In order to identify more easily the product of your interest, we have developed two different indices that will help you in the search.

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ODE is a leading company since 1960 in designing and manufacturing a complete line of solenoid valves and pumps able to satisfy all our customers needs.

ODE is headquartered in Milan, Italy, with the manufacturing plant in Colico, close to the Swiss border. In 2010 we celebrated 50 years of design and manufacturing excellence in the solenoid valves industry. Our general purpose and customized valves are designed to operate very effectively in the coffee machines industry.

ODE’s products are manufactured, assembled and tested in our factory in Italy using lean manufacturing techniques driven by Six Sigma quality practices.

ODE quality is based on the platform of process control granting the elimination of variances, a computerized integrated system able to guarantee the conformity of products, the recording each production step able to ensure effective data analysis as well as a complete and efficient traceability of both components and finished products, always maintaining standards of high competitiveness in the marketplace.

All the above allowed Ode to obtain the ISO 9001, UL, CSA, UR, VDE, NSF, PED and ATEX certifications.

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GENERAL SALES CONDITIONS

ATTENTION
Read carefully the conditions of sale before purchase

1 Subject
The present conditions represent all current and future contractual relations for ODE product suppliers.

2 Contract Preparation
2.1 The supply contract is concluded with the emission of the order confirmation on behalf of ODE. If ODE does not accept part or all of the order, modifications to the order requested will be sent in writing to the Client within five working days from the date of receipt. After 24 hours without receiving notification of the modifications from the client, the modifications introduced by ODE will be deemed to be accepted.

3 Exclusions
3.1 System design, installation of supplied devices, specific tests, institutional courses, assistance.
3.2 In addition, taxes, exportation fees and any other additional expenses are not included in the price, unless otherwise specified and agreed upon by all parties.

4 Technical data, design and documents supplied
4.1 The information provided by ODE in catalogues, brochures, technical sheets or other illustrative documentation is only suggestive. This information is not binding unless specifically mentioned in the delivery.
4.2 ODE reserves the right to modify the technical information at any moment without warning in order to make technical and constructive improvements.
4.3 The client is expressly committed to not use images, technical information and other aspects of the delivery for various reasons other than those mentioned in the contract, the client cannot provide them to third parties or reproduce them without written authorization.

5 Transport, packaging and consignment
5.1 Transport: for the transportation the goods, if not otherwise stipulated, are packaged in standard packaging.
5.2 Packaging: the packaging is not recovered by return to sender; unless agreed upon in writing among parties.
5.3 The offers emitted by ODE are referred to a specific consignment, they are not applicable for other deliveries of the same products if not otherwise specified in the supply contract.

6 Payment
6.1 A multilingual copy of the “Certificate of Conformity” regarding catalogue information, indicating the characteristics and performance as indicated by the catalogue or in the instructions for usage and maintenance, is only suggestive. This information is not binding unless specifically mentioned in the delivery.
6.2 Special deliveries according to client requests are to be agreed upon by parties and be executed at the expense of the client in the ODE headquarters.

7 Prices, discounts and reparations
7.1 The prices indicated on the price list do not include VAT (value added tax).
7.2 Price variability: ODE reserves the rights to vary prices without any warning, the prices can also vary if the quantities ordered are reduced or requested to be delivered in a shorter time period than previously stipulated.
7.3 The offers emitted by ODE are referred to a specific consignment, they are not applicable for other deliveries of the same products if not otherwise specified in the supply contract.
7.4 All the discounts given by ODE are valid for thirty days from the date of proposal. Unless otherwise agreed by all parties, discounts are irrecoverable and expire after thirty days automatically according to article 1229 of the Italian Commercial Code. 7.5 Minimum Order: Direct orders below the following net sums are not accepted: B 30 ( Âu 30) for ODE clients, B 150 ( Âu 150) for distributors and retailers price supplements will be applied to orders under this term.

8 Payment
8.1 Unless otherwise stipulated payments must be made by the client within the indicated terms of the invoice through the chosen credit institutions.
8.2 For administrative reasons no remanding off will be accepted.
8.3 If the client's payment is late he's bound to pay the interest according to the Italian Legislative Decree N. 231/2002, without necessity of statutory notice from ODE S.r.l., with calculation depending on the above mentioned Decree and based on the currently applied interest rate as per the mentioned Decree.

9 Returns
9.1 Returns are not accepted if not authorized beforehand by our personnel, as a result of a written request from the client. The transportation costs will remain at the client expense. The value of the goods returned will be reduced by a percentage to be established, never below 20%, to account for costs occurred during testing and returning products to clients.
9.2 Similarly returns for repair or substitution of products must be previously authorized by our personnel through a written notice by the client regarding product defects; if the defects are covered by the guarantee, article 10 is applied.

10 Warranty
10.1 ODE guarantees the conformity of products supplied; the product is free from defects in materials or workmanship and they conform to all indications in the catalogue.
10.2 The warranty lasts 12 months beginning from the date of products consignment and for products or components substituted under warranty, from the day they are consigned to the client.
10.3 Within this period the client may demonstrate defects through relative non conformance documentation according to the terms of article 1229 of the Italian Commercial Code. ODE is committed without obligation within a reasonable time period in relation to the product of defects to repair or substitute the products or parts of the product that have proved dysfunctional free of charge; the client is obliged to send the dysfunctional products in an appropriate package, unless otherwise stipulated.
10.4 If ODE substitutes the products before receiving the dysfunctional product, the client is then obliged to return the dysfunctional products or any cost to ODE unless otherwise stipulated referring to the replacement/substitution bill in the returned consignment note guaranteed by ODE.
10.5 ODE reserves the right to change the client for costs of products substituted and/or transportation fees if necessary, following testing, for products that are not covered by the guarantee.

11 Suppliers responsibility
11.1 ODE is not responsible for the correct functioning of products supplied regarding characteristics and performance as indicated by the catalogue and/or relative documentation.
11.2 ODE is not responsible in any way for defects in machine operations or systems caused by the client or third parties to ODE products, even if these products have been mounted or connected following diagrams and instructions provided by ODE.
11.3 The client cannot request compensation for indirect damage, lost profits or loss of production caused by the product, nor can they recover compensation above the value of the products supplied, with the exception of any aspects covered by the Consumer Code (Legislative decree 6 September 2005, number 206), and by article 1229 of the Italian commercial Code.

12 Retention of title
12.1 The products supplied remain the property of ODE until the client pays the unpaid in full.
12.2 If the client does not pay, ODE reserves the right to instruct the restitution of the products by the client, in this case they lose their right of ownership.

13 Resale clause expressed and resellable conditions
13.1 The supply contract will terminate in accordance with article 1456 of the Italian commercial Code following a simplified declaration written by ODE exercising the right of the resolutive clause expressed, if the client a) omits or delays payments owed is late or does not consign the products within the terms stipulated by the present article 5.
13.2 The contract will terminate if the client is in liquidation.

14 Applicable laws
14.1 The supply contracts, including those for overseas clients, are regulated by the present general conditions and the Italian Law.

15 Court of Jurisdiction
15.1 The Court of jurisdiction of Milan is competent if any dispute regarding the execution, interpretation, validity, resolution and termination of supply contracts between parties linked by the client, if the actions is filed by ODE any Court according to the law is competent in addition to the Court of Jurisdiction of Milan.
GENERAL INFORMATION ABOUT ODE SOLENOID VALVES FUNCTIONING

GLOSSARY

This chapter illustrates some of the technical terms used in the ODE catalogue.

Fixed core: component in ferrous-magnetic material which, due to the effect of a magnetic field generated by the coil, attracts the plunger.

Piston: component in ferrous-magnetic material which, under the effect of a magnetic field, moves towards the fixed core causing directly or indirectly the switching of the solenoid valve. Often the piston houses one or more shutters which open or close one or more orifices for the solenoid valve functioning.

Complete piston: this is the grouping of the piston, the shutters and any springs.

Armature tube: a guide tube in which the piston runs.

Complete armature tube: the assembly of fixed core and armature tube, generally welded or assembled with rolling, threading or other means.

Coil: it consists of a copper winding, a support bobbin and a holder in ferrous-magnetic material. The whole is covered over with insulating material from which the electrical connections emerge, which may be different depending on the type of coil (see COIL INDEX). The winding generates the magnetic field while the ferrous-magnetic holder closes the magnetic circuit constituted by the holder itself, the piston and the fixed core.

Shutter (or sealing gasket): this component may be housed directly in the piston, in a gasket housing, or be part of the complete diaphragm. With a movement the shutter opens or closes an orifice thus permitting or preventing the flow of fluid. Certain valves have more than one shutter, for example the 3 way direct acting solenoid valves: the two shutters, housed at the ends of the fixed core, alternately open and close the inlet and outlet orifices. There are also two shutters in the combined operation and in the pilot control solenoid valves, one acting on the pilot orifice and the other on the main orifice. Sometimes shutter function is carried out directly by the diaphragm or piston.

Note: in the same solenoid valve there may be shutters made of different materials.

Orifice: this is a holed component which is opened or closed by the shutter, permitting or preventing the passage of fluid. It may be either machine-tooled or inserted. The solenoid valve main orifice is the one permitting maximum flow of the valve itself while the pilot orifice, when opened or closed due to an unbalance of pressure, leads to opening or closing the main one by means of a diaphragm or piston.

Diaphragm: an element of mixed action or solenoid valves with pilot control which opens or closes the main orifice due to the effect of different pressures on its surfaces.

Complete diaphragm: this is the grouping of components united to the diaphragm such as diaphragm bearings, rivet etc.

Pistons: an element of mixed action or solenoid valves with pilot control which opens or closes the main orifice due to the effect of different pressures on its surfaces.

Complete piston: this is the grouping of components united to the piston such as rivet, shutter etc.

Body: it is the central part of the solenoid valve. The pipes are on the body and the main orifice is generally inside. In some cases the body is divided in two parts: for example in solenoid valves for drink dispensing there is the upper body with the inlet pipe and the lower body with the main orifice and the outlet pipe.

Cover: this is found in certain solenoid valves, generally in all those with pilot control, the cover of which normally houses the pilot orifice.

Pipe: a mechanical component for connecting the solenoid valve to inlet, outlet and exhaust pipes.

1.1 2/2 way normally closed direct acting solenoid valves

Main components:
body with main orifice, complete armature tube + complete plunger (normally closed kit), coil.

Functioning:
2/2 way normally closed direct acting solenoid valves have an inlet pipe and an outlet pipe. The plunger, on which a sealing gasket is mounted, provides for opening and closing the main orifice. When the coil is not energized, the plunger is in such a position as to close the orifice thus preventing the fluid flow.

Notes:
in this solenoid valve range, a pressure increase causes the force required to open the valve if the pressure difference between inlet and outlet is greater than the maximum value for which the solenoid valve has been designed, the latter may not open even with the coil energized.

1.2 2/2 way normally open direct acting solenoid valves

Main components:
body with main orifice, complete armature tube + plunger = rod + gasket holder assembly (normally open kit), coil.

Functioning:
2/2 way normally open direct acting solenoid valves have an inlet pipe and a outlet pipe. The plunger, acting on the gasket holder by means of a rod, provides for opening and closing the solenoid valve. When the coil is energized the plunger moves downwards and, by means of the rod, pushes the gasket holder into a position that closes the orifice, permitting fluid flow.

Notes:
in this solenoid valve family an increase in pressure causes an increase in the force required to open the valve if the pressure difference between inlet and outlet is greater than the maximum value for which the coil has been designed, the latter may not open even with the coil deactivated.
1.3 2/2 way normally closed solenoid valves with pilot control

Main components:
- body with main orifice, cover, diaphragm (or piston) assembly, complete armature tube + complete plunger (normally closed kit), coil.

Functioning:
2/2 way normally closed solenoid valves with pilot control have an inlet pipe and an outlet pipe. The main orifice, in the body, is opened by the effect of an unbalance in pressure between the upper and lower surfaces of a diaphragm (or piston). When the coil is not energized there is fluid under pressure in the chamber above the diaphragm: thus the resultant of the forces on the diaphragm is such as to push it and close the main orifice. When the coil is energized, movement of the plunger, on which a gasket is mounted, cause the pilot orifice to open and the chamber above the diaphragm: the pressure unbalance moves the diaphragm which opens the main orifice.

Notes:
In this solenoid valves range there must be a minimum pressure difference between the inlet and the outlet pipes to ensure the correct solenoid valve functioning.

However, an excessive pressure difference between inlet and outlet, as with 2 way normally closed direct acting solenoid valves, causes an increase in the force required to open the pilot orifice, so if this pressure difference is greater than the maximum value for which the solenoid valve has been designed, the latter may not open even when the coil is energized. For a correct operation of the solenoid valve, and to avoid a quick wear of the diaphragm, it is advisable that, once starting the valve closing, the actual flow isn’t higher than the Kv (i.e.: flow rate through the valve with a pressure loss of 1 bar).

For this reason, should the inlet pressure when the valve is open, be higher than 1 bar, it is not advisable the use of the valve itself with free outlet, i.e. without an outlet restriction bringing the pressure drop to the value of 1 bar.

Moreover, particular attention must be paid in designing the hydraulic circuit to the problem of water hammering which could cause overpressures such as to lacerate the diaphragm or damage other parts of the solenoid valve.

1.4 2 way normally open solenoid valves with pilot control

Main components:
- body with main orifice, cover, diaphragm (or piston) assembly, complete armature tube + plunger + gasket holder + gasket (normally open kit), coil.

Functioning:
2 way normally open solenoid valves with pilot control have an inlet pipe and an outlet pipe. These solenoid valves functioning is substantially similar to that of 2 way normally closed solenoid valves with pilot control except that in place of the normally closed kit a normally open kit is mounted to open and close the pilot orifice. So in this case with the coil energized the pilot orifice is closed and the diaphragm therefore in such a position as to close the main orifice, whereas with the coil energized the pilot orifice is open, thus causing the main orifice to open.

Notes:
In this solenoid valves range there must be a minimum pressure difference between the inlet and outlet pipe to ensure correct solenoid valve functioning.

However, an excessive pressure difference between inlet and outlet, as with 2 way normally closed direct acting solenoid valves, causes an increase in the force required to open the pilot orifice, so if this pressure difference is greater than the maximum value for which the solenoid valve has been designed, the latter may not open even when the coil is energized. For a correct operation of the solenoid valve, and to avoid a quick wear of the diaphragm, it is advisable that, once starting the valve closing, the actual flow isn’t higher than the Kv (i.e.: flow rate through the valve with a pressure loss of 1 bar). For this reason, should the inlet pressure when the valve is open, be higher than 1 bar, it is not advisable the use of the valve itself with free outlet, i.e. without an outlet restriction bringing the pressure drop to the value of 1 bar.

Moreover, particular attention must be paid in designing the hydraulic circuit to the problem of water hammering which could cause overpressures such as to lacerate the diaphragm or damage other parts of the solenoid valve.

1.5 2/2 way normally closed combined operation solenoid valves

Main components:
- body with main orifice, cover, diaphragm (or piston) assembly, complete armature tube + complete plunger, coil.

Functioning:
2 way normally closed combined operation solenoid valves have an inlet and an outlet pipe. The main orifice opening, which is in the body, comes about by an unbalance in pressure between the upper and lower surfaces of a diaphragm (or piston) together with direct action of the plunger which is fixed to the diaphragm. Functioning is substantially similar to that of solenoid valves with pilot control as regards diaphragm movement except that even with small pressure differences between inlet and outlet, functioning is ensured by the direct action of the plunger on the diaphragm. So, also in this case, when the coil is not energized there is fluid discharge above the chamber above the diaphragm while beneath the diaphragm there is pressure only in the area external to the main orifice: therefore the resultant of the forces on the diaphragm is such as to push it and close the main orifice. When the coil is energized, movement of the plunger, on which a gasket is mounted, opens an orifice on the complete diaphragm (pilot orifice) and discharges the chamber above the diaphragm. At the same time the plunger exerts direct force on the diaphragm, aiding its opening. The sum of this force and the pressures unbalance on the two sides of the diaphragm causes the diaphragm to move and open the main orifice.

Notes:
In this solenoid valves range there must not be a minimum pressure difference between the inlet and outlet pipes to ensure correct solenoid valve functioning.

However, an excessive pressure difference between inlet and outlet, as with 2 way normally closed direct acting solenoid valves, causes an increase in the force required to open the pilot orifice, so if this pressure difference is greater than the maximum value for which the solenoid valve has been designed, the latter may not open even when the coil is energized. For a correct operation of the solenoid valve, and to avoid a quick wear of the diaphragm, it is advisable that, once starting the valve closing, the actual flow isn’t higher than the Kv (i.e.: flow rate through the valve with a pressure loss of 1 bar). For this reason, should the inlet pressure when the valve is open, be higher than 1 bar, it is not advisable the use of the valve itself with free outlet, i.e. without an outlet restriction bringing the pressure drop to the value of 1 bar.

Moreover, particular attention must be paid in designing the hydraulic circuit to the problem of water hammering which could cause overpressures such as to lacerate the diaphragm or damage other solenoid valve parts.

1.6 2/2 way normally open combined operation solenoid valves

Main components:
- body with main orifice, cover, diaphragm (or piston) assembly, complete armature tube + complete plunger, coil.

Functioning:
2 way normally open combined operation solenoid valves have an inlet pipe and an outlet pipe. Functioning is substantially similar to that of solenoid valves mixed actuated normally closed. The difference is basically in the piloting kit. Instead of a normally closed kit it is mounted a normally open kit. In this case when the coil is not energized there is fluid under pressure in the chamber above the diaphragm while beneath the diaphragm there is pressure only in the area external to the main orifice: therefore the resultant of the forces on the diaphragm is such as to push it and close the main orifice. When the coil is energized, movement of the plunger, on which a gasket is mounted, opens an orifice on the complete diaphragm (pilot orifice) and discharges the chamber above the diaphragm. At the same time the plunger exerts direct force on the diaphragm, aiding its opening. The sum of this force and the pressures unbalance on the two sides of the diaphragm causes the diaphragm to move and open the main orifice.

Notes:
In this family of solenoid valves there must not be a minimum pressure difference between the inlet and outlet pipes to ensure correct solenoid valve functioning.

However, an excessive pressure difference between inlet and outlet, as with 2 way normally closed direct acting solenoid valves, causes an increase in the force required to open the pilot orifice, so if this pressure difference is greater than the maximum value for which the solenoid valve has been designed, the latter may not open even when the coil is energized. For a correct operation of the solenoid valve, and to avoid a quick wear of the diaphragm, it is advisable that, once starting the valve closing, the actual flow isn’t higher than the Kv (i.e.: flow rate through the valve with a pressure loss of 1 bar). For this reason, should the inlet pressure when the valve is open, be higher than 1 bar, it is not advisable the use of the valve itself with free outlet, i.e. without an outlet restriction bringing the pressure drop to the value of 1 bar.

Moreover, particular attention must be paid in designing the hydraulic circuit to the problem of water hammering which could cause overpressures such as to lacerate the diaphragm or damage other solenoid valve parts.

GENERAL INFORMATION ABOUT ODE SOLENOID VALVES FUNCTIONING

Notes:
In this solenoid valves range there must not be a minimum pressure difference between the inlet and outlet pipes to ensure correct solenoid valve functioning.

However, an excessive pressure difference between inlet and outlet, as with 2 way normally closed direct acting solenoid valves, causes an increase in the force required to open the pilot orifice, so if this pressure difference is greater than the maximum value for which the solenoid valve has been designed, the latter may not open even when the coil is energized. For a correct operation of the solenoid valve, and to avoid a quick wear of the diaphragm, it is advisable that, once starting the valve closing, the actual flow isn’t higher than the Kv (i.e.: flow rate through the valve with a pressure loss of 1 bar). For this reason, should the inlet pressure when the valve is open, be higher than 1 bar, it is not advisable the use of the valve itself with free outlet, i.e. without an outlet restriction bringing the pressure drop to the value of 1 bar.

Moreover, particular attention must be paid in designing the hydraulic circuit to the problem of water hammering which could cause overpressures such as to lacerate the diaphragm or damage other parts of the solenoid valve.
1.6 Proportional direct acting solenoid valves

Main components:
- body with main orifice, complete armature tube + adjustment screws + plunger + gasket, coil.

Functioning:
Proportional direct acting solenoid valves have an inlet and an outlet pipe. The plunger, on which a sealing gasket is mounted, provides directly for opening and closing the main orifice of the solenoid valve.

Unlike 2-way normally closed solenoid valves which have only two states, open and closed, a proportional solenoid valve, in function of the current run in the coil, can open partially. The solenoid valve can be set with the adjustment screws in such a way that, with the coil not energized, a perfect seal at maximum project pressure is guaranteed.

For clarification regarding methods used for energizing and controlling this type of solenoid valve, see the functioning scheme for these valves in this section.

Notes:
On these valves, unlike the other models, the fluid shall enter into the valve so to pass through the main orifice from the lower side towards the higher one. In this solenoid valves range an increase in pressure causes a reduction in the force required to open the valve: if the pressure difference between inlet and outlet is greater than the maximum value for which the solenoid valve has been tared, the latter may open even when the coil is not energized.

Proportional solenoid valves are always operated by Direct Current (DC).

It is important to note that proportional solenoid valves are always operated by Direct Current (DC).

For clarification regarding methods used for energizing and controlling this type of solenoid valve, see the functioning scheme for these valves in this section.

3.1 Single solenoid valves for automatic drink-dispensers

Main components:
- body, lower body with orifice, complete armature tube + fixed core + plunger + cap gasket (2 way kit), coil.

Functioning:
Single solenoid valves for drink-dispenser have an inlet pipe and an outlet pipe on which there is generally a small pipe for attaching a vent. The plunger, on which the sealing cap gasket is fitted, provides directly for opening and closing the orifice, as with 2-way normally closed solenoid valves.

When the coil is not energized the plunger is in a position that closes the orifice, preventing fluid flow from the inlet to the outlet pipe.

When the coil is energized the plunger moves to a position that opens the orifice, permitting fluid flow from the inlet to the outlet pipe.

On the outlet pipe there is usually an adjustment screw for setting the solenoid valve flow, dividing the conduit.

Notes:
In this solenoid valves range an increase in inlet pressure causes a force reduction required to open the valve: if the inlet pressure is greater than the maximum value for which the solenoid valve has been designed, the latter may open even when the coil is not energized.

On the lower body of the solenoid valves for automatic drink-dispensers there is also a little venting fitting, on which usually a plastic pipe is connected. This device assures a better fluid efflux and therefore a steady flow.

2.1 3/2 way normally closed direct acting solenoid valves

Main components:
- body with orifice, complete armature tube + fixed core + plunger + 2 gaskets (3 way kit), coil.

Functioning:
3 way normally closed solenoid valves have an inlet pipe, an outlet pipe and an exhaust pipe. The plunger, on which two gaskets are mounted, provides directly for opening and closing the solenoid valve’s main orifice with one of the two gaskets and, simultaneously, opening or closing the outlet orifice with the other gasket.

When the coil is not energized the plunger is in such a position as to close the main orifice, preventing the fluid flow from the inlet pipe to the outlet pipe, whereas the outlet pipe is in communication with the exhaust pipe.

When the coil is energized the plunger moves to a position in which it opens the main orifice, preventing fluid flow from the inlet to the outlet pipe.

When the coil is not energized the plunger is in a position that closes the orifice, permitting fluid flow from the inlet to the outlet pipe.

When the coil is energized the plunger moves to a position that opens the orifice, permitting fluid flow from the inlet to the outlet pipe.

On the lower body of the solenoid valves for automatic drink-dispensers there is also a little venting fitting, on which usually a plastic pipe is connected. This device assures a better fluid efflux and therefore a steady flow.

Notes:
On these valves, unlike the other models, the fluid shall enter into the valve so to pass through the main orifice from the lower side towards the higher one.

In this solenoid valves range an increase in pressure causes a reduction in the force required to open the valve: if the pressure difference between inlet and outlet is greater than the maximum value for which the solenoid valve has been designed, the latter may open even when the coil is not energized.

3.2 Solenoid valves manifold for automatic drink-dispensers

Main components:
- headers, lower bodies with orifices, complete armature tube + fixed cores + plungers + cap gaskets (2 way kit), coils.

Functioning:
In the solenoid valves functioning the manifolds are identical to the single valves. The only difference is that they can be put together to form a group of solenoid valves with an inlet pipe and various outlet pipes, each one of which can be opened by energizing the corresponding coil.

The number of components of the group is in theory unlimited, but normally there are not more than 4 ÷ 5 elements per group.
4. 5/2 way solenoid valves

Main components:
solenoid valve body, profiled shaft, pistons, spring where required, 3 way kit, coil.

Functioning:
5 way solenoid valves are divided into two distinct groups: pneumatic return and spring return.
In pneumatic return 5 way solenoid valves, the coil energizing or de-energizing and on the consequent opening or closing of a pilot orifice an unbalance of forces is created on two pistons of different section, fixed to a suitably profiled shaft which moves, putting the inlet pipe (pipe 1) in communication with one of the other 4 pipes and putting others into outlet, closing or opening them in accordance with specific schemes for each single valve. The pilot orifice closure causes the return of the profiled shaft to its original position due to a play of pressures.
In 5 way spring return solenoid valves there is, instead of the small piston, a spring which carries out the function of the piston returning to its initial position when the coil is de-energized the pilot orifice is closed.

Notes:
For a correct solenoid valves functioning there must be a specified minimum pressure for each type of solenoid valve at the inlet pipe (pipe 1).
## FEATURES
- Wide range of application valves for liquids and gas
- Reliable proven design with high flow
- Small poppet valve for tight shut-off
- Wide range of elastomers
- Mountable in any position

## TECHNICAL SPECIFICATION
- **Body material:** Brass UN 12.165 CW617N
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Seal material:** mineral oil, gasoline, diesel, fuel oils, water, air, inert fluids, inert gases, steam
- **Ambient temperature:** See catalogue page for its compatibility
- **Fluid temperature:** -10°C + 140°C with FKM and PTFE seals
- **Max allowable pressure (PS):** 40 bar
- **Protection class:** IP67
- **Electrical conformity:** IEC 335
- **Switching time:** 20 - 40 ms (depending on pressure conditions)

## AVAILABLE ON REQUEST
- Low lead brass for food grade
- Nickel plated version
- NPT approved version
- Double spring for higher operating pressure
- High pressure up to 100 bar (see High Pressure section)
- Compressor flange interface (i.e. 4690K0V20 see Drawing reference 1a)
- Explosion proof coil Ex m (see Atex section)
- Explosion proof coil Ex d (see Atex section)
- Explosion proof coil Ex nA (see Atex section)
- Latching coil (see coil section)

### TECHNICAL SPECIFICATION
- **Max pressure (bar):** 40
- **Max temperature (°C):** -40°C + 180°C with PTFE and RUBY seals
- **Min temperature (°C):** -10°C + 90°C with NBR seals
- **Max oil viscosity (cSt):** 10
- **Max oil temperature (°C):** 120
- **Max water viscosity (cSt):** 5
- **Max water temperature (°C):** 80
- **Max gas viscosity (cSt):** 1
- **Max gas temperature (°C):** 60
- **Max air viscosity (cSt):** 1
- **Max air temperature (°C):** 70
- **Max steam pressure (bar):** 20
- **Max steam temperature (°C):** 40

### RELATED ITEMS
- **Part numbering example:**
  - **1:** SEE valves
  - **2:** SEE pipes
  - **3:** SEE fittings
  - **4:** SEE dimensions
  - **5:** SEE electrical connectors

### INSTALLATION
- The solenoid valves can be mounted in any position
- Other port connectors available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

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**Module valve**

### Model valve

#### Normally Closed

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<tr>
<th>Range</th>
<th>Pipe</th>
<th>Pressure</th>
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### REPAIR KIT

- Normally Closed: Bitron **K10**
- Normally Open: Bitron **K11**

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### INSTALLATION...

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**Dimensional Table**

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<th>K (mm)</th>
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**Solenoid Valve 2/2 Way Direct Acting**
FEATURES

- Flow control solenoid valve
- Good repeatability and low hysteresis
- Different flow curves depending on the coil
  (contact our Customer Service)

TECHNICAL SPECIFICATION

- Body material: Brass UNI EN 12165 CW617N
- Armature tube: Stainless Steel AISI 300 series
- Plungers: Stainless Steel AISI 400 series
- Spring: Stainless Steel AISI 300 series
- Media: water, inert gases, mineral oils, gasoline
- Ambient temperature: See coils catalogue page for its compatibility
- Fluid temperature: -10°C +140°C with FKM seals
- Design pressure PS: 40 bar
- Protection class: IP65 (complete with electric plug)
- Electrical conformity: IEC 335

AVAILABLE ON REQUEST

Proportional Electric Control System suitable on request, please consult the technical department for additional information.

### Pipe Table

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<th>kV (l/min)</th>
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FEATURES

- Specially designed for compressor use
- Heavy duty design for high number of cycles
- High working temperature

TECHNICAL SPECIFICATION

- Body material: Brass UNI EN 12165 CW617N
- Armature tube: Stainless Steel AISI 300 series (21A2)
- Welved armature tube: Brass - UNI EN 12165 CW617N + Stainless Steel AISI 300 series (21PW)
- Plungers: Stainless Steel AISI 400 series
- Spring: Stainless Steel AISI 300 series
- Media: air, inert gases, water
- Ambient temperature: see coils catalogue page for its compatibility
- Fluid temperature: up to 140°C with FKM seals
- Design pressure PS: 25 bar
- Protection class: IP65 (complete with electric plug)
- Electrical conformity: IEC 335
Solenoid Valve 2/2 Way Direct Acting

**TECHNICAL SPECIFICATION**

- **Body material:** Brass UNI EN 12165 CW617N
- **Armature tube:** Stainless Steel AISI 300 series
- **Reliable solution for steam**
- **Plungers:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Media:** low pressure steam, mineral oils, gasoline, diesel, fuel oils, water
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:** -10°C +140°C with FKM, EPDM seals
- **Design pressure PS:** 25 bar
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335

**FEATURES**

- Reliable solution for steam
- Flow regulation for steam control
- 90° shape for compact installation

**INSTALLATION**

- The solenoid valves can be installed in any position
- Maintenance and instruction sheet available in each solenoid valve box

**RELATED ITEMS**

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11

**21A16 N.C.**

- **Model valve**
  - 21A 16 K T 320
  - Body material: Brass UNI EN 12165 CW617N
  - Armature tube: Stainless Steel AISI 300 series
  - Reliable solution for steam
  - Plungers: Stainless Steel AISI 400 series
  - Spring: Stainless Steel AISI 300 series
  - Media: low pressure steam, mineral oils, gasoline, diesel, fuel oils, water
  - Ambient temperature: See coils catalogue page for its compatibility
  - Fluid temperature: -10°C +140°C with FKM, EPDM seals
  - Design pressure PS: 25 bar
  - Protection class: IP65 (complete with electric plug)
  - Electrical conformity: IEC 335

**PIPE**

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**TCP TYPE**

- AC
- DC

**Piping Table**

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<td>42</td>
<td>54</td>
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</table>
**FEATURES**

- Compact design
- Pressure up to 20 bar
- Wide elastomers range for fluid compatibility

**TECHNICAL SPECIFICATION**

- **Body material:** Brass UNI EN 12165 CW617N
- **Armature tube:** Stainless steel AISI series 300
- **Welded armature tube:** Stainless steel AISI series 300 + Brass - UNI EN 12165 CW617N
- **Plungers:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI series 300
- **Media:** mineral oils, gasoline, diesel, air, water, steam, inert gases
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:** -10°C +90°C with seals NBR
- **-10°C +140°C with seals FKM, EPDM**
- **Design pressure PS:** 16 - 20 bar
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335

**AVAILABLE ON REQUEST**

- Explosion proof coil Ex nA (see Atex section)

**INSTALLATION**

- The solenoid valves can be mounted in any position
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

**RELATED ITEMS**

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- P992128: Electrical plug EN 175301-803 cable 2 wires, 53cm
- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127, P992128 & H coil class)
- P992087: Timer for automatic switch

**PIV TABLE**

<table>
<thead>
<tr>
<th>PIPE</th>
<th>D (mm)</th>
<th>Kv (l/min)</th>
<th>MAX VISCOITY cSt (°E)</th>
<th>PRESSURE MIN MOPD (bar)</th>
<th>PRESSURE MAX MOPD (bar)</th>
<th>COIL TYPE</th>
<th>GAS CODE</th>
<th>NPT CODE</th>
<th>DRAWING REFERENCE</th>
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<tbody>
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**PIV TABLE**

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<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
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</table>
Solenoid Valve 2/2 Way Combined Operation

TECHNICAL SPECIFICATION

- **Body material:** Brass UN EN 12165 CW617N
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Media:** air, gasoline, fuel oils, inert gases, water, mineral oils, diesel, steam
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:**
  - -10°C +90°C with NBR+PA seals
  - -10°C +140°C with FKM+NBR, EPDM seals
- **Design pressure PS:** 16 bar
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20 - 40 msec

AVAILABLE ON REQUEST

- Explosion proof coil Ex nA (see Atex section)

INSTALLATION

- The solenoid valves can be mounted in any position
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

RELATED ITEMS

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- P992128: Electrical plug EN 175301-803 cable 2 wires, 53cm
- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127, P992128 & H coil class)
- P992087: Timer for automatic switch

FEATURES

- **Maximum pressure not required**
- **Textile diaphragm for heavy duty applications also with air**
- **Normally closed and normally open available as standard**

**TECHNICAL SPECIFICATION**

- **Body material:** Brass UN EN 12165 CW617N
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Media:** air, gasoline, fuel oils, inert gases, water, mineral oils, diesel, steam
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:**
  - -10°C +90°C with NBR+PA seals
  - -10°C +140°C with FKM+NBR, EPDM seals
- **Design pressure PS:** 16 bar
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20 - 40 msec

AVAILABLE ON REQUEST

- Explosion proof coil Ex nA (see Atex section)

INSTALLATION

- The solenoid valves can be mounted in any position
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

RELATED ITEMS

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- P992128: Electrical plug EN 175301-803 cable 2 wires, 53cm
- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127, P992128 & H coil class)
- P992087: Timer for automatic switch

FEATURES

- **Maximum pressure not required**
- **Textile diaphragm for heavy duty applications also with air**
- **Normally closed and normally open available as standard**

**TECHNICAL SPECIFICATION**

- **Body material:** Brass UN EN 12165 CW617N
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Media:** air, gasoline, fuel oils, inert gases, water, mineral oils, diesel, steam
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:**
  - -10°C +90°C with NBR+PA seals
  - -10°C +140°C with FKM+NBR, EPDM seals
- **Design pressure PS:** 16 bar
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20 - 40 msec

AVAILABLE ON REQUEST

- Explosion proof coil Ex nA (see Atex section)

INSTALLATION

- The solenoid valves can be mounted in any position
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

RELATED ITEMS

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
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- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127, P992128 & H coil class)
- P992087: Timer for automatic switch

FEATURES

- **Maximum pressure not required**
- **Textile diaphragm for heavy duty applications also with air**
- **Normally closed and normally open available as standard**

**TECHNICAL SPECIFICATION**

- **Body material:** Brass UN EN 12165 CW617N
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Media:** air, gasoline, fuel oils, inert gases, water, mineral oils, diesel, steam
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:**
  - -10°C +90°C with NBR+PA seals
  - -10°C +140°C with FKM+NBR, EPDM seals
- **Design pressure PS:** 16 bar
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20 - 40 msec

AVAILABLE ON REQUEST

- Explosion proof coil Ex nA (see Atex section)

INSTALLATION

- The solenoid valves can be mounted in any position
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

RELATED ITEMS

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
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- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127, P992128 & H coil class)
- P992087: Timer for automatic switch

FEATURES

- **Maximum pressure not required**
- **Textile diaphragm for heavy duty applications also with air**
- **Normally closed and normally open available as standard**

**TECHNICAL SPECIFICATION**

- **Body material:** Brass UN EN 12165 CW617N
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Media:** air, gasoline, fuel oils, inert gases, water, mineral oils, diesel, steam
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:**
  - -10°C +90°C with NBR+PA seals
  - -10°C +140°C with FKM+NBR, EPDM seals
- **Design pressure PS:** 16 bar
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20 - 40 msec

AVAILABLE ON REQUEST

- Explosion proof coil Ex nA (see Atex section)

INSTALLATION

- The solenoid valves can be mounted in any position
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

RELATED ITEMS

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- P992128: Electrical plug EN 175301-803 cable 2 wires, 53cm
- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127, P992128 & H coil class)
- P992087: Timer for automatic switch

FEATURES

- **Maximum pressure not required**
- **Textile diaphragm for heavy duty applications also with air**
- **Normally closed and normally open available as standard**

**TECHNICAL SPECIFICATION**

- **Body material:** Brass UN EN 12165 CW617N
- **Armature tube:** Stainless Steel AISI 300 series
- **Plunger...
FEATURES

- Minimum pressure not required
- Textile diaphragm for heavy duty applications
- AISI 316 for high compatibility with aggressive fluids

TECHNICAL SPECIFICATION

- **Body material:** Stainless Steel AISI 316 series
- **Armature tube:** Stainless Steel AISI 316 series
- **Plungers:** Stainless Steel AISI 400 series
- **Springs:** Stainless Steel AISI 300 series
- **Ex d Housing in Aluminium die cast**
- **Media:** air, inert gas, water, mineral oils, gasoline, diesel
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:** -10°C +90°C with NBR + PA seals
  - -10°C +140°C with FKM + PA seals
- **Design pressure PS:** 16 bar
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335

AVAILABLE ON REQUEST

- Explosion proof coil Ex m (see Atex section)
- Explosion proof coil Ex d (see Atex section)
- Explosion proof coil Ex nA (see Atex section)
- Latching coil (see Atex section)

INSTALLATION

- The solenoid valves can be mounted in any position
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

RELATED ITEMS

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- P992128: Electrical plug EN 175301-803 cable 2 wires, 53cm
- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127; P992128 & H coil class)
- P992087: Timer for automatic switch
**TECHNICAL SPECIFICATION**

- **Body material:** Brass
- **Armature tube:** Stainless steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Media:** Mineral oils, gasoline, diesel, fuel oils, water, air, inert fluids, inert gases
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:** -10°C +140°C with FKM seals
  -10°C +90°C with NBR seals
- **Design pressure PS:** 40 bar
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20 msec A (Depending on pressure conditions)

**AVAILABLE ON REQUEST**

- Nickel plated version
- Explosion proof coil Ex nA (see Atex section)

**INSTALLATION**

The solenoid valves can be mounted in any position

**RELATED ITEMS**

- P990307: Electrical plug EN 175301-803 Pg11

**PIPE**

<table>
<thead>
<tr>
<th>Ø (mm)</th>
<th>Ý (l/min)</th>
<th>MAX VISCOSITY cSt (°E)</th>
<th>PRESSURE MAX WSPO (bar)</th>
<th>GAS CODE</th>
<th>NPT CODE</th>
<th>DRAWING REFERENCE</th>
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(*) NSF Certified

**MODEL NUMBER**

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<th>Valve</th>
<th>B</th>
<th>A</th>
<th>D0</th>
<th>L</th>
<th>Ø</th>
<th>Kv</th>
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<td>A</td>
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<td>L</td>
<td>Ø</td>
<td>Kv</td>
<td>MAX VISCOSITY cSt (°E)</td>
<td>PRESSURE MAX WSPO (bar)</td>
<td>GAS CODE</td>
<td>NPT CODE</td>
<td>DRAWING REFERENCE</td>
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</table>

**PIPE Ø**

- 2
- 2.5

**DIAGRAMS**

- Section
- REPAIR KIT
- INSTALLATION
- RELATED ITEMS
- FEATURES
**Solenoid Valve 2/2 Way Direct Acting**

**TECHNICAL SPECIFICATION**

- **Body material:** Stainless steel AISI 316 series
- **Armature tube:** Stainless steel AISI 300 series
- **Plungers:** Stainless steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Media:** demineralized water, steam, syrups, chemical products compatible with stainless steel
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:** -10°C +140°C with FKM seals
  - -40°C +180°C with PTFE seals
- **Design pressure PS:** 40 bar
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20 - 40 msec (depending on pressure conditions)

**AVAILABLE ON REQUEST**

- Lateral regulation
- Explosion proof coil Ex nA (see Atex section)

**INSTALLATION**

The solenoid valves can be mounted in any position

- Holes and threaded connections for panel fixing
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

**RELATED ITEMS**

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- P992128: Electrical plug EN 175301-803 cable 2 wires, 53cm
- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127; P992128 & H coil class)
- P992087: Timer for automatic switch

**FEATURES**

- Small poppet valve for tight shut off
- Mountable in any position
- AISI 316 for aggressive fluids

**PIPE**

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<tr>
<th>Pipe</th>
<th>Ø (mm)</th>
<th>Kv (l/min)</th>
<th>Max viscosity (cSt)</th>
<th>Pressure min</th>
<th>Pressure max</th>
<th>Motor max MOPD (bar)</th>
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**GAS CODE**

- Pressure
- Temperature
- Flow

**COLL TYPE**

- AC
- DC

**DIMENSIONAL TABLE**

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<td>B</td>
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</table>

**SECTION**

**REPAIR KIT**

**NORMALLY CLOSED**

- Normally Closed 21L N.C.
- Orifice <=3mm: KT130KT30-H, KT130KV30-H
- Orifice >=3mm: KT130KT55-H, KT130KV55-H

**NORMALLY OPEN**

- Normally Open 21L N.O.
- (*) D for B coil; G for U/G coil

**REPAIR KIT**

- Normally Closed
- Normally Open

- Part numbering example: add “N” at the 4th digit

**DIAGRAM**

- Section
- Installation
Solenoid Valve 2/2 Way Direct Acting

TECHNICAL SPECIFICATION

- **Body material:** Brass UNI EN 12164 CW614N
- **Armature tube:** Stainless steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Springs:** Stainless Steel AISI 300 series
- **Media:** mineral oils, gasoline, diesel, fuel oils, water, air, inert gases
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:** -10°C +90°C with NBR seals
  - -10°C +140°C with FKM seals
- **Design pressure PS:** 25 bar for S.V. 21M
  - 40 bar for S.V. 4144
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335

AVAILABLE ON REQUEST

- Explosion proof coil Ex nA (see Atex section)

INSTALLATION

The solenoid valves can be mounted in any position

Other ports connections available on request

Maintenance and instruction sheet available in each solenoid valve box

Availability of repair kit and coils as spares

RELATED ITEMS

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- P992128: Electrical plug EN 175301-803 cable 2 wires, 53cm
- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127, P992128 & H coil class)
- P992087: Timer for automatic switch

FEATURES

- Response time reduced
- Reliable for heavy applications
- In line connection
- Suitable for compressors applications
## TECHNICAL SPECIFICATION

- **Body material**: Brass UNI EN 12165 CW617N
- **Armature tube**: Brass UNI EN 12165 CW617N
- **Plungers**: Stainless Steel AISI 400 series
- **Spring**: Stainless Steel AISI 300 series
- **Media**: mineral oils, gasoline, diesel, fuel oils, water, air, inert fluids, inert gases, combustible gases
- **Ambient temperature**: See coils catalogue page for its compatibility
- **Fluid temperature**: -10°C +140°C with seals FKM
  - -10°C +90°C with seals NBR
- **Working temperature for S.V. approved**: -15°C +80°C
- **Design pressure PS**: 30 bar
- **Protection class**: IP 65 (complete with electric plug)
- **Electrical conformity**: IEC 335
- **Switching time**: 20 msec (depending on pressure conditions)

### AVAILABLE ON REQUEST

- Explosion proof coil Ex nA (see Atex section)

### INSTALLATION

- The solenoid valves can be installed in any position
- Fixing holes
- Other port connections available on request
- Instruction sheet available in each solenoid valve box
- Coils available as spares

### RELATED ITEMS

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11

### DRAWING REFERENCE

- COIL P/N: RBDA04230AS

### TABLE

<table>
<thead>
<tr>
<th>PIPE Ø (mm)</th>
<th>Kv</th>
<th>MAX VISCOITY cSt (°E)</th>
<th>PRESSURE</th>
<th>GAS CODE</th>
<th>NPT CODE</th>
<th>DRAWING REFERENCE</th>
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<tr>
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### Section

- Section
- Section

### Dimensions Table

<table>
<thead>
<tr>
<th>Figure</th>
<th>Type</th>
<th>Co/or Type</th>
<th>mm</th>
<th>Width</th>
<th>mm</th>
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<td>B</td>
<td>30</td>
<td>42</td>
<td>54</td>
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</tbody>
</table>
FEATURES

- High flow rates
- Long life version
- Wide range of applications valves for liquids and gases
- Wide elastomers range
- Mountable in any position

TECHNICAL SPECIFICATION

- Body material: Brass UN: 12365 CW617N
- Armature tube: Stainless Steel AISI 300 series
- Plunger: Stainless Steel AISI 400 series
- Spring: Stainless Steel AISI 300 series
- Media: air, water, inert gas, low pressure steam
- Temperature: -10°C to +140°C with NBR, FKM seals
- Fluid temperature: -10°C to +90°C with FKM seals
- Design pressure PS: G 3/8 - G 1/2 bar 2
- Temperature: 5/8 NPT - 1 NPT 25 bar
- G 3/4 - G 1/2 bar 25 bar
- G 1 1/4 - 1 1/4 NPT - G 2 - 2 NPT 16 bar
- Protection class: IP 65 (complete with electric plug)
- Electrical conformity: IEC 335

AVAILABLE ON REQUEST

- Manual override
  - (i.e. 21WA3DB130-41)
- Manual override+closing speed control
  - (i.e. 21WA3DB130-110)
- Progressive closing
  - (i.e. 21WA3DB130-PC)
- Spring on diaphragm
  - (i.e. 21WA4R0130-9AM)
- Latching coils (see coil section)
- Explosion proof coil ex nA (see Atex section)

PIECE 2/2 Way pilot control

21W N.C./N.O.

(Compliance to current Directives 10/23/CE for S.V. 21W-A10/1 - 21W-A20/2)

PIECE 2/2 Way pilot control

21W N.C./N.O.

(Compliance to current Directives 10/23/CE for S.V. 21W-A10/1 - 21W-A20/2)

PIECE 2/2 Way pilot control

21W N.C./N.O.

(Compliance to current Directives 10/23/CE for S.V. 21W-A10/1 - 21W-A20/2)
Solenoid Valve 2/2 Way With Pilot Control

**TECHNICAL SPECIFICATION**

- **Body material:** Stainless Steel AISI 316 series
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Media:** Steam, hot water, chemical products compatible with stainless steel, demineralized water, air, water, low pressure steam
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:**
  - -10°C +90°C with NBR seals
  - -10°C +140°C with FKM, EPDM seals
  - (*) +180°C with PTFE seals
- **(*) WARNING:** For a correct functioning of the solenoid valve the minimum temperature should not be less than +60°C; in order to ensure a long diaphragm life, the steam filtration is recommended
- **Design pressure PS:** 25 bar
- **Protection class:** IP 65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20-40 msec

**AVAILABLE ON REQUEST**

- Explosion proof coil Ex nA (see Atex section)

<table>
<thead>
<tr>
<th>INSTALLATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The solenoid valves can be mounted in any position</td>
</tr>
<tr>
<td>Holes and threaded connections for panel fixing</td>
</tr>
<tr>
<td>Other port connections available on request</td>
</tr>
<tr>
<td>Maintenance and instruction sheet available in each solenoid valve box</td>
</tr>
<tr>
<td>Availability of repair kit and coils as spares</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RELATED ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>P990305: Electrical plug EN 175301-803 Pg9</td>
</tr>
<tr>
<td>P990306: Electrical plug EN 175301-803 Pg11</td>
</tr>
<tr>
<td>P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)</td>
</tr>
<tr>
<td>P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)</td>
</tr>
<tr>
<td>P992128: Cable 2 wires, 53cm</td>
</tr>
<tr>
<td>R452714: Antihumidity kit (up to IP67 protection together with plugs P990329, P992127, P992128 &amp; M coils class)</td>
</tr>
<tr>
<td>P992280: Timer for automatic switch</td>
</tr>
</tbody>
</table>

### FEATURES

- Proven Pilating System
- Reliable for heavy applications
- Suitable for high temperature

### TABLES

#### Dimensions Table

<table>
<thead>
<tr>
<th>Pipe</th>
<th>D (mm)</th>
<th>K</th>
<th>Max Viscosity cSt (°E)</th>
<th>Pressure (bar)</th>
<th>Code</th>
<th>Code</th>
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<tr>
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<tr>
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<tr>
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<tr>
<td>G 3/4</td>
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<td>G 3/4</td>
<td>19</td>
<td>120</td>
<td>12(G)</td>
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<td>16</td>
<td>10</td>
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<tr>
<td>G 1</td>
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<td>0.5</td>
<td>16</td>
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<tr>
<td>G 1</td>
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<td>12(G)</td>
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<td>16</td>
<td>10</td>
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<tr>
<td>1 NPT</td>
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<td>160</td>
<td>12(G)</td>
<td>0.1</td>
<td>16</td>
<td>10</td>
</tr>
</tbody>
</table>
FEATURES

- Dedicated to control steam application
- Piston design
- High lifetime

TECHNICAL SPECIFICATION

- Body material: Brass UNI EN 12165 CW617N
- Armature tube: Stainless Steel AISI 300 series
- Plungers: Stainless Steel AISI 400 series
- Spring: Stainless Steel AISI 300 series
- Media: Steam, hot water
- Ambient temperature: See coils catalogue page for its compatibility
- Fluid temperature: -40°C +180°C with PTFE seals
- Design pressure PS: 25 bar
- Protection class: IP 67 (with coil fitted by connector dedicated)
- Electrical conformity: IEC 335
- Switching time: 20-40 msec

AVAILABLE ON REQUEST

- NPT threads

INSTALLATION

The solenoid valves can be mounted in any position
- Holes and threaded connections for panel fixing
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

RELATED ITEMS

- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127, P992128 & H coils class)
- P992087: Timer for automatic switch

REPAIR KIT

- Normally Closed
- Normally Open

PIECE Ø (mm) | Kv (l/min) | MAX VISCOSITY cSt (°C) | PRESSURE max (MPa) | GAS CODE | NPT CODE | FLOW CURVE

<table>
<thead>
<tr>
<th>Pipe Type</th>
<th>Ø</th>
<th>Kv</th>
<th>MAX VISCOSITY</th>
<th>Pressure max</th>
<th>Gas Code</th>
<th>NPT Code</th>
<th>Flow Curve</th>
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<td>10</td>
<td>21YN6K0T250</td>
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</tbody>
</table>

Soneloid Valve 2/2 Way With Piston Pilot Control

53
**FEATURES**

- Threaded exhaust connection
- Reliable performance
- Suitable with triple certification UL, CSA, VDE
- High flow

**TECHNICAL SPECIFICATION**

- **Body material:** Brass UNI EN 12165 CW617N
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Media:** mineral oils, gasoline, diesel, air, inert gases, water, steam, fuel oils, hot water
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:** 4°C - 180°C with RUBY seals
- **Design pressure PS:** 40 bar
- **Protection class:** IP 65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20-40 msec

**AVAILABLE ON REQUEST**

- Also available with low lead brass for food grade
- The use of rigid sealings usually implies a slight leakage, limited within 2 scc/min at the pressure of 1 bar
- Manual override (i.e. 31A2AV15-M)
- Latching coil (see coil section)

**INSTALLATION**

- The solenoid valves can be mounted in any position
- Holes and threaded connections for panel fixing
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

**RELATED ITEMS**

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- 31A2AV15-M: Latching coil (see coil section)

**REPAIR KIT**

- Normally Closed
  - KT130AR30-B
  - KT130AR30-A
  - KT130AR30-AV
- Normally Open
  - KT130FV30-AZ

**SUBPLATE MOUNTING**

- Normally Closed
  - 31A1A5R15-AG
  - 31A1A5R15-AG
  - 31A1A5R15-AG
  - 31A1AR15
  - 31A1AR15-ORV
  - 31A1AR15-VORV

- Normally Open
  - 31A1AR10
  - 31A1AR15
  - 31A1AV10
  - 31A1AV15
  - 31A2AV10
  - 31A2AV20

**Suffix description:** 31A1A5R15-AG

- AG: Version with dempness-proof kit
- AVG: Version with dempness-proof kit
- OR: Sealing system with FKM
- VORV: Armature tube sealing with FKM
- Z: Sub base FKM O-Ring

**Dimensional Tables**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Coil Type</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>F (mm)</th>
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**TECHNICAL SPECIFICATION**

- **Body material:** Brass UN 12/65 CW617N
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 300 series
- **Media:** mineral oil, gasoline, diesel, air, inert gases, water, steam, fuel oils, hot water,
  Ambient temperature: see coils catalogue page for its compatibility
- **Fluid temperature:** -10°C +140°C with FKM seals
  -40°C +180°C with RUBY seals
- **Design pressure PS:** 40 bar
- **Protection class:** IP 65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20-40 msec

**AVAILABLE ON REQUEST**
- Also available with low lead brass for food grade
- The use of rigid sealings usually implies a slight leakage, limited within 2scc/min at the pressure of 1 bar.
- Explosion proof coil Ex nA (see Atex section)
- Latching coil (See coil section)

**INSTALLATION**
- The solenoid valves can be mounted in any position
- Holes and threaded connections for panel fixing
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

**RELATED ITEMS**
- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- P992128: Electrical plug EN 175301-803 cable 2 wires, 53cm
- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127; P992128 & H coils class)
- P992087: Timer for automatic switch

**REPAIR KIT**

**AVAILABLE ON REQUEST**
- Also available with low lead brass for food grade
- The use of rigid sealings usually implies a slight leakage, limited within 2scc/min at the pressure of 1 bar.
- Explosion proof coil Ex nA (see Atex section)
- Latching coil (See coil section)
TECHNICAL SPECIFICATION

- **Body material:** Brass
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Media:** low pressure steam, mineral oils, gasoline, diesel, fuel oils, water
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:** -10°C +90°C with NBR seals
- **Design pressure PS:** 40 bar
- **Protection class:** IP 65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20-40 msec

AVAILABLE ON REQUEST

- Manual override (i.e. 21A3KV15-M)
- NSF approved version
- Also available with low lead brass for food grade
- Explosion proof coil Ex nA (see ATEX section)

INSTALLATION

- The solenoid valves can be mounted in any position
- Holes and threaded connections for panel fixing
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

RELATED ITEMS

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127; P992128 & H coils class)
- P992087: Timer for automatic switch

Drawing Reference

- G 1/8
- G 3/8
- G 1/4
- G 3/4

Pipe Ø (mm) | Kv (l/min) | Max viscosity cSt (°E) | Pressure min | Pressure max | MOPD (bar) | Gas code | NPT code | Drawing reference
---|---|---|---|---|---|---|---|---
P 1/4 | 1,2(*) | 1 | 12(2) | 0 | 15 | - | 46209BV12 | N/A | 1

(1) 3rd way exhaust = Ø 1,7mm
(2) 3rd way exhaust = Ø 1,2mm
(3) 3rd way exhaust = Ø 1,5mm

G 1/8 | 1,2(*) | 1 | 12(2) | 15 | 15 | 31JN1W0V12 | 1

Subplate mounting:

**G 1/8:**

| Ø (mm) | Kv (l/min) | Max viscosity cSt (°E) | Pressure min | Pressure max | MOPD (bar) | Gas code | NPT code | Drawing reference
---|---|---|---|---|---|---|---|---
P 1/4 | 1,2(*) | 1 | 12(2) | 0 | 15 | - | 46209BV12 | N/A | 1

(1) 3rd way exhaust = Ø 1,7mm
(2) 3rd way exhaust = Ø 1,2mm
(3) 3rd way exhaust = Ø 1,5mm
FEATURES

- Ideal for piloting
- High flow rate
- Quick response

TECHNICAL SPECIFICATION

- Body material: Stainless Steel 316 AISI series
- Armature tube: Stainless Steel 300 AISI series
- Plungers: Stainless Steel AISI 300 series
- Medium: mineral oils, gasoline, diesel, fuel oils
- Ambient temperature: See coils catalogue page for its compatibility
- Fluid temperature: -10°C +140°C with FKM seals
- Design pressure PS: 40 bar
- Protection class: IP 65 (complete with electric plug)
- Electrical conformity: IEC 335
- Switching time: 20-40 msec

AVAILABLE ON REQUEST

- Explosion proof coil Ex nA (see Atex section)

INSTALLATION

- The solenoid valves can be mounted in any position
- Holes and threaded connections for panel fixing
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

RELATED ITEMS

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- P992128: Electrical plug EN 175301-803 cable 2 wires, 53cm
- R452714: Antihumidity kit (up to IP67 protection together with plugs P992126, P992127, P992128 & H coils class)
- P992087: Timer for automatic switch
**Solenoid Valve 5/2 Way Servocontrolled**

**TECHNICAL SPECIFICATION**

- **Body material:** Aluminium
- **Armature tube:** Stainless steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Media:** lubricated air
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:** -10°C +90°C with NBR seals
- **Design pressure PS:** 10 bar
- **Protection class:** IP 65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20-40 msec

**AVAILABLE ON REQUEST**

- Explosion proof coil Ex nA (see Atex section)

**INSTALLATION**

- The solenoid valves can be mounted in any position
- Holes and threaded connections for panel fixing
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares

**RELATED ITEMS**

- **P990305:** Electrical plug EN 175301-803 Pg9
- **P990306:** Electrical plug EN 175301-803 Pg11
- **P992126:** Electrical plug EN 175301-803 Pg9 (with OR screw)
- **P992127:** Electrical plug EN 175301-803 Pg11 (with OR screw)
- **P992128:** Electrical plug EN 175301-803 cable 2 wires, 53cm
- **R452714:** Antihumidity kit (up to IP67 protection together with plugs P992126, P992127, P992128 & H coils class)
- **P992087:** Timer for automatic switch

**TABLE 1: PIPE Ø (mm) / Kv (l/min) / MAX VISCOITY cSt (°E) / PRESSURE MIN / MAX MOPD (bar)**

<table>
<thead>
<tr>
<th>PIPE Ø (mm)</th>
<th>Kv (l/min)</th>
<th>MAX VISCOITY cSt (°E)</th>
<th>PRESSURE MIN</th>
<th>MAX MOPD (bar)</th>
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<tbody>
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<td>6.5</td>
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<td>1,3</td>
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**TABLE 2: GAS CODE / NPT CODE / DRAWING REFERENCE**

<table>
<thead>
<tr>
<th>GAS CODE</th>
<th>NPT CODE</th>
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<td>W0B12-2</td>
<td>515620W0B12-2</td>
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**TABLE 3: REPAIR KIT**

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<tr>
<td>KT100W0B25-F</td>
<td>512620 W0 B12</td>
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**TABLE 4: COIL TYPE / AC / DC**

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<th>COIL TYPE</th>
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<th>DC</th>
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<tbody>
<tr>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
</tbody>
</table>

**TABLE 5: MODEL / VALVE / 2 / O.D. / 1 / G / 1/4 / N.C. / B / 0W0 / B / NBR / 12 / OREFICE 10 TYP / 0-10mm / D / EN 175301-803**

**TABLE 6: L / B / A / 05 / 024 / A / S**

<table>
<thead>
<tr>
<th>L</th>
<th>B</th>
<th>A</th>
<th>05</th>
<th>024</th>
<th>A</th>
<th>S</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>W</td>
</tr>
</tbody>
</table>
FEATURES

- Carwash
- Mountable in any position

TECHNICAL SPECIFICATION

- Body material: Brass UNI EN 12165 CW617N
- Armature tube: Stainless Steel AISI 300 series
- Plungers: Stainless Steel AISI 400 series
- Spring: Stainless Steel AISI 300 series
- Media: water
- Ambient temperature: See coils catalogue page for its compatibility
- Fluid temperature: -10°C +140°C with FKM seals
- Design pressure: P= 20 bar
- Protection class: IP65 (complete with electric plug)
- Electrical conformity: IEC 335
- Switching time: 20 - 40 msec (depending on pressure conditions)

INSTALLATION

The solenoid valves can be mounted in any position

Holes and threaded connections for panel fixing

Other port connections available on request

Maintenance and instruction sheet available in each solenoid valve box

Availability of repair kit and coils as spares

RELATED ITEMS

- P990305: Electrical plug EN 175301-803 Pg9
- P990306: Electrical plug EN 175301-803 Pg11
- P992126: Electrical plug EN 175301-803 Pg9 (with OR screw)
- P992127: Electrical plug EN 175301-803 Pg11 (with OR screw)
- P992128: Electrical plug EN 175301-803 cable 2 wires, 53cm
- P992087: Timer for automatic switch

REPAIR KIT

KTG0H7KV12

<table>
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<tr>
<th>PIPE</th>
<th>Ø (mm)</th>
<th>KV</th>
<th>MAX VISCOSITY</th>
<th>PRESSURE (bar)</th>
<th>GAS CODE</th>
<th>NPT CODE</th>
<th>DRAWING REFERENCE</th>
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<table>
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<th>PRESSURE (bar)</th>
<th>GAS CODE</th>
<th>NPT CODE</th>
<th>DRAWING REFERENCE</th>
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<td>16</td>
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<th>GAS CODE</th>
<th>NPT CODE</th>
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<table>
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<th>NPT CODE</th>
<th>DRAWING REFERENCE</th>
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<th>Ø (mm)</th>
<th>KV</th>
<th>MAX VISCOSITY</th>
<th>PRESSURE (bar)</th>
<th>GAS CODE</th>
<th>NPT CODE</th>
<th>DRAWING REFERENCE</th>
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<table>
<thead>
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<th>PRESSURE MAX MCCP (bar)</th>
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<th>NPT CODE</th>
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<tbody>
<tr>
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TECHNOPOLYMEN SOLENOID VALVES

- 21D-K N.C.  page 68-69
- 21JP N.C.   page 70-71
- 21SBG N.C. page 72-73
- 31JP N.C.   page 74-75
**FEATURES**
- Totally separation valve
- Reliable solution for hot water application
- Flow regulation for hot water control
- 90° shape for compact installation
- Directly connected to the boiler
- Reliable switch on-off time for accurate dispensing
- Modular system for multiple valve manifold
- NSF approved version

**TECHNICAL SPECIFICATION**

- **Body material:** PSU (Polysulphone)
- **Armature tube:** Brass - UNI EN 12164 CW614N
- **Plungers:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Media:** water
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:** +2°C to +100°C with VMQ seals

**AVAILABLE ON REQUEST**

- **Manifold:** (Please see key code for complete part numbering and for manifold construction)

**INSTALLATION**
- Maintenance and instruction sheet available in each solenoid valve box
- The valves can be connected directly on the boiler

**REPAIR KIT**

- KR100RRS90-L2
- KR130KRS90-L3

**Drawing Reference**

**21D72 CONNECITON KR S 90**

- Model valve
- See connection types overleaf

**PIPE**

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<th>Kg (l/min)</th>
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<th>PRESSURE MAX MOPD (bar)</th>
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<td>AC 08 DC 024</td>
<td>2107200100 L</td>
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<td>0 0,3 0,5</td>
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<tr>
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<td>AC 08 DC 024</td>
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<td>2</td>
</tr>
<tr>
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<td>9</td>
<td>0 0,3 0,5</td>
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<td>0 0,3 0,5</td>
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<td>AC 08 DC 024</td>
<td>2107201008 SIL RL R</td>
<td>2</td>
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<tr>
<td>Ø 12</td>
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<td>0 0,3 0,5</td>
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<td>2107201008 SIL RL R L</td>
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<td>0 0,3 0,5</td>
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<td>2107201008 SIL RL R L R R</td>
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<tr>
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<td>9</td>
<td>0 0,3 0,5</td>
<td>0,4 0,5 0,6</td>
<td>AC 08 DC 024</td>
<td>2107201008 SIL RL R L R L R</td>
<td>2</td>
</tr>
<tr>
<td>Ø 12</td>
<td>9</td>
<td>0 0,3 0,5</td>
<td>0,4 0,5 0,6</td>
<td>AC 08 DC 024</td>
<td>2107201008 SIL RL R L R L R R</td>
<td>2</td>
</tr>
<tr>
<td>Ø 12</td>
<td>9</td>
<td>0 0,3 0,5</td>
<td>0,4 0,5 0,6</td>
<td>AC 08 DC 024</td>
<td>2107201008 SIL RL R L R L R L R</td>
<td>2</td>
</tr>
</tbody>
</table>

**FLOW RATE WITH HEAD OF 80mmm: 2,5 l/min.**

**GAS CODE NPT CODE DRAWING REFERENCE**

- **AC** = 30mm Ø 13
- **DC** = EN 175301-803
- **A** = Class F
- **08** = 8W
- **024** = 24V
- **AC** = 2 faston
- **C** = 12 W
- **024** = 24V
- **E** = 50%
- **S** = Without Approval
- **NPT CODE**
  - **110** = 110V
  - **C** = DC
  - **H** = 50%
  - **223** = 220V-230V
FEATURES
- Food grade
- High performance technopolymer
- Compact design

TECHNICAL SPECIFICATION
- Body material: PPS
- Armature tube (for PARR - JPARR) Brass UNI EN 12165 CW617N
- Armature tube (JPARR - JPAR1) Stainless Steel AISI 300 series
- Plungers: Stainless Steel AISI 400 series
- Spring: Stainless Steel AISI 300 series
- Media: air, water, inert gases, steam
- Ambient temperature: See coils catalogue page for its compatibility
- Fluid temperature: -10°C +140°C with FKM seals
- Design pressure PS: 16 bar
- Protection class: IP65 (complete with electric plug)
- Electrical conformity: IEC 335
- Switching time: 20 - 40 msec (depending on pressure conditions)

AVAILABLE ON REQUEST
- NSF approved version

INSTALLATION
The solenoid valves can be mounted in any position
Holes and threaded connections for panel fixing
Other port connections available on request
Maintenance and instruction sheet available in each solenoid valve box

RELATED ITEMS
- P990307: Electrical plug EN 175301-803 Pg9

REPAIR KIT
Coil L 2,5W-5W (see coil list)

Drawing Reference
21JP N.C.
21JR N.C.
21J1R N.C.
21J1R1 N.C.
21J1RR N.C.
21J1RR1 N.C.

PIPE Ø (mm)  L mm  B mm  A mm  OS  D24  A  S
G 1/8 male 1 1 2 0 15 15 3 2 21JP1RRV12 (*) 1
G 1/8 male 2,3 2,1 37 0 6 15 - 8 21JP1R1V23 (*) 2
G 1/8 male 2,3 2,1 37 0 6 15 - 8 21JP1RRV23 (*) 2
G 1/8 male 2,3 2,1 37 0 6 15 - 8 21JP1R1V23 (*) 2
G 1/8 male 2,3 2,1 37 0 6 15 - 8 21JPARRV12 (*) 1
G 1/8 male 2,3 2,1 37 0 6 15 - 8 21JPARRV23 (*) 1
G 1/8 male 2,3 2,1 37 0 6 15 - 8 21JPARRV12 (*) 1

Note
- Max torque for fittings and nut assembly 2Nm
- In case glue is used to seal the fittings, verify the compatibility with body material (PPS)
- For applications, with steam, please consult our Technical Service

Drawing Reference
21JP N.C.
21JR N.C.
21J1R N.C.
21J1R1 N.C.
21J1RR N.C.
21J1RR1 N.C.

Dimensional Table
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<thead>
<tr>
<th>Figure</th>
<th>Cell Type</th>
<th>Ø mm</th>
<th>E mm</th>
<th>F mm</th>
<th>G mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>L</td>
<td>22</td>
<td>27,5</td>
<td>39,5</td>
<td>11</td>
</tr>
</tbody>
</table>

(*) NSF Certified
Available NSF version also
Total Separation Solenoid Valve 2/2 Way Direct Acting

**TECHNICAL SPECIFICATION**

- **Body material:** PEI
- **Armature tube:** Brass - UNI EN 12164 CW614N
- **Plungers:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Media:** water
- **Up to 1 bar**
- **Ambient temperature:** See coils catalogue page for its compatibility
- **Fluid temperature:** 0°C +95°C with EPDM seals
- **Electrical conformity:** IEC 335

**RELATED ITEMS**

- The solenoid valves can be mounted in any position
- Holes and threaded connections for panel fixing
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Availability of repair kit and coils as spares.
Solenoid Valve 2/2 Way Direct Acting

**TECHNICAL SPECIFICATION**

- **Body material:** PPS
- **Armature tube:** (fig.1) Stainless Steel AISI 300 series
- **Armature tube:** (fig.2) Brass - UNI EN 12165 CW617N
- **Plungers:** Stainless Steel AISI 300 series
- **Spring:** Stainless Steel AISI 300 series
- **Media:** air, water, inert gases, steam
- **Ambient temperature:** see coils catalogue page for its compatibility
- **Fluid temperature:** -10°C + 140°C with FKM seals
- **Design pressure PS:** 16 bar
- **Protection class:** IP 65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20-40 msec

**AVAILABLE ON REQUEST**

- NSF approved version

**FEATURES**

- Light and reliable
- Up to 15 bar
- Proven actuation system

**PIPED**

<table>
<thead>
<tr>
<th>PIPE Ø (mm)</th>
<th>B</th>
<th>MAX VISCOITY cSt (**)</th>
<th>PRESSURE max NPSD (bar)</th>
<th>GAS CODE</th>
<th>NPT CODE</th>
<th>DRAWING REFERENCE</th>
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</thead>
<tbody>
<tr>
<td>G 1/8 male</td>
<td>1,2(*)</td>
<td>0,7</td>
<td>12(2)</td>
<td>0</td>
<td>15</td>
<td>31JPAPV12-05(3)</td>
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<tr>
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<td>2,2(*)</td>
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<td>0</td>
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<td>0</td>
<td>15</td>
<td>31JPAPV52(5)</td>
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<tr>
<td>G 1/8 male</td>
<td>2,2(*)</td>
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<td>37(5)</td>
<td>0</td>
<td>15</td>
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<tr>
<td>G 1/8 female</td>
<td>1,2(*)</td>
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<td>12(2)</td>
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<td>2,2(*)</td>
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<td>37(5)</td>
<td>0</td>
<td>15</td>
<td>31JPAPV23-T0(5)</td>
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<tr>
<td>G 1/4 male</td>
<td>2,2(*)</td>
<td>2,1</td>
<td>37(5)</td>
<td>0</td>
<td>15</td>
<td>31JPAPV52(5)</td>
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<td>2,2(*)</td>
<td>2,1</td>
<td>37(5)</td>
<td>0</td>
<td>15</td>
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<tr>
<td>G 1/4 male</td>
<td>2,2(*)</td>
<td>2,1</td>
<td>37(5)</td>
<td>0</td>
<td>15</td>
<td>31JPAPV23-T0(5)</td>
</tr>
</tbody>
</table>

**INSTALLATION**

- The solenoid valves can be mounted in any position
- Holes and threaded connections for panel fixing
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box

**RELATED ITEMS**

- PM90057: Electrical plug EN 175301-803 Pg9

**AVAILABLER ON REQUEST**

- NSF approved version

**REPAIR KIT**

For spare parts please consult our technical department

Coil P/N RLBA

<table>
<thead>
<tr>
<th>Figure</th>
<th>COL Type</th>
<th>D mm</th>
<th>E mm</th>
<th>F mm</th>
<th>G mm</th>
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<td>2</td>
<td>22</td>
<td>27.5</td>
<td>19.5</td>
<td>11</td>
</tr>
</tbody>
</table>
PINCH SOLENOID VALVES

- 21Z N.C./N.O.
- 31Z N.C.

Page 78-79

Page 80-81
FEATURES
- Totally separate valve
- Up to 36 g closing force
- Fluid untouched when flowed

TECHNICAL SPECIFICATION
- Body material: Anodized Aluminum
- Armature tube: Armature tube: Brass - UNI EN 12164 CW614N
- + Nickel Plated (for 21Z16)
- Brass - UNI EN 12164 CW614N (for 21Z25)
- Spring: Stainless Steel AISI 300 series
- Flanged device POM C= Acetalic resin
- Ambient temperature: -10°C +40°C
- Protection class: IP65 (complete with electric plug)
- Electrical conformity: IEC 335
- Switching time: 20-40 msec

AVAILABLE ON REQUEST
- For different tube diameter or hardness, please consult our technical department
- Explosion proof coil Ex nA (see Atex section)

REPAIR KIT
- For spare parts please consult our technical department

Coil Type DC
- For 21Z16: RMAA0424CS
- For other: Coil B type (08W)
- Coil G type (14W)
- Coil U type (12W)

REPAIR KIT
- For spare parts please consult our technical department

Coil Type AC
- R5MAA0424AC
- G5MAA0424AC
- U5MAA0424AC

TUBINGS

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<th>ø ext. (mm)</th>
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<th>PRESSURE MAX [bar]</th>
<th>WEIGHT [g]</th>
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**Drawing Reference**

**Dimensional Table**

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<td>D</td>
<td>56</td>
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TECHNICAL SPECIFICATION

- **Body material:** Anodized Aluminium
- **Armature tube:** Brass - UNI EN 12164 CW614N + Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Pinching device:** Poly (Acetal resin)
- **Ambient temperature:** -10°C +40°C
- **Protection class:** IP65 (complete with electric plug)
- **Electrical conformity:** IEC 335
- **Switching time:** 20-40 msec

AVAILABLE ON REQUEST

- For different tube diameter or hardness, please consult our technical department
- Explosion proof coil Ex nA (see Atex section)

FEATURES

- Totally separate valve
- Up to 36 Kg closing force
- Fluid untouched when flowed
- Bidirectional flow control
- Suitable for food pharmaceutical and medical application

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>REPAIR KIT</th>
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<tbody>
<tr>
<td>G 6,4 Ø 9</td>
<td>Model valve Body diameter G= 14W 3- way S= 10N 95</td>
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TUBINGS

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Table: 312 N.C.

Pinch Solenoid Valve 3/2 Way Direct Acting - Bidirectional

81
EXPLOSION PROOF SOLENOID VALVES ATEX

- 21A Ex d & Ex m N.C./N.O.  page 84-85
- 21H Ex d N.C.  * 86-87
- 21L Ex m Ex d N.C.  * 88-89
- 21W Ex m, Ex d N.C./N.O.  * 90-91
- 21X Ex m, Ex d N.C.  * 92-93
- 31A2 Ex m, Ex d N.C.  * 94-95
- 31L Ex m, Ex d N.C.  * 96-97
FEATURES

- Wide range of applications for high flow valves for liquids, gaseous
- Hazardous environments
- Small puppet valve for tight shutoff
- Acceptable in any position
- Dedicated to CPT market

TECHNICAL SPECIFICATION

- Body material: Brass UN EN 12365 CHW57N
- Armature tube: Stainless Steel AISI 300 series
- Plungers: Stainless Steel AISI 400 series
- Spring: Stainless Steel AISI 300 series
- Ex d Housing: in Aluminium die cast
- Media: mineral oils, gasoline, diesel, fuel oils, air, inert gases, water, 114 A, 4 R404a
- Ex m Ambient temperature: see catalogue page for its compatibility
- Ex m Fluid temperature: -10°C +80°C with FKM seals
- Ex d Housing Ambien temperature: -40°C +60°C
- Ex d Fluidelempoliture: -10°C +140°C with FKM seals
- Design pressure PS: 40 bar
- Protection class: Ex m IP55 (complete with electric plug)
- Ex m IP55 (with housing fitted by cable gland Atex Ex d)
- Electrical conformity: IEC 335

Atex - Solenoid Valve 2/2 Way Direct Acting Explosion Proof

- Switching time: 20 - 40 msec (depending on pressure conditions)
- (Conformity to Atex Directive 94/9/CE ATEX)
- For S.V. 21A, Q
  - 20 Ex d II T 4 ATEX 130°C 086 IP67
  - 20 Ex m II T 4 ATEX 130°C 086 IP67
- For S.V. 21A Q
  - 20 Ex m II T 4 ATEX 130°C 086 IP67
- II 2G Ex d IIC T6 o T5 Gb
- For S.V. 21A I
  - II 2G Ex d IIIC t 130°C Db

Holes and threaded connections for panel fixing
- Switching time: 20 - 40 msec (depending on pressure conditions)
- Maintenance and instruction sheet available in each solenoid valve box
- Attention: for fuse selection please refer to the "Instruction sheet"
- Accessories: Code PN2214 Cable gland (to be ordered separately)
- Code P992219 Cable Gland

For spare parts please consult our technical department

Atex products” delivered together with the valve

For spare parts please consult our technical department
FEATURES
- Wide range of application high flow valves for liquids, gaseous
- Hazardous environment
- Small poppet valve for tight shutoff
- Mountable in any position
- Dedicated to CPT Market

TECHNICAL SPECIFICATION
- Body material: Stainless Steel AISI 316
- Armature tube: Stainless Steel AISI 316
- Plungers: Stainless Steel AISI 400 Series
- Spring: Stainless Steel AISI 300 Series
- Explosion proof housing in Aluminium die cast
- Fluid: air, inert gases, water, mineral oils, gasoline, diesel
- Housing ambient temperature: -40°C +60°C
- Fluid temperature: -10°C +80°C with NBR seals
- -10°C +80°C with FKM seals
- Design pressure PS: 16 bar
- Protection class: IP65 (with hosing fitted by cable gland Atex Ex d
- Electrical conformity: IEC335
(Conforme to Atex Directive 94/9/CE ATEX)
II 2G Ex d IIC T6 o T5 Gb
II 2D Ex tb IIIC T80° o T95°C Db IP67
(Tamb: -40°C ≤ +60°C)

INSTALLATION
- The solenoid valves can be mounted in any position
- Other port connections available on request
- Maintenance and instruction sheet available in each solenoid valve box
- Attention: for fuse selection please refer to the “Instruction sheet Atex products”, delivered together with the valve
- Availability of repair kit and coils as spares.

PIVz Ø mm Kv l/min MAX VISCOSITY cSt °E PRESSURE MAX MPSO (bar) GAS CODE NPT CODE DRAWING REFERENCE
<table>
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<tr>
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<th>PRESSURE MAX MPSO (bar)</th>
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<th>NPT CODE</th>
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REPAIR KIT
For spare parts, please consult our technical department

ACCESSORIES
Code PH3219 Cable gland (to be ordered separately)

Dimensions Table

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<th>Figure</th>
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Section
**Technical Specification**

- **Body material:** Stainless Steel AISI 316
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 300 series
- **Spring:** Stainless Steel AISI 300 series
- **Spring:** Stainless Steel AISI 300 series
- **Ex d Housing in Aluminium die cast**
- **Media:** mineral oils, gasoline, diesel, fuel oils, air, water, inert gases, 134 a, R 404a
- **Ex m Ambient temperature:** See coils catalogue page for its compatibility
- **Ex m Fluid temperature:** -10°C +80°C with FKM seals
  - -30°C +80°C with H-NBR seals
- **Ex d Housing Ambient temperature:** -40°C +60°C
- **Ex d Fluid temperature:**
  - -10 +80°C with FKM seals
- **Design pressure PS:** 40 bar
- **Protection class:** Ex m IP65 (complete with electric plug); Ex d IP65 (with hosing fitted by cable gland Atex Ex d)
- **Electrical conformity:** IEC 335 (Conforme to Atex Directive 94/9/CE ATEX)
  - For S.V. 21L..I
    - Ex d II 2G Ex d II 2G T6 o T5 Gb
    - Ex tb IIIC T80°C o T90°C Db
  - For S.V. 21L..Q
    - Ex mb II 2G Ex mb II 2G T4
    - Ex tb IIIC t130°C Db

**Features**

- Wide range of applications high flow valves for liquids, gaseous
- Reliable proven design with high flow
- Small poppet valve for tight shutoff
- Mountable in any position

**Installation**

- The solenoid valves can be mounted in any position
- Maintenance and instruction sheet available in each solenoid valve box
- Attention: for fuse selection please refer to the "Instruction sheet Atex products" delivered together with the valve
- Fixing holes

**Repair Kit**

For spare parts please consult our technical department

- Coil P/N Ex mb II T 4
  - RTN4X024D4
  - RTN5X110D4
  - RTNA05224DA
  - RTNA10024C4

**Accessories**

- Code P992219 Cable Gland
  - (to be ordered separately)

**Dimensions Table**

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<td>5</td>
<td>55</td>
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</table>
FEATURES

- Wide range of applications: high flow valves for liquids, gaseous media.
- Reliable proven design with high flow rates.
- Small poppet valve for tight shut-off.
- Acceptable in any position.

### TECHNICAL SPECIFICATION

- **Body material**: Brass UN EN 1254-1 C7:17.
- **Armature tube**: Stainless steel AISI 300 series.
- **Plungers**: Stainless steel AISI 400 series.
- **Spring**: Stainless steel AISI 300 series.
- **Ex d Housing**: In Aluminium die cast.
- **Media**: mineral oils, gasoline, diesel, air, inert gases, water, R 134a, R 404a.
- **Ex m Ambient temperature**: See catalogue page for its compatibility.
- **Ex d Fluid temperature**: -10°C to +80°C with FKM seals.
- **Ex d Ambient temperature**: -40°C to +60°C.
- **Ex d Fluid temperature**: -10°C to +80°C with FKM seals.

### INSTALLATION

- The solenoid valves can be mounted in any position.
- Maintenance and instructive sheets available in each solenoid valve box.

- **Attention**: for fuse selection please refer to the "Instruction sheet" Atex products, delivered together with the valve.

### ACCESSORIES

- **Coil P/N** Ex mb II T 4
  - St 110VA 4X
  - St 220VA-240VA

### REPAIR KIT

- Code P992219 Cable Gland
- (to be ordered separately)

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### TABLE

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<th>NPT CODE</th>
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### DIAGRAMS

- **Drawing Reference**: 1
- **Drawing Reference**: 2

---

### LEGEND

- **Ex m**: Normally Closed
- **Ex d**: Normally Open
**Features**

- Dedicated to CPT Market
- Explosion proof rate
- Reliable construction

**Technical Specification**

- **Body material:** Stainless Steel AISI 316
- **Armature tube:** Stainless Steel AISI 300 series
- **Plunger:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Ex d Housing:** In Aluminium die cast
- **Media:** Mineral oils, gasoline, diesel, fuel oils, air, inert gases, water, 134 a, R 404a
- **Ex m Ambient temperature:** See coils catalogue page for its compatibility
- **Ex m Fluid temperature:** -10°C +80°C with FKM seals
- **Ex d Housing Ambient temperature:** -40°C +60°C
- **Ex d Fluid temperature:** -30°C +80°C with H-NBR seals, -10°C +140°C with FKM seals
- **Design pressure PS:** 25 bar
- **Protection class:**
  - Ex m IP65 (complete with electric plug)
  - Ex d IP 65 (with hosing fitted by cable gland Atex Ex d)
- **Electrical conformity:** IEC 335

**Switching time:** 20-40 msec (depending on pressure conditions)

**For S.V. 21X2Q..**
- II 2G Ex mb IIC Gb
- II 2D Ex tb IIIC T80°C o T95°C Db
  - (Tamb: -40°C ≤ +60°C)

**For S.V. 21X2KI..**
- II 2G Ex d IIC t6 o t5 Gb
- II 2D Ex bb IIIC T80°C o T95°C Db

**Accessories**

- **Coil P/N Ex mb II T 4**
  - RTNA4X024D4
  - RTNA5X110D4
  - RTNA05224DA
  - RTNA10024C4
- **Coil P/N Ex mb II T 4**
  - RTNA4X024D4
  - RTNA5X110D4
  - RTNA05224DA
  - RTNA10024C4
- **Coil P/N Ex mb II T 4**
  - RTNA4X024D4
  - RTNA5X110D4
  - RTNA05224DA
  - RTNA10024C4

**Installation**

- The solenoid valves can be mounted in any position
- Maintenance and instruction sheet available in each solenoid valve box
- Attention: for fuse selection please refer to the "Instruction sheet Atex products" delivered together with the valve
- Holes and threaded connections for panel fixing

**Repair Kit**

- For spare parts please consult our technical department

**PIECE**

- **PIPE Ø (mm)**
  - Kg (g/m)
  - Kv (l/min)

<table>
<thead>
<tr>
<th>PRESSURE MAX. A.W.P.O. (bar)</th>
<th>GAS CODE</th>
<th>NPT CODE</th>
<th>DRAWING REFERENCE</th>
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<td>DC</td>
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**Dimensions Table**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Pipe</th>
<th>Coil Type</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>F (mm)</th>
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<tr>
<td>1-2</td>
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<td>1/2 NPT</td>
<td>40</td>
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<td>136</td>
<td>120</td>
<td>104</td>
<td>38</td>
<td>47</td>
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</table>
**TECHNICAL SPECIFICATION**

- **Body material:** Brass UNI EN 12165 CW617N
- **Armature tube:** Stainless Steel AISI 300 series
- **Plungers:** Stainless Steel AISI 400 series
- **Spring:** Stainless Steel AISI 300 series
- **Ex d Housing in Aluminium die cast**
- **Ex m Fluid temperature:** -10°C +80°C with FKM seals
  - -30°C +80°C with H-NBR seals
- **Ex d Housing Ambient temperature:** -40°C +60°C
- **Design pressure PS:** 40 bar
- **Protection class:** Ex m IP 65 (complete with electric plug); Ex d IP 65 (with hosing fitted by cable gland Atex Ex d)
- **Electrical conformity:** IEC 335
  - Switching time: 20-40 msec (depending on pressure conditions)
  - Conform to Atex Directive 94/9/CE ATEX
  - For S.V. 31A3EI:
    - II 2G Ex d IIC T6 o T5 Gb
    - II 2D Ex tb IIIC T80°C o T90°C Db IP67
      - (Tamb: -40°C ≤ +60°C)
  - For S.V. 31A3P:
    - II 2G Ex mb II T4
    - II 2D Ex tD IEC Ex m II T4
    - A21 IP65 T130°C

**FEATURES**

- Wide range of applications high flow valves for liquids, gaseous
- Reliable proven design with high flows
- Small poppet valve for tight shutoff
- Mountable in any position

**INSTALLATION**

- The solenoid valves can be mounted in any position
- Maintenance and instruction sheet available in each solenoid valve box
- Attention: for fuse selection please refer to the “Instruction sheet Atex products” delivered together with the valve
- Holes and threaded connections for panel fixing

**REPAIR KIT**

- For spare parts please consult our technical department
  - Coil P/N Ex mb II T4
    - RTNA4X024D4
    - RTNA5X110D4
    - RTNA05224DA
    - RTNA10024C4

**ACCESSORIES**

- Code P992219 Cable Gland (to be ordered separately)

---

**PIECE**

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<tr>
<th>Ø (mm)</th>
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<th>Kv (l/min)</th>
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**Drawing Reference**

- Section
- REPAIR KIT for spare parts please consult our technical department
- Coil P/N Ex mb II T4
  - RTNA4X024D4
  - RTNA5X110D4
  - RTNA05224DA
  - RTNA10024C4
- Section
- REPAIR KIT for spare parts please consult our technical department
- Code P992219 Cable Gland (to be ordered separately)

**INSTALLATION**

- The solenoid valves can be mounted in any position
- Maintenance and instruction sheet available in each solenoid valve box
- Attention: for fuse selection please refer to the “Instruction sheet Atex products” delivered together with the valve
- Holes and threaded connections for panel fixing
**FEATURES**

- Ideal for piloting
- High flow rate
- Atex approval

**TECHNICAL SPECIFICATION**

**Body material:** Stainless Steel AISI 316

**Armature tube:** Stainless Steel AISI 300 series

**Plungers:** Stainless Steel AISI 400 series

**Spring:** Stainless Steel AISI 300 series

**Spring:** Stainless Steel AISI 300 series

**Ex d Housing in Aluminium die cast**

**Media:**
- mineral oils, gasoline, diesel, fuel oils,
- air, water, inert gases, 134 a, R 404a
- Ex m Ambient temperature: See coils catalogue page for its compatibility
- Ex m Fluid temperature:
  - -10°C + 80°C with FKM seals
- Ex d Ambient temperature:
  - -40°C + 60°C
- Ex d Fluid temperature:
  - -10°C + 80°C with FKM seals
  - -30°C + 80°C H-NBR

**Design pressure PS:**
- 40 bar for Ex d
- 25 bar for Ex m

**Protection class:**
- Ex m IP 65 (complete with electric plug);
- Ex d IP 65 (with hosing fitted by cable gland Atex Ex d)

**Electrical conformity:**
- IEC 335
  - (Conforme to Atex Directive 94/9/CE ATEX)
  - For S.V. 31L..I
    - II 2G Ex d IIC T6 o T5 Gb
    - II 2D Ex tb IIIC T80°C o T90°C Db
- For S.V. 31L..P
  - II 2G Ex mb II T4
  - II 2D Ex tD
  - IEC Ex m II T4
  - A21 IP65 T130°C

**DRAWING REFERENCE**

**INSTALLATION**

- The solenoid valves can be mounted in any position
- Maintenance and instruction sheet available in each solenoid valve box
- Attention: for fuse selection please refer to the “Instruction sheet Also products” delivered together with the valve
- Fixing holes
- Holes and threaded connections for panel fixing

**ACCESSORIES**

Coil P/N Ex mb II T 4
- RTNA4X024D4
- RTNA5X110D4
- RTNA05224DA
- RTNA10024C4

**REPAIR KIT**

For spare parts please consult our technical department

**PIECE**

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<th>PIPE Ø (mm)</th>
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<th>GAS CODE</th>
<th>NPT CODE</th>
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<td>10</td>
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**DIMENSIONS Table**

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<tr>
<th>Figure</th>
<th>Coil Type</th>
<th>Ø mm</th>
<th>E mm</th>
<th>F mm</th>
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<tbody>
<tr>
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**Section**

REPAIR KIT

For spare parts please consult our technical department

Coil P/N Ex mb II T 4
- RTNA4X024D4
- RTNA5X110D4
- RTNA05224DA
- RTNA10024C4

**INSTALLATION**

- The solenoid valves can be mounted in any position
- Maintenance and instruction sheet available in each solenoid valve box
- Attention: for fuse selection please refer to the “Instruction sheet Also products” delivered together with the valve
- Fixing holes
- Holes and threaded connections for panel fixing
High Pressure

**Solenoid Valve 2/2 Way Direct Acting**

**Technical Specification**

- **Plungers**: Stainless Steel AISI 303 series.
- **Spring**: Stainless Steel AISI 303 series.
- **Flux**: Normally Open (for 21A1K0R30-TXC, 21A2K0T12-XC, 21AN2K0T12-XC, 21A1ZT11D-GB), Normally Closed (for 21A1ZT11D-GB).
- **Armature tube**: Stainless Steel AISI 303 series.

**Pressure with Mono Frequency Coil**

- **Max. allowed drop at 1 bar**
- **For dampness-proof cup see catalogue page**

**Note**

- Pressure with mono frequency coil.
- Dampness-proof cup see catalogue page.
- Maximum allowed drop is 1 bar.

**Related Items**

- **Repair kit** and coils available as spares.
- Maintenance and instruction sheet available in each solenoid valve box.
- The solenoid valves can be mounted in any position.

**Switching time**

- 20-40 msec (depending on pressure conditions).

**Electrical conformity**

- IEC 335

**Ambient temperature**

- See coils catalogue page for its compatibility.

**Fluid temperature**

- -10°C to 30°C with RUBY, PTFE seals.
- -10°C to 50°C with PBT seals (for 4966Z0Q120D).
- -20°C to 95°C with PTFE seals (for 4966K0Q120).
- -40°C to 98°C with PTFE seals (for 4731K0T70).
- -40°C to 98°C with PTFE seals (for 21A1K0R30-TXC).

**Protection class**

- IP65 (complete with electric plug).
- IP67 (for 21A2ZT11D-GB).

**Fluid**

- Water, steam, mineral oils, gas oil, fuel oils.
- Air, inert gases (for 21A1K0R30-TXC).
- Air, water (for 21A2K0T12-XC, 21AN2K0T12-XC, 21A1ZT11D-GB).

**Media**

- Water, steam, mineral oils, gas oil, fuel oils.
- Air, inert gases (for 4731K0T70, 4966K0Q120).
- Air, water (for 21A2K0T12-XC, 21AN2K0T12-XC).

**Electrical characteristics**

- Normally Open coil type (8W)
- Normally Closed coil type (8W)

**PCI**

- Normally Open: 20-40 mSec (depending on pressure conditions).
- Normally Closed: 20-40 mSec (depending on pressure conditions).

**Ambient temperature**

- See coils catalogue page for its compatibility.

**Switching time**

- 20-40 msec (depending on pressure conditions).

**Electrical conformity**

- IEC 335

**Ambient temperature**

- See coils catalogue page for its compatibility.

**Fluid temperature**

- -10°C to 30°C with RUBY, PTFE seals.
- -10°C to 50°C with PBT seals (for 4966Z0Q120D).
- -20°C to 95°C with PTFE seals (for 4966K0Q120).
- -40°C to 98°C with PTFE seals (for 21A1K0R30-TXC).

**Protection class**

- IP65 (complete with electric plug).
- IP67 (for 21A2ZT11D-GB).

**Fluid**

- Water, steam, mineral oils, gas oil, fuel oils.
- Air, inert gases (for 21A1K0R30-TXC).
- Air, water (for 21A2K0T12-XC, 21AN2K0T12-XC, 21A1ZT11D-GB).

**Media**

- Water, steam, mineral oils, gas oil, fuel oils.
- Air, inert gases (for 4731K0T70, 4966K0Q120).
- Air, water (for 21A2K0T12-XC, 21AN2K0T12-XC).

**Electrical conformity**

- IEC 335

**Ambient temperature**

- See coils catalogue page for its compatibility.

**Fluid temperature**

- -10°C to 30°C with RUBY, PTFE seals.
- -10°C to 50°C with PBT seals (for 4966Z0Q120D).
- -20°C to 95°C with PTFE seals (for 4966K0Q120).
- -40°C to 98°C with PTFE seals (for 21A1K0R30-TXC).

**Protection class**

- IP65 (complete with electric plug).
- IP67 (for 21A2ZT11D-GB).

**Fluid**

- Water, steam, mineral oils, gas oil, fuel oils.
- Air, inert gases (for 21A1K0R30-TXC). Note: pressure with mono frequency coil.
- Dampness-proof cup see catalogue page.
- Maximum allowed drop is 1 bar.
FEATURES

- Angle seat for high flow rate configuration
- Long life cycles
- N.C. and N.O. convertible after the delivery
- Flow below and above the piston
- Service free solution
- Air water hammer

TECHNICAL SPECIFICATION

VALVE FEATURES
Fluid Temperature: -10°C +180°C
Environment temperature: -10°C +60°C
Material: Stainless Steel AISI 316 series
Seal: PTFE
Packing gland: PTFE, FKM

PILOT ACTUATOR FEATURES
Media: Dry Air or lubricated, gas and neutral fluids
Fluid Temperature: max +60°C
Body: Polyamide 66 with 30% glass fibre
NBR Gaskets
Actuator Ø 70
Self adjusting Teflon seat

PILOT VALVE 31A2AV20+BDA (see 31A catalogue page)
Together with male thread nipple male 1/4”-1/4”
Position indicator
Water piloting system

AVAILABLE ON REQUEST

POSITION INDICATOR

INSTALLATION

The solenoid valves can be mounted in any position
Maintenance and instruction sheet available in each solenoid valve box

PIECE OPINION Directives 97/23/CE for valve 21IA7 ÷ 21IA9

21IA N.O.
Valve 2/2 Way - Flow Direction Below The Seat - Angle Seat Pilot Valve Pneumatically Actuated

PIECE OPINION

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<tr>
<th>PIPE Ø (mm)</th>
<th>KV l/min</th>
<th>ACTUATOR PILOT PRESSURE (bar)</th>
<th>DIFFERENTIAL PRESSURE (bar)</th>
<th>MAX ALLOWABLE PRESSURE GAS CODE</th>
<th>NPT CODE</th>
<th>WEIGHT (kg)</th>
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PIECE OPINION

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PIECE OPINION

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PIECE OPINION
1. FEATURES
- Angle seat for high flow rate configuration
- Long life cycles
- N.C. and N.O. convertible after the delivery
- Flow below and above the piston
- Service free solution
- Water hammer

2. TECHNICAL SPECIFICATION

2.1. VALVE FEATURES
- Fluid Temperature: -10°C +180°C
- Environment temperature: -10°C +60°C
- Material: Stainless Steel AISI 316 series
- Seal: PTFE
- Packing gland: PTFE, FKM

2.2. PILOT ACTUATOR FEATURES
- Media: Dry Air or lubricated, gas and neutral fluids
- Fluid Temperature: max +60°C
- Body: Polyamide 66 with 30% glass fibre
- NBR Gaskets
- Actuator Ø 70
- Self adjusting Teflon seat

3. AVAILABLE ON REQUEST
- Pilot Valve 31A2AV20+BDA (see 31A catalogue page)
- Together with male thread nipple male 1/4"-1/4"
- Position indicator
- Double Effect
- Water piloting system

4. INSTALLATION
- The solenoid valves can be mounted in any position
- Maintenance and instruction sheet available in each solenoid valve box

5. AVAILABLE ON REQUEST
- Pilot Valve 31A2AV20+BDA (see 31A catalogue page)
- Together with male thread nipple male 1/4"-1/4"
- Position indicator
- Double Effect
- Water piloting system
FEATURES

- Angle seat for high flow rate configuration
- Long life cycles
- Flow below and above the piston
- Sensor free solution
- Water hammer

VALVE FEATURES

Fluid Temperature: -10°C +180°C
Environment Temperature: -10°C +60°C
Material: Stainless Steel AISI 316 series
Seal: PTFE
Packing gland: PTFE, FKM

PILOT ACTUATOR FEATURES

Media: Dry Air or lubricated, gas and neutral fluids
Fluid Temperature: max +60°C
Body: Aisi 316
NBR Gaskets
Actuator Ø 50
Self adjusting teflon seat

Available on Request

PILOT Valve 31A3AV20+BDA (see 31A catalogue page)
Together with male thread nipple male 1/4"-1/4"
Position indicator
Water piloting system

INSTALLATION

The solenoid valves can be mounted in any position
Maintenance and instruction sheet available in each solenoid valve box

Drawing Reference

Dimensional Table

<table>
<thead>
<tr>
<th>Pipe</th>
<th>Ø (mm)</th>
<th>Kspring (l/min)</th>
<th>Actuator Pilot Pressure (bar)</th>
<th>Differential Pressure (bar)</th>
<th>Max Allowable Pressure (bar)</th>
<th>Gas Code</th>
<th>Weight</th>
<th>Drawing Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 1/2</td>
<td>15</td>
<td>80</td>
<td>S</td>
<td>8</td>
<td>0</td>
<td>25</td>
<td>40</td>
<td>21IA4T15G1-5</td>
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<tr>
<td>G 3/4</td>
<td>20</td>
<td>150</td>
<td>S</td>
<td>8</td>
<td>0</td>
<td>15</td>
<td>40</td>
<td>21IA5T20G1-5</td>
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<tr>
<td>G 1</td>
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<td>190</td>
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<td>8</td>
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<td>40</td>
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</table>

Model valve

4 = G 1/2
5 = G 3/4
6 = G 1
FEATURES
The condensate removal timer is a plug-on controller specially designed for drain valves. The unit offers an easy time cycle programming. The drainage time can be set with the “ON” trimmer between 0.5 and 10 seconds. The “OFF” trimmer allows to adjust the delay time between two draining cycles from 0.5 to 45 minutes. The unit is ready to control the valve as soon as the power is switched on. The ON/OFF sequence will be repeated so long as the unit is led. Two LEDS indicate the output status. A “TEST” button is provided to check the cycle settings and to restart the control sequence from the output status “ON”.

USE
› Condensate drainage system
› Timed systems

TECHNICAL SPECIFICATION
› Supply voltage: 24 to 240V AC/DC±10% 50/60Hz
› Output voltage: same as supply voltage
› Load current: max. 1A
› Standby current: 8mA max
› Operating temp. range: -40°C to +60°C
› Connector: EN 175301-803 / ISO 4400
› Environmental protection: IP65 (assembled with delivered gaskets)
› Housing dimensions: 69 x 43 x 21mm
› On time: 0.5 to 10 seconds
› Off time: 0.5 to 45 minutes
› Scale accuracy: ±10%
› Indicators: Green LED – On phase; Red LED – Off phase.

MATERIALS
› Shell: ABS/PA 765
› Gasket: NBR (nitrile)
› Description:
1. Push-button TEST
2. Green LED not supplied output power present (ON)
3. Red LED load supplied: output power absent (OFF)
4. Trimmer “ON”: regulation time “ON”
5. Trimmer “OFF”: pause time regulation “OFF”

AVAILABLE ON REQUEST
› Connectors for SV (to be order separately)
› Pg 9 (6÷8mm) or Pg 11(8÷10mm)
› In the near future available also with UL approval.
› In accordance with RoHS.

FEATURES
Cable glands for unarmoured cable, outer seal. The sealing ring seals and blocks cable on the outer sheath. Ambient temperature: Seal E =EPDM - 40°C + 100°C S=VMQ - 70°C + 220°C Protection degree: IP 66/68

For indoor and outdoor applications
Group II, category 2D, Zone 21, 22 presence of combustible dust zone
Group I, category 2D, Zone 1, 2 presence of explosive gas atmospheres
(Conforme to Atex Directive 94/9/CE ATEX)
I M2 / I I 2 GD IIC
Connector for electronic connections

**P990305 - P992257**

<table>
<thead>
<tr>
<th>Code</th>
<th>Compatible coils</th>
<th>Standard</th>
<th>Number of contacts</th>
<th>Supply voltage</th>
<th>Operating current</th>
<th>Max current</th>
<th>Contact resistance</th>
<th>Max conductor section</th>
<th>Housing</th>
<th>Cable entry</th>
<th>Cable diameter</th>
<th>Protection class</th>
<th>Insulation class</th>
<th>Sealing</th>
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<tbody>
<tr>
<td>P990305 ÷ P990306</td>
<td>BD.. - GB.. - UD..</td>
<td>EN 175301-803</td>
<td>2</td>
<td>AC max 250V</td>
<td>10 A</td>
<td>16 A</td>
<td>≤4 mOhm</td>
<td>1,5 mm²</td>
<td>PA (Polyamide)</td>
<td>Pg 09</td>
<td>6÷8 mm</td>
<td>IP 65 EN 60529</td>
<td>VDE 0110-1/89</td>
<td>NBR -40°C +90°C</td>
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<tr>
<td>P990307</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>P990322 ÷ P990525</td>
<td>BD.. - GB.. - HD.. - UD..</td>
<td>EN 175301-803</td>
<td>2</td>
<td>AC max 250V</td>
<td>5 A</td>
<td></td>
<td>≤4 mOhm</td>
<td>1,5 mm²</td>
<td>PP (Polypropylene)</td>
<td>Pg 50</td>
<td>6÷10 mm</td>
<td>IP 65 EN 60529</td>
<td>VDE 0110-1/89</td>
<td>NBR -40°C +90°C</td>
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**Figure Cable Lenght (L) in cm**

<table>
<thead>
<tr>
<th>Code</th>
<th>Cable Length (L)</th>
<th>L in cm</th>
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<tbody>
<tr>
<td>P990322</td>
<td>50</td>
<td>5</td>
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<td>P990481</td>
<td>65</td>
<td>5</td>
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<td>P990407</td>
<td>75</td>
<td>5</td>
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<tr>
<td>P990415</td>
<td>105</td>
<td>10</td>
</tr>
<tr>
<td>P990420</td>
<td>110</td>
<td>7,5</td>
</tr>
<tr>
<td>P990430</td>
<td>150</td>
<td>5</td>
</tr>
<tr>
<td>P990468</td>
<td>210</td>
<td>5</td>
</tr>
<tr>
<td>P990463</td>
<td>250</td>
<td>5</td>
</tr>
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</table>
Latching coils
BDA
Coil housing material: Black polyamide - class F (155°C)
Electrical connections: With connector EN 175301-803 paragraph 5.3.1
Protection degree IP 65 EN 60529 (DIN 40050)

Nominal voltages tolerances: DC +10% -5%; AC +10% -15%

Technical operating data:
- Impulse feed from 4.5 to 24 Volts for a period lasting from 20 to 100 ms (see fig. 3a).

Note:
To ensure correct operation the fluid should be filtered to eliminate all traces of impurity subject to magnetic attraction, which would inevitably deposit on the cores of the solenoid valve, which are always magnetized, causing the formation of oxide as well as contact problem.

BDA
Coil housing material: PA - Black polyamide - class F (155°C)
Electrical connections: With connector EN 175301-803 paragraph 5.3.1
Protection degree IP 65 EN 60529 (DIN 40050)

Nominal voltages tolerances: DC +10% -5%; AC +10% -15%

Technical operating data:
- Impulse feed from 4.5 to 24 Volts for a period lasting from 20 to 100 ms (see fig. 3a).

Other voltages and power absorptions available on demand and for quantities.
**BDV Coil housing material:** PET - Black polyethylene - class H (180°C)
**Winding:** In class H
**Electrical connections:** With connector EN 175301-803 paragraph 5.3.1
**Protection degree:** IP 65 EN 60529 (DIN 40050)

**Nominal voltages tolerances:**
- DC: +10% - 5%
- AC: +10% - 15%

(According to Directive 94/9/CE ATEX)

**II 3G Ex nA IIC T3 Gc**

**II 3D Ex tc IHC T200°C Dc**

**IP65**

**Note**
- The coil to comply Atex protection category mentioned above will be supplied only with connector ATEX type Ex II 3GD IP65.

**ODE code has to be ordered separately:** 992221

**Available on request and with minimum quantities.**

### AC Coils

<table>
<thead>
<tr>
<th>CODE</th>
<th>Power [VA]</th>
<th>Voltage [V]</th>
<th>Frequency [Hz]</th>
<th>ED [%]</th>
<th>Ambient Temperature</th>
<th>Approvals</th>
<th>Drawing Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDV08024D3</td>
<td>14.5</td>
<td>24 –</td>
<td>50/60</td>
<td>100</td>
<td>-20°C – +80°C</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>BDV08110A3</td>
<td>14.5</td>
<td>110 – 1200</td>
<td>50 60</td>
<td>100</td>
<td>-20°C – +80°C</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>BDV08210A4</td>
<td>14.5</td>
<td>220 – 250</td>
<td>50 60</td>
<td>100</td>
<td>-20°C – +80°C</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

### DC Coils

<table>
<thead>
<tr>
<th>CODE</th>
<th>Power [W]</th>
<th>Voltage [V]</th>
<th>ED [%]</th>
<th>Ambient Temperature</th>
<th>Approvals</th>
<th>Drawing Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDV08024C3</td>
<td>8</td>
<td>24 –</td>
<td>100</td>
<td>-20°C – +60°C</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

### Code

**GDH Coil housing material:** EP - Black epoxy resin - class H (180°C)
**Winding:** In class H
**Electrical connections:** With connector EN 175301-803 paragraph 5.3.1
**Protection degree:** IP 65 EN 60529 (DIN 40050)

**Nominal voltages tolerances:**
- DC: +10% - 5%
- AC: +10% - 15%

**Note**
- The coil to comply Atex protection category mentioned above will be supplied only with connector ATEX type Ex II 3GD IP65.

**ODE code has to be ordered separately:** 992221

**Available on request and with minimum quantities.**

### AC Coils

<table>
<thead>
<tr>
<th>CODE</th>
<th>Power [VA]</th>
<th>Voltage [V]</th>
<th>Frequency [Hz]</th>
<th>ED [%]</th>
<th>Ambient Temperature</th>
<th>Approvals</th>
<th>Drawing Reference</th>
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<tbody>
<tr>
<td>GDH14024DS</td>
<td>27</td>
<td>24 –</td>
<td>50/60</td>
<td>100</td>
<td>-20°C – +40°C</td>
<td>CE</td>
<td>1</td>
</tr>
<tr>
<td>GDH14110DS</td>
<td>27</td>
<td>110 – 1200</td>
<td>50 60</td>
<td>100</td>
<td>-20°C – +40°C</td>
<td>CE</td>
<td>1</td>
</tr>
<tr>
<td>GDH14223DS</td>
<td>27</td>
<td>220 – 230</td>
<td>50 60</td>
<td>100</td>
<td>-20°C – +40°C</td>
<td>CE</td>
<td>1</td>
</tr>
<tr>
<td>GDH14024DY</td>
<td>26</td>
<td>24 –</td>
<td>50/60</td>
<td>100</td>
<td>-20°C – +60°C</td>
<td>CE - UL - CSA - VDE</td>
<td>1</td>
</tr>
<tr>
<td>GDH14110AY</td>
<td>23</td>
<td>110 – 1200</td>
<td>50 60</td>
<td>100</td>
<td>-20°C – +60°C</td>
<td>CE - UL - CSA - VDE</td>
<td>1</td>
</tr>
<tr>
<td>GDH14230AY</td>
<td>27</td>
<td>220 – 240</td>
<td>50 60</td>
<td>100</td>
<td>-20°C – +60°C</td>
<td>CE - UL - CSA - VDE</td>
<td>1</td>
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</tbody>
</table>

### DC Coils

<table>
<thead>
<tr>
<th>CODE</th>
<th>Power [W]</th>
<th>Voltage [V]</th>
<th>ED [%]</th>
<th>Ambient Temperature</th>
<th>Approvals</th>
<th>Drawing Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDH14024CS</td>
<td>14</td>
<td>24 –</td>
<td>100</td>
<td>-20°C – +40°C</td>
<td>CE</td>
<td>1</td>
</tr>
<tr>
<td>GDH14024CY</td>
<td>14</td>
<td>24 –</td>
<td>100</td>
<td>-20°C – +60°C</td>
<td>CE - UL - CSA - VDE</td>
<td>1</td>
</tr>
</tbody>
</table>

### Code

**GDV Coil housing material:** PET - Black Polyethylene - class H (180°C)
**Winding:** In class H
**Electrical connections:** With connector EN 175301-803 paragraph 5.3.1
**Protection degree:** IP 65 EN 60529 (DIN 40050)

**Nominal voltages tolerances:**
- DC: +10% - 5%
- AC: +10% - 15%

**Note**
- The coil to comply Atex protection category mentioned above will be supplied only with connector ATEX type Ex II 3GD IP65.

**ODE code has to be ordered separately:** 992221

**Available on request and with minimum quantities.**
GOV Coil housing material: PET - Black polyamide - class H (180°C)
Winding: In class H
Electrical connections: With connector EN 175301-803 paragraph 5.3.1
Protection degree: IP65 EN 60529 (DIN 40050)

LBF Coil housing material: PPS - Black polyphenylensulphide - class H (180°C)
Winding: In class H
Electrical connections: With connector EN 175301-803 paragraph 5.3.1
Protection degree: IP65 EN 60529 (DIN 40050)

LBV Coil housing material: PET - Black Polyethylene - class H (180°C)
Winding: In class H
Electrical connections: With connector EN 175301-803 paragraph 5.3.1
Protection degree: IP65 EN 60529 (DIN 40050)

NOMINAL VOLTAGES TOLERANCES: DC +10% -5%; AC +10% -15%

GDV14024C3 - GDV14230A3

GDV Coils

<table>
<thead>
<tr>
<th>CODE</th>
<th>POWER [VA]</th>
<th>VOLTAGE [V]</th>
<th>FREQUENCY [Hz]</th>
<th>ED [%]</th>
<th>AMBIENT TEMPERATURE</th>
<th>APPROVALS</th>
<th>DRAWING REFERENCE</th>
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<tbody>
<tr>
<td>GDV14024D3</td>
<td>27</td>
<td>43</td>
<td>24 -</td>
<td>50/60</td>
<td>100</td>
<td>-20°C +80°C</td>
<td>-</td>
</tr>
<tr>
<td>GDV14110A3</td>
<td>27</td>
<td>43</td>
<td>110 - 120</td>
<td>50</td>
<td>60</td>
<td>100</td>
<td>-20°C +80°C</td>
</tr>
<tr>
<td>GDV14230A3</td>
<td>27</td>
<td>43</td>
<td>230 - 240</td>
<td>50</td>
<td>60</td>
<td>100</td>
<td>-20°C +80°C</td>
</tr>
</tbody>
</table>

LBA-LBF-LBV

LBA Coil housing material: PA - Black polyamide - class F (155°C)
Winding: In class H
Electrical connections: With connector EN 175301-803 paragraph 5.3.1
Protection degree: IP65 EN 60529 (DIN 40050)

LBF Coil housing material: PPS - Black polyphenylensulphide - class H (180°C)
Winding: In class H
Electrical connections: With connector EN 175301-803 paragraph 5.3.1
Protection degree: IP65 EN 60529 (DIN 40050)

LBV Coil housing material: PET - Black Polyethylene - class H (180°C)
Winding: In class H
Electrical connections: With connector EN 175301-803 paragraph 5.3.1
Protection degree: IP65 EN 60529 (DIN 40050)

NOMINAL VOLTAGES TOLERANCES: DC +10% -5%; AC +10% -15%

GDV14024D3 - GDV14230A3

GDV Coils

<table>
<thead>
<tr>
<th>CODE</th>
<th>POWER [VA]</th>
<th>VOLTAGE [V]</th>
<th>FREQUENCY [Hz]</th>
<th>ED [%]</th>
<th>AMBIENT TEMPERATURE</th>
<th>APPROVALS</th>
<th>DRAWING REFERENCE</th>
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<tr>
<td>LBA05024AS</td>
<td>10</td>
<td>15</td>
<td>24</td>
<td>50</td>
<td>100</td>
<td>-10°C +40°C</td>
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<tr>
<td>LBA05230AS</td>
<td>10</td>
<td>15</td>
<td>230 -</td>
<td>50</td>
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<td>-10°C +40°C</td>
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<td>LBVF05224BU</td>
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<td>15</td>
<td>24</td>
<td>60</td>
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<td>LBVF05024WY</td>
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<td>15</td>
<td>24</td>
<td>50</td>
<td>100</td>
<td>-25°C +40°C</td>
<td>CE - VDE</td>
</tr>
<tr>
<td>LBVF05024BY</td>
<td>11.5</td>
<td>15</td>
<td>24</td>
<td>60</td>
<td>100</td>
<td>-25°C +40°C</td>
<td>CE - UL - CSA - VDE</td>
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<td>100 - 120</td>
<td>50</td>
<td>60</td>
<td>100</td>
<td>-20°C +40°C</td>
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<tr>
<td>LBVF05110BU</td>
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<td>15</td>
<td>110 -</td>
<td>60</td>
<td>100</td>
<td>-20°C +40°C</td>
<td>CE - UL</td>
</tr>
<tr>
<td>LBVF05220BU</td>
<td>13.5</td>
<td>15</td>
<td>220 -</td>
<td>60</td>
<td>100</td>
<td>-20°C +40°C</td>
<td>CE - UL</td>
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<tr>
<td>LBVF05220BU</td>
<td>13.5</td>
<td>15</td>
<td>230 - 240</td>
<td>50</td>
<td>60</td>
<td>100</td>
<td>-20°C +40°C</td>
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DC Coils

<table>
<thead>
<tr>
<th>CODE</th>
<th>POWER [W]</th>
<th>VOLTAGE [V]</th>
<th>ED [%]</th>
<th>AMBIENT TEMPERATURE</th>
<th>APPROVALS</th>
<th>DRAWING REFERENCE</th>
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<tbody>
<tr>
<td>GDV14024C3</td>
<td>1.6</td>
<td>24</td>
<td>100</td>
<td>-20°C +80°C</td>
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GDV Coils

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<thead>
<tr>
<th>CODE</th>
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<th>VOLTAGE [V]</th>
<th>FREQUENCY [Hz]</th>
<th>ED [%]</th>
<th>AMBIENT TEMPERATURE</th>
<th>APPROVALS</th>
<th>DRAWING REFERENCE</th>
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<tbody>
<tr>
<td>GDA050024CS</td>
<td>5</td>
<td>24</td>
<td>100</td>
<td>-</td>
<td>-10°C +40°C</td>
<td>CE</td>
<td>-</td>
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<tr>
<td>LDVF08024CY</td>
<td>7</td>
<td>24</td>
<td>100</td>
<td>-</td>
<td>-20°C +40°C</td>
<td>CE - UL - CSA - VDE</td>
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<tr>
<td>LDVF08024HU</td>
<td>10</td>
<td>24</td>
<td>50 (1)</td>
<td>-</td>
<td>-20°C +40°C</td>
<td>CE - UL</td>
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LBA-Coils 22 mm x Ø 10 mm

LBA Coils

<table>
<thead>
<tr>
<th>CODE</th>
<th>POWER [V]</th>
<th>VOLTAGE [V]</th>
<th>ED [%]</th>
<th>AMBIENT TEMPERATURE</th>
<th>APPROVALS</th>
<th>DRAWING REFERENCE</th>
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<tr>
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<td>15</td>
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<td>-10°C +40°C</td>
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<td>15</td>
<td>230</td>
<td>50</td>
<td>100</td>
<td>-10°C +40°C</td>
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<tr>
<td>LBVF05224BU</td>
<td>10</td>
<td>15</td>
<td>24</td>
<td>60</td>
<td>100</td>
<td>-10°C +40°C</td>
</tr>
<tr>
<td>LBVF05024WY</td>
<td>11.5</td>
<td>15</td>
<td>24</td>
<td>50</td>
<td>100</td>
<td>-25°C +40°C</td>
</tr>
<tr>
<td>LBVF05024BY</td>
<td>11.5</td>
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<tr>
<td>LBVF05110BU</td>
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<td>110</td>
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<td>-20°C +40°C</td>
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<tr>
<td>LBVF05220BU</td>
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<td>220</td>
<td>60</td>
<td>100</td>
<td>-20°C +40°C</td>
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<td>15</td>
<td>230</td>
<td>50</td>
<td>60</td>
<td>-20°C +40°C</td>
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DC Coils

<table>
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<tr>
<th>CODE</th>
<th>POWER [W]</th>
<th>VOLTAGE [V]</th>
<th>ED [%]</th>
<th>AMBIENT TEMPERATURE</th>
<th>APPROVALS</th>
<th>DRAWING REFERENCE</th>
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<tr>
<td>LBA050024CS</td>
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<td>LDVF08024CY</td>
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</table>

Drawing Reference

Note
The coil to comply Atex protection category mentioned above will be supplied only with connector ATEX type Ex II 3GD IP65.

ODE code has to be ordered separately: 992221
Available on request and with minimum quantities.
ERICA 22 mm x Ø 13 mm for potentially explosive construction Ex nA

**LBV**
- Coil housing material: PET - Black polyethylene - class H (180°C)
- Winding: In class H
- Electrical connections: With connector EN 175301-803 paragraph 5.3.1
- Protection degree IP 65 EN 60529 (DIN 40050)
- **Nominal voltages tolerances:** DC +10% -5%; AC +10% -15%

**UDA**
- Coil housing material: PA - Black polyamide - class F (155°C)
- Winding: In class H
- Electrical connections: With connector EN 175301-803 paragraph 5.3.1
- Protection degree IP 65 EN 60529 (DIN 40050)
- **Nominal voltages tolerances:** DC +10% -5%; AC +10% -15%

---

### DC Coils

<table>
<thead>
<tr>
<th>CODE</th>
<th>POWER [W]</th>
<th>VOLTAGE [V]</th>
<th>ED [%]</th>
<th>AMBIENT TEMPERATURE</th>
<th>APPROVALS</th>
<th>DRAWING REFERENCE</th>
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<tbody>
<tr>
<td>LBV05024A3</td>
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<td>LBV05204B3</td>
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<td>LBV05110A3</td>
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<td>LBV05230A3</td>
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### AC Coils

<table>
<thead>
<tr>
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<th>VOLTAGE [V]</th>
<th>FREQUENCY [Hz]</th>
<th>ED [%]</th>
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<th>APPROVALS</th>
<th>DRAWING REFERENCE</th>
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</thead>
<tbody>
<tr>
<td>LBV12244A3</td>
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<td>100</td>
<td>-20°C +40°C</td>
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<td>1</td>
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<tr>
<td>LBV12110DS</td>
<td>25</td>
<td>110 +</td>
<td>50/60</td>
<td>100</td>
<td>-20°C +40°C</td>
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<td>1</td>
</tr>
<tr>
<td>LBV12220A3</td>
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<td>100</td>
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<td>1</td>
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<td>LBV12120DS</td>
<td>25</td>
<td>120 +</td>
<td>50/60</td>
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### DC Coils

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<tr>
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<th>POWER [W]</th>
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<th>AMBIENT TEMPERATURE</th>
<th>APPROVALS</th>
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### AC Coils

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<th>VOLTAGE [V]</th>
<th>FREQUENCY [Hz]</th>
<th>ED [%]</th>
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<tr>
<td>UDA12110DS</td>
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<td>110 +</td>
<td>50/60</td>
<td>100</td>
<td>-20°C +40°C</td>
<td>CE</td>
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<td>UDA12230AS</td>
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<tr>
<td>UDA12120DW</td>
<td>25</td>
<td>230 +</td>
<td>50/60</td>
<td>100</td>
<td>-20°C +40°C</td>
<td>CE - UL - CSA</td>
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### DC Coils

<table>
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<tr>
<th>CODE</th>
<th>POWER [W]</th>
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</table>

---

**Note**
- The coil to comply ATEX protection category mentioned above will be supplied only with connector ATEX type Ex II 3GD IP65.
- ODE code has to be ordered separately: 992257
- Available ex-stock and with minimum quantities.

**Drawing Reference**

---

**Other voltages and power absorptions available on demand and for quantities.**
### Electromagnet 36 mm x Ø 14,5 mm for potentially explosive construction Ex mb II T4

The coils must be protected with an external fuse that has characteristics as per table.

**Ambient Temperature:** -20°C to +50°C

**Fluid Max Temperature:** +80°C

---

**Drawing Reference**

TNA4X024D4 ÷ TNA10024C4

**TNA Coil Housing Material:** PPS - Black polyphenylensulphide - class H (180°C)

**Winding:** In class H

**Electrical connections:** Three-core cable Ø 1.5 mm length cm 300 PIR 03 ATEX 2086 X

**Protection degree:** IP 65 EN 60529 (DIN 40050)

**Nominal Voltages Tolerances:** ±10%

(According to Directive 94/9/EC ATEX)

II 2G Ex mb IIC Gb

II 2D Ex mb IIIC t130°C Db

---

<table>
<thead>
<tr>
<th>CODE</th>
<th>POWER [VA]</th>
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<th>FREQUENCY [Hz]</th>
<th>RATE CURRENT [mA]</th>
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<td>TNA4X024D4</td>
<td>7.2</td>
<td>24 ~</td>
<td>50/60</td>
<td>315</td>
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<tr>
<td>TNA5X110D4</td>
<td>8.13</td>
<td>100 ~</td>
<td>50/60</td>
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<tr>
<td>TNA6X224D4</td>
<td>7.7 ~ 9.24</td>
<td>220-240 ~</td>
<td>50/60</td>
<td>35-30</td>
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<tr>
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<th>VOLTAGE [V]</th>
<th>RATE CURRENT [mA]</th>
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<tr>
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<th>TYPE</th>
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<td>CURRENT</td>
<td>AC</td>
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<tr>
<td>AMBIENT TEMPERATURE</td>
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<td>MANIFOLD ASSEMBLY</td>
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<td>MAX MEDIA TEMPERATURE</td>
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<td>MANIFOLD ASSEMBLY MIN. DISTANCE</td>
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<td>155</td>
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<tr>
<td>165</td>
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<td>TNA6X224D4</td>
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</table>

1) Current dimension

2) Each solenoid operator has to be protected by a fuse according to the rated current (max. 3x rated current accord. DIN 41571 or IEC 60127-2-1) resp. Motor protection switch short circuit and fast thermal tripping protection. The fuse can be accommodated in the associated device or must be added separately.

The fuse voltage has to be equal or higher than the rated solenoid voltage. The shutdown capability has to be equal or higher than the max. assumed short-circuit current at the installation point (usually 1000A).

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### Solenoid Codes

**AC Coils**

- **TNA**: Power [VA], Voltage [V], Frequency [Hz], Rate Current [mA], Drawing Reference

- **TNA4X024D4**: 7.2 [VA], 24 [V], 50/60 [Hz], 315 [mA], 1 [Drawing Reference]

- **TNA5X110D4**: 8.13 [VA], 100 [V], 50/60 [Hz], 83 [mA], 1 [Drawing Reference]

- **TNA6X224D4**: 7.7 ~ 9.24 [VA], 220-240 [V], 50/60 [Hz], 35-30 [mA], 1 [Drawing Reference]

**DC Coils**

- **TNA10024C4**: 10.1 [W], 24 [V], 421 [mA], 1 [Drawing Reference]

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**Other voltages and power absorptions available on demand and for quantities.**
APPICATION
- Coffee Machines
- Floor Cleaning Machines
- Steam Ironing Stations

SPECIFICATION
- Outlet: G 1/8
- Pressure: 15 Bar
- Fluids: Tap Water/Distilled Water
- Max Ambient Temperature: 35°C
- Max Fluid Temperature: 35°C
- Dead Head Pressure: See Performance Chart
- Free Flow Rate: See Performance Chart
- Power Consumption (max.): 53W
- Operating Voltage: 100Vac 50Hz/60Hz (JET)
  120Vac 60Hz (UL)
  230Vac/50Hz (VDE)
- Working cycle: 1.0 min ON, 1 min OFF
- Not require External Type Diode
- Coil Insulation: Class F (155°C)
  Class H (180°C)
- Terminals: 6.3mm x 0.8mm Faston type
- Endurance: 18,000 cycles (at 8-10 bar)
  (based on 1 min ON, 1 min OFF)
- Coil Encapsulation: 750°C, 60W

MATERIALS
- Plunger: Stainless Steel
- Spring: Stainless Steel
- No return valve: Synthetic Rubber
- Seal: NBR or equivalent
- Plastic parts: PA66 Based Plastics

CERTIFIED BY
- CE
- NSF
- UL 778
- VDE (IEC 60335-1, 60335-2-41)

Proven sealing system for reliable and long life application

Ordering part number:
- P992124-AP (230V 50Hz)
- P992182-AP (120V 60Hz)
The NSF product approval is available on website for food grade fluids compatibility. The ODE range includes solenoid valves approved NSF, which indicates that the product complies with all standard requirements for food safety. NSF certification mark on a product means that the product complies with all standard requirements for food safety. The ODE range includes solenoid valves approved NSF, which guarantees the product's compliance with the European Directives and national standards.

ISO 9001:2008 Quality Management System Certification
ISO 9001 identifies a series of terms and guidelines developed by ISO to provide a system of continuous quality control, aimed at improving effectiveness and efficiency of the organization with the goal of customer satisfaction. Bureau Veritas certified that the ODE Management System has been audited and found to be in accordance with the requirements of the management system standards of ISO 9001. The ISO 9001:2008 certification is available on website.

ISO 14001:2004 Environment Management System Certification
ISO 14001 provides practical tools for companies and organizations looking to identify and control their environmental impact and constantly improve their environmental performance. Bureau Veritas certified that the ODE Management System has been audited and found to be in accordance with the requirements of the management system standards of ISO 14001. The ISO 14001:2004 certification is available on website.

OHSAS 18001:2007 Health and Safety Management System Certification
OHSAS 18001 is an international standard that ensures organizations to define their occupational health and safety policies and objectives. It enables better control of hazards from normal operations and unusual situations. Bureau Veritas certified that the ODE Management System has been audited and found to be in accordance with the requirements of the management system standards of OHSAS 18001. The OHSAS 18001:2007 is available on website.

VDE Approval
The Verein Deutscher Elektrotechniker is the Association for Electrical, Electronic and Information Technologies and their related sciences, technologies and applications. The ODE solenoid valve range includes coils VDE certificated. VDE approval is available on website.

REACH Declaration
The new REACH (Registration, Evaluation and Authorisation of Chemicals) is aimed to regulate companies that handle more than 1 ton/year of chemical substances (raw material and end product, such as cosmetics, household products, etc.) in Europe. This regulation will have a significant impact on importers and manufacturers. In this declaration ODE refers to products defined as “Articles” in accordance with the European Regulation n. 2006/1907/EC. For the REACH declaration please contact our Customer Service at sales@ode.it.

CE Declaration
CE (Conformité Européenne) is applied to the design, manufacturing, inspection and testing of the solenoid valves according to the applicable laws, under its own responsibility, that its solenoid valves are designed, constructed, manufactured and tested in accordance with Directives 97/2/EC. For the CE declaration please contact our Customer Service at sales@ode.it.

RoHS Directive
European Directive 2006/95/CE (Restriction of Hazardous Substances Directive) adopted since February 2003. The Directive is aimed to restrict the use of certain hazardous substances in electrical and electronic equipment. In this statement it declares that the solenoid valves and the components supplied by ODE are in accordance with the European Directive 2011/65/CE. For the RoHS directive please contact our Customer Service at sales@ode.it.

ISO 9001:2008 Certification
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