

STAG



Balancing valves

With grooved ends – Size 2 1/2" - 12"

STAG

A grooved end, ductile iron balancing valve that delivers accurate hydronic performance in an impressive range of applications. STAG is ideal for use mainly on the secondary side in heating and cooling systems.

Key features

- > **Handwheel**
Equipped with a digital read-out, the handwheel ensures accurate and straightforward balancing. Handwheel for sizes 2 1/2" - 6" with side reading makes the read-out easy from any angle.
- > **Accurate and precise**
Provides high accuracy of measurement.
- > **Self-sealing measuring points**
For simple, accurate balancing.
- > **Positive shut-off function**
For easy maintenance.



Technical description

Applications:

Heating and cooling systems.

Functions:

Balancing
Pre-setting
Measuring
Shut-off (The balancing cone for valve sizes 4" - 12" is pressure released).

Dimensions:

Size 2 1/2" - 12"

Pressure class:

Class 150
Temperature / Max. pressure:
14 to 100 °F / 250 psi
200 °F / 235 psi
248 °F / 225 psi

Temperature:

Max. working temperature: 248°F
Min. working temperature: 14°F

Media:

Water or neutral fluids, water-glycol mixtures (0-57%).

Material:

Body: Ductile iron EN-GJS-400-15 (~ ASTM A536 Grade 60-40-18. ISO 1083 Grade 400-15).
Size 2 1/2" - 6": Bonnet, cone and spindle of AMETAL®.
Size 8" - 12": Bonnet and cone of ductile iron EN-GJS-400-15. Spindle of AMETAL®.
Cone (size 4" - 12"): PTFE coated.
Seals: EPDM.
Slip washer: PTFE.
Bonnet bolts: Surface treated steel.
Measuring points: AMETAL® and EPDM.
Handwheel: Size 2 1/2" - 6" polyamide, size 8" - 12" aluminum.

AMETAL® is the dezincification resistant alloy of IMI Hydronic Engineering.

Surface treatment:

Size 2 1/2" - 8": Epoxy painting.
Size 10" - 12": Duasolid painting.

Marking:

Body: TA, Class 150, inch size, flow direction arrow, material and casting date (year, month, day).
CE-marking:
CE: size 2 1/2" - 6"
CE 0409*: size 8" - 12"
*) Notified body.

Face to face length:

ISO 5752 series 1, EN 558-1 series 1.

Measuring points

Measuring points are self-sealed. Remove the cap and insert the probe through the seal.

Sizing

When Δp and the design flow are known, use the formula to calculate the Cv value or use the diagram.

$$C_v = 1.52 \frac{q}{\sqrt{\Delta p}} \quad q \text{ in GPM, } \Delta p \text{ in ft WG}$$

$$C_v = \frac{q}{\sqrt{\Delta p}} \quad q \text{ in GPM, } \Delta p \text{ in psi}$$

Cv values

Turns	2 1/2"	3"	4"	5"	6"	8"	10"	12"
0.5	1.18	2.69	2.94	6.92	6.24	-	-	-
1	2.76	4.92	6.47	12.6	15.4	-	-	-
1.5	4.36	7.17	9.98	18.1	26.3	-	-	-
2	5.99	9.80	13.3	24.8	47.4	46.4	104	-
2.5	7.53	13.2	18.0	33.7	76.0	58.0	128	-
3	9.46	17.4	30.2	43.4	107	75.4	162	174
3.5	13.4	24.1	49.5	62.6	147	104	226	267
4	21.5	34.6	76.3	98.4	204	139	296	348
4.5	34.5	50.0	106	136	247	191	371	429
5	45.8	66.5	125	171	288	261	447	522
5.5	55.3	80.4	137	194	325	331	516	621
6	66.4	93.8	157	229	354	394	580	719
6.5	76.7	107	175	268	384	464	632	800
7	85.8	120	189	295	408	505	684	870
7.5	92.5	132	202	318	433	545	766	945
8	98.3	142	214	340	462	597	841	1032
9	-	-	-	-	-	690	951	1125
10	-	-	-	-	-	754	1090	1206
11	-	-	-	-	-	824	1218	1299
12	-	-	-	-	-	887	1375	1392
13	-	-	-	-	-	-	-	1531
14	-	-	-	-	-	-	-	1589
15	-	-	-	-	-	-	-	1624
16	-	-	-	-	-	-	-	1682

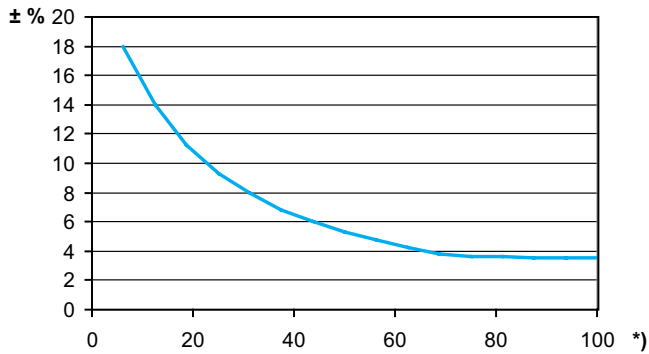
NOTE: In softwares (HySelect, HyTools) and balancing instrument (TA-SCOPE) the STAG, sizes 2 1/2" - 6", is named STAG*.

Measuring accuracy

The handwheel zero position is calibrated and must not be changed.

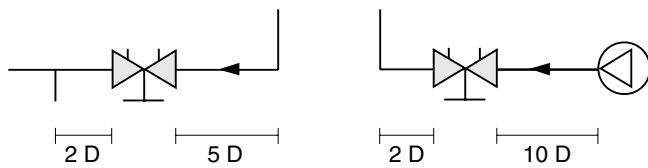
Deviation of flow at different settings

The curve holds for valves with the correct flow direction, straight pipe distances (Fig. 1) and normal pipe fittings.

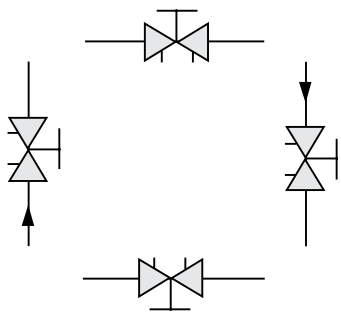


*) Setting (%) of fully open valve.

Fig. 1



D = Valve size



Correction factors

The flow calculations are valid for water (68°F). For other liquids with approximately the same viscosity as water ($\leq 20 \text{ cSt} = 3^\circ \text{E} = 100 \text{ S.U.}$), it is only necessary to compensate for the specific density. However, at low temperatures, the viscosity increases and laminar flow may occur in the valves. This causes a flow deviation that increases with small valves, low settings and low differential pressures. Correction for this deviation can be made with the software HySelect or directly in our balancing instruments.

Setting

It is possible to read the set value on the handwheel.

The number of turns between the fully open and closed positions is:

8 turns for size 2 1/2" - 6",
12 turns for size 8" - 10" and
16 turns for size 12".

Initial setting of a valve for a particular pressure drop, e.g. corresponding to 2.3 turns on the graph, is carried out as follows:

1. Close the valve fully (Fig. 1)
2. Open the valve to 2.3 turns (Fig. 2).
3. Using an Allen key, turn the inner spindle clockwise until the stop position.
4. The valve is now set.

To check the setting of a valve, first close the valve, then open it to the stop position; the indicator then shows the presetting number, in this case 2.3 (Fig. 2).

Example size 2 1/2"

Fig. 1 Valve closed

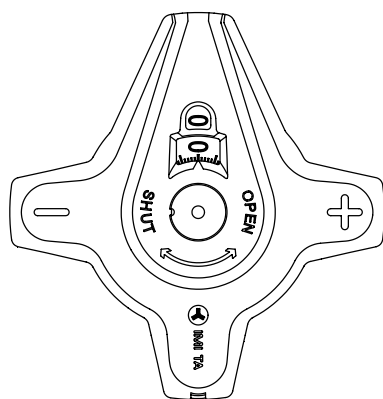


Fig. 2a The valve is set at 2.3

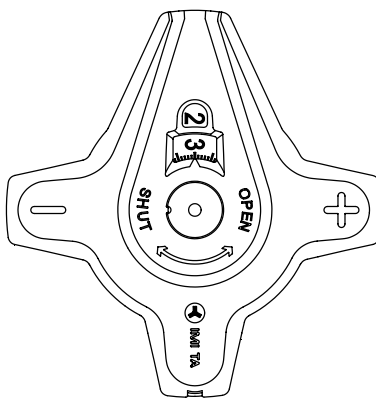
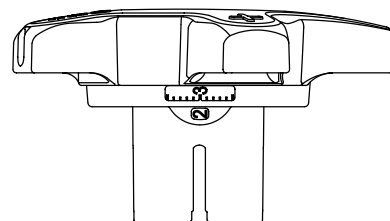


Fig. 2b Setting 2.3 side view



Example size 8"

Fig. 1 Valve closed

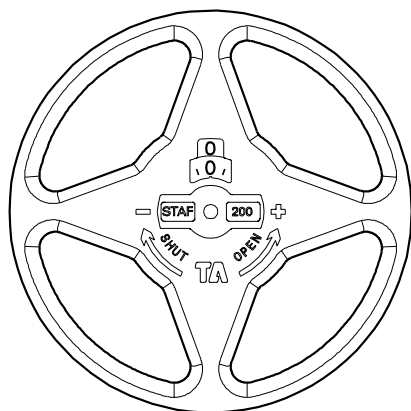
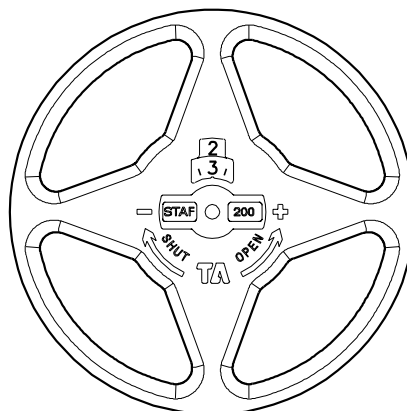


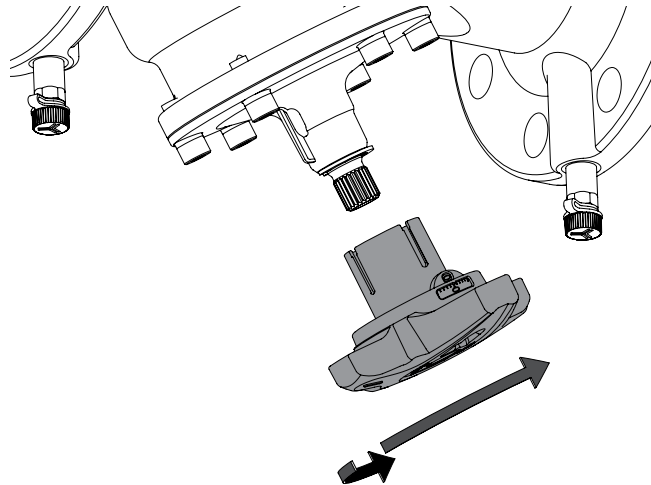
Fig. 2 The valve is set at 2.3



Change of handwheel position sizes 2 1/2" - 6"

The handwheel on valve sizes 2 1/2" - 6" have a reading on the side as well as on the top of the handwheel to make it easier to read.

The handwheel can be rotated to have the side view reading in three different positions.



Spindle extension sizes 2 1/2" - 6"

The spindle can be extended on valve sizes 2 1/2" - 6" to make more room for insulation if needed. An extension kit is included with the valves sizes 2 1/2" - 6".

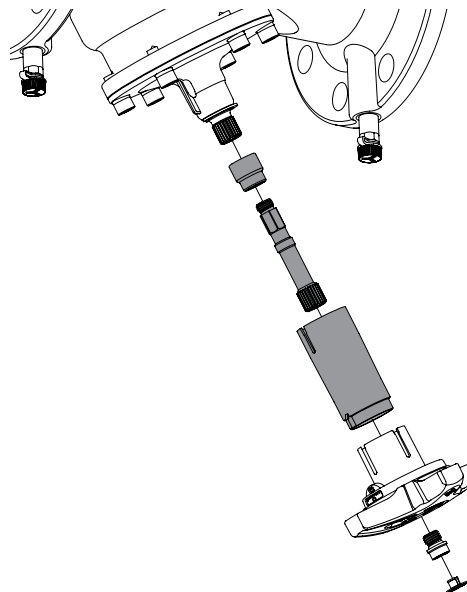


Diagram example

Wanted:

Presetting for size 3" at a desired flow rate of 120 gpm and a pressure drop of 4 psi.

Solution:

Draw a straight line joining 120 gpm and 4 psi. This gives $C_v=60$.

Now draw a horizontal line from $C_v=60$.

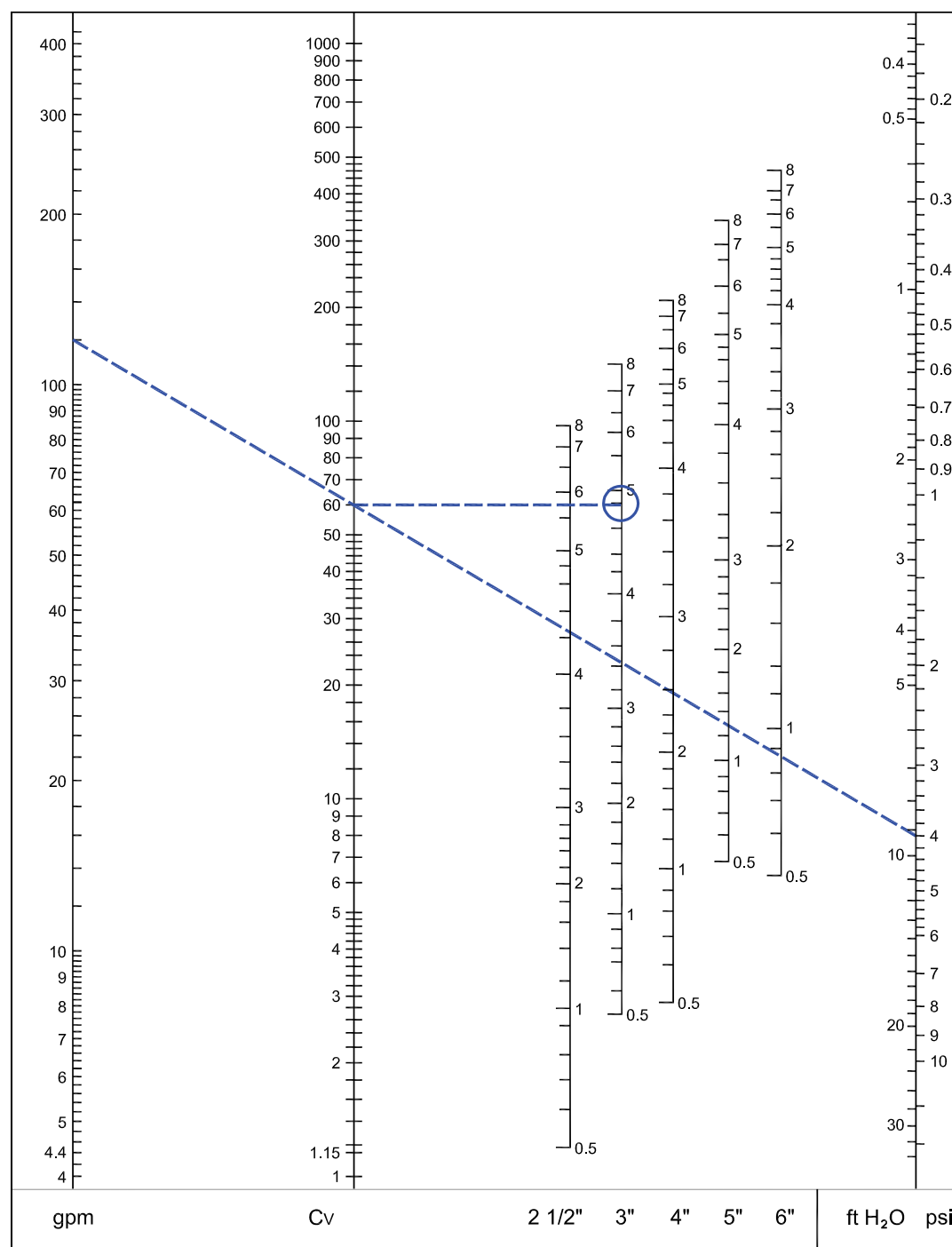
This intersects the bar for size 3" at the desired presetting of 4.8 turns.

NOTE:

If the flow rate falls outside the scale in the diagram, the reading can be made as follows:

Starting with the example above, we get 4 psi, $C_v = 60$ and flow rate 120 gpm. At 4 psi and $C_v = 6.0$ we get the flow rate 12 gpm, and at $C_v = 600$, we get 1200 gpm. That is, for a given pressure drop, it is possible to read 10 times or 0.1 times the flow and C_v -values.

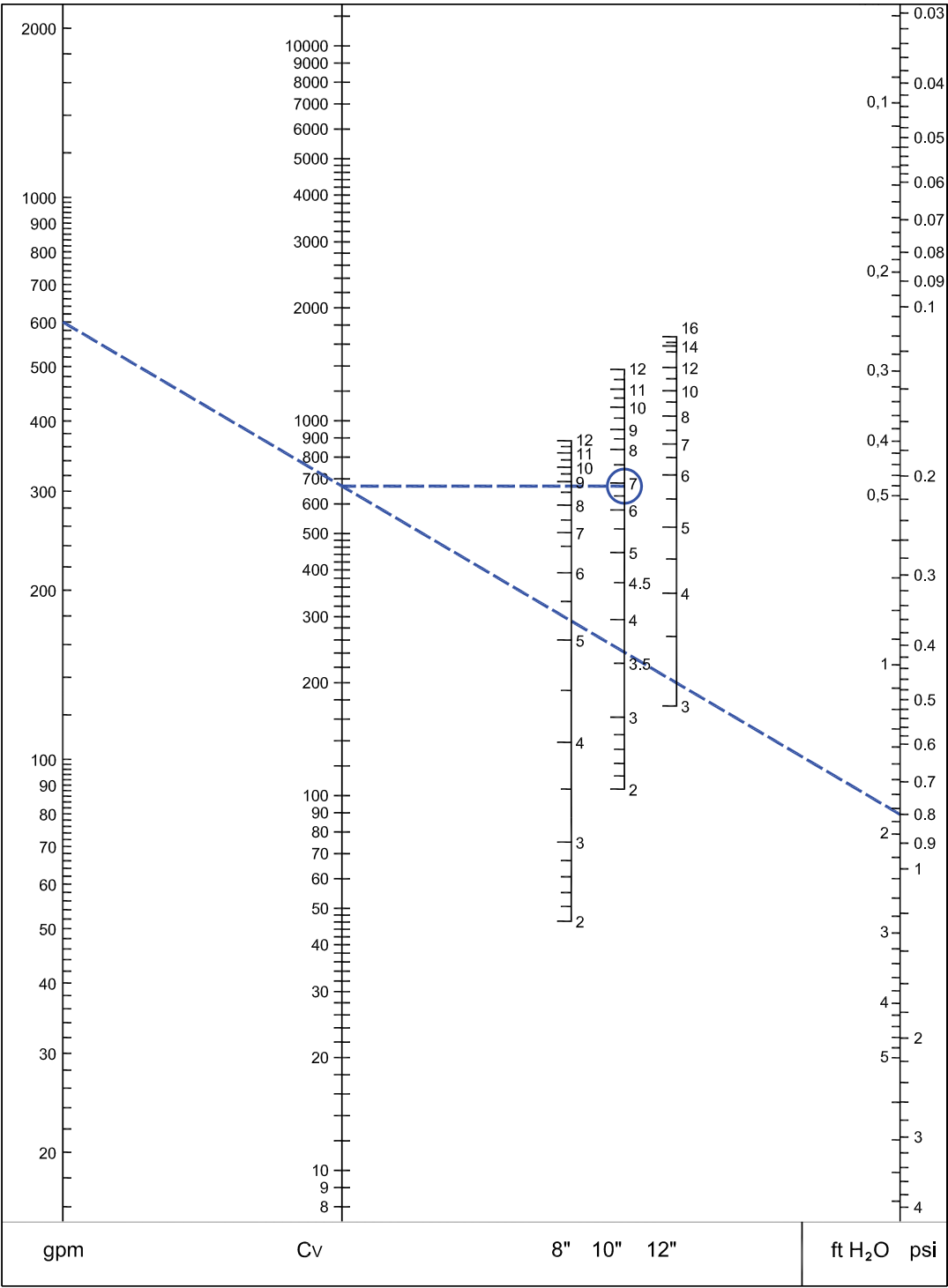
Diagram size 2 1/2" - 6"



Recommended area: See Fig. 3 under "Measuring accuracy".

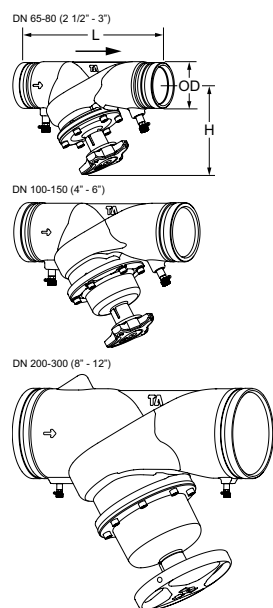
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Diagram size 8" - 12"



Recommended area: See Fig. 3 under "Measuring accuracy".

Articles



Bolted bonnet

Measuring points on body

Spindle extension for sizes 2 1/2" - 6" is included.

Class 150, ISO 4200

Size	D [in]	L [in]	H [in]	H ¹⁾ [in]	Cvs	lb	Article No *** North America	Article No International
2 1/2"	2.875	11.42	6.42	8.78	98.3	11.9	52 172-073	52 188-073
2 1/2"	2.996	11.42	6.42	8.78	98.3	11.9	52 188-076	52 188-076
3"	3.500	12.20	6.77	9.13	142	16.5	52 172-089	52 188-089
4"	4.500	13.78	8.78	11.14	214	27.1	52 172-114	52 188-114
5"	5.500	15.75	10.20	12.56	340	44.3	52 188-140	52 188-140
5"	5.563	15.75	10.20	12.56	340	44.3	52 172-141	52 188-141
6" ²⁾	6.500	18.90	10.75	13.11	462	64.3	52 188-165	52 188-165
6"	6.625	18.90	10.75	13.11	462	64.3	52 172-168	52 188-168
8"	8.625	23.62	16.93	-	887	140	52 167-219	52 183-219
10"	10.750	28.74	16.54	-	1375	203	52 167-273	52 183-273
12"	12.750	33.45	18.90	-	1682	280	52 167-324	52 183-324

1) Height with spindle extension

2) Not conforming to ISO 4200.

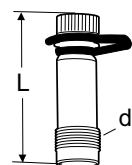
**) Distributed by Victaulic.

→ = Flow direction

Cvs = gpm at a pressure drop of 1 psi and fully open valve.

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Accessories



Measuring point

AMETAL®/EPDM

d	L [in]	Article No
Size 2 1/2" - 12"		
R3/8	1.85	52 179-008
R3/8	4.05	52 179-608



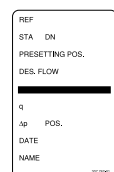
Measuring point, extension 2.36 in.

(not for 52 179-000/-601)

Can be installed without draining of the system.

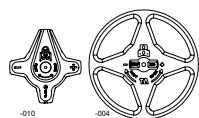
AMETAL®/Stainless steel/EPDM

L [in]	Article No
2.36	52 179-006



Identification tag

Article No
52 161-990



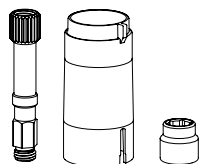
Handwheel

Size	Article No
2 1/2" - 6"	52 186-010
8" - 12"	52 186-004



Allen key
For locking of setting.

[mm]	For size	Article No
3	2 1/2" – 6"	52 187-103
5	8" – 12"	52 187-105



Spindle extension
Spare part.
Included in valve sizes 2 1/2" - 6".

For size	Article No
2 1/2" - 6"	52 186-015