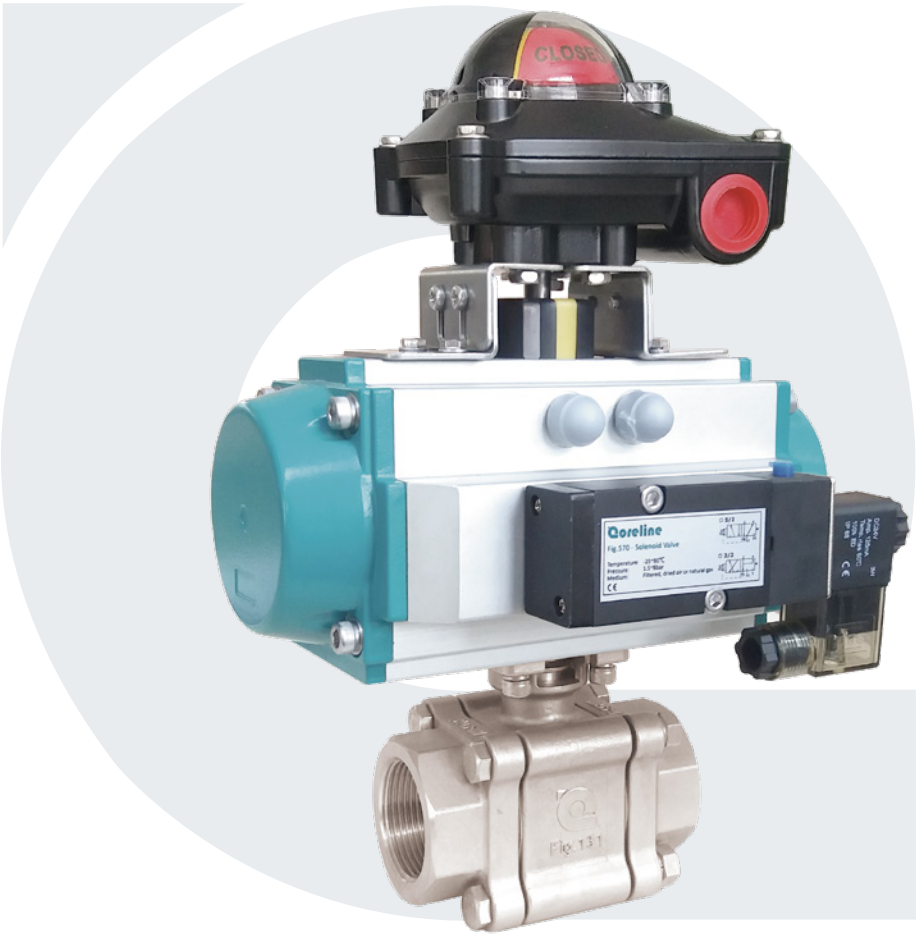
Coreline **Installation-Operation-Maintenance Manual**

3pc Pneumatic Ball Valves

Fig.130,131
Fig.135



API607 ISO10497 ISO15848-1 TA-LUFT **ISO27895** **SIL3**

Important

This manual contains essential information regarding the safety measures to adopt when installing and starting up the equipment. It is therefore essential that the user reads these instructions before installing and starting to use the apparatus.

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In order to get the most from your actuated valve, it is advisable to carefully read the instructions below.
These symbols ⚠ ❗ ⚠ indicate potential danger should you not follow the advice set out here.
⚠ DANGER. Risk of electrocution. Failure to follow the advice set out here may result in electrocution.
❗ DANGER. Failure to follow the advice set out here may result in personal harm or damage to the apparatus.
⚠ WARNING. Failure to follow the advice set out here may result in damage to the automatic valve or apparatus.

General safety advice

⚠ The valves described in this manual are designed to ensure a correct flow circulation in all working phases.
Apparatus should be installed in accordance with the specific instructions for each installation. All existing safety legislation should be respected at all times in order to avoid accidents.
Any modification to the pneumatic actuator requires the prior authorisation of the manufacturer. Spare parts and accessories authorised by the manufacturer are a guarantee of greater safety. The manufacturer of this actuated valve is exempt from all responsibility for damage arising from unauthorised spare parts and accessories.
⚠ During operation, the electrical and pneumatic parts of this apparatus will have electrical current running through them.
All work on the automatic valve and other related equipment should only be carried out having first disconnected the start up mechanism.
The user should ensure that all assembly and maintenance work is carried out by suitably authorised, qualified personnel, and previously reading the installation and service instructions set out in this manual is required.
Safe usage of this actuated valve can only be guaranteed by closely following the installation and service instructions laid out here.
Voltage and air pressure limits should not be exceeded under any circumstances.
In case of malfunction or breakdown, contact the manufacturer for supports.
Avoid shocks during transport, since they may damage the pneumatic accessories and mechanism of the valve.
Store the valve in the original packaging, protected against humidity and dirt.

Pneumatic ball valve warnings

Correct installation and handling of the valve, as well as adherence to the maximum pressure and temperature conditions specified in this manual are essential for preserving the service life of the valve.
The medium must be compatible with the valve materials.
⚠ Before carrying out any maintenance operations on the pipe or valve, ensure that the system is depressurised by releasing the pressure and emptying the pipes, clean the pipe system thoroughly if necessary, following the specific safety regulations of each product.
Before installation, check that the valve is undamaged and that it contains all the parts required for installation.
When using the valve as the final element of a installation, take into account the risks of the liquid and control the pressure and temperature, according to the standards of safety of each product.
⚠ Make all connections following the instruction referring to electrical supply as set out in this manual. Ensure that all cable leading top the electrovalve are correctly connected.
Should you need to disassemble the pneumatic accessories at the end of the run, on closing again, check that it is correctly positioned and also check that connectors are correctly situated.
⚠ At all times, avoid contact, albeit accidental, with the actuated valve's moving parts during operation and/or before it has come to a complete stop.
⚠ Before beginning any electrical or pneumatic maintenance, ensure that the start-up mechanisms are blocked. It is advisable to follow the following steps before any alteration to the actuated valve:
1. Disconnect the electrovalve from the mains supply.
2. Block the pneumatic system's start-up mechanisms.
3. Make sure that there is no voltage running through the circuits, including the auxiliary circuits and supplementary services.
All the above should be taken as indicative and not directly tied to safety procedure as specific safety norms may be in place in some cases.
⚠ IMPORTANT: As a result of the complexity of the subject, the installation, usage and maintenance instructions to be found in this manual are not designed to cover all imaginable service and maintenance scenarios. Should you require further instructions or encounter specific problems, please do not hesitate to contact the manufacturer.

1. Definition

Ball valve for isolating the flow in the pipe system.
The ball valve is in accordance with the 2014/68/EU and 2014/34/EU Directive.
Pressure rating for Fig.135 and Fig.130/131 is different, refer to Coreline's catalogs for details.
The valve is available with WCB and CF8M body material. The sealing is available with PTFE and PTFE+25% carbon (CTFE) material. The choice of material for the body and sealing depends on the type of medium to be carried and on the working temperature of the medium, in accordance with the chemical resistance and the pressure/temperature chart in this manual.
The pneumatic actuator controls the positions of the valve Open / Close.

2. Components

2.1 General assembly

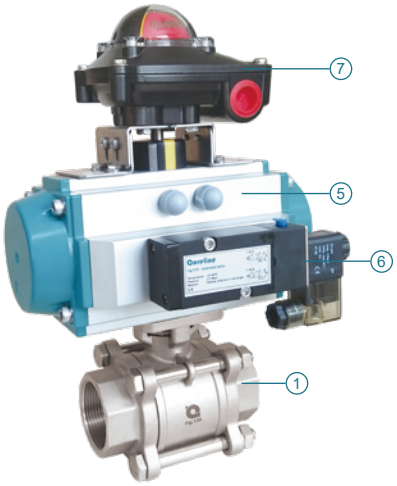
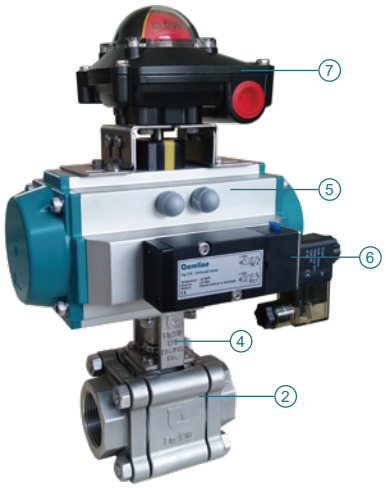


Fig.135



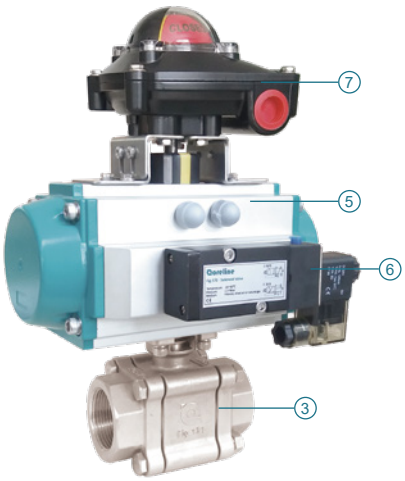


Fig.131 heavy duty type

Item No.	Part name	Remarks
1	Fig.135 ball valve	Butt welded Threaded ends Socket welded ends Flanged ends
2	Fig.130 ball valve	
3	Fig.131 ball valve	
4	Bracket system	Fig.510, Fig.515
5	Pneumatic actuator	Fig.540 double acting, Fig.541 spring return
6	Solenoid valve	Standard type, explosion proof type
7	Limit switch box	Mechanical type, proximity type, magnet type

2.2 Ball valve bare shaft

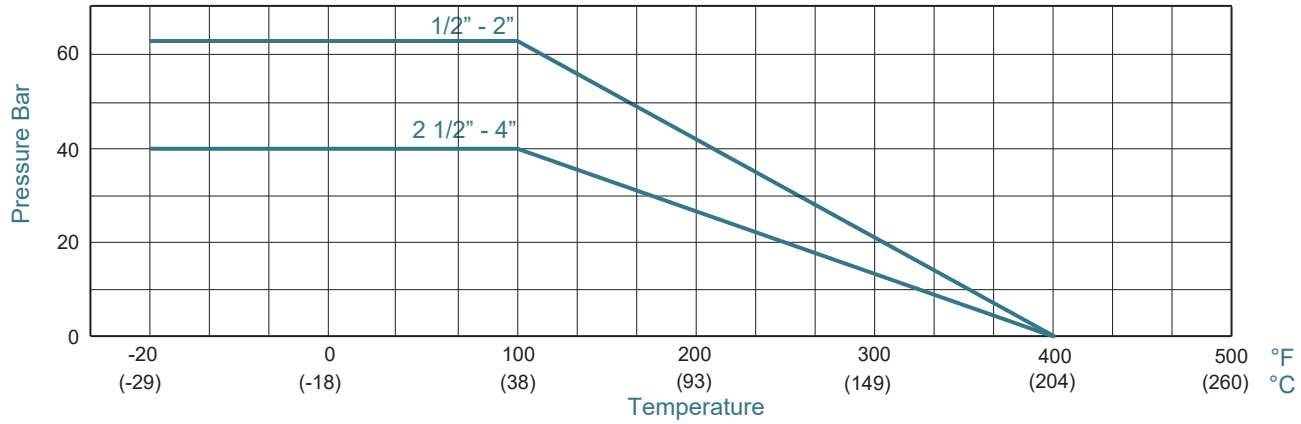
Read Coreline ball valve catalogs for detailed information of part list of the bare shaft valves.

3. Pneumatic actuated ball valve

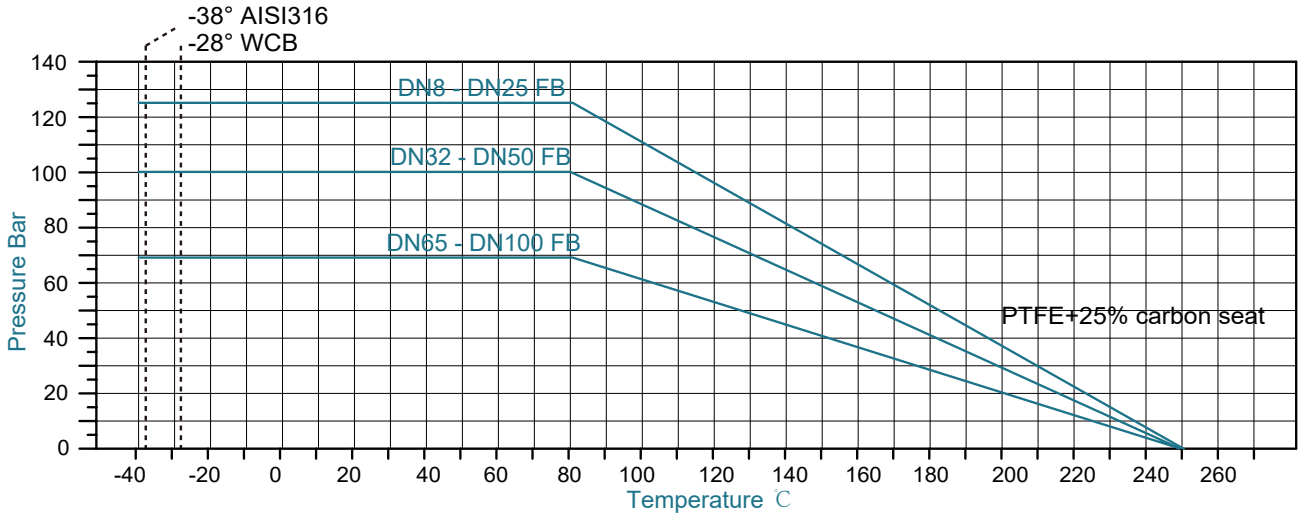
3.1 Technical specifications of the pneumatic actuators

Air supply: Dry or lubricated air, non-corrosive gas
Air pressure: 2.5bar~8bar according to order. In case of lower presure, ask the manufacturer to check the torque of the actuator.
Temperature range for the pneu. actuators: –15°C~+80°C : Standard (NBR O-ring)
–40°C~+80°C : Low temperature (Silicone O-ring)
–15°C~+150°C : High temperature (FPM O-ring)
All the actuators include NAMUR VDI/VDE 3845 interface for the electrovalve and the limit switch box.
Travel adjustment: Adjustable +4°/-4° by 0° and 90° position
Actuators are CE, ATEX certified.
For more information, please refer to the catalog for Fig.540,541 pneumatic actuators.

3.2 Pressure / Temperature chart



Pressure / Temperature chart - Fig.135 with PTFE seat



Pressure / Temperature chart - Fig.130,131 with PTFE+25% carbon seat

3.3 Valve operation torque

Operating torque values at rated pressure (PN) and 20 °C in as new direct from the factory condition. Installation and operating conditions (pressure and temperature) will affect these values.
The actuator that is required for an automatic operation must be calculated according to suitable safety factors.

Size	Torque [Nm] 1)			Size	Torque [Nm] 1)		
	135 2)	130	131		135 2)	130	131
8F	-	6	8	40F/50R	26	35	35
10F/15R	-	6	8	50F/65R	36	48	49
15F/20R	8	9	8	65F/80R	53	-	68
20F/25R	10	16	14	80F/100R	70	-	101
25F/32R	17	22	18	100F	120	-	124
32F/40R	24	27	28				

1) Torque values include 30% safty factor (Test: 0bar differential pressure, ambient temperature, non-lubricating).
2) Fig.135 ball valve are all with full port design.

4. Installation and commissioning

Make sure the pipeline is correct. Tensions and displacements in the pipeline may cause high torque value and leakage between the body and end caps.
The pipeline should be supported and the space between the pipe endings must corrospond to the face-to-face dimension of the ball valve.
Foreign matters in the pipeline may damage the sealing surface of the valve or prevent the movement of the valve ball, resulting in the valve not closing properly. In order to reduce the possibility of dangerous situations, all pipes need to be cleaned before installing the valve. Check that pipe dirt, metal chips, welding slag and other foreign objects have been removed. In addition, check the flange surface of the pipe to ensure that there is a smooth surface (If any cleaning proces after the valve is installed in pipeline, the ball valve has to be in open position and must not be activated before rinsing completed, to avoid damage of seat).
The use of the valve shall be carried out in accordance with the instruction manual, and shall not exceed the design parameters. The operator must go through on-the-job training to understand the basic operationprinciple of the valve.
Prevent incorrect opening and closing of valves. The operator should clearly understand the role of each valve and its position in the process pipeline to prevent misuse. It should be ensured that the valve can be opened and closed at least twice within a week to prevent the valve from being stuck due to long-term inactivity.
Coreline 3PC ball valve can be installed in any position on the pipeline, but be aware that deposited dirts in the bottom of the pipeline may damage the stem seal if the valve is mounted upside down.

Installation of thread ends ball valve

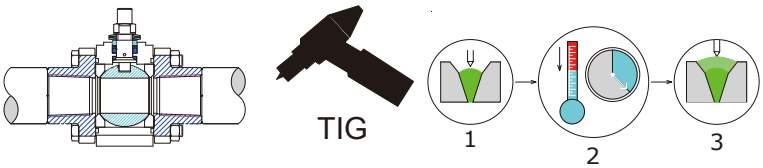
Do not disassemble the valve before installation.
Sealant is applied to the pipe thread (Packing yarn, Teflon tape etc.).
Apply wrench only to the hexagon part of the valve end that is to be connected.

Installation of weld ends ball valve

Align the open ball valve between the pipes and spot weld four places on each weld connection end.

Welding for Fig.130/131:

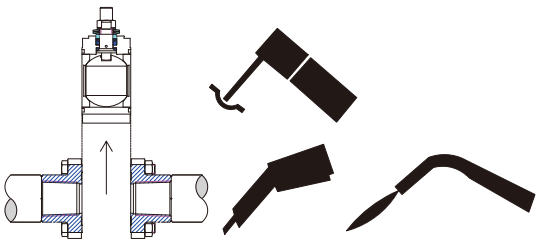
The valve should not be separated during TIG welding. Keep the valve in open position and complete the welding process.



Welding for Fig.130/131

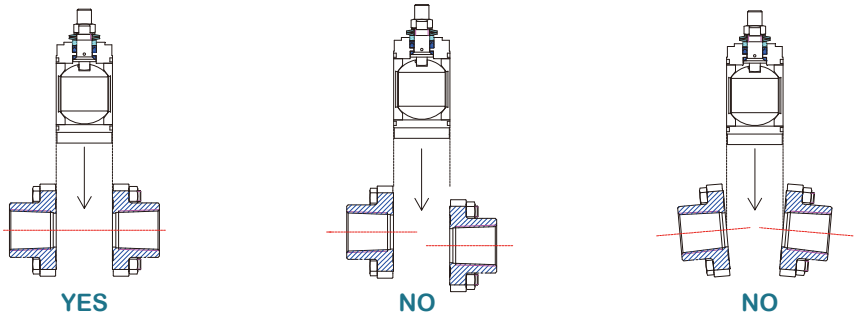
Welding for Fig.135:

With the ball valve open, disassemble the body from the spot welded connection ends and place the body in a clean and safe place.



Welding for Fig.135

Make sure that the connection ends are aligned. Complete the welding of both connection ends to the pipe. Carefully place the open ball valve (body) between the cleaned and cooled connection ends. Make sure that the joint gasket is not scratched against the connection ends, which may cause leakage during operation.
With the ball valve open carefully tighten the bolts evenly in a star pattern with a torque wrench under the given torques by Coreline.



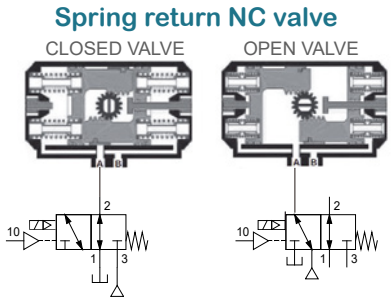
Place the body between the ends - Fig.135

5. Valve function

There are three different type of pneumatic actuated valves which are listed as below. 3/2 solenoid valve or 5/2 solenoid valve is required to do the action.

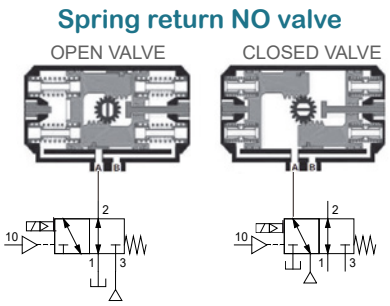
5.1 Spring return NC valve

The valve is closed without air supply. When the actuator is supplied with pressurized air, the valve opens. If the supply of the pressurized air is closed and the escape of the air is permitted, the valve will be closed because of the internal springs of the actuator.
3/2 solenoid valve is required to do the action.
In case of the installation of a monostable normally closed solenoid valve, the electrical signal should be kept during the time that the valve needs to be opened.
In case of spring return actuator, Coreline will serve NC valve as standard.



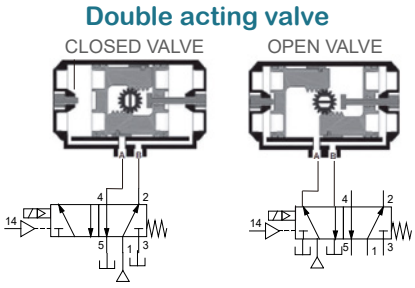
5.2 Spring return NO valve

The valve is opened without air supply. When the actuator is supplied with pressurized air, the valve closes. If the supply of the pressurized air is closed and the escape of the air is permitted, the valve will be opened because of the internal springs of the actuator.
3/2 solenoid valve is required to do the action.
In case of the installation of a monostable normally closed solenoid valve, the electrical signal should be kept during the time that the valve needs to be closed.



5.3 Double acting valve

The valve has no defined fail safe position. The valve is opened and closed by applying control pressure to the corresponding control connections.
5/2 solenoid valve is required to do the action. In case of the installation of a monostable normally closed solenoid valve, the electrical signal should be kept during the time that the valve needs to be opened (according to the drawing).



5.4 Limit switch box

To confirm electrically the position of the valve, a limit switch box can be mounted to the actuator according to NAMUR specification.
The limit switch boxes are available with mechnical type, proximity type and magnet type.

5.5 Solenoid valve

You can install differents types of solenoid valve defined by:
- 3/2 (3 ways, 2 positions) and 5/2 (5 ways, 2 positions).
- Power supply: 12/24/48VDC, 110/220/230/240VAC

See the specific datasheet for more options.

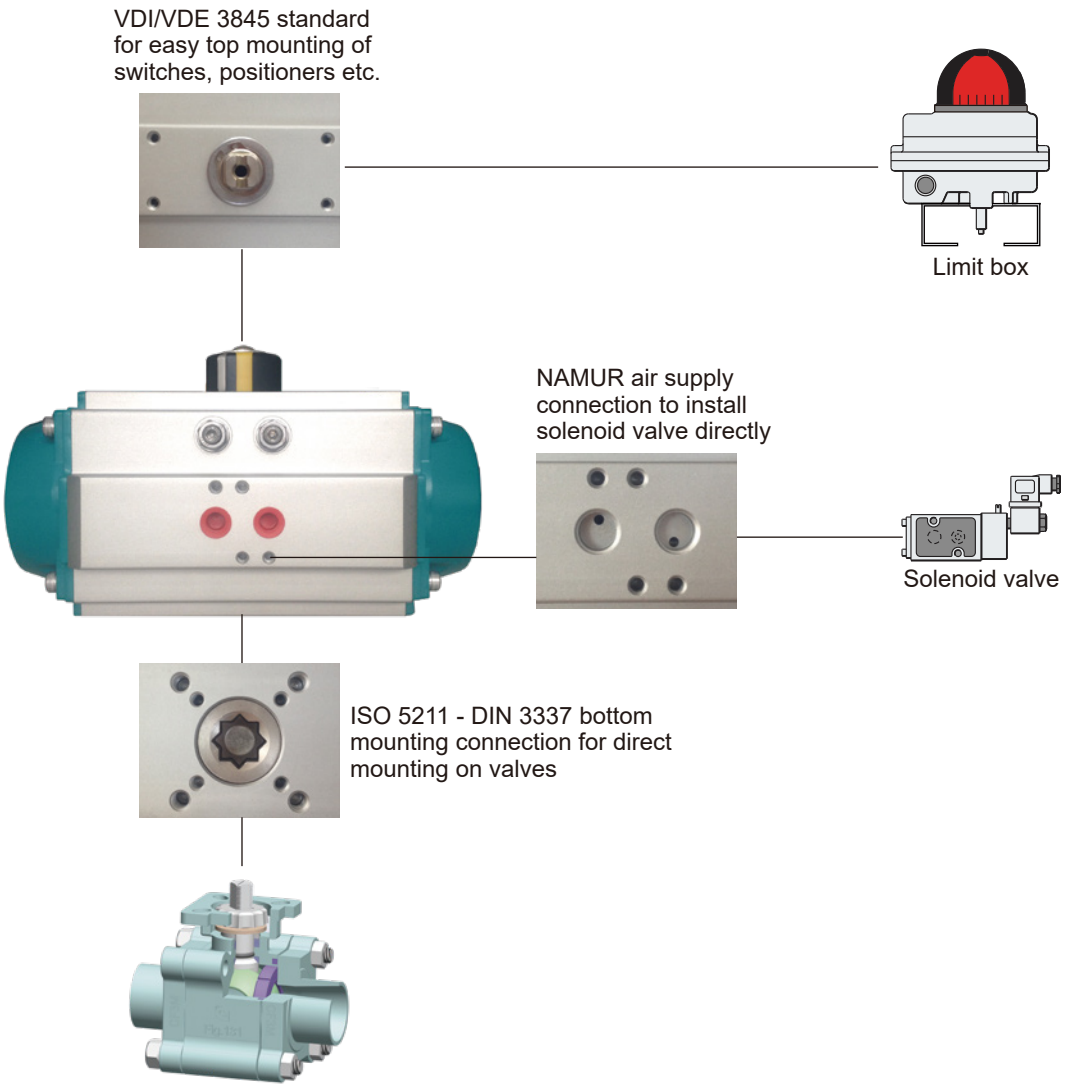
6. Mount and dismantle the actuator

Should it be necessary to replace the actuator or the valve, proceed as follows:

1. Move the ball valve to the closed position.
2. Depressurize and drain the plant or the plant component.
3. Depressurize the control medium.
4. Remove the control medium line(s) from the actuator.
5. Remove the screws on the valve top or on the bracket which are used to fix the actuator.
6. Remove the assembly of the pneumatic actuator (with the bracket if any) from the bare shaft valve.
7. Remove the screws in order to dismount the actuator from the bracket, if there is.
8. In case that the actuator should be substituted by a handle, remove also the coupling.

To mount a new actuator or a new valve, proceed in opposite sense of the previous description.

7. Actuator interface for valve automation and mounting standard



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