permanent magnet tightly screwed into a spindle. This spindle is connected to the valve piston or stem.

These indicators can be mounted with IP65 or EEx protection.

### Features

- Emission-proof, switching magnet incorporated in valve system
- Easily mounted in any position
- Small valve strokes detected
- Accurately reproducible switching points
- Glass fibre reinforced thermoplastic housing
- Good mechanical and electrical durability



We will gladly provide you with any further information required.

## EC Type examined Valves to DVGW (German GAS installation and plumbing association) requirements

Firing systems, gas turbines and other oil and gas appliances are operated with safety valves that shut off the fuel supply should dangerous conditions arise.

Type examination is mandatory to establish their suitability for this purpose.

For the gases specified by DVGW Code of Practice G 260, the requirements of EN 161 and DIN 3394 Part 1 have to be met for working pressures in excess of 4 bar. Liquid fuels are governed by the requirements of EN 264.

The old DIN DVGW registration number has been superseded in the course of EU harmonisation.

Safety shut-off valves are not gas appliances ready for use as defined in the Gas Appliance Directive. The valves are marked with the CE product identification number rather than the CE mark.

Buschjost has developed 3 series of electrically and electropneumatically actuated valves. The 82580 series is only suitable for gaseous fuels, the others cater for gaseous and liquid fuels.

These valves are described in greater detail on their Data sheets.

### Overview valves

Series	Product ID No	Page
82370	CE-0085AU0323	18
82580	CE-0085AT0091	36
83860	CE-0085AS0104	74



We will gladly provide you with any further information required.

## Pressure equipment directive (PED)

The Pressure Equipment Directive (PED) is generally applicable to equipment with a working pressure greater than 0.5 bar. Valves as components of this equipment come under the scope of the directive. However, only valves above a certain nominal size are required to bear CE markings.

Valves suitable for different (e. g. neutral, toxic or flammable) fluids only require PED markings above a nominal size of DN 25. Smaller valves must not bear a CE mark in accordance with the Pressure Equipment Directive. This equipment must be designed in line with standard engineering practice so that it meets the requirements of the directive.

Almost all of the valves over DN 25 in size requiring marking should be assigned to Categories I and II. This means their design and testing is in the responsibility of the manufacturer, Buschjost Norgren in this case. Module A 1 has been chosen as the related method of evaluating conformity and certified by the “nominated body” (TÜV Nord).

The products are also subject to other EU Directives such as EMC, Low Voltages, etc. The products bear a CE mark as a declaration of conformity with all of these. Where applicable (sizes > DN 25) this mark also serves as a declaration of conformity with the Pressure Equipment Directive. Category II valves are also marked with the identification number of the nominated body; CE 0045 for TÜV Nord.

### DGRL1 Applies to the following series: 82380, 82480, 82960, 8495475

#### Note to Pressure Equipment Directive (PED):

The valves of this series are according to Art. 3 § 3 of the Pressure Equipment Directive (PED) 97/23/EG. This means interpretation and production are in accordance to engineers practice wellknown in the member countries. The CE-sign at the valve does not refer to the PED. Thus the declaration of conformity is not longer applicable for this directive.

#### Note to Electromagnetic Compatibility Guideline (EEC):

The valves shall be provided with an electrical circuit which ensures the limits of the harmoniised standards EN 61000-6-3 and EN 61000-6-1 are observed, and hence the requirements of the Electromagnetic Guideline (2004/108/EC) satisfied.

### DGRL2 Applies to the following series: 82900

#### Note to Pressure Equipment Directive (PED):

The valves of this series are according to Art. 3 § 3 of the Pressure Equipment Directive (PED) 97/23/EG.

This means interpretation and production are in accordance to engineers practice wellknown in the member countries. A certificate of conformity ist not designated.

### DGRL3 Applies to the following series: 82370, 82400, 82540, 82580, 82660, 82670, 83030, 83040, 83380, 83860, 84500, 84520, 8452x9x, 84740, 85300, 85320, 85340, 85440, 85500, 85520, 85540, 85560, 85600, 85700, 85720, 85720, 85740

#### Note to Pressure Equipment Directive (PED):

The valves of this series, including the connection size DN 25 (G 1), are according to Art. 3 § 3 of the Pressure Equipment Directive (PED) 97/23/EG. This means interpretation and production are in accordance to engineers practice wellknown in the member countries.

#### Note to Electromagnetic Compatibility Guideline (EEC):

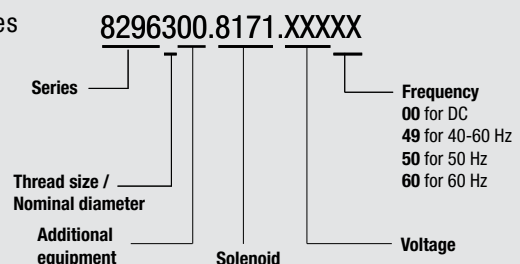
The valves shall be provided with an electrical circuit which ensures the limits of the harmonised standards EN 61000-6-3 and EN 61000-6-1 are observed, and hence the requirements of the Electromagnetic Compatibility Guideline (2004/108/EG) satisfied.

The CE-sign at the valve refers not to the PED. Thus the declaration of conformity is not longer applicable for this directive.

For valves > DN 25 (G 1) Art. 3 § (1) No.1.4 applies. The basic requirements of the Enclosure I of the PED must be fulfilled. The CE-sign at the valve includes the PED. A certificate of conformity of this directive will be available on request.

## Key to valve catalogue numbers

Standard valves





## ATEX

### Marking of Solenoid Valves in potentially explosive atmospheres

#### The Directive 94/9/EC is from 01 July 2003 onwards to be obligatory for manufacturers as well as users.

As from this date on only equipment for use as intended in hazardous areas which conforms to Directive 94/9/EC may be sold and delivered. This directive contains, amongst other items, a further division of the existing equipment group II into equipment categories, which regulate the safety level of the apparatuses for the respective zone. Additionally this directive differentiates Gas-Ex-Areas "G" and Dust-Ex-Areas "D". Furthermore for the Dust-Ex-Areas a new three-stage hazard classification in zones 20, 21 and 22 has been introduced.

The accompanying chart shows the required markings for the apparatuses according to the above-mentioned directive.

Kennzeichnung von Geräten für Gas- Ex- Bereiche		
Zone	Geräte-kategorie	Kennzeichnung
0	1	II 1 G
1	2	II 2 G
2	3	II 3 G

Kennzeichnung von Geräten für Staub- Ex- Bereiche		
Zone	Geräte-kategorie	Kennzeichnung
20	1	II 1 D
21	2	II 2 D
22	3	II 3 D

The Directive 94/9/EC (ATEX) refers, apart from electrical apparatuses, also to non-electrical apparatuses. For all equipment for use as intended in hazardous areas category 2 and 3 supplied by us, we issue EC-Declarations of Conformity for the electrical as well as non-electrical parts. The customer/user of the product specifies the zone in which the machine is being used and /or which can arise inside the machine.

The solenoids of the series

**8036....8045, 8136....8145, 8186....8195, 8336....8345, 8436....8445, 9136....9145, 9186....9195, 9236....9245, 9336....9345, 9350....9360, 9540....9564**

with EEx me II T4 or T3 explosion protection are electrical apparatuses for use as intended in hazardous areas. They are marked:

II 2 GD bzw. II 2 G

according to Directive 94/9/EC..

The category 2 solenoids may be used in areas where potentially explosive mixtures of gases and/or vapours and/or air (zones 1 and 2), or of dust and air (Zones 21 and 22), are present. IP54 to IP67 protection is provided depending on the type of solenoid.

The solenoids are marked with the EC Type Examination Certificate number:

TÜV 06 ATEX 553076 X  
 TÜV 07 ATEX 553412 X (9540....9564)  
 TÜV 06 ATEX 553413 X (8186....8195)  
 TÜV 06 ATEX 553414 X (9136....9145)  
 TÜV 06 ATEX 553415 X (9186....9195)

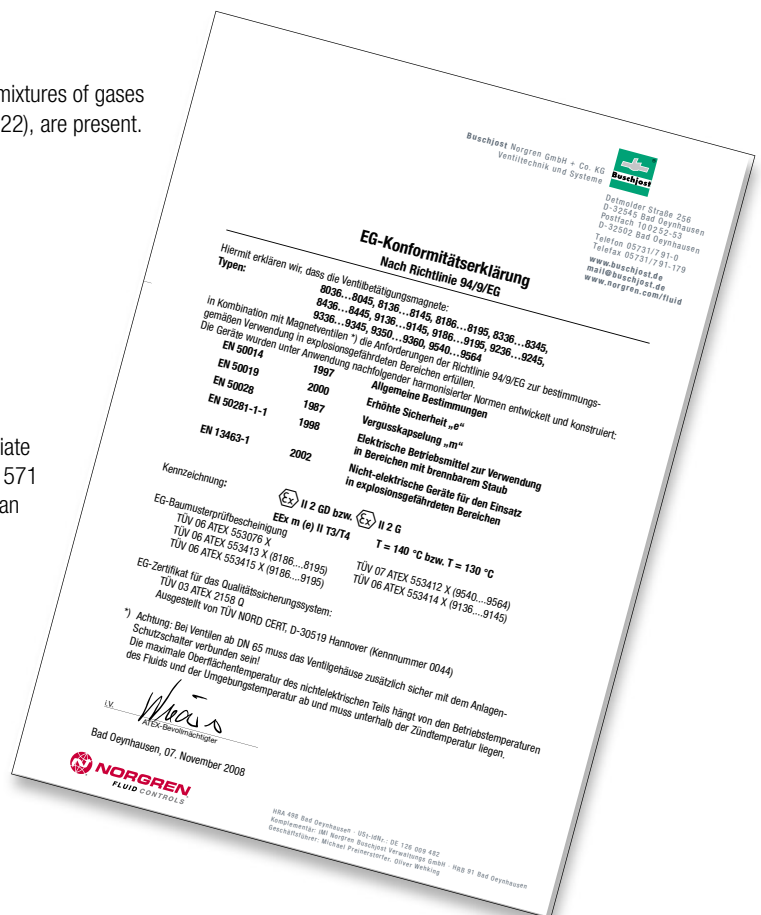
The marking "X" indicates special conditions:

To each solenoid, connect a fuse for short circuit protection with an appropriate rating (of up to 3 times the rated current of the solenoid according to DIN 41571 or IEC 127). The braking capacity of this fuse must be equal to or greater than the maximum short circuit acceptable at the installation location.

The solenoids do not need conventional maintenance. However, depending on the service conditions regular visual inspections for cracks, dirt, etc, are recommended.

The EC-Type Examination Certificate can be downloaded from our homepage [www.buschjost.de](http://www.buschjost.de) under Certificates.

Valve actuating solenoids are electrical components unsuitable for use without the associated valves.



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## The future's green

### Committed to protecting the environment



We stand by our responsibility towards the environment and social justice (Corporate Social Responsibility)



- Environmental protection is one of our corporate objectives
- We encourage the environmental awareness of all of our staff
- Our environmental management system is DIN EN ISO 14001 certified
- We received the ECOPROFIT award of the district of Minden-Lübbecke as an environmentally-friendly business
- In relation to sales, our consumption of electricity has fallen by around 14 % in the past three years.
- We optimise the energy used for producing compressed air by conducting regular leakage tests on our products throughout the whole factory
- Our consumption of water per employee has fallen by 26 % in the past three years.
- Materials are used sparingly and waste is minimised in our production process
- We use the latest simulation software in the design of our products to ensure of materials
- Nearly all of our products conform to the RoHS directive
- REACH – our raw materials and supplies are purchased according to strict ecological criteria on a European level
- We do not use any chlorinated hydrocarbons in our washing plants
- All processes with liquids hazardous to water are safeguarded by structural measures
- Wherever possible we recover and recycle our manufacturing waste
- Our Group IMI is listed in the Dow Jones Sustainability Index, to which companies meeting, among other things, sustainability criteria are admitted



DIN EN ISO 14001



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