Installation, Operation & Maintenance

Aquestia
Directing the Flow

DOROT Control Function Flow Regulation (FR)

Control function Flow Regulation (FR) **Flow Regulation Using CXSD Pilot**	
Applicable models:	Sizes:
300,100,500	1½" – 40/ 40-/1000mm

1. Function Description

Dorot Series 300 Flow Control Valve ('30-FR') is activated by the pressure of the pipeline. The valve limits the flow rate in the network to a preset value, regardless of upstream pressure variations. The valve fully opens when the flow rate drops below the set point.

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)
  S500/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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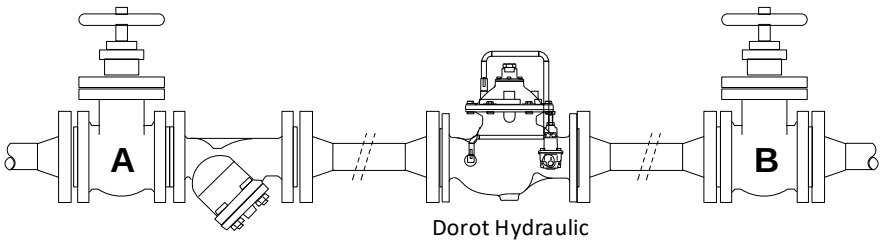
Typical Installation

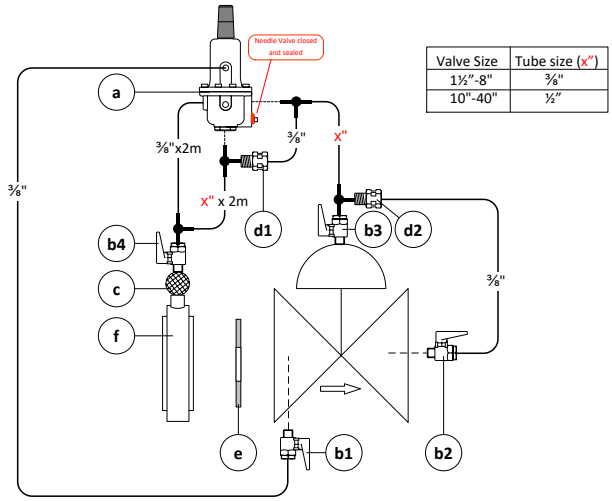


Dorot Hydraulic
Control-valve

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.

5. Control-trim Design



Valve Size	Tube size (x")
1½"-8"	⅜"
10"-40"	½"

Main Parts

a. Pilot Valve, Model CXSD (spring #108)
b. Isolation Ball Valve
c. Self-flushing, Inline Control Filter
d. Nozzle
e. Orifice Plate
f. Orifice Adaptor Ring
(for valves 12"/300mm or smaller)

6. Commissioning & Adjustment

a. Enable unrestricted flow in the network.
b. Open ball valves [b].
c. Start the pump or open isolation valve [A].
d. Bleed air out of the control chamber (refer to 'Air Bleed Procedure' below).
e. Dismantle cover on the pilot valve [a].
f. Adjust flow rate limit using the adjustment bolt on the pilot valve [a]. Turn clockwise to increase flow rate and counter-clockwise to decrease flow rate.
g. Reassemble the adjustment bolt cover.

ⓘ Charging the downstream system must be done slowly to prevent pressure surges

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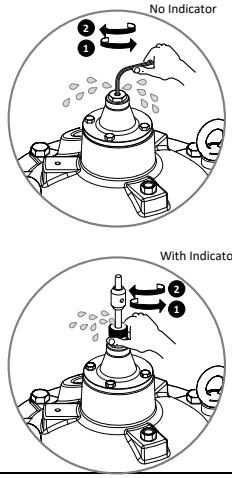
Air bleed in S-300/500 valves

This should be done with the control chamber pressurized (main valve closed)

Using the supplied Allen key – open air-bleed-screw at the top of the bonnet and reclose it when only water, (no air) is discharged (refer to diagram on the right).

In cases where an indicator rod exists – using hand force only – release and tighten the round nut at the top of the indicator guide.



7. Manual Activation

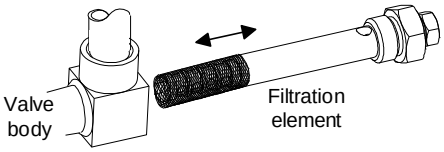
ⓘ Note that

a. The valve can be closed manually by closing ball valve [b2] while valves [b1, b3] are opened.
b. The valve can be set in a fixed position, for maintenance of control circuit, by closing valve [b3, b1 and b2] in that order. The automatic control is cancelled while valve [b3] is closed.

ⓘ Return the valves [b] to "OPEN" position after maintenance is completed.

8. Maintenance

a. Inspect and clean the inline filter [c] as water quality dictates. This service should be performed every few months.
b. During this operation, the main valve must be isolated from external pressure, by closure of up- and downstream isolation valves [A, B].
c. Inspect valve performance by checking water levels periodically.



Extraction of screen element, filter

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9. Troubleshooting		
General check list	Ball valves [b]	All must be open when operated
	Schematic diagram	Verify that piping is consistent with the schematic diagram
	Release air trapped in the control chamber	
	Filter	Check and clean
	System adjustment	Verify that the pilot valve is adjusted correctly
Low downstream flow	Downstream pressure is too low, even though the valve is open	Verify consumption can be supplied by selected valve size
	Manual isolation valves [A] or [B] are throttled/closed	Verify all isolation valves upstream of the pressure gauge are fully open
	Adjustment bolt on pilot valve [a] is open	Readjust (see section 2)
High downstream flow	Downstream pressure is too high	Verify there is no other pressure source in the zone
	Filter [f] and/or needle valve [c] and/or nozzle [d] are clogged.	Check and clean
	Adjustment bolt on pilot valve [a] is too tight	Readjust (see section 2)
	Foreign object stuck in the main valve internal-trim	Disassemble main valve, extract inner trim and flush/remove foreign object
	Cracked main valve diaphragm	Disassemble and replace diaphragm
	Cracked pilot valve diaphragm (water flow from pilot valve bonnet) or defective internal seal	Replace the pilot valve diaphragm assembly