



ODE S.r.l.

Technical Bulletin *n° 2010/01*

PRIORITA'

Low ☐

Medium ☒

High ☐

Dept Involved

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Tech Bulletin 2010/01

Additional Information on the Series 21IA Angle seat Valves





SCHEMA DI COMANDO VALVOLA SEDE INCLINATA NC MEDIANTE ELETTROVALVOLA 3 VIE COMMAND DIAGRAM OF ASVP NC BY 3 WAY SOLENOID VALVE

- 1) Collegare la porta “1” di una elettrovalvola 3 vie all’ingresso pneumatico “1” della valvola a sede inclinata mediante raccordo da G 1/4 (foto 1)

Connect the port “1” of a 3 way solenoid valve to the pneumatic inlet “1” of the angle seat valve using a G 1/4 pipe (picture 1)

**foto
picture 1**



- 2) L’ingresso “2” dell’elettrovalvola deve essere alimentato con aria ad una pressione compresa tra 4 e 10 bar max ; “3” Connessione di scarico aria attuatore

The inlet “2” of the solenoid valve shall be connected to a air supply from 4 to 10 bar maximum;
“3” Exhaust air connection of the actuator

**foto
picture 2**





OFFICINE DI ESINO LARIO

FOGLIO INSTALLAZIONE E MANUTENZIONE PER 21HA

G 1/2 ÷ G 2 ; NPT 1/2 ÷ NPT 2

APERTO DA UNA PRESSIONE DI PILOTA

CHIUSA DA UNA MOLLA (VERSIONE NC)

OPERATING INSTRUCTION FOR SERIES 21HA

G 1/2 ÷ G 2 ; NPT 1/2 ÷ NPT 2

OPENED BY PILOT PRESSURE

CLOSED BY SPRING FORCE (VERSION NC)



For safety and reliability this valve must be operated within the permissible limits and in accordance with these instructions. Tampering or unauthorized modification of the valve, or failure to follow these instructions, invalidates the warranty and relieves us of any liability for damage or injury that may result, for which the user then accepts sole responsibility. The valve may only be operated with fluids that do not chemically attack or mechanically damage its constituent materials. If there are no empirical values indicating suitability available, it is advisable to seek clarification from our application engineers.

Valves <= DN25 conform to Article 3, Clause 3 of the Pressure Equipment Directive (97/23/EC).

Valves >= DN32 are designed in accordance with Pressure Equipment Directive 97/23/EC for Group 1 and 2gases and liquids

APPLICATION NOTES

Mount the valve with sufficient clearance to permit removal for maintenance. It is advisable to design the system with manual isolating and drain valves that allow depressurization and emptying of the pipe system for valve maintenance. Provide additional protection if the valve may be subject to unusual external loads, due to factors such as outdoor location or vulnerability to falling objects.

Clean pipe system before mounting valve dirt leads to malfunctions. To prevent PTFE seat seals getting damaged fit a strainer with a mesh size = 0.25 mm upstream of the valve inlet.

Valves with special cleanliness requirements (ex. for acids, analytical systems or painting systems) must not be removed from their protective packaging until just before mounting in accordance with the applicable regulations.

Installations in hazardous areas have to conform to special standards. The supplied General Operating Instructions for Piloting Valve Solenoids and the EU Type Inspection Certificate must also be followed.

The valve closes tightly in the direction of flow only. Flow in the opposite direction to the marked arrow may, under certain conditions, irreparably damage components

Safety Precautions for piloting: The safety precautions only relate to the solenoid valve in isolation. In combination with other items of equipment there may be other potential dangers, which must be taken into account by carrying out a risk analysis for the system.

- Check actual service conditions conform to the details on the rating plate and technical data from the relevant publication or data sheet. The limits for the particular application must not be exceeded.

- Ensure before commissioning that initial actuation cannot give rise to danger from fluid escaping from openings that have not been plugged.

To avoid pressure surges damaging internal parts prime the valve slowly when commissioning.

DANGER! Actuators are spring loaded. This spring force is reduced to a safe value when their cover is removed.

The valves are not designed to withstand the fluid freezing

Leak and strength tests with the valve open or closed are permitted a up to 1.5 times the maximum working pressure. The valve must not be operated during these tests.

MOUNTING

Compare the data on the type label and on the data sheet with the operating data.

Flush the pipe work before fitting the valve. Rank dirt causes malfunction.

Avoid subjecting the valve housing to excessive stress.

The valve can be mounted in any position.

Mount the valve with arrow in direction of flow; pressure on downstream-side must never be higher than on up streamside.

When commissioning, prime the valve and make sure the pressure rises slowly.

PILOT CONTROL

The actuator is designed for neutral gaseous fluids as e.g. air, nitrogen

For remote control a 3/2-way pilot valve is necessary.

The unused control port can be protected with a threaded filler element.

PRINCIPLE OF OPERATION

Design: Angle seat valve.

Valve spindle sealed with spring loaded seal packing.

Actuator: Piston actuator controlled by external fluid.

Normally closed:

The actuator is depressurized. By means of the compression spring(s) in the actuator the valve plate is pressed onto the valve seat and seals it.

Pressure actuated open:

The actuator is pressurized. By means of the control pressure the actuator piston lifts up to its end position against the force of the compression spring(s) and lifts the valve plate from the valve seat.

The valve spindle is sealed by a spring loaded seal packing.

MAINTENANCE

Preventive maintenance, appropriate to the operating conditions, is recommended.

Deposits, dirt, old or worn seals may lead to malfunction.

Recommended wearing parts are marked in the attached parts list (*).

Maintenance works must be carried out only in absence of pressure in the pipe-work and with the actuator disconnected from control pressure supply.

DISMANTLING

Refer to the sectional Drawing (See Fig. 1)

Undo the actuator cover (20) with a 36 mm ring spanner or socket wrench and unscrew it.

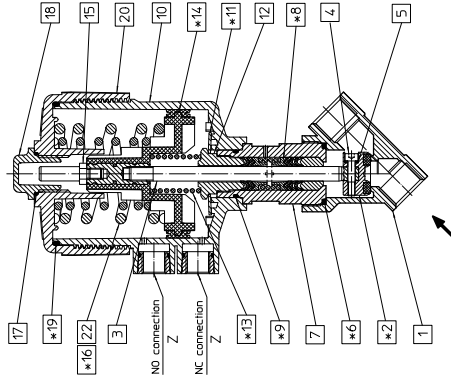


Fig. 1

When taking off the actuator cover the load of the compression spring(s) is released down to approx. 80 N.

Take off the compression springs (16) and (22) (does not exist in all sizes) Take O-ring (19) out of the actuator cover.

Unscrew the screw piece (7) from the valve body (1) and take the sealing ring (6) out of the valve body.

Unscrew the hexagon socket screw (4).

Push the complete valve spindle (3) out of the screw piece (7).

Take off the compression spring (13).

Remove the cylinder sealing (14) from the piston.

Unscrew screw piece (12) with a 24 mm socket wrench

Take off the disc spring (11).

Push the seal packing (8) out of the screw piece (7).

Clean all valve parts.

Check the sliding surfaces, seals, seat and compression springs.

Replace defective parts.

REASSEMBLY

The mounting position of all parts must be in accordance with the sectional drawing!

Coat seals and sealing surfaces sparingly with a suitable lubricant.

Mounting sequence of seal packing:

1. Guide bushing PTFE
2. 2 x packing rings PTFE
3. Packing ring FPM
4. Supporting ring PPS
5. Compression spring
6. Supporting ring PPS
7. Packing ring FPM
8. Packing ring PTFE

Mount O-ring (9) in the groove of the screw piece (7).

Mount the actuator body (10) on the screw piece (7).

Lay the disc spring (11) with its arched side on top on the bottom of the actuator body (10) and screw it tight with screw piece (12) until it stops. Use a 24 mm socket wrench.

Mount the cylinder seal (14) on the piston and lay the compression spring (13) over the spindle into the depression of the piston. Introduce the pre-assembled spindle (3) into the screw piece (12) and push it through the seal packing. Pay attention to the sealing lip of the cylinder seal that it is also introduced into the actuator body without damages.

Mount the valve plate (2) on the spindle head and fix it with hexagon socket screw (4) and spring washer (5).

Lay the sealing ring n°6 into the valve body (1) and mount the pre-assembled screw piece (7) on the valve body and screw it tight.

Mount the cylinder seal (14) on the piston and lay the compression spring (13) over the spindle into the depression of the piston. Introduce the pre-assembled spindle (3) into the screw piece (12) and push it through the seal packing. Pay attention to the sealing lip of the cylinder seal that it is also introduced into the actuator body without damages.

Mount the valve plate (2) on the spindle head and fix it with hexagon socket screw (4) and spring washer (5).

Lay the sealing ring n°6 into the valve body (1) and mount the pre-assembled screw piece (7) on the valve body and screw it tight.

Put the O-ring (19) without grease on the bottom of the actuator cover and press it even against the walls. The O-ring must not protrude from the wall at any place. Grease the O-ring after mounting it.

Put the compression springs (16) and (22) (does not exist in all sizes) on the piston.

Screw the actuator cover on until it is tight with a maximum torque of 20 Nm. Turn the control ports into the desired direction by turning the actuator body with a 36 mm spanner.

Connect the control pipe to the control port Z

REBUILD TO NO FUNCTION

Undo the actuator cover (20) with a 36 mm spanner and unscrew it. When taking off the actuator cover the load of the compression spring(s) is released totally.

Take off the compression springs (16) and (22) (does not exist in all sizes).

Screw the actuator cover (20) on the actuator body until it is tight.

Now use the upper control port for pipe connection.

The build in standard compression spring (13) lifts the not pressurized piston to open position.

LEAK TEST

Before pressurization, a function test is recommended.

Check for leaking towards the outside on the actuator and on the valve body.

Check tightness of the spindle sealing on the bleed bore at the screw piece (7).

Check tightness of the valve seat.

OPERATING NOTE

Preventive maintenance is necessary at significant changes of switching times.

With fluids capable of freezing, the valves are not frost-proof.

Leak tests are permitted with pressures up to the maximum working pressure (see type label).

Strength tests are only permitted with open valve.

The following applies here: 1.5 x pressure rating of valve body

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ISTRUZIONI PER TRASFORMARE UNA VALVOLA SEDE INCLINATA DA NC IN NA **INSTRUCTION FOR CHANGE ASPV FROM NC TO NO**

- 1) Bloccare la valvola tramite l'esagono inferiore del comando pneumatico (foto 1)
Lock the valve from the exagonal shape on the bottom of the actuator (picture 1)

foto - picture 1



- 2) Svitare in senso antiorario il coperchio superiore del comando pneumatico (foto 2)
Unscrew anticlockwise rotation the actuator head (picture 2)

foto - picture 2



- 3) Rimuovere il coperchio ed estrarre le 2 molle superiori (foto 3 e 4)
Remove the actuator head and take out the 2 springs (picture 3 and 4)

foto - picture 3



foto - picture 4



- 4) Assicurarsi che la guarnizione di tenuta del comando pneumatico sia correttamente posizionata nella relativa sede (foto 5 e 6)
Assure the O-ring on the top of the plastic actuator is correctly in its seat (picture 5 and 6)

foto – picture 5



foto - picture 6



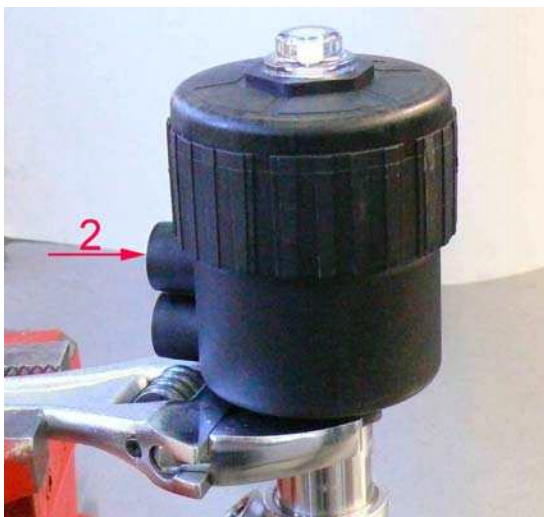
- 5) Avvitare il coperchio al corpo principale del comando pneumatico - Operazione da effettuare manualmente e senza attrezzi (foto7)
Screw the actuator head - To be done manually without tools (picture 7)

foto -picture 7



- 6) Per il pilotaggio pneumatico ora utilizzare la connessione superiore n. 2 dell'attuatore (foto8)
Now as pneumatic connection the upper (n.2) connection has to be used (picture 8)

foto -picture 8





Operating Instructions for Series 211A

G ½ to G 2, NPT ½ to NPT 2

Opened by pilot pressure.

Closed by spring force (NC)



M&I document n°001 – Rev 01

Use as intended

For safety and reliability this valve must be operated within the permissible limits and in accordance with these instructions. Tampering or unauthorized modification of the valve, or failure to follow these instructions, invalidates the warranty and relieves us of any liability for damage or injury that may result, for which the user then accepts sole responsibility.

The valve may only be operated with fluids that do not chemically attack or mechanically damage its constituent materials. If there are no empirical values indicating suitability available, it is advisable to seek clarification from our application engineers.

Valves \leq DN25 conform to Article 3, Clause 3 of the Pressure Equipment Directive (97/23/EC).

Valves \geq DN32 are designed in accordance with Pressure Equipment Directive 97/23/EC for Group 1 and 2 gases and liquids

Application Notes

Mount the valve with sufficient clearance to permit removal for maintenance. It is advisable to design the system with manual isolating and drain valves that allow depressurization and emptying of the pipe system for valve maintenance. Provide additional protection if the valve may be subject to unusual external loads, due to factors such as outdoor location or vulnerability to falling objects.

Clean pipe system before mounting valve dirt leads to malfunctions. To prevent PTFE seat seals getting damaged fit a strainer with a mesh size = 0.25 mm upstream of the valve inlet.

Valves with special cleanliness requirements (ex. for acids, analytical systems or painting systems) must not be removed from their protective packaging until just before mounting in accordance with the applicable regulations.

Installations in hazardous areas have to conform to special standards. The supplied General Operating Instructions for Piloting Valve Solenoids and the EU Type Inspection Certificate must also be followed.

The valve closes tightly in the direction of flow only. Flow in the opposite direction to the marked arrow may, under certain conditions, irreparably damage components

Safety Precautions for piloting: The safety precautions only relate to the solenoid valve in isolation. In combination with other items of equipment there may be other potential dangers, which must be taken into account by carrying out a risk analysis for the system.

- Check actual service conditions conform to the details on the rating plate and technical data from the relevant publication or data sheet. The limits for the particular application must not be exceeded.
- Ensure before commissioning that initial actuation cannot give rise to danger from fluid escaping from openings that have not been plugged.



Operating Instructions for Series 21IA

G ½ to G 2, NPT ½ to NPT 2

Opened by pilot pressure.

Closed by spring force (NC)

M&I document n°001 – Rev 01



- To avoid pressure surges damaging internal parts prime the valve slowly when commissioning.
- DANGER! Actuators are spring loaded. This spring force is reduced to a safe value when their cover is removed.
- The valves are not designed to withstand the fluid freezing
- Leak and strength tests with the valve open or closed are permitted al up to 1.5 times the maximum working pressure. The valve must not be operated during these tests.

Mounting

Compare the data on the type label and on the data sheet with the operating data.

Flush the pipe work before fitting the valve. Rank dirt causes malfunction.

Avoid subjecting the valve housing to excessive stress.

The valve can be mounted in any position.

Mount the valve with arrow in direction of flow; pressure on downstream-side must never be higher than on up streamside.

When commissioning, prime the valve and make sure the pressure rises slowly.

Pilot Control

The actuator is designed for neutral gaseous fluids as e.g. air, nitrogen

For remote control a 3/2-way pilot valve is necessary.

The unused control port can be protected with a threaded filter element.

Principle of Operation

Design: Angle seat valve.

Valve spindle sealed with spring loaded seal packing.

Actuator: Piston actuator controlled by external fluid.

Normally closed:

The actuator is depressurized. By means of the compression spring(s) in the actuator the valve plate is pressed onto the valve seat and seals it.

Pressure actuated open:

The actuator is pressurized. By means of the control pressure the actuator piston lifts up to its end position against the force of the compression spring(s) and lifts the valve plate from the valve seat.

The valve spindle is sealed by a spring loaded seal packing.



Operating Instructions for Series 21IA

G ½ to G 2, NPT ½ to NPT 2

Opened by pilot pressure.

Closed by spring force (NC)

M&I document n°001 – Rev 01



Maintenance

Preventive maintenance, appropriate to the operating conditions, is recommended.

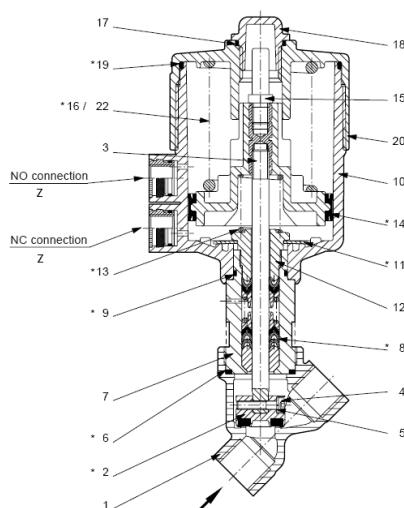
Deposits, dirt, old or worn seals may lead to malfunction.

Recommended wearing parts are marked in the attached parts list.

Maintenance works must be carried out only in absence of pressure in the pipe-work and with the actuator disconnected from control pressure supply.

Dismantling

Refer to the sectional Drawing.



Undo the actuator cover n°20 with a 36 mm ring span ner or socket wrench and unscrew it.

When taking off the actuator cover the load of the compression spring(s) is released down to approx. 80 N.

Take off the compression springs n°16 and n°22 (doe s not exist in all sizes)

Take O-ring n°19 out of the actuator cover.

Unscrew the screw piece n°7 from the valve body n°1 and take the sealing ring n°6 out of the valve body.

Unscrew the hexagon socket screw n°4.

Push the complete valve spindle n°3 out of the screw piece n°7.

Take off the compression spring n°13.

Remove the cylinder sealing n°14 from the piston.

Unscrew screw piece n°12 with a 24 mm socket wrench

Take off the disc spring n°11.



Operating Instructions for Series 21IA

G ½ to G 2, NPT ½ to NPT 2

Opened by pilot pressure.

Closed by spring force (NC)

M&I document n°001 – Rev 01



Pull the actuator body n°10 from the screw piece n° 7 and take the O-ring n°9 out of the groove.
Push the seal packing n°8 out of the screw piece n° 7.

Clean all valve parts.

Check the sliding surfaces, seals, seat and compression springs. Replace defective parts.

Reassembly

The mounting position of all parts must be in accordance with the sectional drawing!

Coat seals and sealing surfaces sparingly with a suitable lubricant.

Mounting sequence of seal packing:

1. Guide bushing PTFE
2. 2 x packing rings PTFE
3. Packing ring FPM
4. Supporting ring PPS
5. Compression spring
6. Supporting ring PPS
7. Packing ring FPM
8. Packing ring PTFE

Mount O-ring n°9 in the groove of the screw piece n° 7.

Mount the actuator body n°10 on the screw piece n°7 .

Lay the disc spring n°11 with its arched side on top on the bottom of the actuator body n°10 and screw it tight with screw piece n°12 until it stops. Use a 24 mm socket wrench.

Mount the cylinder seal n°14 on the piston and lay the compression spring n°13 over the spindle into the depression of the piston. Introduce the pre-assembled spindle n°3 into the screw piece n°12 and push it through the seal packing. Pay attention to the sealing lip of the cylinder seal that it is also introduced into the actuator body without damages.

Mount the valve plate n°2 on the spindle head and fix it with hexagon socket screw n°4 and spring washer n°5.

Lay the sealing ring n°6 into the valve body n°1 and mount the pre-assembled screw piece n°7 on the valve body and screw it tight.

Put the O-ring n°19 without grease on the bottom of the actuator cover and press it even against the walls. The O-ring must not protrude from the wall at any place. Grease the O-ring after mounting it.

Put the compression springs n°16 and n°22 (does not exist in all sizes) on the piston.

Screw the actuator cover on until it is tight with a maximum torque of 20 Nm.

Turn the control ports into the desired direction by turning the actuator body with a 36 mm spanner.

Connect the control pipe to the control port Z.



Operating Instructions for Series 21IA

G ½ to G 2, NPT ½ to NPT 2

Opened by pilot pressure.

Closed by spring force (NC)

M&I document n°001 – Rev 01



Rebuild to NO Function

Undo the actuator cover n°20 with a 36 mm spanner and unscrew it.

When taking off the actuator cover the load of the compression spring(s) is released totally.

Take off the compression springs n°16 and n°22 (does not exist in all sizes).

Screw the actuator cover n°20 on the actuator body until it is tight.

Now use the upper control port for pipe connection.

The built in standard compression spring n°13 lifts the not pressurized piston to open position.

Leak Test

Before pressurization, a function test is recommended.

Check for leaking towards the outside on the actuator and on the valve body.

Check tightness of the spindle sealing on the bleed bore at the screw piece n°7.

Check tightness of the valve seat.

Operating Note

Preventive maintenance is necessary at significant changes of switching times.

With fluids capable of freezing, the valves are not frost-proof.

Leak tests are permitted with pressures up to the maximum working pressure (see type label).

Strength tests are only permitted with open valve.

The following applies here: 1,5 x pressure rating of valve body.