

02 - 03.2

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Injection head (mechanical type)





Injection head DN 25, 40, 50 PN 25 to 160

Description

The injection head (further in text only VH) is a device designed to control the temperature of steam. VH is equipped with a mechanical spraying nozzle with changable flow. The nozzle is designed to create tiny drops of cooling water independently on water quantity. Water is sprayed proportionally so it could quickly evaporate. Injected water quantity is controlled by a separate control valve.

VH is supplied in flanged possibly welded connection with connection flange 2 (connection to steam pipeline) of DN 50 (for tempeature of 350°C max. only) or DN 80 with 1 to 3 nozzles and dimensions corresponding to the customer's requirements.

Application

VH serves for precise and economical temperature regulation by a direct installing of cooling water into steam flow. VH is designed especially for industrial applications such as low-pressure steam production in heating, steam circuits in power plants or technological processes.

Process media

VH is designed to inject cooling water without mechanical impurities. Application of VH for other process media must be considered with regard to the used material that is in contact with medium and it is recommended to consult it with the producer.

Installation

VH must be installed into pipeline always the way so that the flow of cooled medium will coincide with the arrows indicated on the flange No. 2. As far as the dismantling is considered, it is recommended to leave free space of min. Height that is equal to the distance between flange lower edge and end point of body bent (length "L"). VH can be piped in horizontal, vertical or inclined pipeline in any position.

Technical data

| | | |
|---|--|-------------------|
| Series | VH | |
| Execution | Injection head with 1, 2 or 3 nozzles | |
| Nominal diameter | Flange 1 ... 25, 40, 50; flange 2 ... 50 and 80 | |
| Nominal pressure | 25 to 160 | |
| Opening overpressure | 0,2 or 0,4 MPa | |
| Leakage rate | Acc. to ČSN EN 1349 (5/2001) Class I. | |
| Operating temperature range | -20 to 350°C | -20 to 550°C |
| Flange 1 material | DN 25, 40, 50 | Cast steel 1.0425 |
| Flange 2 material | DN 50 and 80 | Cast steel 1.0425 |
| Pipe material | | Cast steel 1.0425 |
| Connection dimensions (flange 1 / weld ends) | Acc. to ČSN EN 1092-1 (2/2003) / ČSN EN 12627 (8/2000) *1) | |
| Body material | 1.4922 | |

*1) Dimensions and type of connection (flange / weld) acc. to customers requirements. It shall be specified in the order.

Kvs values

| DN | No. of nozzles | | |
|----|----------------|-----|-----|
| | 1 | 2 | 3 |
| 25 | 2.4 | --- | --- |
| 40 | 2.4 | 4.8 | --- |
| 50 | --- | --- | 7.2 |

Connection dimensions of VH

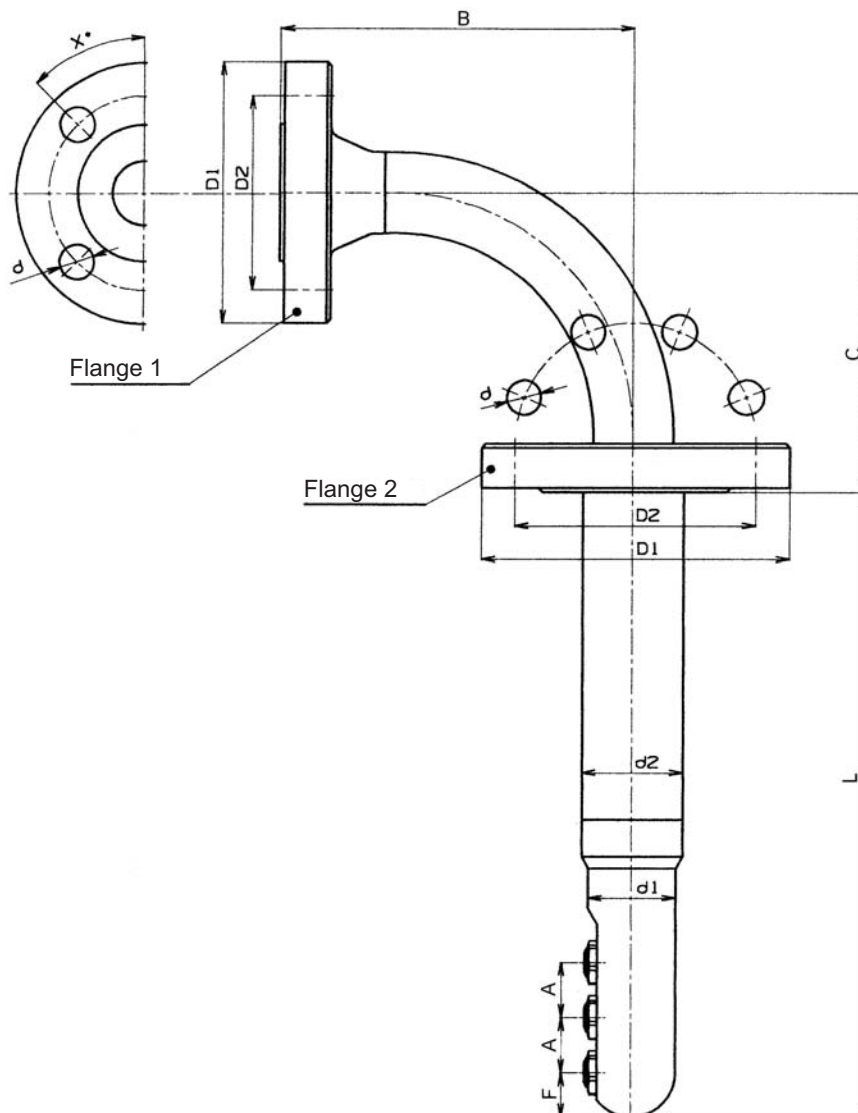
| Flange 1 ^{*1)} | | | | | | | | | | | | | | | | | | | | |
|-------------------------|----------------|----------------|-----|----|----------------|----------------|----------------|-----|----|----------------|----------------|----------------|-----|----|----------------|----------------|----------------|-----|----|----------------|
| DN | PN 25 and 40 | | | | | PN 63 | | | | | PN 100 | | | | | PN 160 | | | | |
| | D ₁ | D ₂ | n | d | x ⁰ | D ₁ | D ₂ | n | d | x ⁰ | D ₁ | D ₂ | n | d | x ⁰ | D ₁ | D ₂ | n | d | x ⁰ |
| | mm | mm | pcs | mm | | mm | mm | pcs | mm | | mm | mm | pcs | mm | | mm | mm | pcs | mm | |
| 25 | 115 | 85 | 4 | 14 | 45 | 140 | 100 | 4 | 18 | 45 | 140 | 100 | 4 | 18 | 45 | 140 | 100 | 4 | 18 | 45 |
| 40 | 150 | 110 | 4 | 18 | 45 | 170 | 125 | 4 | 22 | 45 | 170 | 125 | 4 | 22 | 45 | 170 | 125 | 4 | 22 | 45 |
| 50 | 165 | 125 | 4 | 18 | 45 | 180 | 135 | 4 | 22 | 45 | 195 | 145 | 4 | 26 | 45 | 195 | 145 | 4 | 26 | 45 |

| DN | d ₁ | d ₂ | A | B _{min} ^{*)} | C _{min} ^{*)} | F | L _{max} |
|----|----------------|----------------|----|--------------------------------|--------------------------------|----|------------------|
| | mm | mm | mm | mm | mm | mm | mm |
| 25 | 66 | 76 | 41 | 150 | 160 | 33 | 385 |
| 40 | 66 | 76 | 41 | 194 | 163 | 33 | 385 |
| 50 | 66 | 76 | 41 | 280 | 240 | 33 | 385 |

| Flange 2 | | | | |
|----------|----------------|----------------|-----|----|
| PN 100 | | | | |
| DN | D ₁ | D ₂ | n | d |
| | mm | mm | pcs | mm |
| 50 | 195 | 145 | 4 | 26 |
| 80 | 230 | 180 | 8 | 26 |

The missing data correspond to dimensions of steam pipeline and customers requirements.

*1) Dimensions and type of connection (flange / weld) acc. to customers requirements. It shall be specified in the order.



Complete specification No. for ordering VH

| | | XX | X | XX | / | XX | - | XXX | X | X | XXX |
|---|--|----|---|----|---|----|---|-----|---|---|-----|
| 1. Series | Injection head | VH | | | | | | | | | |
| 2. No. of nozzles | 1 | | 1 | | | | | | | | |
| | 2 | | 2 | | | | | | | | |
| | 3 | | 3 | | | | | | | | |
| 3. DN flange 2 | DN 50 (for execution up to 350°C only) | | | 50 | | | | | | | |
| | DN 80 | | | 80 | | | | | | | |
| 4. DN flange 1 | DN 25 | | | | | 25 | | | | | |
| | DN 40 | | | | | 40 | | | | | |
| | DN 50 | | | | | 50 | | | | | |
| 5. PN of inlet medium (cooling medium) | PN 25 | | | | | | | 025 | | | |
| | PN 40 | | | | | | | 040 | | | |
| | PN 63 | | | | | | | 063 | | | |
| | PN 100 | | | | | | | 100 | | | |
| | PN 160 | | | | | | | 160 | | | |
| 6. Pipe material | Cast steel 1.0425 (-20 to 350°C) | | | | | | | | | 1 | |
| | Alloy steel 1.7335 (-20 to 550°C) | | | | | | | | | 2 | |
| 7. Opening pressure | 0,2 MPa | | | | | | | | | | 1 |
| | combination of 0,2 and 0,4 MPa | | | | | | | | | | 2 |
| | 0,4 MPa | | | | | | | | | | 3 |
| 8. Length L | Acc. to execution | | | | | | | | | | XXX |

Ordering example : Injection head with 1 nozzle, flange 2 DN 80, flange 1 DN 25, PN 160, body material: cast steel 1.0425, opening pressure 0,4 MPa, length L = 300 mm is marked as follows : **VH1 80/25-160 1 3 300**

Note

It is necessary to specify nominal pressure PN and nominal size DN of steam pipeline in the order possibly after the agreement with the producer also parameters that do not correspond to the catalogue.

Max. permissible operating pressures [MPa]

| Material | PN | Temperature [°C] | | | | | | | | Testing pressure at 20°C |
|-----------------------|-----|--------------------|------|------|------|------|------|------|------|--------------------------|
| | | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | |
| Cast steel 1.0425 | 25 | 1,78 | 1,62 | 1,47 | 1,37 | --- | --- | --- | --- | 3,80 |
| | 40 | 2,84 | 2,60 | 2,35 | 2,19 | --- | --- | --- | --- | 6,00 |
| | 63 | 4,48 | 4,09 | 3,71 | 3,45 | --- | --- | --- | --- | 9,50 |
| | 100 | 7,11 | 6,50 | 5,89 | 5,48 | --- | --- | --- | --- | 15,0 |
| | 160 | 11,4 | 10,4 | 9,40 | 8,80 | --- | --- | --- | --- | 24,0 |
| Alloy steel 1.7335 | 25 | --- | --- | 2,08 | 1,93 | 1,80 | 1,67 | 1,39 | 0,55 | 5,30 |
| | 40 | --- | --- | 3,33 | 3,09 | 2,89 | 2,67 | 2,23 | 0,88 | 8,40 |
| | 63 | --- | --- | 5,24 | 4,86 | 4,55 | 4,20 | 3,51 | 1,39 | 13,0 |
| | 100 | --- | --- | 8,32 | 7,71 | 7,22 | 6,67 | 5,57 | 2,21 | 21,0 |
| | 160 | --- | --- | 13,3 | 12,3 | 11,5 | 10,7 | 8,90 | 3,50 | 34,0 |