



Twin plate check valves

Pressure class PN 25
Ductile iron body
DN 50 to 600 (2 to 24")

Applications

- Heating, air conditioning,
- Pumping station, water supply, irrigation, water treatment...
- General circuits: water, air, industrial gas, . . .

Working conditions

- Temperature range:
from -18°C up to $+343^{\circ}\text{C}$
The working temperature depends on the body and seat materials (refer to table page 2).
- Maximum working pressure (M.W.P):
25 bar at ambient temperature
- Vacuum service down to 0 bar absolute.
- Maximum fluid velocity:
 - liquids: refer to diagram page 3
 - gas: 75 m/s.

Materials

- Refer to pages 2 and 4

Standard design

- One-piece wafer type body ensuring maximum life and corrosion resistance
- Twin plate configuration
- Metal/elastomer or metal/metal sealing
- Upstream/downstream sealing:
 - Check valves with metal/elastomer sealing in accordance with EN 12266-1 rate A and ISO 5208 category A.
 - Check valves with metal/metal sealing in accordance with API 598.
- Face-to-face dimensions in accordance with API 594 class 150.
- Connection between flanges PN 10, 16, 20, 25 and ASME B16.5 class 150.
- Marking in accordance with EN 19 standard.
- External coating: Polyurethane paint, 80 μ thickness, colour blue RAL 5002.
- The check valves in ductile iron meet the safety requirements of the pressure equipments Directive 97/23/EC (PED) appendix I for fluids of groups 1 and 2.
- The check valves comply with the requirements of the REACH regulation 1907/2006. See page 6.

Standard variant

- ATEX version in accordance with 94/9/EC directive
- Variant on request:** DN 700 to 1200 (28" to 48")

Remarks

- Operating instructions 8000.86/.-10

Data to be supplied when ordering

- SERIE 2000 check valve, in accordance with type series booklet 8480.12/5-10.
- Size.
- Connection drilling pattern.
- Working conditions: nature of fluid, pressure, temperature.



Materials

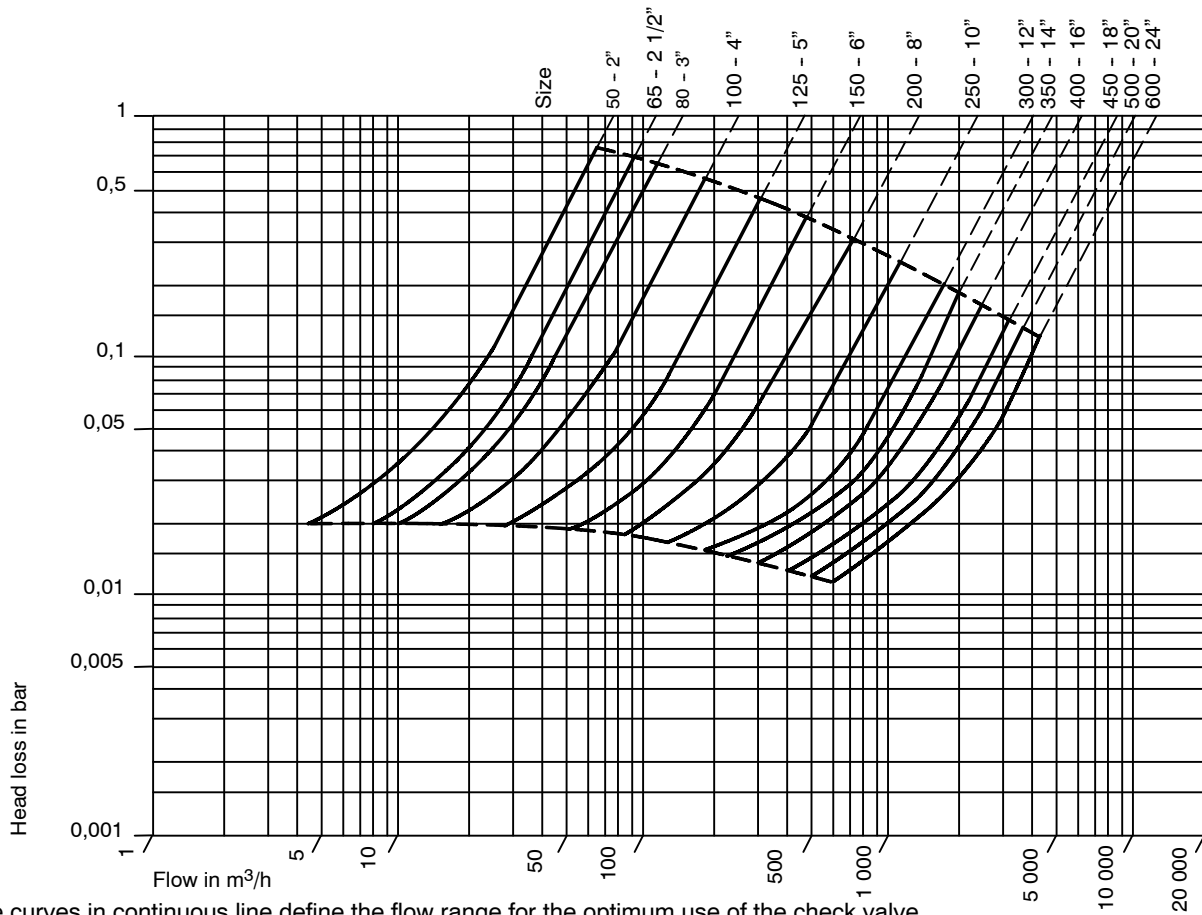
| Body | KSB code |
|------------------------------------------------------------------------------------------------------------------------|--------------|
| Ductile iron ASTM A395 | 3g |
| Plates | KSB code |
| Stainless steel ASTM A351 gr. CF 8M Ductile iron ASTM A395 (DN ≥ 250) Cupro-aluminium ASTM B148 C95800 / CC 333G | 6 3g 2 |
| AMRING seat | KSB code |
| Metal/elastomer sealing High content nitril EPDM drinking water approved VITON | K X V |
| Metal/Metalsealing Metal | M |

Pressure / Temperature

In pressure class PN 25, Serie 2000 check valves are in accordance with EN 12516-4.

| Body | Material Seat | Working pressure in bar for temperature °C | | | | | | | | | | | |
|-----------|------------------|--------------------------------------------|------|------|------|------|------|-------------|-------------|------|-------------|-----|-----|
| | | -18 | -5 | 38 | 50 | 93 | 100 | 120 | 150 | 200 | 250 | 300 | 343 |
| ASTM A395 | Metal/Metal (M) | 25,0 | 25,0 | 25,0 | 22,6 | 16,2 | 15,9 | 15,4 | 14,8 | 13,8 | 11,8 | 9,8 | 8,6 |
| | Nitrile (K) | 25,0 | 25,0 | 25,0 | 22,6 | 16,2 | 15,9 | not allowed | | | | | |
| | EPDM (X) | 25,0 | 25,0 | 25,0 | 22,6 | 16,2 | 15,9 | 15,4 | not allowed | | | | |
| | VITON (V) | not allowed | 25,0 | 25,0 | 22,6 | 16,2 | 15,9 | 15,4 | 14,8 | 13,8 | not allowed | | |

Pressure drops in water flow



The curves in continuous line define the flow range for the optimum use of the check valve.

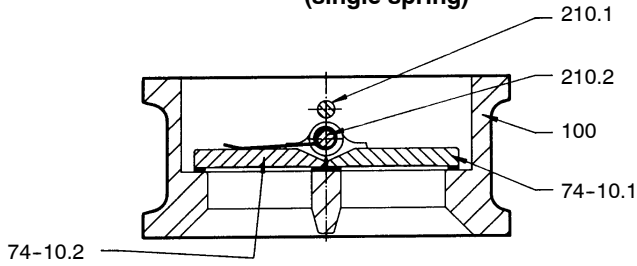
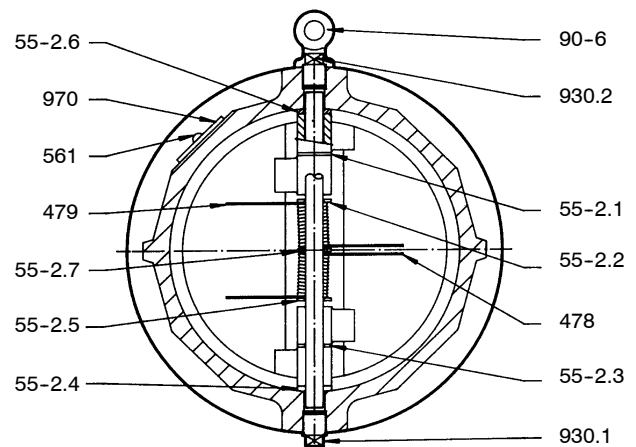
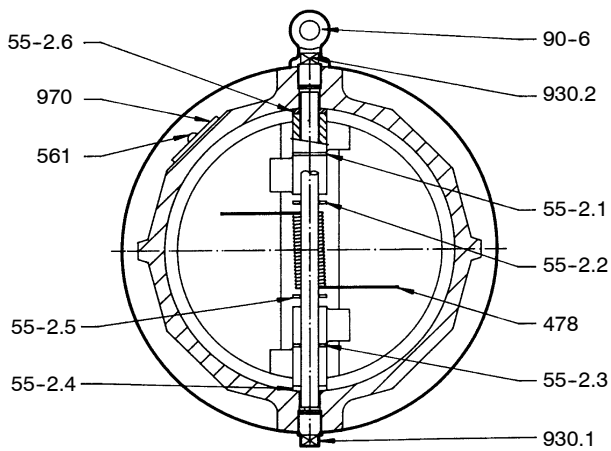
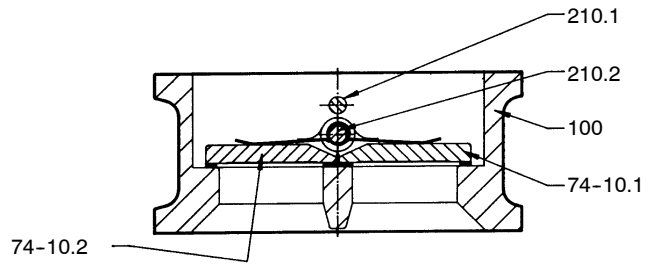
Hydraulic characteristics

| DN | NPS | Flow coefficient in full open position | | Zeta |
|-----|-------|----------------------------------------|------|------|
| | | Kvo | Cvo | |
| 50 | 2 | 75 | 87 | 1,77 |
| 65 | 2 1/2 | 112 | 130 | 2,27 |
| 80 | 3 | 141 | 163 | 3,29 |
| 100 | 4 | 240 | 278 | 2,77 |
| 125 | 5 | 450 | 522 | 1,92 |
| 150 | 6 | 750 | 870 | 1,43 |
| 200 | 8 | 1300 | 1508 | 1,51 |

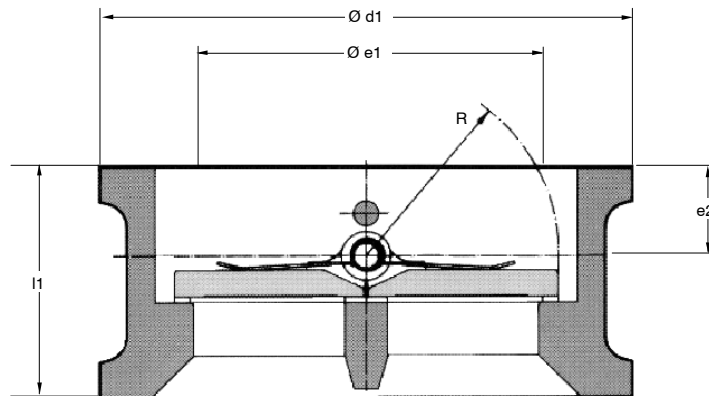
| DN | NPS | Flow coefficient in full open position | | Zeta |
|-----|-----|----------------------------------------|-------|------|
| | | Kvo | Cvo | |
| 250 | 10 | 2300 | 2668 | 1,18 |
| 300 | 12 | 3850 | 4466 | 0,87 |
| 350 | 14 | 4600 | 5336 | 1,13 |
| 400 | 16 | 6000 | 6960 | 1,13 |
| 450 | 18 | 8500 | 9860 | 0,91 |
| 500 | 20 | 10000 | 11600 | 0,99 |
| 600 | 24 | 12500 | 14500 | 1,32 |

Dismantling downstream and end of line

Check valves cannot be used as end of line and to do downstream dismantling.

Construction
**DN 50 to 350 - DN 450
(single spring)**

**DN 400, 500 and 600
(double spring)**


| Item | Designation | DN (mm) | Materials |
|-----------------------------------------------------------------------------|----------------------|--------------------------|-------------------------------------------------------------------------------------------------------|
| 100 | Body | 50 to 600 | Ductile iron ASTM A395 |
| 210.1 | Pin retainer | 50 to 600 | 316 stainless steel |
| 210.2 | Pin retainer | 50 to 600 | 316 stainless steel |
| 55-2.1 | Friction washer | 50 to 600 | K,X,V seats : PTFE filled / M seat: 316L stainless steel |
| 55-2.2 | Friction washer | 50 to 600 | K,X,V seats : PTFE filled / M seat: 316L stainless steel |
| 55-2.3 | Friction washer | 50 to 600 | K,X,V seats : PTFE filled / M seat: 316L stainless steel |
| 55-2.4 | Friction washer | 50 to 600 | K,X,V seats : PTFE filled / M seat: 316L stainless steel |
| 55-2.5 | Friction washer | 50 to 600 | K,X,V seats : PTFE filled / M seat: 316L stainless steel |
| 55-2.6 | Friction washer | 50 to 600 | K,X,V seats : PTFE filled / M seat: 316L stainless steel |
| 55-2.7 | Friction washer | 400, 500 and 600 | K,X,V seats : PTFE filled / M seat: 316L stainless steel |
| 561 | Grooved pin | 50 to 600 | Stainless steel |
| 74-10.1 | Plate | 50 to 600 | Stainless steel ASTM A351 gr. CF8M Ductile iron ASTM A395 (DN ≥ 250) Aluminium ASTM B148 C95800 |
| 74-10.2 | Plate | 50 to 600 | Stainless steel ASTM A351 gr. CF8M Ductile iron ASTM A395 (DN ≥ 250) Aluminium ASTM B148 C95800 |
| 90-6 | Eye bolt | 200 to 600 | Carbon steel |
| 930.1 | Stop pin retainer | 50 to 450 500 and 600 | Carbon steel Stainless steel |
| 930.2 | Hinge pin retainer | 50 to 450 500 and 600 | Carbon steel Stainless steel |
| 970 | Identification plate | 50 to 600 | Stainless steel |
| Check valve with High content nitril seat (K code) or EPDM (code X) | | | |
| 478 | Spring (right hand) | 50 to 600 | 316 stainless steel |
| 479 | Spring (left hand) | 400, 500 and 600 | 316 stainless steel |
| Check valve with Viton seat (V code) or Metal/Metal sealing (M code) | | | |
| 478 | Spring (right hand) | 50 to 600 | INCONEL 600 |
| 479 | Spring (left hand) | 400, 500 and 600 | INCONEL 600 |

Dimensions (mm) and weights (kg)


| DN | NPS | Connection | | | | | | | | | | Average weight * kg |
|-----|-------|------------|-----|-------|-----|-------|-----|-------|-----|-----------|-----|------------------------|
| | | PN 10 | | PN 16 | | PN 20 | | PN 25 | | Class 150 | | |
| | | Ø d1 | l1 | Ø d1 | l1 | Ø d1 | l1 | Ø d1 | l1 | Ø d1 | l1 | |
| 50 | 2 | 104,6 | 60 | 104,6 | 60 | 104,6 | 60 | 104,6 | 60 | 104,6 | 60 | 2,3 |
| 65 | 2 1/2 | 123,7 | 67 | 123,7 | 67 | 123,7 | 67 | 123,7 | 67 | 123,7 | 67 | 2,7 |
| 80 | 3 | 136,4 | 73 | 136,4 | 73 | 136,4 | 73 | 136,4 | 73 | 136,4 | 73 | 3,0 |
| 100 | 4 | 164,0 | 73 | 164,0 | 73 | 174,5 | 73 | 170,0 | 73 | 174,5 | 73 | 6,0 |
| 125 | 5 | 194,0 | 86 | 194,0 | 86 | 194,0 | 86 | 194,0 | 86 | 194,0 | 86 | 10,0 |
| 150 | 6 | 220,0 | 98 | 220,0 | 98 | 220,0 | 98 | 226,0 | 98 | 220,0 | 98 | 13,3 |
| 200 | 8 | 275,0 | 127 | 275,0 | 127 | 275,0 | 127 | 286,0 | 127 | 275,0 | 127 | 25,0 |
| 250 | 10 | 330,0 | 146 | 330,0 | 146 | 330,0 | 146 | 343,0 | 146 | 330,0 | 146 | 39,0 |
| 300 | 12 | 380,0 | 181 | 380,0 | 181 | 409,5 | 181 | 403,0 | 181 | 409,5 | 181 | 68,0 |
| 350 | 14 | 440,0 | 184 | 446,0 | 184 | 450,8 | 184 | 460,0 | 184 | 450,8 | 184 | 79,0 |
| 400 | 16 | 491,0 | 191 | 498,0 | 191 | 514,4 | 191 | 517,0 | 191 | 514,4 | 191 | 109,0 |
| 450 | 18 | 541,0 | 203 | 558,0 | 203 | 549,3 | 203 | 567,0 | 203 | 549,3 | 203 | 125,0 |
| 500 | 20 | 596,0 | 219 | 620,0 | 219 | 606,4 | 219 | 627,0 | 219 | 606,4 | 219 | 171,0 |
| 600 | 24 | 698,0 | 222 | 737,0 | 222 | 717,5 | 222 | 734,0 | 222 | 717,5 | 222 | 245,0 |

* Average weight for manufactured check valve according to a connection corresponding at the pressure class.

| DN | NPS | Plate clearance | | |
|-----|-------|-----------------|------|-----|
| | | e1 | e2 | R |
| 50 | 2 | - | 33,6 | 30 |
| 65 | 2 1/2 | 36 | 32,6 | 36 |
| 80 | 3 | 50 | 36,3 | 42 |
| 100 | 4 | 84 | 38,6 | 54 |
| 125 | 5 | 107 | 42,7 | 65 |
| 150 | 6 | 142 | 44,6 | 81 |
| 200 | 8 | 191 | 48,3 | 104 |

| DN | NPS | Plate clearance | | |
|-----|-----|-----------------|------|-----|
| | | e1 | e2 | R |
| 250 | 10 | 238 | 56,0 | 128 |
| 300 | 12 | 280 | 70,4 | 154 |
| 350 | 14 | 307 | 91,0 | 175 |
| 400 | 16 | 379 | 77,1 | 201 |
| 450 | 18 | 431 | 76,5 | 225 |
| 500 | 20 | 482 | 81,5 | 251 |
| 600 | 24 | 585 | 76,4 | 299 |

REACH regulation 1907/2006

The check valves comply with the requirements of the REACH regulation. None of substances included in the candidate list and in Annex XIV of this regulation are present in our check valves above a concentration of 0.1% weight by weight (article 33/REACH).

Anti-corrosion protection

- **Body**

- Outside:

- External coating: Polyurethane paint, thickness 80 μ , blue color RAL 5002.

- Other coatings are possible on request: definition in accordance with the Type Series Booklet Paint Valves / Actuators / Automation.

- Flanges faces and inside:

- Protection by dry phosphatation or by fluid of hydrofuge protection

- **Plates**

- Plates in ductile iron (3g) :

- Protection by dry phosphatation or by fluid of hydrofuge protection

- Plates in stainless steel (6) :

- Protection by pickling - passivation.

- Plates in aluminium (2) :

- For this material, no protection is necessary.

Other constructions

- **Construction S14 / S17 : ACS - WRAS - DVGW drinking water approval**

- Construction with drinking water approval in accordance with the requirements:

- ACS - France
 - WRAS - United Kingdom
 - DVGW - Germany.

- Construction suitable on DN 50 to 600 with:

- Body DN 50 to 600
ductile iron (3g) - Inside coated by a blue acrylic paint, thickness 250 μ m, drinking water approval
 - Plates
DN 250 to 600 : ductile iron (3g), protection by a blue acrylic paint, thickness 250 μ m, drinking water approval
DN 50 to 600 : Stainless steel (6), standard protection
DN 50 to 600 : Cupro-aluminium (2), standard protection
 - EPDM seat drinking water approval

- Recommended version for DN 50 to 150: SERIE 2000 Class 150 with:

- Body and plates in stainless steel
 - EPDM seat Drinking Water approved

- **S21 construction**

- Construction recommended for use on salted water.

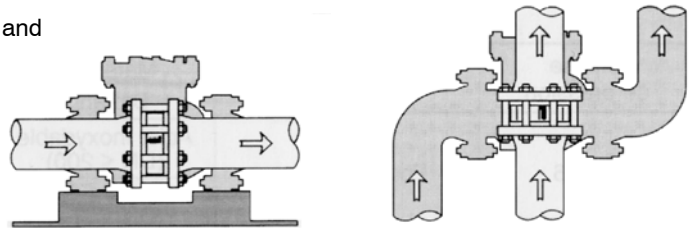
- Springs and internal parts (pin retainer, friction washers and stop pin retainer) are made of MONEL 400.

Installation

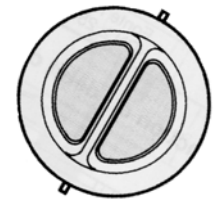
The SERIE 2000 PN 25 check valve design allows a rapid and easy installation between standardized flanges:

- reduced weight and overall dimensions,
- no additional pipe supports are required,
- suitable for horizontal and vertical up flow,
- no special tools are needed for installation,
- low maintenance.

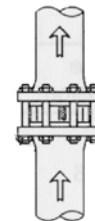
- The SERIE 2000 PN 25 check valve is offered with:
- in standard, flat faces (FF) with flange faces machined "Stock finish" Ra 6,3 to 12,5 (KSB code: 1B).
 - in option, flat faces (FF) with flange faces machined "Smooth finish" Ra 3,2 to 6,3 (KSB code: 1A).
 - on request, raised faces (RF).



CORRECT



WRONG



Optimum installation

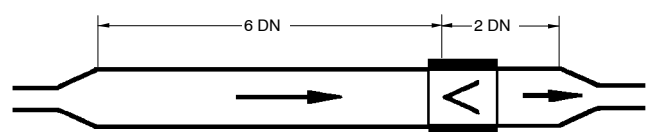
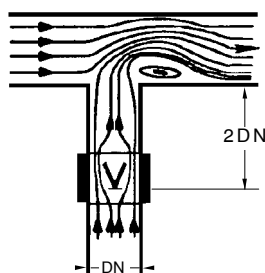
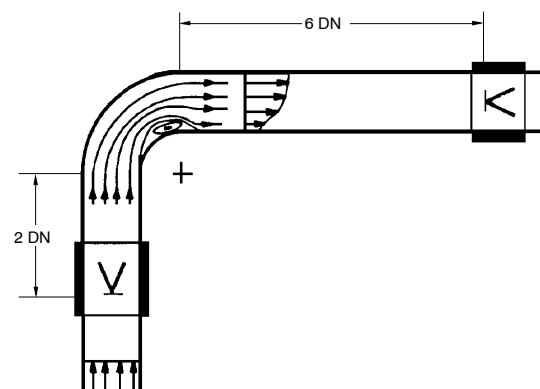
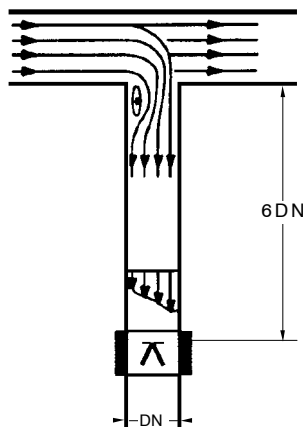
In a horizontal pipe, the check valve must always be installed with its hinge pin in the vertical position.

When the check valve is inserted in a vertical pipe, it will function correctly only if the fluid moves upwards (for a fluid moving downwards, please consult us).

In a piping system, some minimum distances must be respected between the check valve position and a bend or tee. The following drawings show some horizontal pipe configurations (viewed from above) in which the check valve is installed with its hinge pin in the vertical position.

The minimum recommended distance for a check valve installed downstream from a bend, tee, pump or valve causing disturbance is 6 DN.

When such a unit is downstream of the check valve, it is necessary to respect a distance of at least 2 sizes.



This leaflet is not contractual
and may be amended without notice.

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8480.12/5-10



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