

	Nomenclature - Requirements	
number: NP-3192923		
review: A	REGULATING VALVE DN500 PN10	

1 Closure requirements

- Order quantity 2 pcs.
- These are operational control valves in the bypass of DN4200 PN10 dampers.
- Type considered: plunger valve; the manufacturer will suggest a suitable type.
- The valve is installed at the end of the DN500 bypass pipe, the valve axis position is rising, the slope from
The angle of the horizontal plane is approximately 35°. The outlet from the valve is into the DN4200 pipe.
- Required connection DN500 PN10.
- Electromotive control (we assume Auma).
- Medium: river water, can also carry sand.
- The assumed operating water velocity through the bypass pipe is $v = 4 \text{ m/s}$.
- We require water speed control with a valve.
- We require operation free of cavitation and dangerous vibrations throughout the entire control range.
- Maximum operating pressure up to 64 m water column (mvs).
- Maximum pressure during emergency closing 0.8 MPa (water hammer).
- Materials: steel body, closing member + spindle stainless steel.
- Valve operating temperature $-25 \text{ °C} \div +30 \text{ °C}$.
- Seismicity dle „Seismic design code – Part I – Design provision for buildings“ indicative P 100-1/2013,
acceleration $g_{\text{design}} = 0.20 \text{ g}$ for an earthquake with an average recurrence interval IMR = 225 years and 20%
probability of exceedance in 50 years, control spectrum of response spectrum TC = 0.7 s.

2 Function description

This is a control valve for bypassing the flap valves of the hydropower plant's feeder. It is assumed that the flap valves will be open for a long time.

The bypass will be closed most of the time. The pressure upstream of the control valve will be between 64 mvs and 0 mvs. The pressure downstream of the control valve will be between 0 mvs and 64 mvs. The valve manufacturer may recommend periodic check opening and closing to verify its functionality.

The control valve will be open in the event of filling the feeder between the operating damper and the turbine distributor, or when there is a requirement to equalize the pressures upstream and downstream of the operating damper.

When filling the feeder (about 1400 m³), the valve will be opened to the required water speed in the bypass pipe. The valve opening time will be in minutes. After reaching a certain pressure in the feeder, the valve will be closed. This pressure in the feeder is then maintained (the control valve is closed). In several steps as described above, the entire feeder will be filled (opening the valve - filling the feeder - closing the valve - maintaining the required pressure). Only after the feeder is filled will the filled part of the feeder be pressurized (to equalize the pressures). After the pressures have been equalized, the flap valve will be

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open and the bypass control valve closed. We assume this operating mode in units of cycles over the valve's lifetime.

Feeder filling sequence:

1. Open the valve to a maximum flow rate of 0.75 m³/s for 10 minutes. 2. Close the valve completely.
3. Open the valve to a maximum flow rate of 0.75 m³/s for 8 minutes. 4. Close the valve completely.
5. Open the valve to a maximum flow rate of 0.79 m³/s for 6 minutes. 6. Close the valve completely.
7. Open the valve to a maximum flow rate of 0.79 m³/s for 6 minutes.

Furthermore: the closing time from the maximum flow rate of 0.79 m³/s to the fully closed state must not exceed 1 minute; the opening time from the fully closed state to a flow rate of 0.79 m³/s must not exceed 1 minute.

The second operation option is to simply equalize the pressures upstream and downstream of the damper, without the need to fill the empty feeder. This operation will last on the order of seconds, at most a few minutes. We assume this operating mode several times in a year.

3 Flange design requirement

- We require sealing surface type H according to ČSN EN 1092-1, (see appendix). • Unspecified dimensions will be in accordance with ČSN EN 1092-1.
- We prefer flange designs while maintaining the standard cap length.
- Centering collar type H according to EN 1092-1 with diameter "z" in tolerance h10; required height "f4" = 4.5 mm (according to EN it is only 3 mm). Starting chamfer "mx 45°" = 1 x 45°.
- We require the recesses for the contact surfaces of the nuts (bolts) on the inside of the flanges to be unpainted, only preserved (countersink with diameter Dz = 48 mm to depth t = max. 2 mm). For stainless steel body there is no Countersinking is necessary if the seating surface is machined and parallel to the flange face.
- Surfaces with the required roughness Ra 1.6 μm and Ra 3.2 μm should only be preserved, other surfaces should be painted.

4 Requirements for the electric drive

- We require a self-locking drive, Auma solution or similar.
- We require a maximum opening/closing time of 60 seconds (please specify the exact time in the offer).
- Voltage for the drive 1x 230 V AC / 3x 400 V AC; 50 Hz. • Sensors 24 V DC (positions open - closed). Sensors with the possibility of alternatively connecting as a normally open or normally closed contact. • Continuous position sensor 4-20 mA.
- Optical position indicator, heating element, thermostat, torque switches, operation indicator light.
- We prefer sensors with connection to a terminal block or with a connector without wiring. • An alternative manual control option is required (e.g. handwheel).
- AUMA must be equipped with an AUMAMATIC control unit (e.g. wiring diagram TPCA-1B1-1C1-A000 TPA 00R100-0/1-000).

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5 Surface treatment requirements

- The requirement for coatings does not apply to stainless steel parts and surfaces.
- Surface protection for environments with 100% humidity, risk of splashing water, etc.
- Coatings will be performed according to the attached coating specification.
- Upon mutual agreement, it can be performed according to the manufacturer's technology.

6 Required documentation according to the Quality Control Plan (during implementation)

- Documentation language: English and Czech.

Declaration of conformity with the order according to ČSN EN 10204–2.1.

- Inspection certificate (test report) according to EN 10204–3.1.
- Catalog sheet for the closure.
- Installation, operation and maintenance instructions for the closure.
- Result of tests P10 (body strength), P11 (body tightness) and P12 (seat tightness) according to EN 12 266-1.
- Result of functional test F20 according to EN 12 266-2.
- For coatings: blasting protocol, coating thickness measurement.
- Assembly, operation and maintenance instructions for the drive.

Catalog sheet for the electric drive (dimensions, technical data, electrical data). • Wiring diagram. • Declaration of incorporation of partly completed machinery

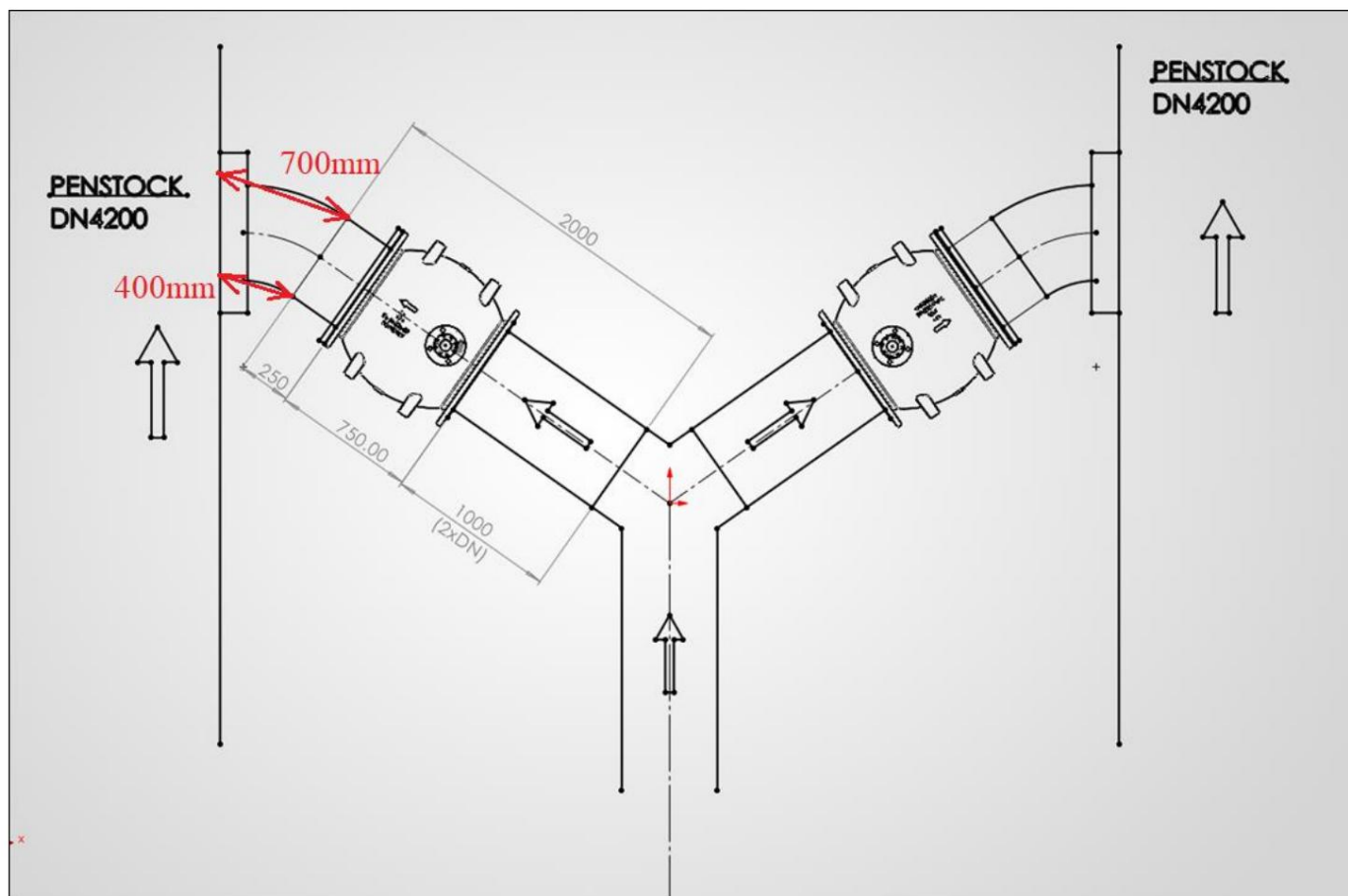
(Directive 2006/42/EC) including declaration of conformity with regard to electromagnetic compatibility (Directive 2014/30/EU); declaration intended for Romania.

7 Other required documentation

- 3D model of the closure including the drive in STEP format (solids, not just surfaces).
- Exact marking of spare parts or spare parts catalog sheets.

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8 Valve locations



9 Attachments

- Flange treatment sketch CKD-52844
- Coating specifications CKD-740142-04