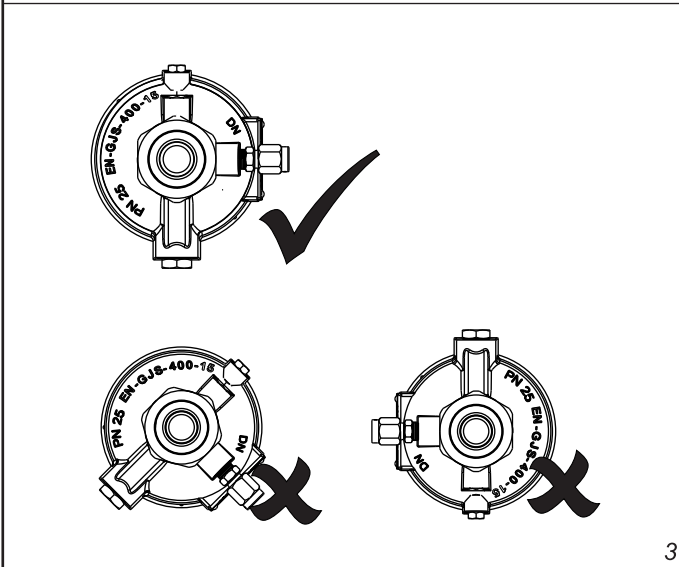


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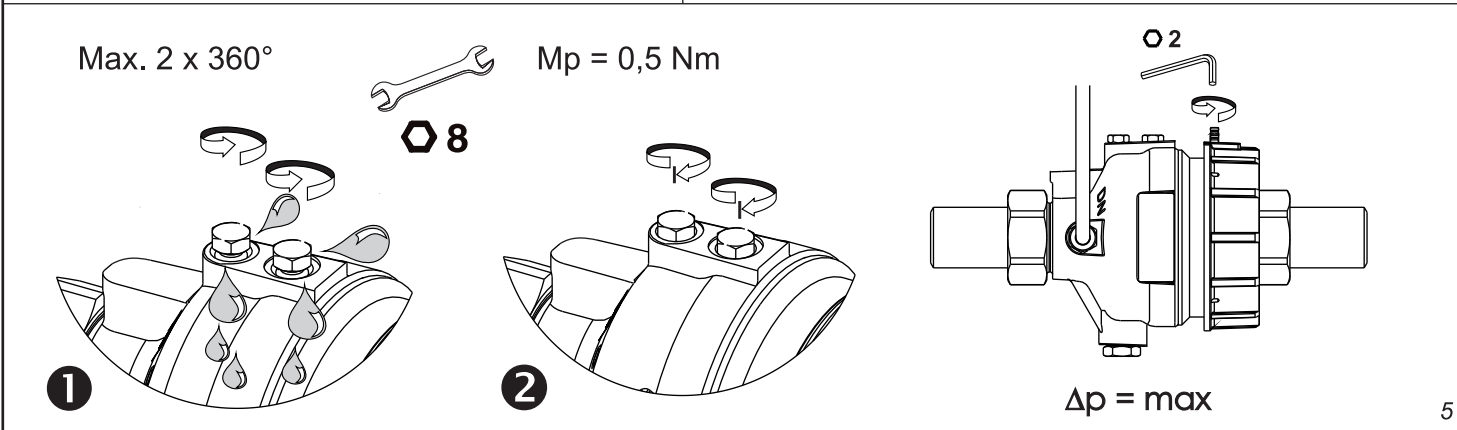
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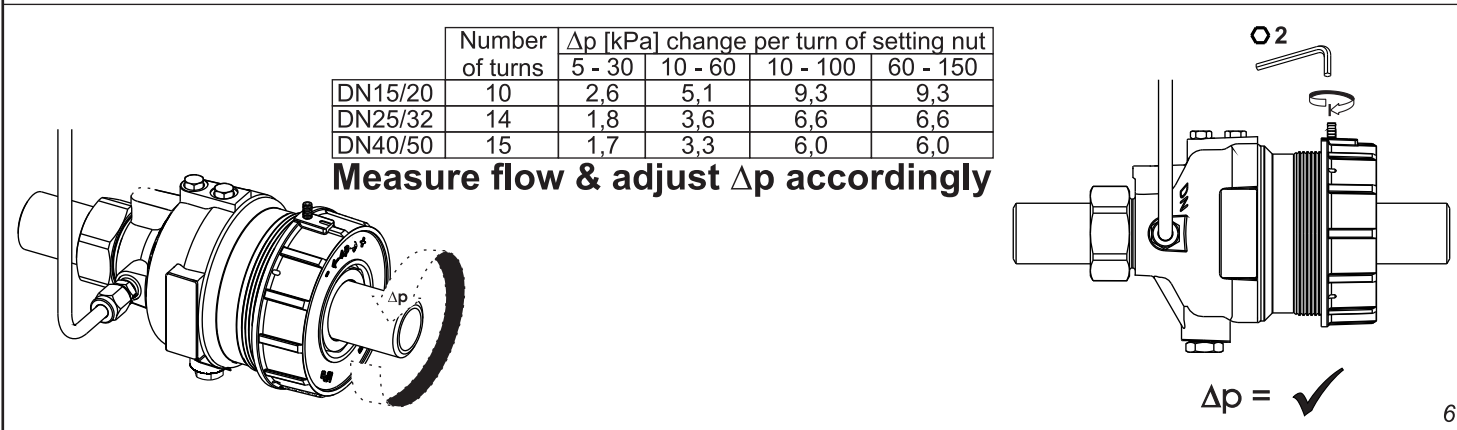
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4

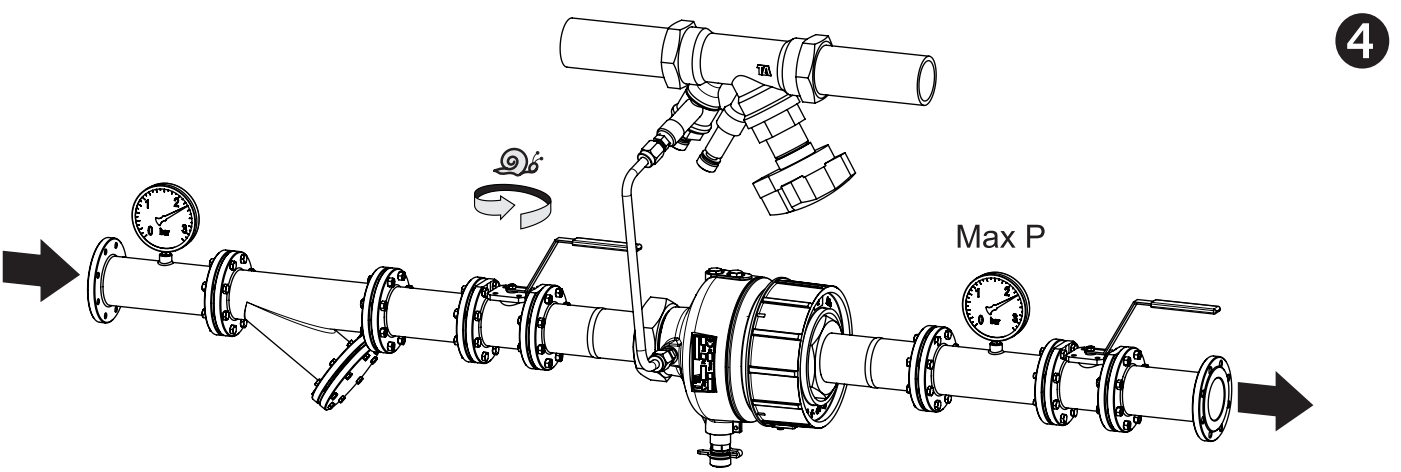
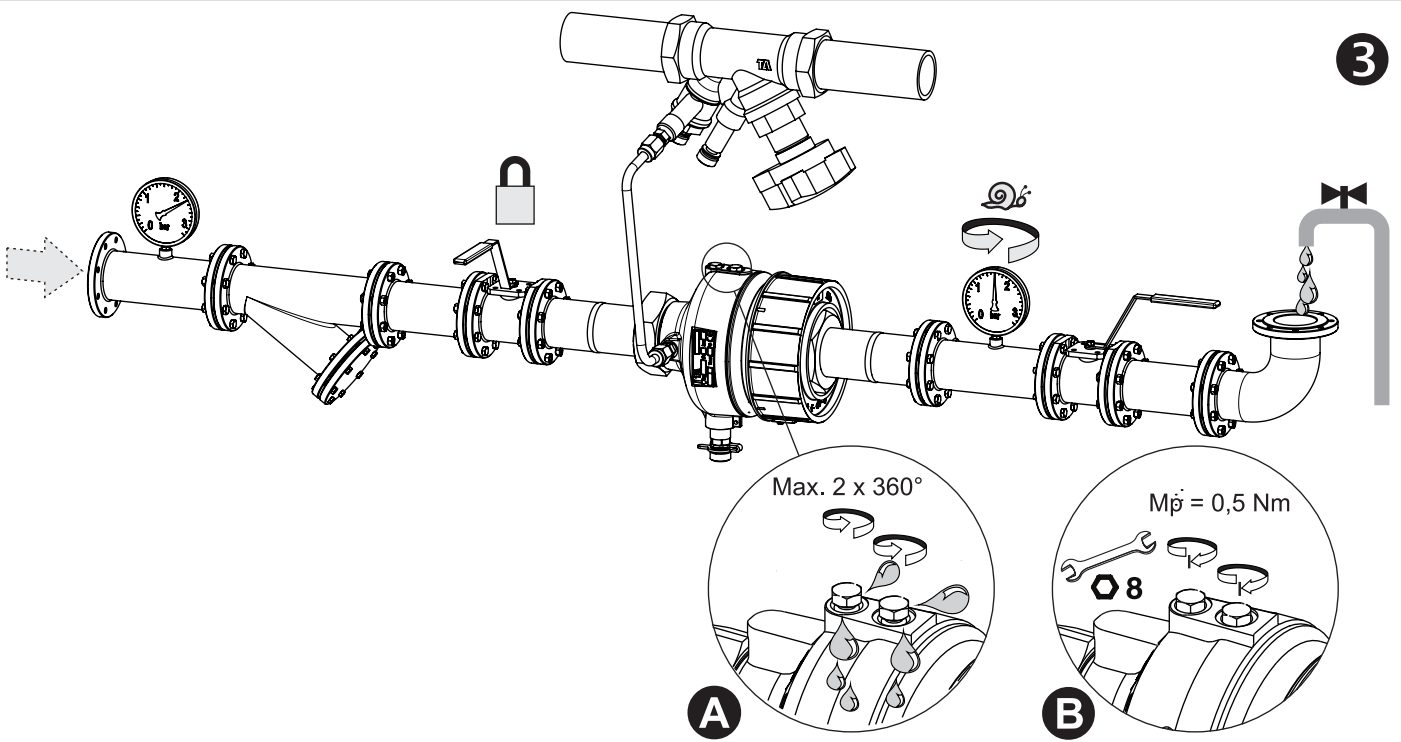
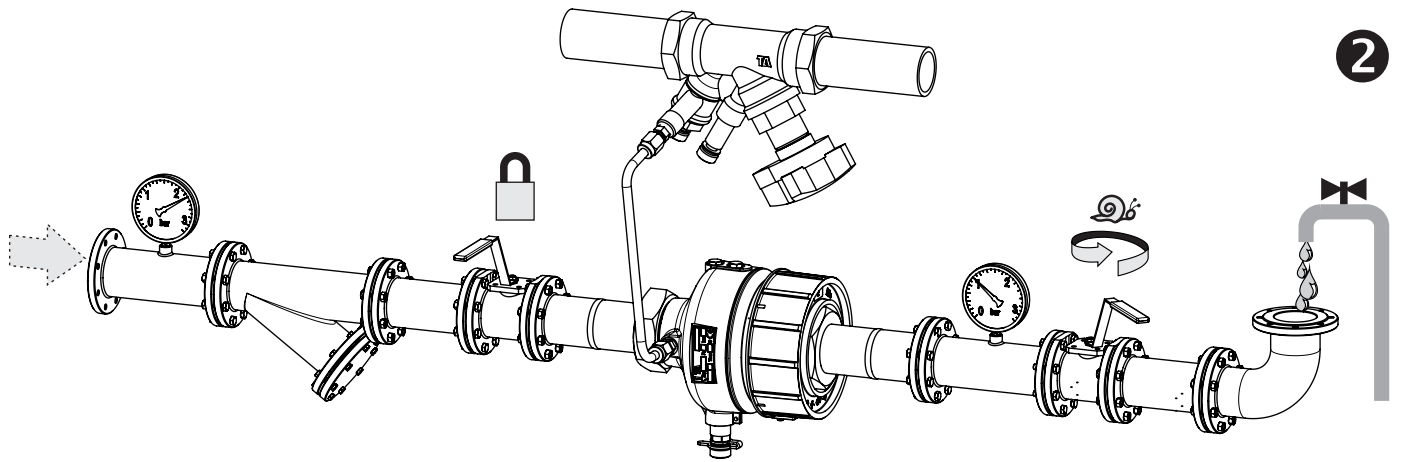
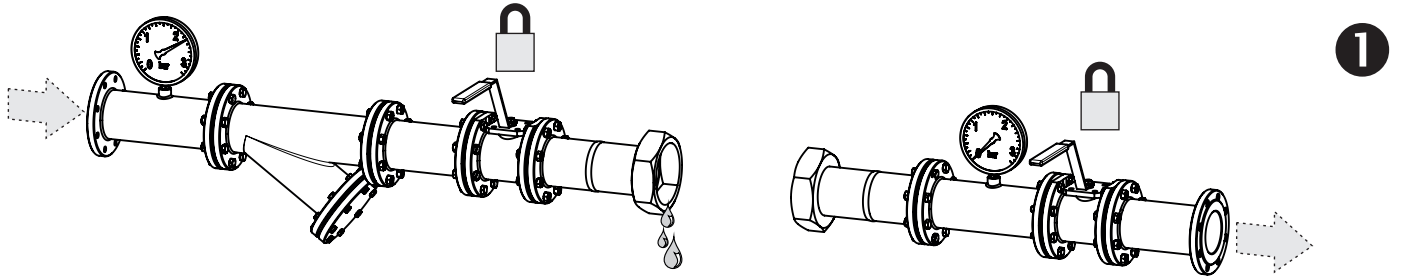


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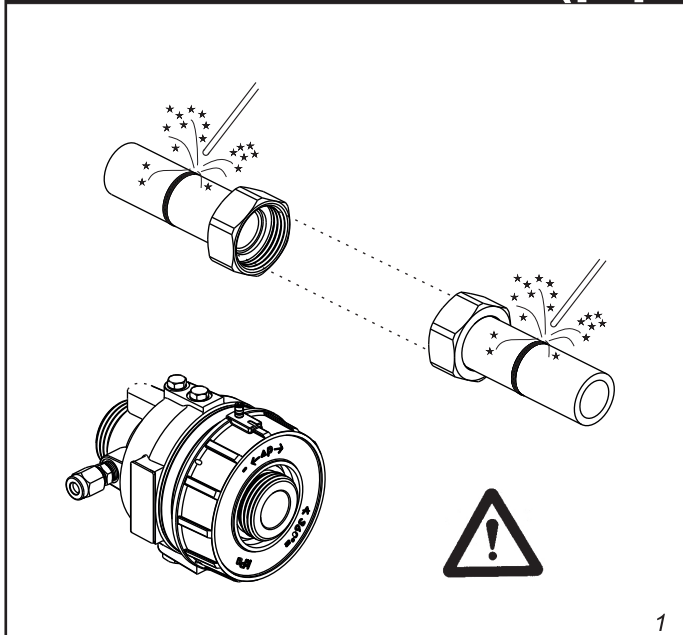


6

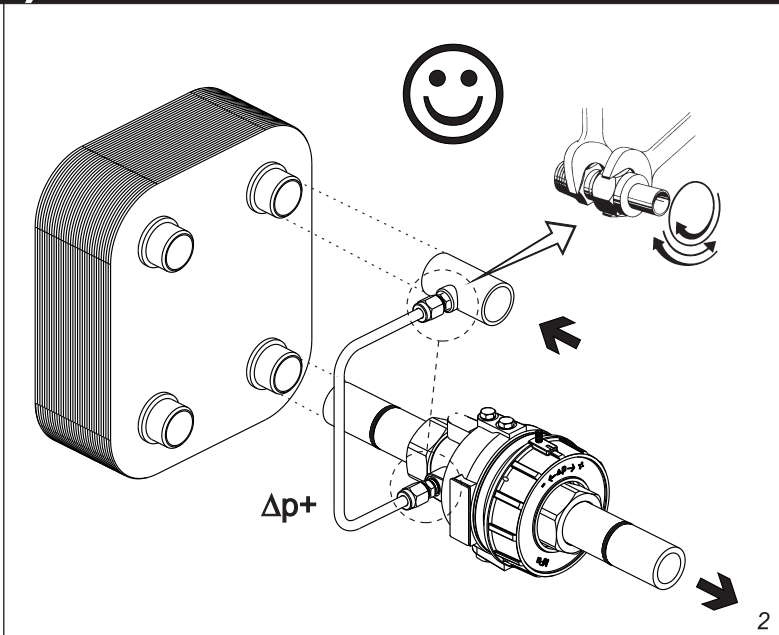
# DA 516 - START-UP PROCEDURE



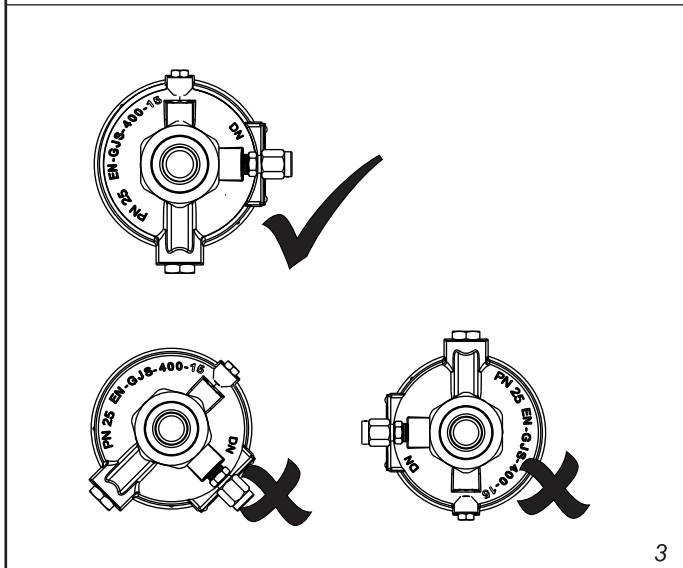
# DA 516 DN 15-50 (pipe)



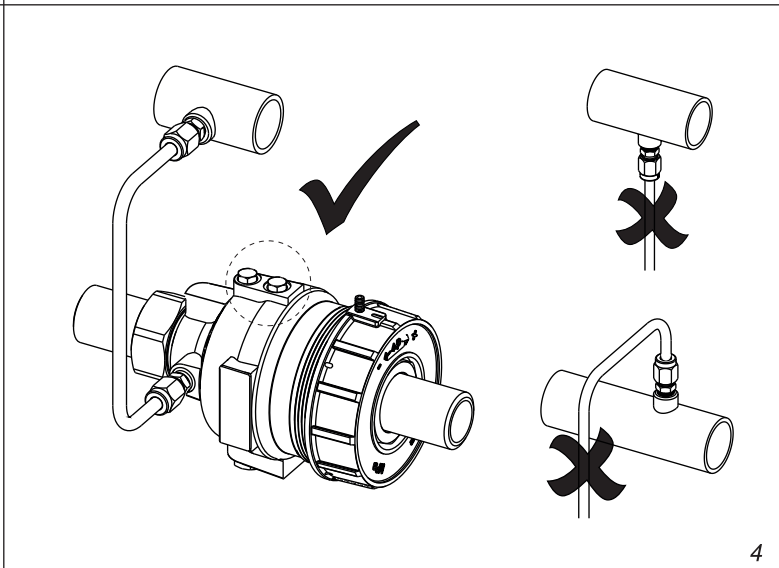
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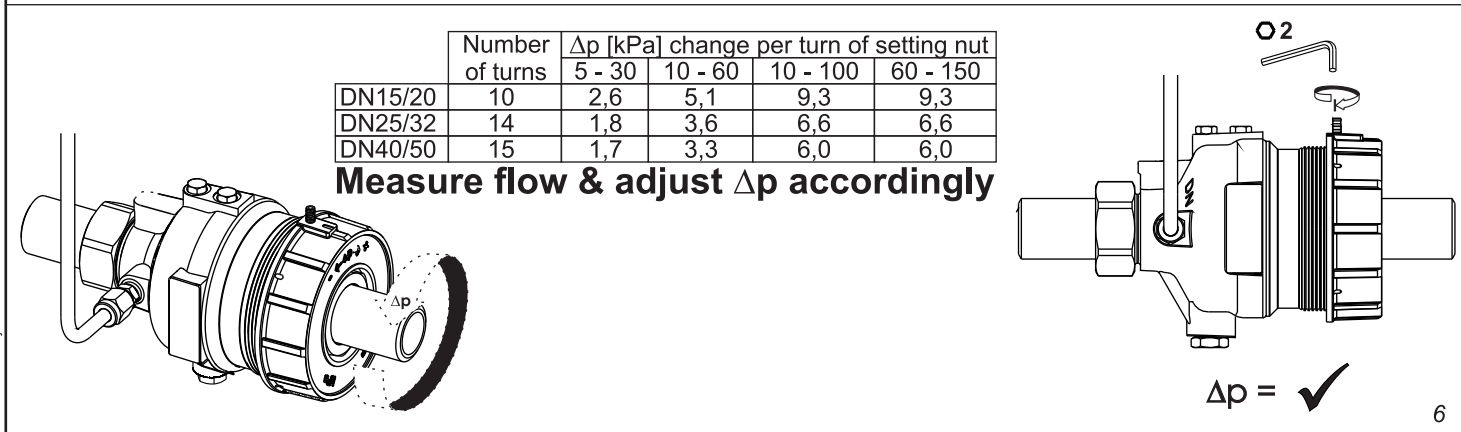
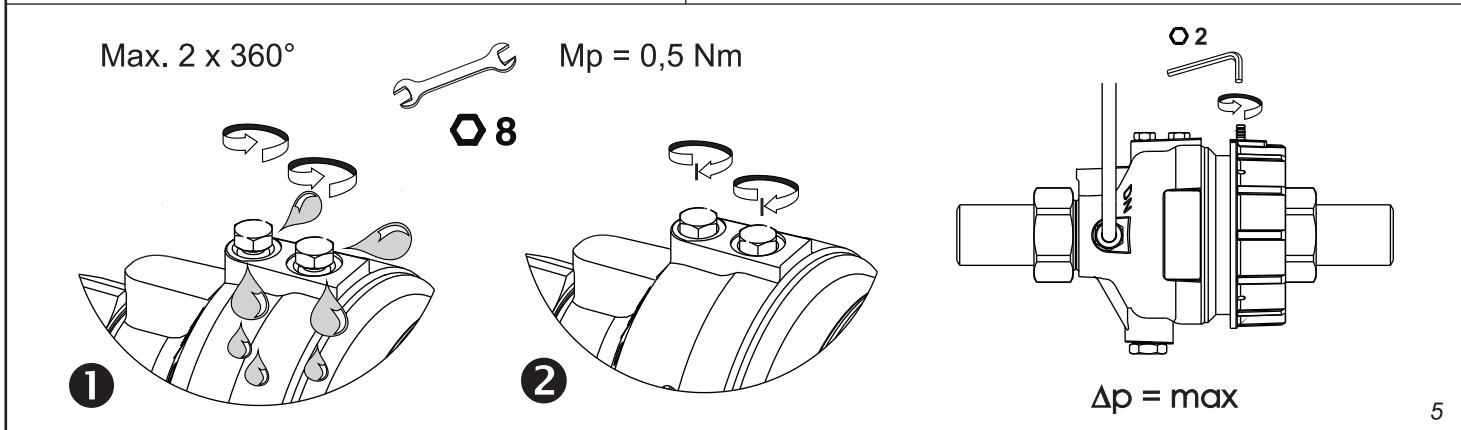
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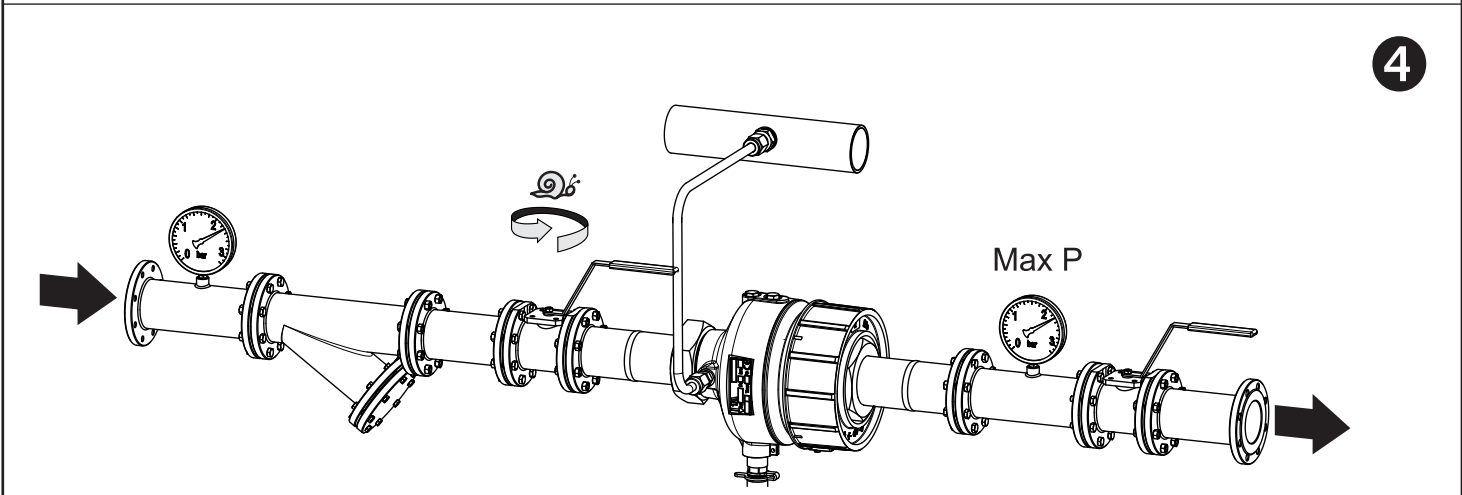
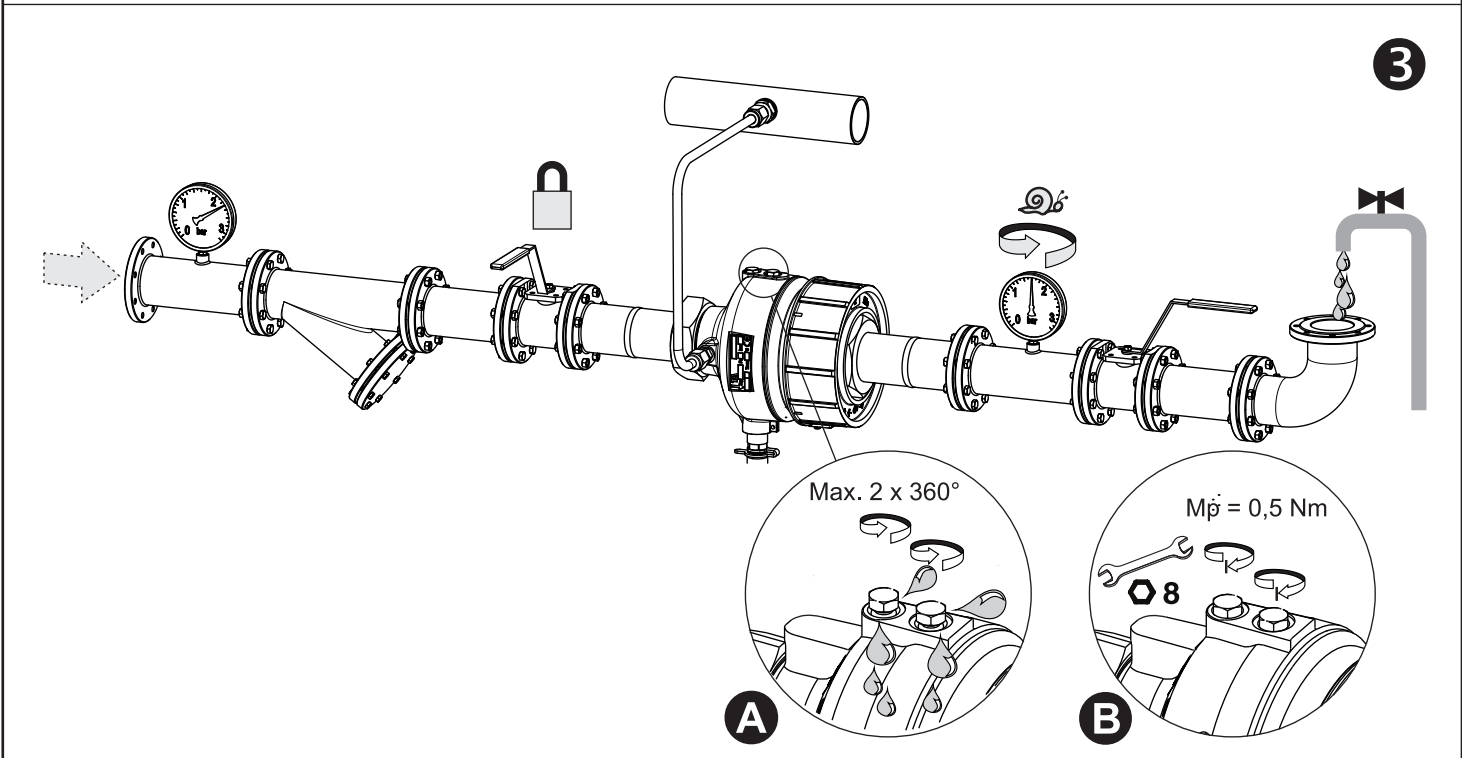
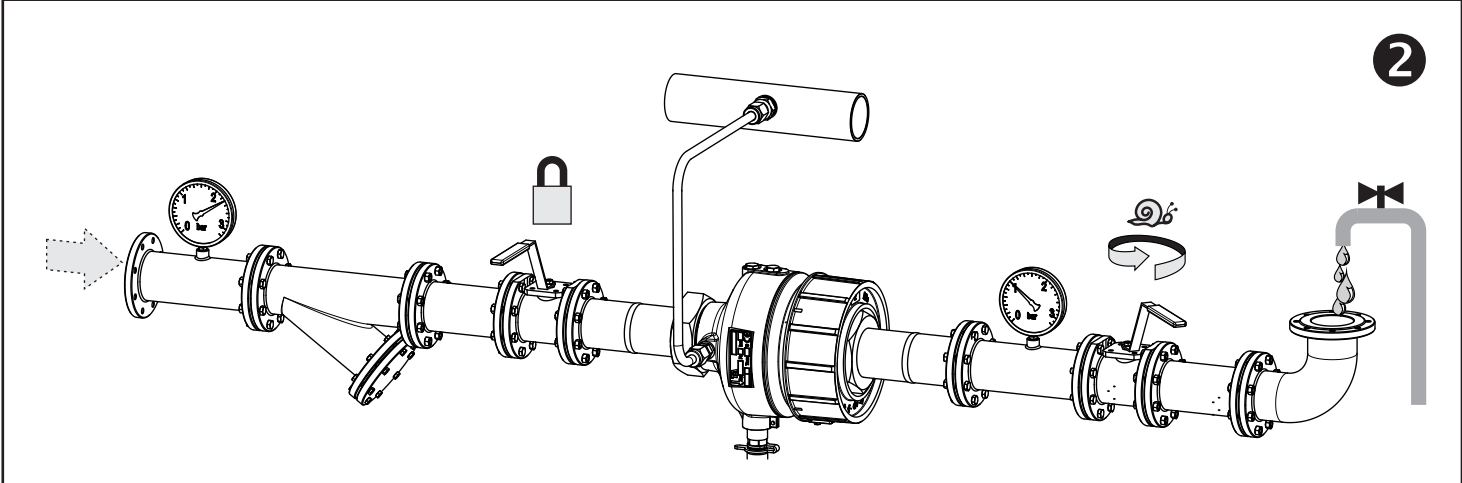
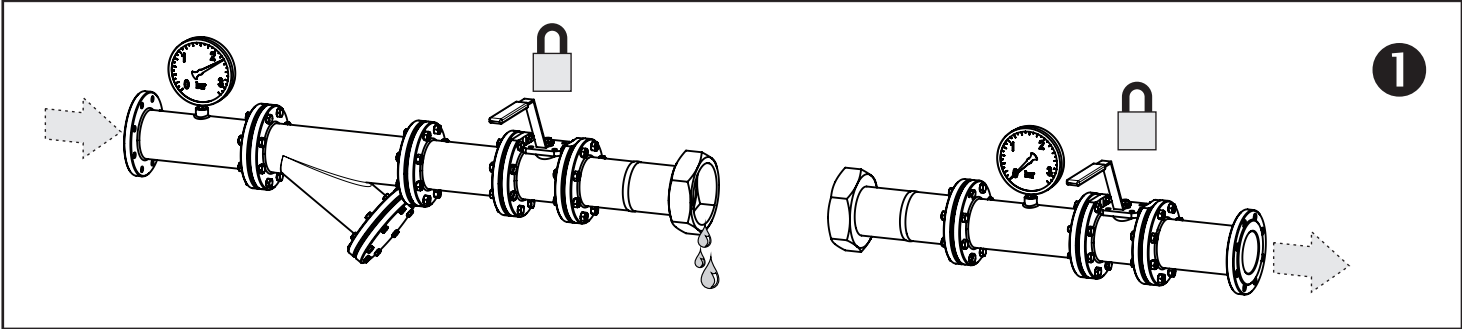


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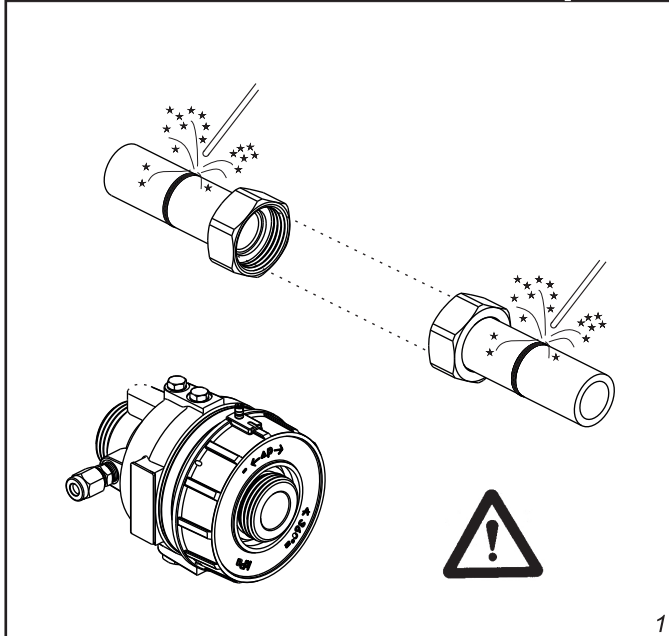


4

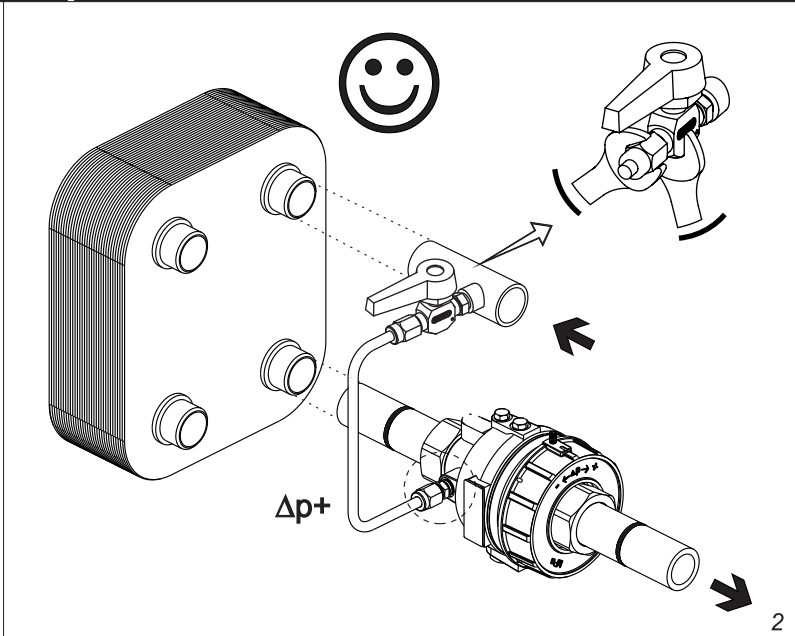




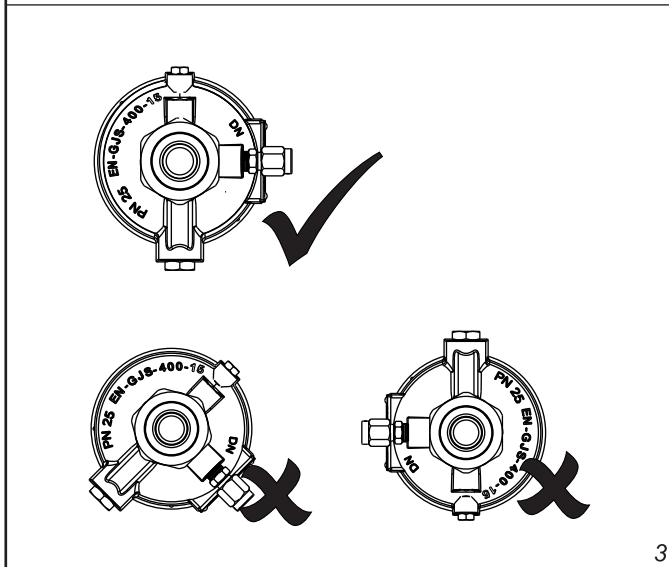
# DA 516 DN 15-50 (valve)



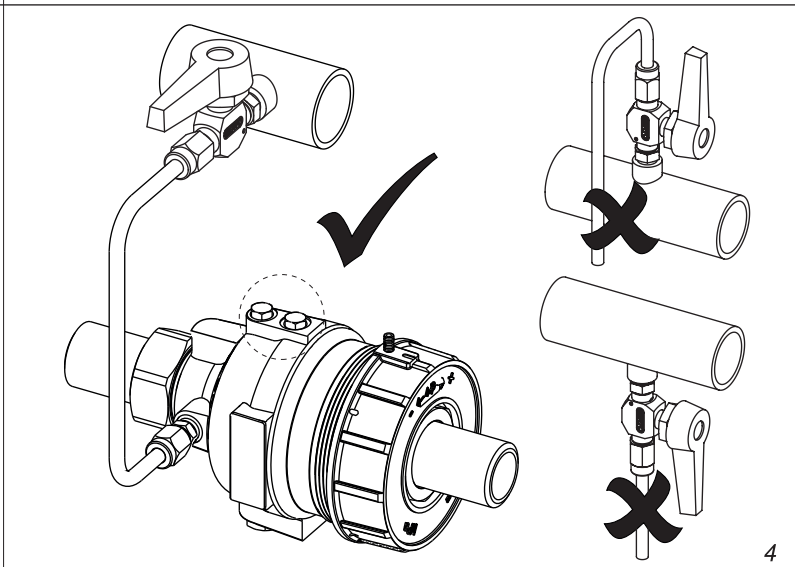
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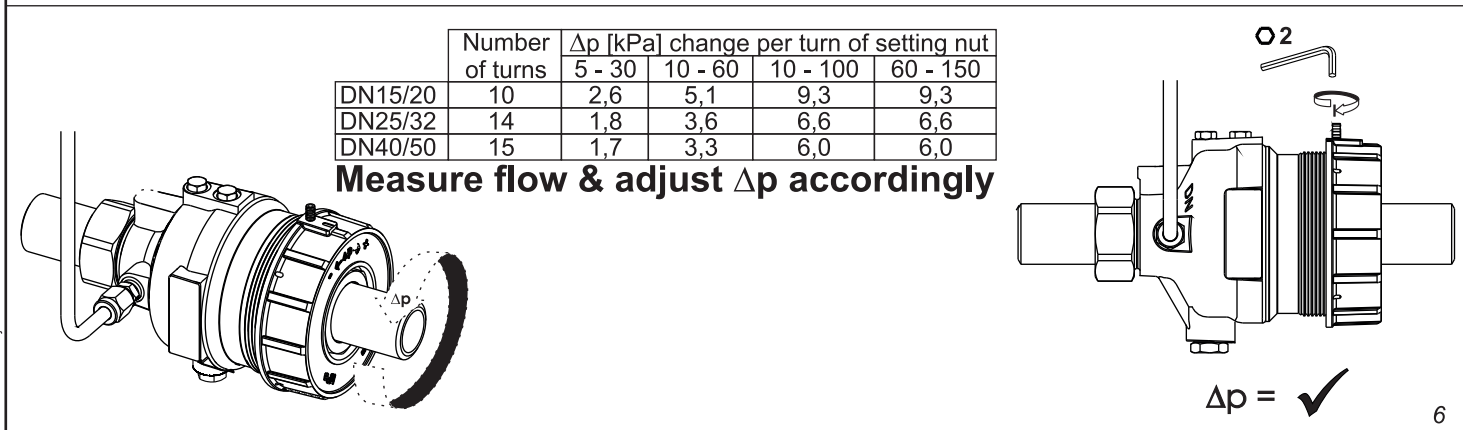
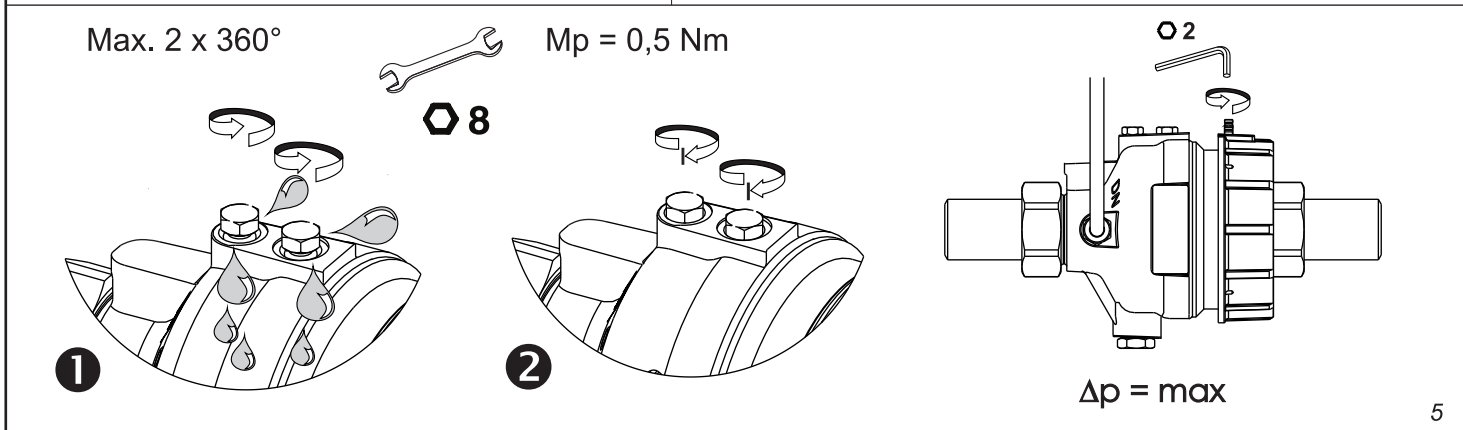
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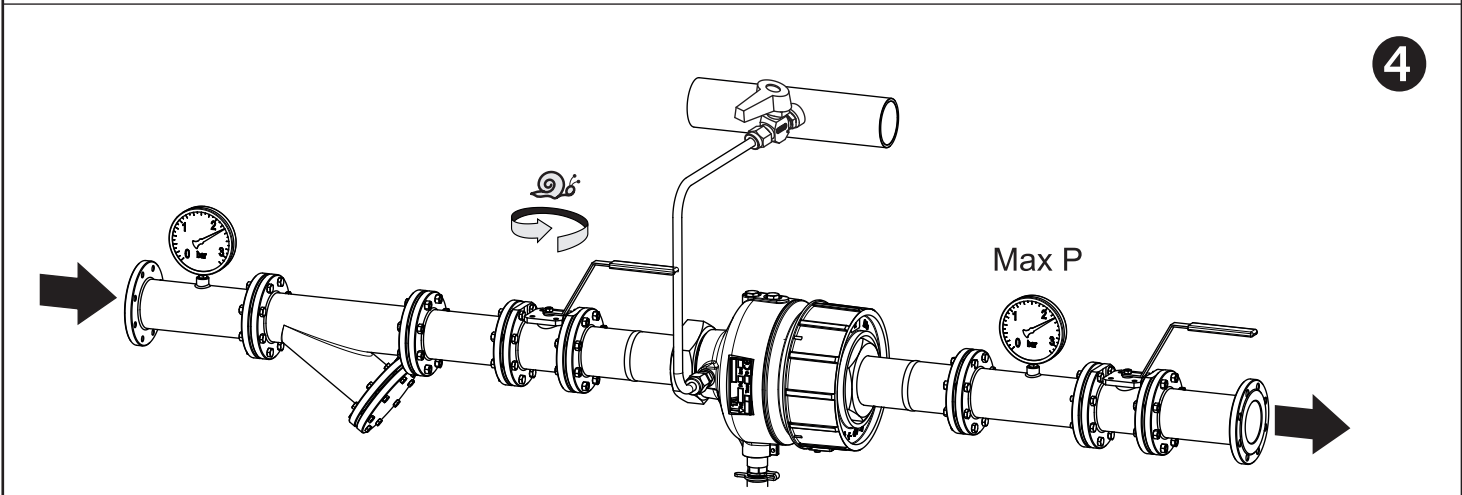
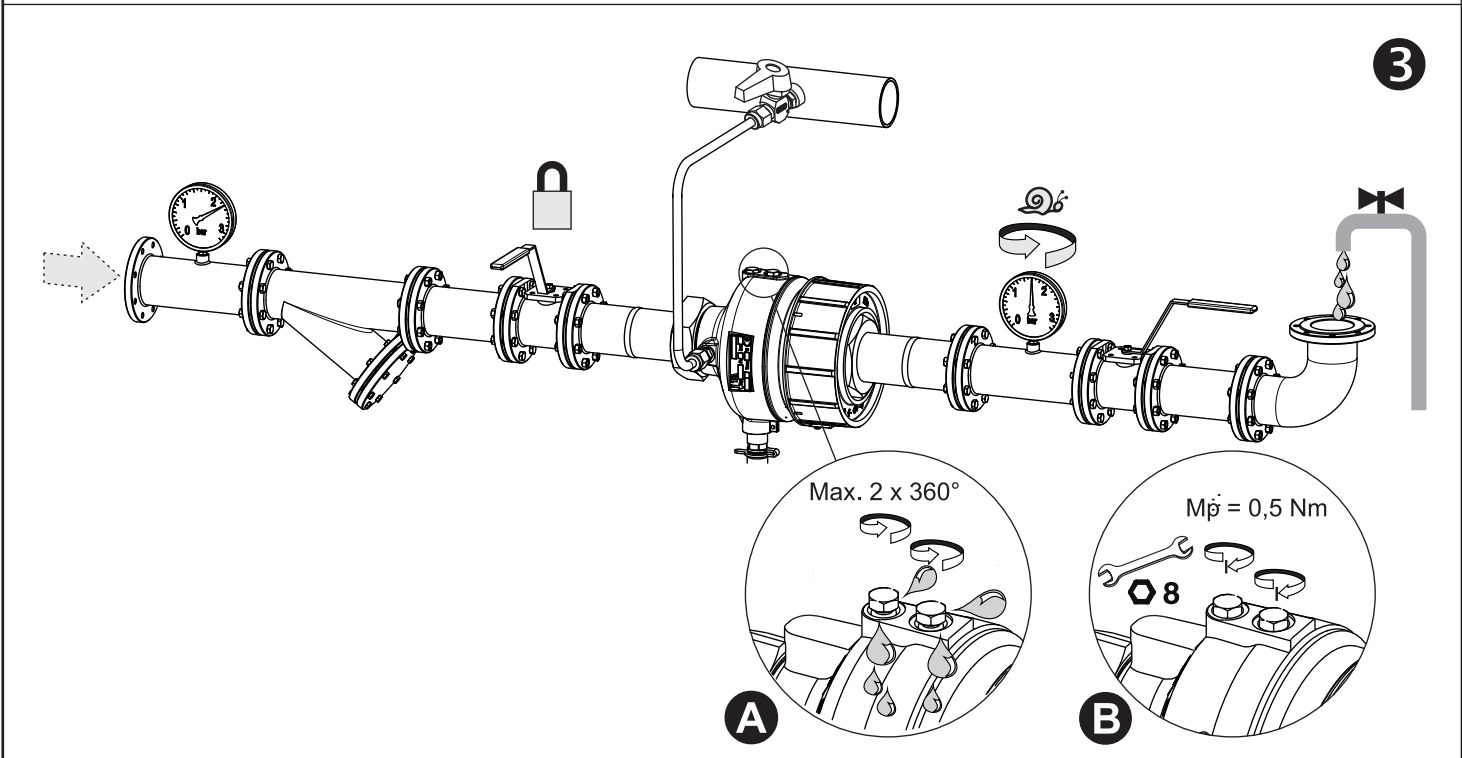
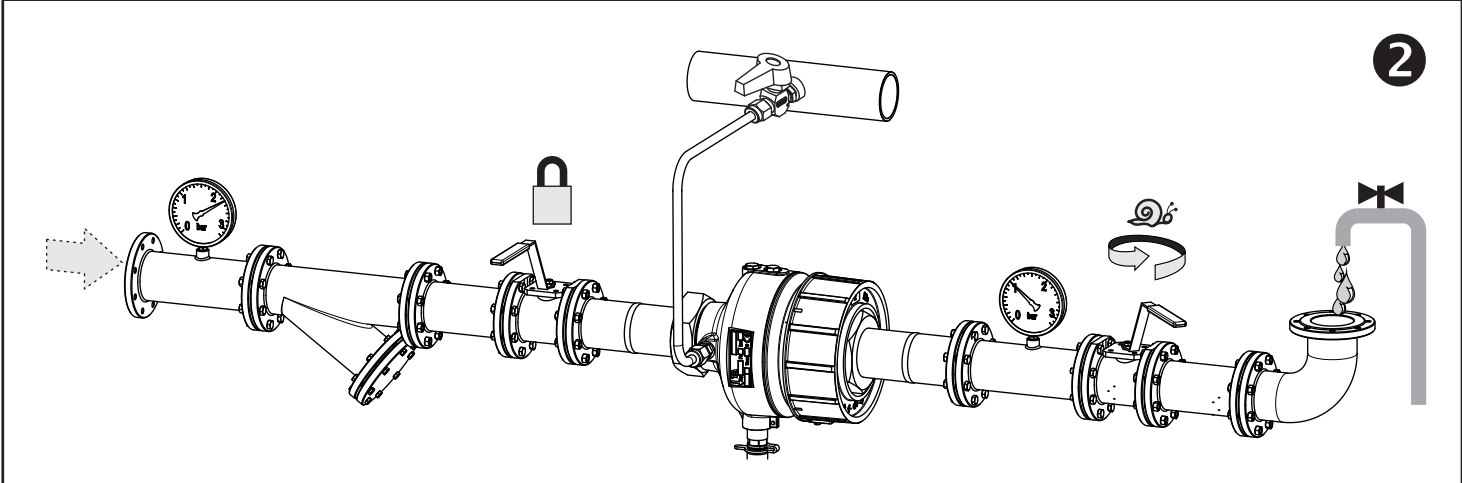
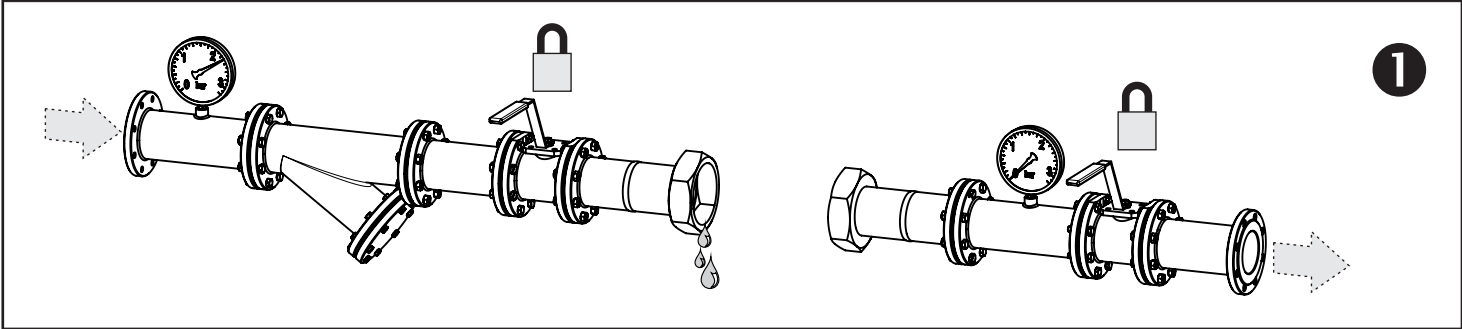


3



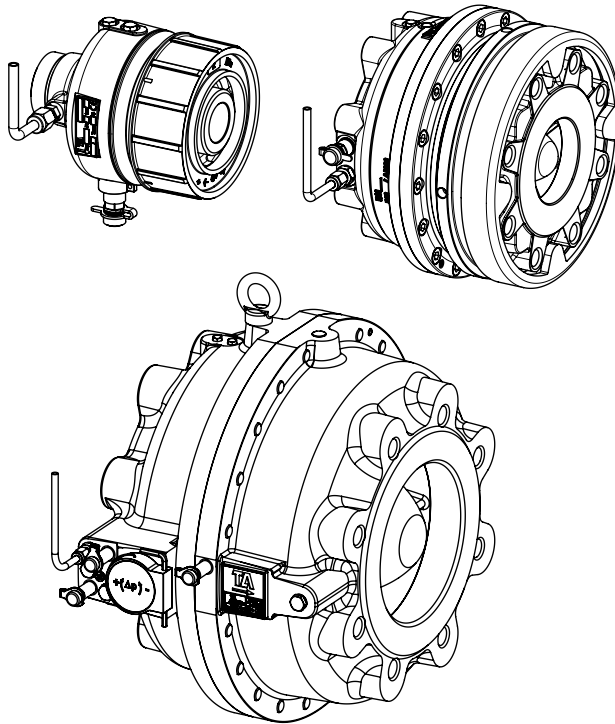
4





# DA 516 (DN 15 -150)

Installation, maintenance and operating instructions



## General

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- High-performing and compact, these differential pressure controllers for heating and cooling systems are particularly effective in situations requiring high temperatures and/or pressure drops.
- They are also suitable for use on the primary and secondary side in district heating and cooling systems.
- Rust protection is assured due to the electrophoretically painted ductile iron body (KTL).

## Marking

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The valve displays the following data:

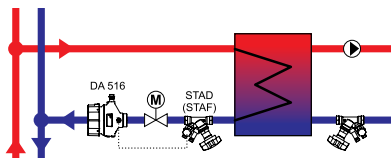
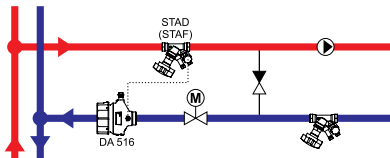
- TAH - Manufacturer: according to table 3
- Material: according to table 2
- DN: according to table 2
- Max. (PN) working pressure according to table 2
- CE-marking according to table 1; 3
- → Unidirectional flow arrow for the recommended direction of flow
- Max. permitted temperature: 120°C (table 3)
- Setting range: 5-30, 10-60, 10-100, 60-150, 100-400 kPa (table 3)
- Date of manufacture: year, week (table 3)

## Installation

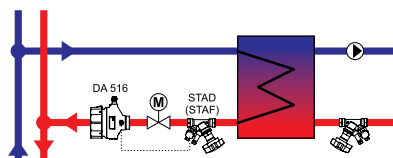
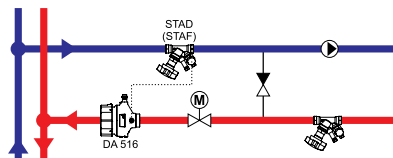
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- The valve serving the terminal unit can be installed in the return pipe

- Heating



- Cooling





- The valve may be installed in a vertical, horizontal or inclined pipeline.
- The valve should be installed to match the direction of flow, with the flow direction arrow shown on the valve body or on the identification plate.
- Install the valve so that venting is possible and the  $\Delta p$  pressure adjustment pilot is visible and accessible.
- Check allowed positions of the presetting nut / pilot and provide adequate space for future service and maintenance.
- Installation of a strainer upstream of the valve is strongly recommended.

## Installation - Preparation

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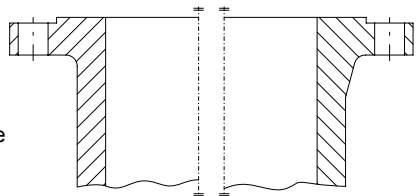
- Ensure valve is suitable for service conditions e.g. pressure, temperature, service media.
- Ensure the pipe system has been cleaned.
- Ensure the strainer is installed.
- Ensure all sealing surfaces are clean and undamaged.
- The installation shall provide adequate means of draining and venting to avoid harmful effects such as water hammer, vacuum collapse, corrosion and uncontrolled chemical reactions and to permit cleaning, inspection and maintenance in the correct manner.
- The valve has been designed for load, appropriate to its intended use and other reasonable foreseeable operating conditions. Load caused by traffic, wind and earthquake, have not been taken into account.

## Flange Joints

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Flanges may be damaged by over tightening the bolts. The following procedures will reduce this risk:

- Check that the counter-flanges are parallel before the valve is installed.
- Lubricate the threads on the bolts and fit washers. Ensure adequate lubrication of bolts and washers.
- Full faced gaskets should be used with integral flanges according to standard EN 1092-2:1997 (Type 21).
- Always use the correct size and number of bolts.
- Tighten the bolts crosswise using a torque wrench to the tightening torque set out in table 4.
- Check that the full faced gaskets are in accordance with the given standard for flanges and that they are centred correctly on the sealing surfaces.



## Threaded Joints

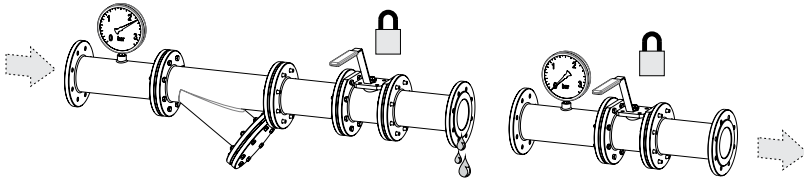
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- The valves are supplied with the external inch threads ends.
- To avoid distortion of the valve during installation, the valve must be held with the proper tools so that the valve is in line.
- Care should be taken to avoid 'pipe ending'. This is a condition that occurs when the pipe is screwed in too far resulting in distortion to the valve seat.
- The male thread on the pipe must have fully formed undamaged threads.

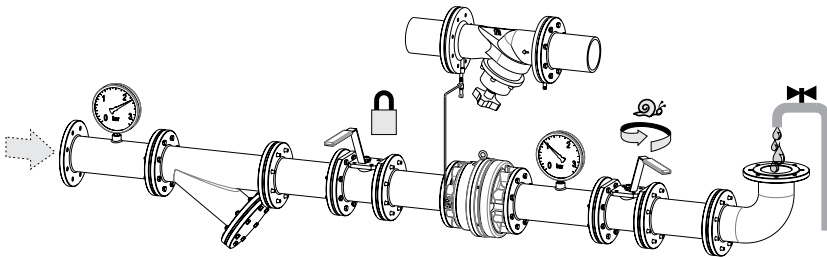
## Start-up procedure

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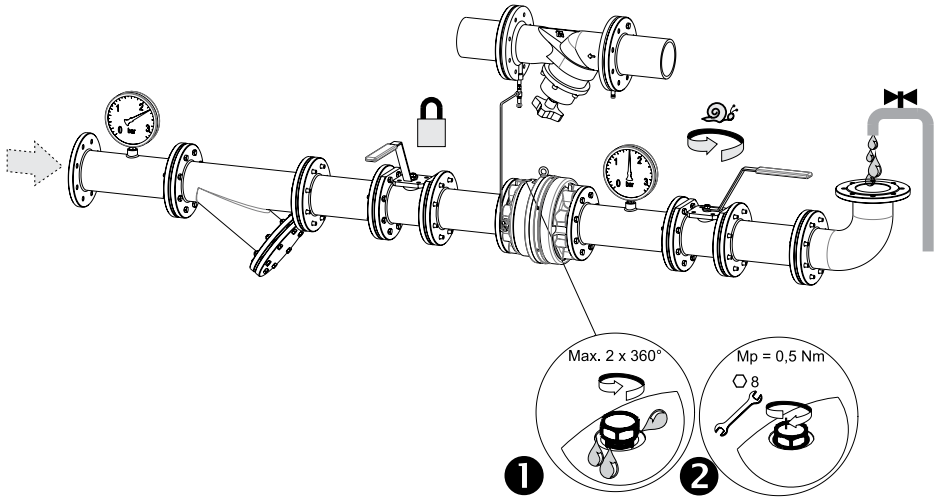
- Install the valve into dry pipe. Verify the installation of a strainer upstream of the DA valve. Isolation valves at the inlet and outlet side of the DA should be closed.



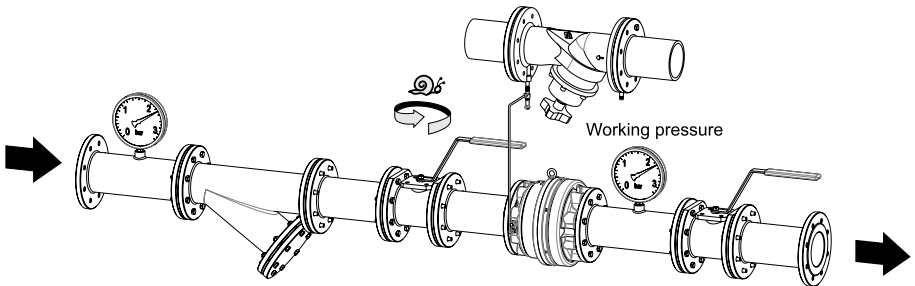
- Fill the system with the tap water from the reverse side by slowly opening the isolation valve at the outlet side of the DA, while the isolation valve at the inlet side of the DA is still closed.



When the isolation valve on the outlet side of the DA valve is fully open and the valve is under pressure, vent the valve by using an 8 mm spanner.



- Slowly open the isolation valve at the inlet side of the DA.



- Reversing the flow and flushing through the DA valve is not allowed!!!

## **Pre-commission**

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- Check that the arrow on the valve body is in the same direction as the flow.
- Check that the strainer basket is clean.
- Slowly fill the system with the tap water according to the «Start-up procedure»
- Close the bypasses.
- Check sealing.

## **Commission**

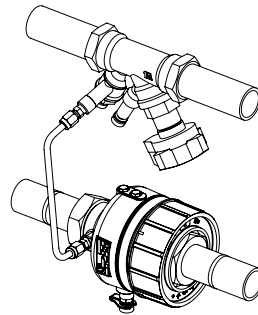
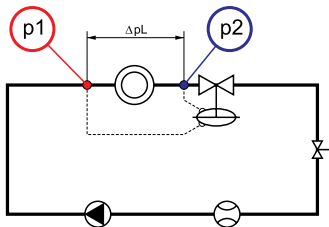
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- Slowly raise the pressure to working pressure.
- Vent the valve.
- Check sealing.
- Set the  $\Delta p$  according to the table supplied with the valve or from table 5.

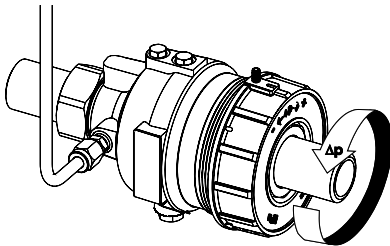
## Presetting

### DN 15 - 50

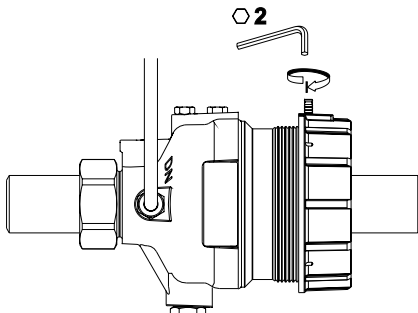
Factory setting is on **maximum** value of  $\Delta p$  range. Example of presetting the valve DA 516 DN 25  $\Delta p$  10-100 kPa, to 50 kPa is done as follows:



- Unscrew the fixing screw with 2 mm allen key.
- With both hands turn the setting nut anticlockwise to decrease the setting on min. value. When the setting nut and spanners are no longer in contact (lower resistance at unscrewing), start with the presetting.
- With both hands turn the setting nut clockwise to increase the setting. Between the turning, count the turns.



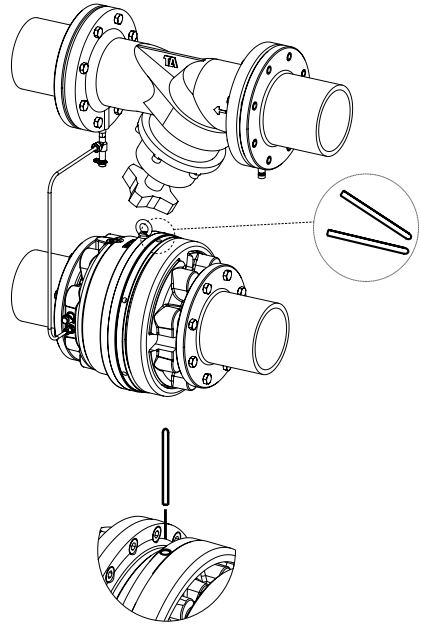
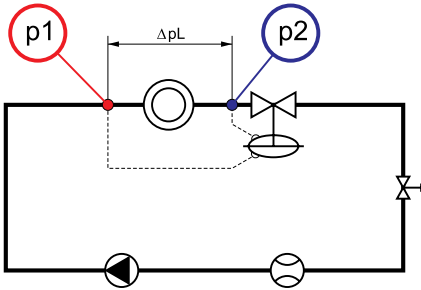
- Set  $\Delta p$  according to the table 5. In this example you need to turn the setting nut for 6 turns. For finetuning use TA-SCOPE or U-pipe.
- By turning setting nut clockwise you will increase the setting and vice versa.



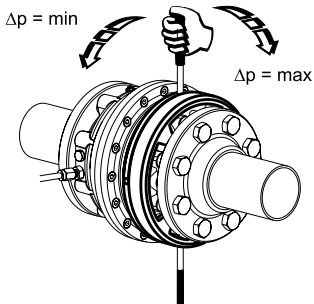
- After adjustment, screw the fixing screw with 2 mm allen key to protect the setting.

## Presetting DN 65 - 125

- Factory setting is on half value of  $\Delta p$  range. Example of presetting the valve DA 516 DN 100  $\Delta p$  10-100 kPa, to 50 kPa is done as follow:



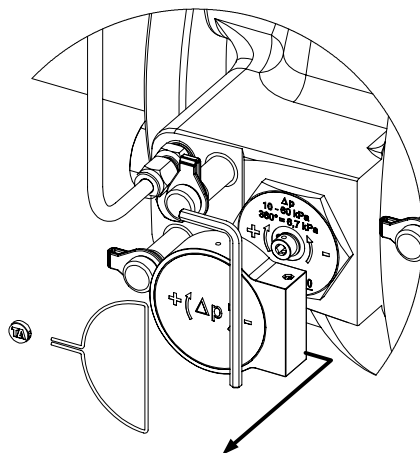
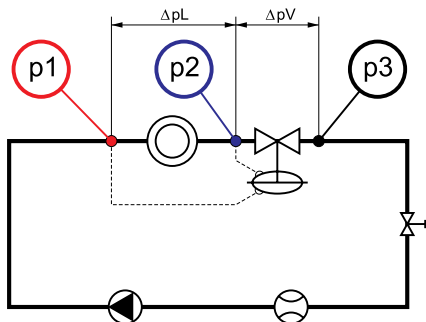
- Use the two sticks delivered with the valve and set it into the holes on the setting nut.
- With sticks and both hands turn the setting nut anticlockwise to decrease the setting to the min. value. When the setting nut and spanners are no longer in contact (lower resistance at unscrewing), start with the presetting.
- With sticks and both hands turn the setting nut clockwise to increase the setting. Between the turning, count the turns



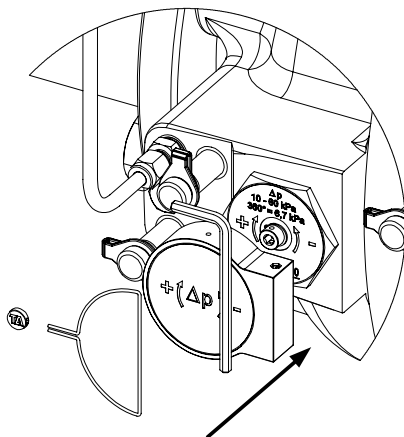
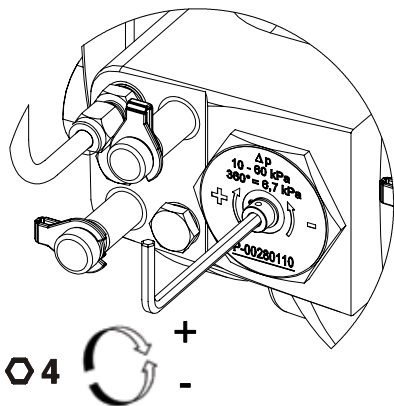
- Set  $\Delta p$  according to the table 5. In this example you need to turn the setting nut for 2.9 turns. For fine-tuning use TA-SCOPE or U-pipe.
- By turning setting nut clockwise you will increase the setting and vice versa.

## Presetting DN 150

Factory setting is on minimum value of  $\Delta p$  range. Example of presetting the valve DA 516 DN 150  $\Delta p$  10-100 kPa, to 50 kPa is done as follow:



- Remove the plomb wire and protect cover from the pilot.
- Use the 4 mm allen key delivered with the valve (it is on protect cover) and set it into the setting spanner.

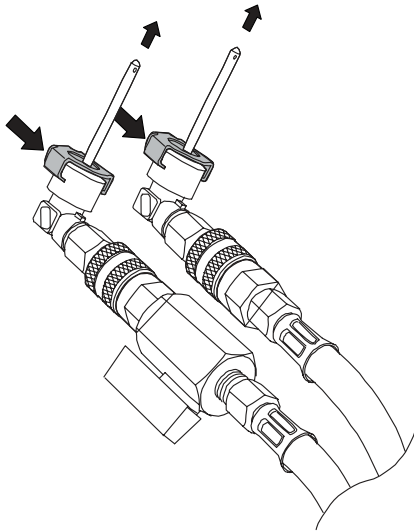


- With allen key turn the setting spanner clockwise to increase the setting. Between the turning, count the turns.
- Set  $\Delta p$  according to the table 5. In this example you need to turn the setting spanner for 3.3 turns. For fine-tuning use TA-SCOPE or U-pipe.
- By turning setting spanner clockwise you will increase the setting and vice versa.
- After adjustment, put the cover and plomb back on the pilot.

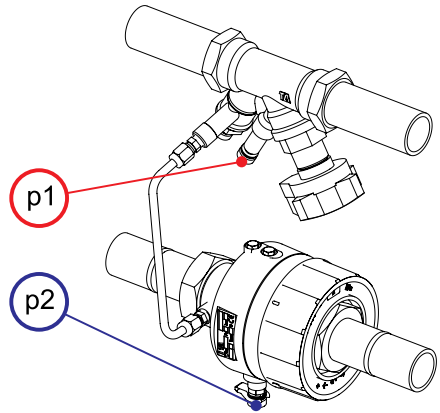
## Measuring

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- For precise  $\Delta p_L$  setting use TA-SCOPE or U-tube and measure the  $\Delta p_L$  over measuring points.
- Be sure, that the system is under working pressure and all isolation valves are fully open.
- Connect TA-SCOPE or U-tube on the valve with measuring probes.

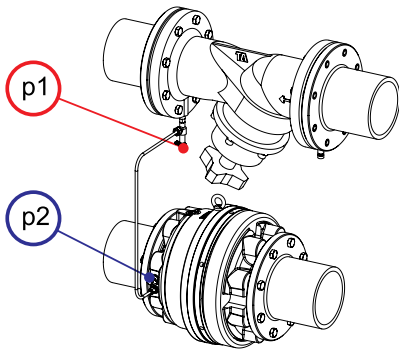


### DN 15-50

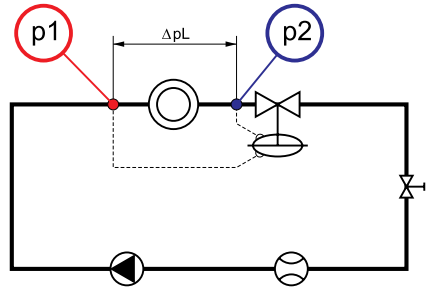




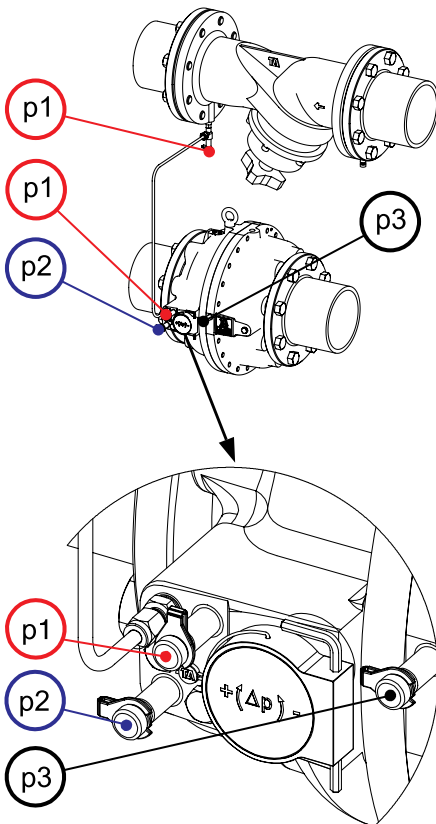
### DN 65-125



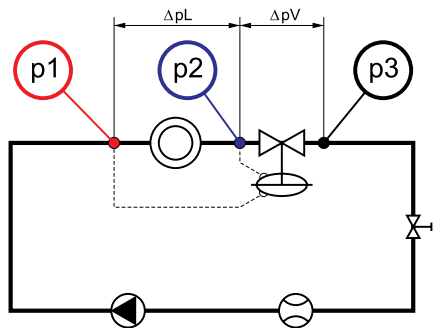
### DN 15-125



### DN 150



### DN 150



- TA-SCOPE will read  $\Delta p$  over the load ( $\Delta p_L$ ) between p1 and p2. On dimension DN 150 you can also read  $\Delta p$  across the valve ( $\Delta p_V$ ) between p2 and p3.

- Before measuring the  $\Delta p_L$ , be sure that the isolation valves are fully open and that bypasses are closed.
- Be aware that complete pressure drop in the system between p1 and p2 at design flow should not be bigger than max. setting on DA valve !!!
- Biggest  $\Delta p_L$  as  $\Delta p_{\text{setting}}$ , closing the valve and don't allow to reach the desire flow.
- $(\Delta p_{\text{pipe}} + \Delta p_{\text{accessories}} + \Delta p_{\text{heatexchanger}}) < \text{max. } \Delta p_{\text{setting}}$

## Maintenance

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The valves are maintenance free under the condition that they are used within their normal application.

## Troubleshooting Guide

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### DN 15-150

#### 1. Valve is fully open and design flow is not able to be measured

- Check pump head is sufficient and in manual mode
- Ensure all by-pass valves are closed
- Check all control valves are fully open
- Check strainers are not blocked
- Ensure that water is not being drained at another part of the system.
- If possible measure the pressure drop of the control valve fully open and check Kv.

#### 2. DPCV is adjusted but no change in flow is measured

- Check both valve chambers are vented and water is evident, if not;
  - Capillary may be blocked with dirt. (a fine hard wire may dislodge trapped dirt)
  - Throttle in valve body may be blocked with dirt.  
(a fine hard wire (DN 15-125 Ø 0,5 mm; DN 150 Ø 1,5 mm) may dislodge trapped dirt)

### DN 15-50

- Or compression pins are damaged or sticking, due to improper installation. (This can be checked by removing the adjustment ring to expose and inspect the 4 no. steel compression pins).

## Tables

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**Table 1 Categorization according to directive 97/23/EC (PED)**

|                        | PS (PN)   |            |
|------------------------|-----------|------------|
|                        | PN 16     | PN 25      |
| <b>Article 3&amp;3</b> |           | DN 15-40   |
| <b>Category I</b>      | DN 65-200 | DN 50-125  |
| <b>Category II</b>     |           | DN 150-200 |

**Table 2 Markings on housing / labels**

| DN              | 15/20 | 25/32 | 40/50 | 65 | 80 | 100 | 125 | 150 |
|-----------------|-------|-------|-------|----|----|-----|-----|-----|
| <b>Material</b> | ✓     | ✓     | ✓     | ✓  | ✓  | ✓   | ✓   | ✓   |
| <b>DN</b>       | ✓     | ✓     | ✓     | ✓  | ✓  | ✓   | ✓   | ✓   |
| <b>PN</b>       | ✓     | ✓     | ✓     | ✓  | ✓  | ✓   | ✓   | ✓   |

**Table 3 Markings on labels**

| DN         | 15/20 | 25/32 | 40/50 | 65 | 80 | 100 | 125 | 150 |
|------------|-------|-------|-------|----|----|-----|-----|-----|
| Logo - TAH | ✓     | ✓     | ✓     | ✓  | ✓  | ✓   | ✓   | ✓   |
| CE         | x     | x     | ✓     | ✓  | ✓  | ✓   | ✓   | ✓   |
| Temp. °C   | ✓     | ✓     | ✓     | ✓  | ✓  | ✓   | ✓   | ✓   |
| Δp         | ✓     | ✓     | ✓     | ✓  | ✓  | ✓   | ✓   | ✓   |
| Date       | ✓     | ✓     | ✓     | ✓  | ✓  | ✓   | ✓   | ✓   |

**Table 4 Bolts, gaskets, torque**

| DN           | 15/20       | 25/32       | 40/50       | 65           | 80           | 100            | 125            | 150            |
|--------------|-------------|-------------|-------------|--------------|--------------|----------------|----------------|----------------|
| Threads      | G1"         | G1 1/4"     | G2"         | M16          | M16          | M16/<br>M20    | M20/<br>M24    | M20/<br>M24    |
| Screw length | x           | x           | x           | 35           | 40           | 45             | 50             | 45/50          |
| N°           | x           | x           | x           | 4/8          | 8            | 8              | 8              | 8              |
| Nm           | 50          | 100         | 150         | 100          | 130          | 200            | 280            | 310            |
| Gasket       | 30/23<br>x2 | 39/25<br>x2 | 56/40<br>x2 | 127/77<br>x2 | 142/89<br>x2 | 168/<br>115 x2 | 194/<br>141 x2 | 218/<br>169 x2 |

**Table 5 Presettings**

|          | Numbers of turn | Δp [kPa] change per turn of setting nut/spanner |         |          |          |           |
|----------|-----------------|---|---------|----------|----------|-----------|
|          |                 | 5 - 30  | 10 - 60 | 10 - 100 | 60 - 150 | 100 - 400 |
| DN 15/20 | 10              | 2,6   | 5,1     | 9,3      | 9,3      | x         |
| DN 25/32 | 14              | 1,8   | 3,6     | 6,6      | 6,6      | x         |
| DN 40/50 | 15              | 1,7   | 3,3     | 6,0      | 6,0      | x         |
| DN 65    | 6,5             | 3,8   | 7,7     | 13,8     | 13,8     | x         |
| DN 80    | 6,5             | 3,8   | 7,7     | 13,8     | 13,8     | x         |
| DN 100   | 6,5             | 3,8   | 7,7     | 13,8     | 13,8     | x         |
| DN 125   | 6,5             | 3,8   | 7,7     | 13,8     | 13,8     | x         |
| DN 150   | 7,5             | 3,3   | 6,7     | 12,0     | 12,0     | 40,0      |

Measure flow & adjust Δp accordingly

**Notes:**

## Start-up procedure - fill form

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### 1. Pre-commission

Check

1. Install the valve in the pipeline according by the arrow on the label (flow direction)
2. Check that the strainer basket is clean
3. Slowly fill the system with the tap water
4. Close the bypass
5. Check sealings

### 2. Commission

Check

1. Slowly rise the pressure to working pressure
2. Vent the valve
3. Check the sealing
4. Check  $\Delta p_L$  according to the table 5 on page 13
5. Check  $\Delta p_L$  on measuring points

|                  |            |                     |
|------------------|------------|---------------------|
| Location/object: | Valve typ: | Date:<br>Signature: |
|------------------|------------|---------------------|

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*We reserve the right to introduce technical alterations without previous notice.*



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