



DOROT Altitude Pilot Control Valve (AL)

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Level Control Using CXAL Pilot

Applicable Series:

S300, S100

Sizes:

1 1/2" - 40" / 40 - 1000mm

1. Function Description

Dorot Altitude Pilot Control Valve ('AL') is an automatic, pilot controlled, level-control valve, activated by the pressure of the pipeline. The main valve is controlled by a highly sensitive pilot, located outside the tank. The pilot opens or closes the valve in response to the static pressure of the water.

2. Technical Features

- Media: Water; natural, non-aggressive fluids
- Pressure rating: PN16 or PN25 (250psi or 360 psi) per specific valve-model
- Temp. range:
 - S300: 2 – 80°C (35 - 176°F)
 - S100: 2 – 60°C (35 - 140°F)
- Flow velocity for continuous operation: 0.05 – 5.5 m/sec (0.3 – 18 ft/sec)
Max. flow velocity for intermittent operation: 8 m/sec (26 ft/sec)

Notes:

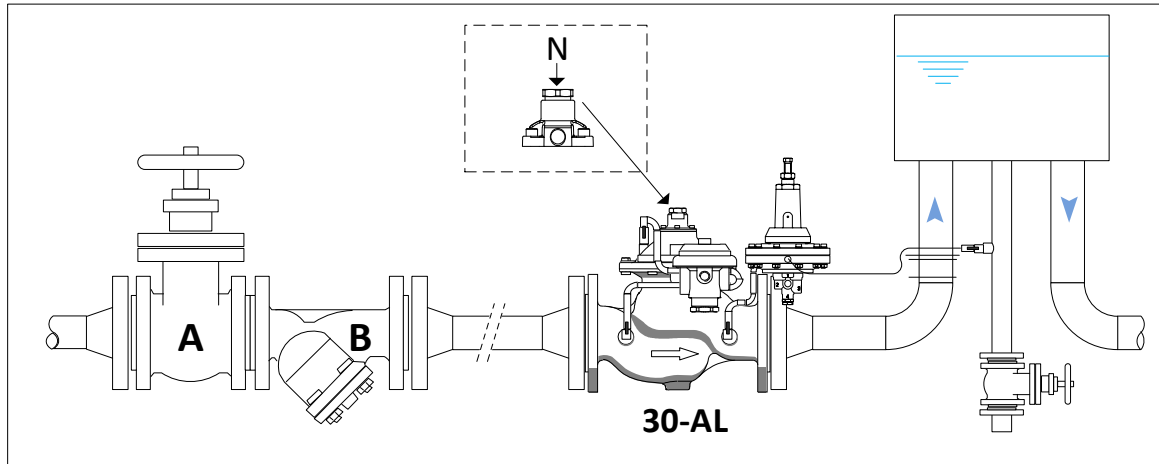
- In case the designed/actual operating conditions are not suitable for the above defined standard features, please contact Aquestia Applications-Engineering.
- Refer to specific valve model publications for further details.

3. Safety Guidelines

- Injury or damage to the system/surroundings may occur if installation, commissioning, operation or maintenance instructions are not followed correctly, or if applicable codes of practice and regulations are ignored.
- Dorot valves are designed for use in fresh water-systems. Please consult Aquestia Applications-Engineering in case other media is to be used.
- Be sure to depressurize the valve, prior to any disassembly of valve or control-trim parts.
- Electrical works (e.g. connection of solenoid-valves, limit-switches etc.), must be executed by a certified electrician.
- Errors in the layout-design, installation or operation may affect valve performance and may be a risk to the system and operators/users. Please note, the system layout, installation and commissioning of valves is the responsibility of the system designer, installer and/or user.
- In any case of doubt and prior to taking any further action, please contact Aquestia representative for assistance.


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4. Installation



- a. The valve can be installed in any position, although installation with the bonnet facing up is recommended for ease of maintenance.
 - b. Flow direction should match the engraved arrow on the bonnet.
 - c. For maintenance considerations, it is recommended that manual isolation-valves (gate or butterfly) are installed, both sides with a strainer between the upstream isolation-valve and the valve inlet (as shown in the diagram above).
 - d. Flush pipeline, upstream of the valve, before assembly of the control-valve.
 - e. The sensor port of the pilot (a), should be connected to the bottom of the tank in a turbulence-free location (Example: tank-drainage pipe).
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5. Control-trim Design

	<p>1 1/2" - 14" - Main Parts</p> <ul style="list-style-type: none"> a. High-sensitivity, hydrostatic pressure-control pilot valve, model CXAL b. Isolation ball valve c. Control filter
	<p>16" - 40" - Main Parts</p> <ul style="list-style-type: none"> a. High-sensitivity, hydrostatic pressure-control pilot valve, model CXAL b. Isolation ball valve c. Control filter d. Closing accelerator, Model CXPS

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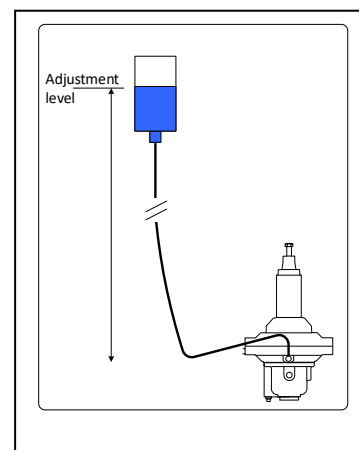
6. Commissioning & Adjustment

Adjustment

- Turn adjusting bolt [a1] of the pilot [a] counterclockwise, all the way.
- Close downstream ball valve [b2] and open valves [b1, b3].
- Open upstream isolation valve [A] (refer to 4. Installation diagram).
- Verify that the upstream pressure of the valve is higher than the required water level, by at least 1.5 bar.
- Release trapped air from the control chamber, by a slight opening of the bolt [N], using the supplied Allen-key.
- Open isolation ball valve [b2].
- Slowly turn adjusting bolt [a1] clockwise, until water level reaches the required value.
- Needle valve [a2] setting:
 - The valve is factory set (normally 1 1/2 turns open) – the setting should not be changed unless required.
 - The needle can be opened between a 1/4 turn to 3 turns. Smaller openings may cause non-closure failure and larger openings may cause high losses and non-opening failure.

Remarks:

- Stage (g) of level setting, can be shortened by using a water container, connected by a small diameter, flexible pipe to the tank-connection port of pilot [a], to be located at the same height as the maximal level, to simulate the static pressure of the tank.
- Slowly turn adjusting bolt [a1] clockwise until the valve starts opening. Rotate the bolt back, in a counterclockwise direction, just until the valve closes.
- Reconnect the tube to the tank.



3. Manual Activation

- The valve can be set in a fixed position, for maintenance of control circuit, by closure of valve [b3]. The automatic control is cancelled while this valve is closed.
- The valve can be closed manually by closure of the isolation valve [b2].
- The valve can be opened manually by closing valve [b1] and disconnecting the tube from the tank-connection port of the pilot [a].

Return valves [b] to "open" position and re-connect tubes after maintenance is completed.

4. Maintenance

- Inspect and clean the in-line filter [c] as water quality dictates. Unless the water is very dirty, this service should be performed once a year. During this operation, the main valve must be isolated from external pressure by closure of upstream and downstream isolation valves.
- Inspect valve performance by checking downstream pressure periodically.
- The control system can be serviced without stopping the flow, by closing isolation valves [b3, b1, b2], in that order.


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5. Troubleshooting

Symptom	Probable Cause	Remedy
Main valve does not open	Inlet pressure lower than minimal operating pressure	Verify there is sufficient inlet pressure (upstream separation-valve is open)
	Valves [b2] or [b3] are closed	Open all cock valves
	Needle valve [a2] is on open	Close needle [a2] and open, 1 1/2 turns
	The water level is higher than the setting	Verify there is no other (bypass) supply to the tank system, or set the valve to a higher level.
Main valve does not close	Valves [b1] or [b3] are closed	Open all cock valves
	Needle valve [a2] is closed	Close needle [a2] and open, 1 1/2 turns. Clean if clogged.
	Another pressure source exists into the downstream system	Close upstream isolation-valve [A] and verify there is no demand outside of the tank. If the water level increases – look for another source.
	Filter [c] is clogged	Extract filter [c] and clean
	The control tube leading from the tank to the pilot sensor-port is disconnected or clogged	Verify that the tube is not clogged or closed, check service valve if it exists) and that it is connected to a still area in the tank.
	Water level is lower than the setting	Reset the pilot valve if lower level is required
	Foreign object stuck in the valve	Disassemble main valve and flush
	Crack in the valve diaphragm	Replace diaphragm
Crack in the pilot valve diaphragm (water flow from the pilot valve bonnet)	Replace the pilot valve	

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