Flanged balancing valve Serie Ekoflux S

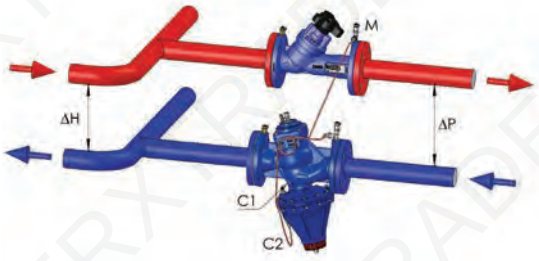
DN40-DN200

DN250-DN400

start at page 18

brandoni VALVES

The valves in the series EKOFLUX balance the flow in main circuits or single sections of heating or conditioning plants.
They allow correcting irregularities in the supply of the single users (irregularities which might cause noise and damage the components of the plant) and, as a result, improve environmental comfort and optimize energy consumption.
They perform shut-off and measuring functions. The continuous presetting function allows controlling the loss of pressure and of the flow rate.
They can be installed indifferently on the supply piping and on the return piping.
It also allows the transmission of the delivery pressure to the DPCV pressure regulator.



Accessories

- *Electronic instrument for measuring the differential pressure, flow rate and balancing of the circuit*
- *Pressure gauge probe adaptor*

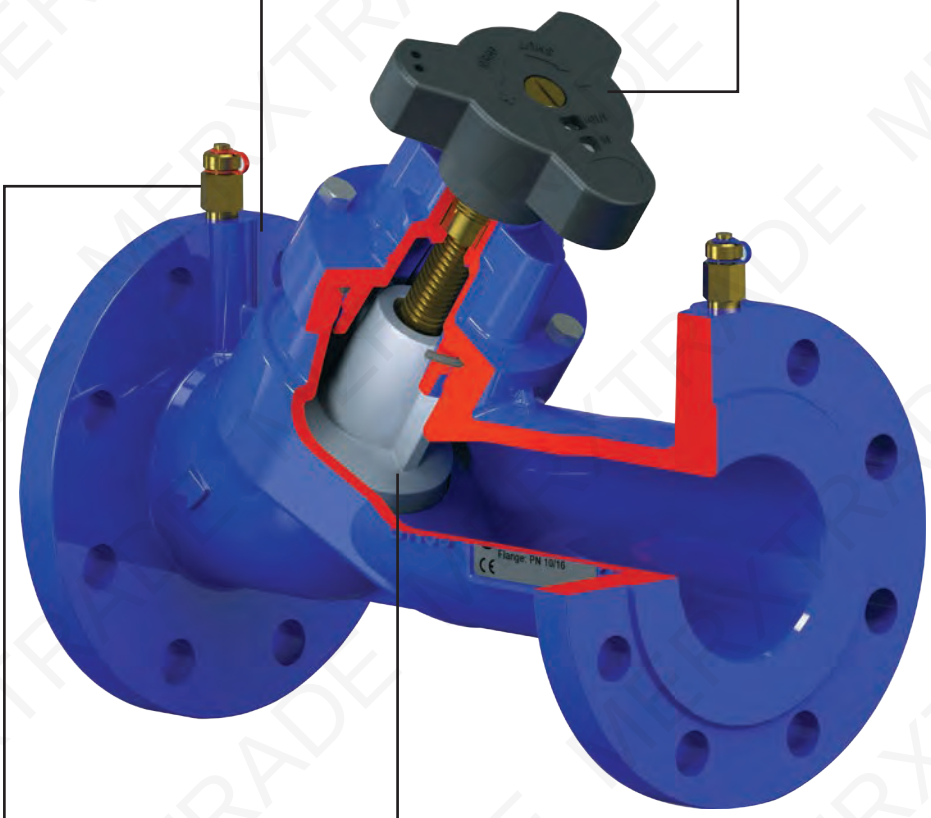
In conformity with directive 2014/68/UE (ex 97/23/CE PED)
Suitable for drinking water application, comply with Italian regulation D.M.174

***Design and testing standards** (correspondences):*
Face-to-face: EN 558-1/1 ISO 5752/1
Flanges: EN 1092 ISO 7005
Design: EN12516Marking: EN19
Testing: 100% testing according to EN 12266

***Markings and dataplate:** product type (EKOFLUX.S/P), flow arrow, DN, PN, temperature, shell material, flange, CE mark (DN65 and above)*

Internal and external epoxy coating, high temperature resistance, envi-ronmentally-friendly water based paint.

Continuous pre-regulation allows controlling the precise loss of pres-sure and flow rate.
The adjustable hand wheel allows reading the position indicator in 4 dif-ferent positions.
Preset position memory: the preset value is maintained also when the valve is moved.



The shutter with EPDM seal pro-duces a perfect seal,
when maintenance work is done on the system.

Self-sealing test point for quick-in-stalling pressure or temperature probes.

EKOFLUX.SP

Body: cast iron
Seal: FKM (DN40-50), EPDM (DN65-200)
Temp: -10 +120°C

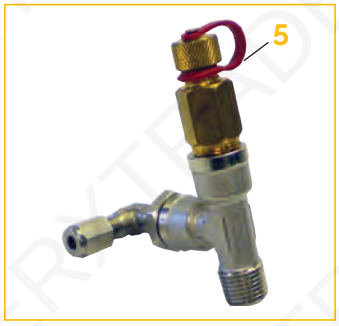
Accessories

PPA1

Pressure gauge probe adaptor. 1/4" F brass body and stainless steel probe.

EKOFLUX.FLEX1

Electronic instrument for the mea-surement of the differential pressu-re, the flow rate and the balancing of the circuit.



KEKO.002

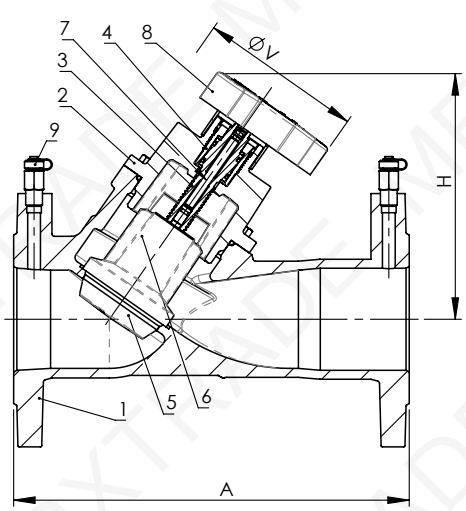
Tee 1/4MFF fitting, 1/4M-1/8F adapter, compression fitting 1/8M, 1/4M test plug.

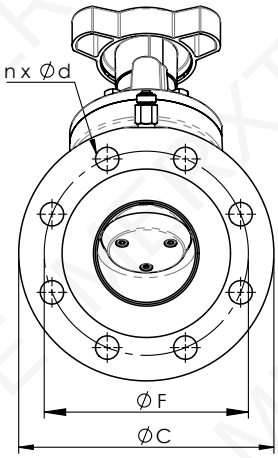
EP8EX

Extended test plug

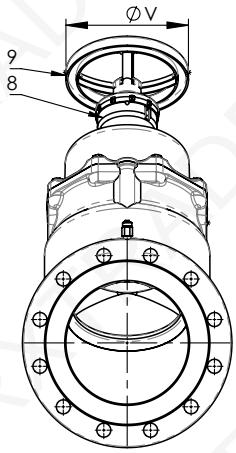
Components and accessories made in steel different from stainless steel, even if protected by painting or galvanizing, if used in outdoor environments, in conditions of high humidity / condensation or in aggressive environments, may exhibit a limited protection span against oxidation.

DN 40-200





DN40-150



DN200

Dimensions *(mm)*

DN		40	50	65	80	100	125	150	200
A	EN 558-1/1	290	290	290	310	350	400	480	600
H		186	186	195	212	228	251	287	500
V		128	128	128	128	128	128	128	200
C		165	165	185	200	220	250	285	340
F	EN1092 PN16	110	125	145	160	180	210	240	295
n x D		4 x 18	4 x 18	4 x 18	8 x 18	8 x 18	8 x 18	8 x 22	12 x 22

Weight *(kg)*

kg		9.7	9.7	12.6	15.6	21.3	30	43.5	84

Materials

	Component	Material	
		DN 40-50	DN 65-200
1	*Body*	Ductile iron GGG40(GJS400-15)	Cast Iron EN GJL 250
2	*Bonnet*	Ductile iron GGG40 (GJS400-15)	Cast Iron EN GJL 250
3	*Stelo / Stem*	Brass CW614N	Brass CW614N
4	*Ghiera / Ring nut*	-	Brass CW614N
5	*Guarnizione tenuta / Seal*	FKM	EPDM
6	*Otturatore / Obturator*	Ductile iron GGG40 (GJS400-15)	Engineering plastics
7	*Vite limitatrice / Limiting screw*	Brass CW614N	Brass CW614N
8	*Volantino-indicatore di posizione / Handwheel - position indicator*	Polyammide	Polyammide
9	*Volantino DN200 / Handwheel DN200*	-	Steel, epoxy coated
10	*Prese pressione / Test plus*	Brass	Brass
11	*O-Ring / O-Ring*	FKM	EPDM
12	*Viteria / Bolts and nuts*	*Stainless steel AISI 304*	*Stainless steel AISI 304*

Maximum pressure

Fluids	
Water, water - glycol mixtures (MAX 50% glycol)	16 bar

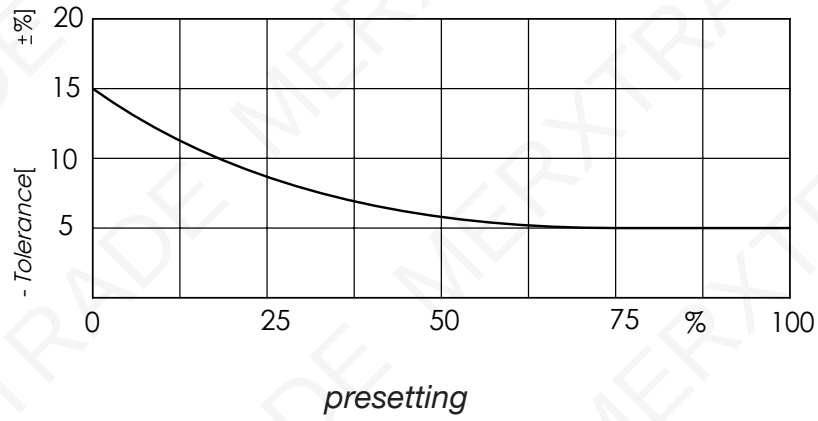
Not suitable for gas. Do not use with oils, hydrocarbons and with hazardous, corrosive and abrasive fluids.

Temperature

Temperature	min °C	Max°C
	-10	120

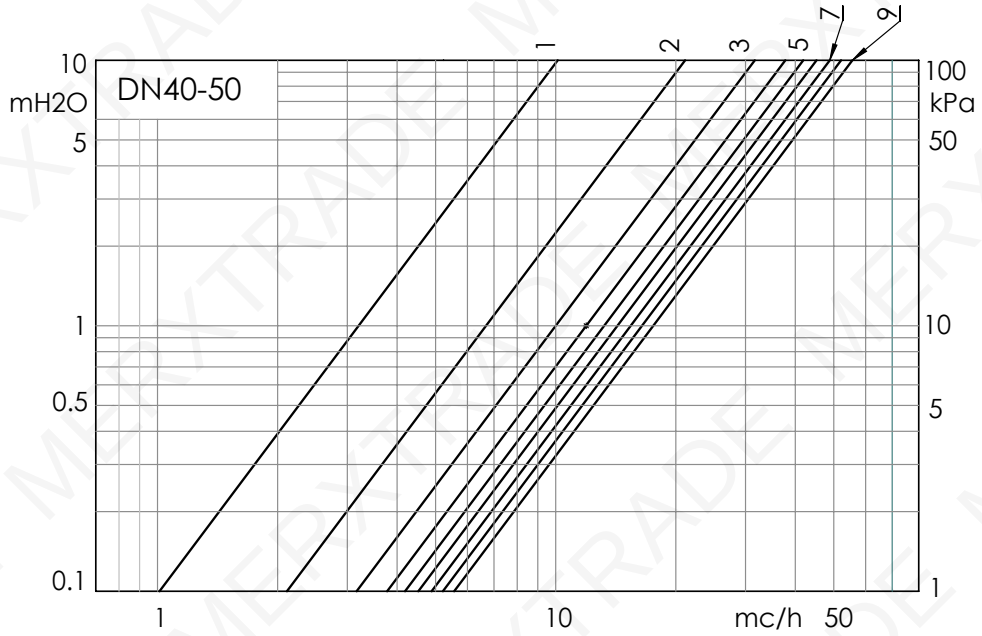
Flow rate deviation vs. regulation position

Flow tolerance depending on presetting



DN 40-50

Head loss

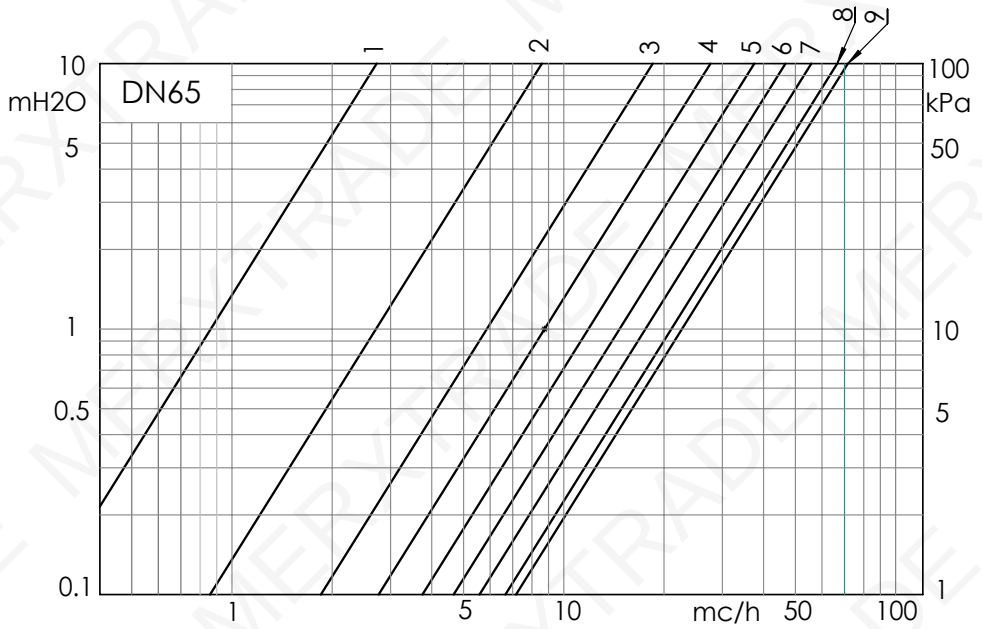


Kv chart (mc/h per bar)

Position	Kv
0.0	0
0.5	5
1.0	10.1
1.5	15.6
2.0	21.1
2.5	26.3
3.0	31.6
3.5	34.7
4.0	37.8
4.5	39.8
5.0	41.9
5.5	43.5
6.0	45.1
6.5	46.9
7.0	48.7
7.5	50.3
8.0	52
8.5	53.8
9.0	55.6

DN 65

Head loss

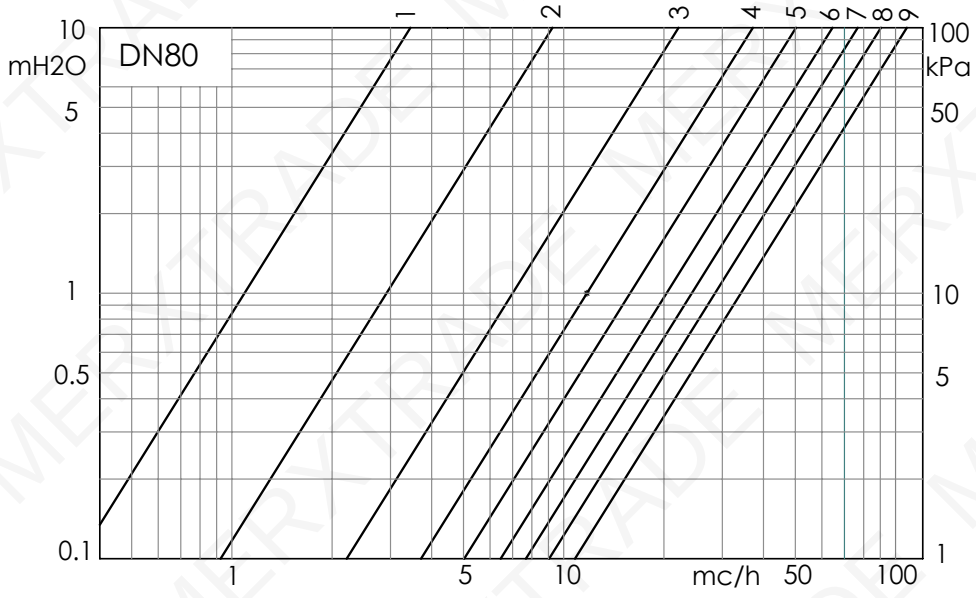


Kv chart *(mc/h per bar)*

Position	Kv
0.0	0
0.5	1.5
1.0	2.7
1.5	3.8
2.0	8.6
2.5	14.0
3.0	18.5
3.5	23.4
4.0	27.7
4.5	32.5
5.0	37.5
5.5	42.5
6.0	46.6
6.5	51.6
7.0	55.8
7.5	62.3
8.0	66.7
8.5	70.2
9.0	71.8

DN 80

Head loss

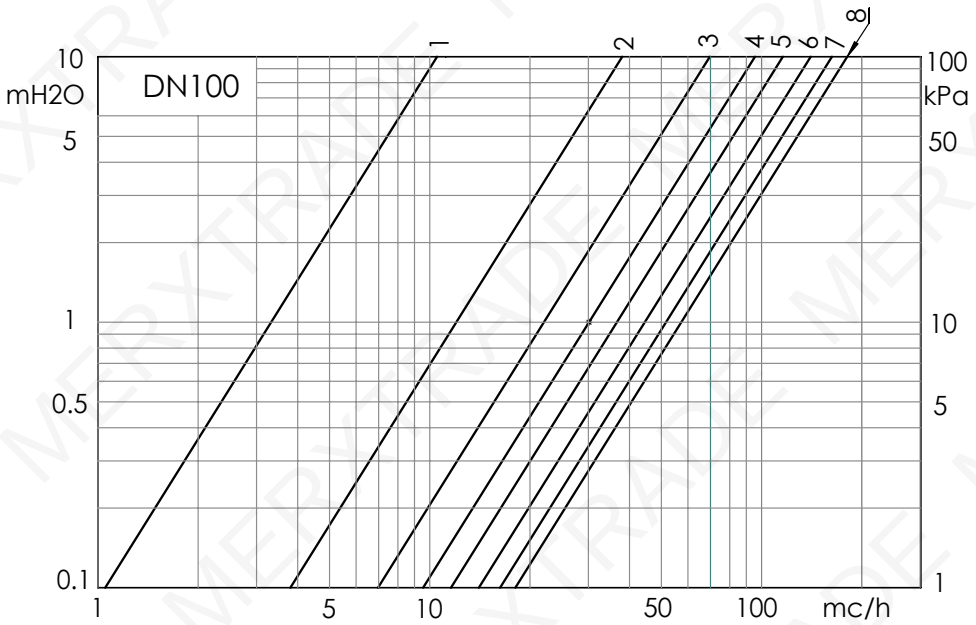


Kv chart *(mc/h per bar)*

Position	Kv
0.0	0
0.5	2.3
1.0	3.5
1.5	4.1
2.0	9.3
2.5	14.5
3.0	22.2
3.5	29
4.0	37.1
4.5	43.2
5.0	50.2
5.5	58.6
6.0	64.5
6.5	71.2
7.0	77
7.5	84
8.0	90.5
8.5	97.1
9.0	108

DN 100

Head loss

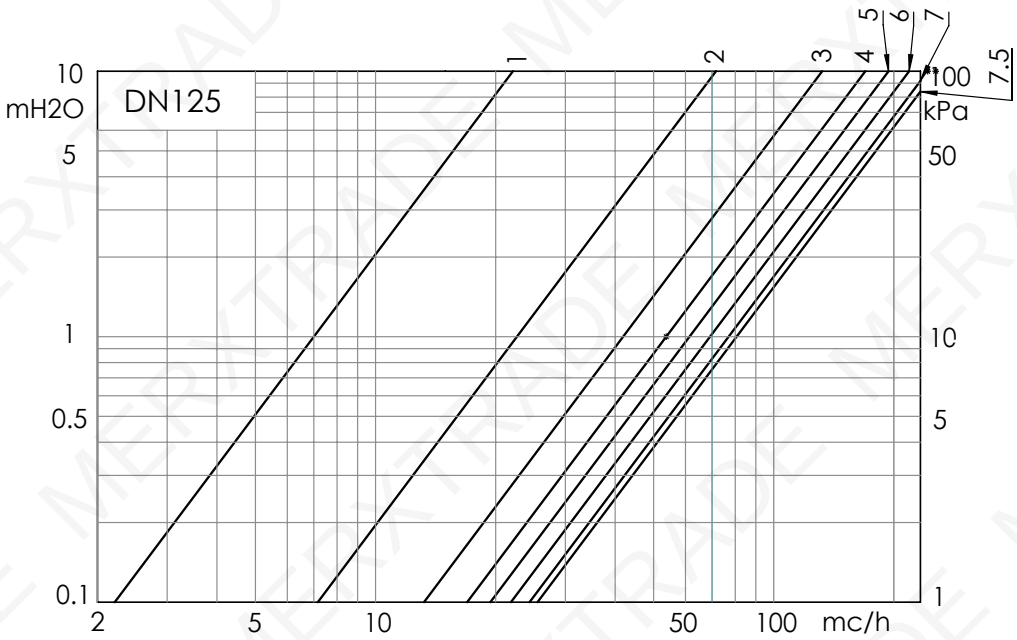


Kv chart *(mc/h per bar)*

Position	Kv
0.0	0
0.5	3,4
1.0	10,5
1.5	23,9
2.0	38
2.5	54,3
3.0	69,9
3.5	83,1
4.0	95,6
4.5	105,8
5.0	115,7
5.5	128,7
6.0	140,6
6.5	154
7.0	163,3
7,5	173,4
8,0	181

DN 125

Head loss

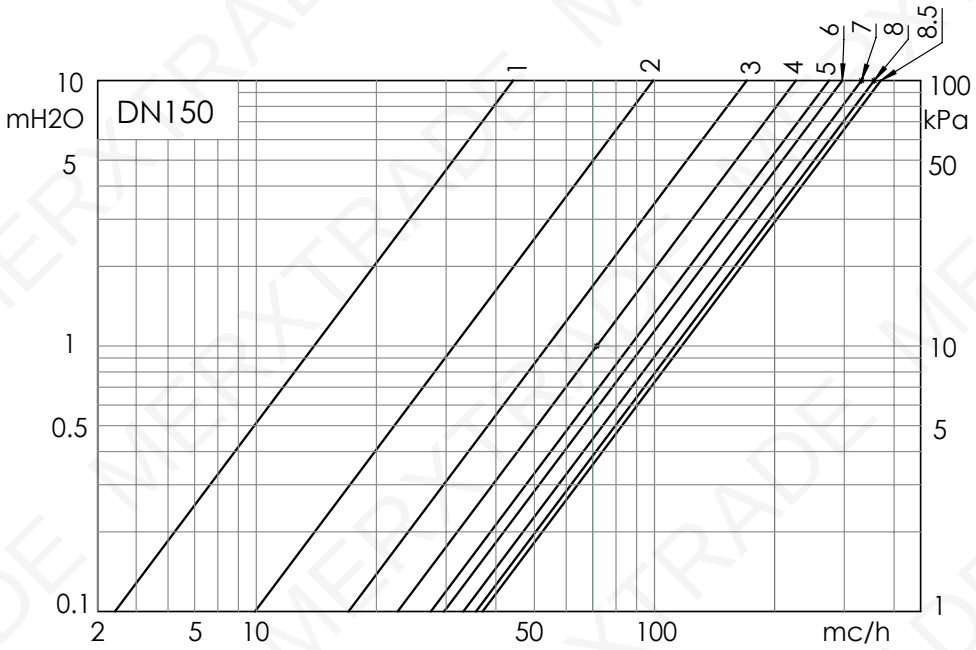


Kv chart *(mc/h per bar)*

Position	Kv
0.0	0
0.5	5,3
1.0	22,1
1.5	42,6
2.0	71,7
2.5	104,7
3.0	132,4
3.5	155,2
4.0	170
4.5	182,4
5.0	194,2
5.5	207,4
6.0	219
6.5	232,5
7.0	243,4
7.5	255,2

DN 150

Head loss

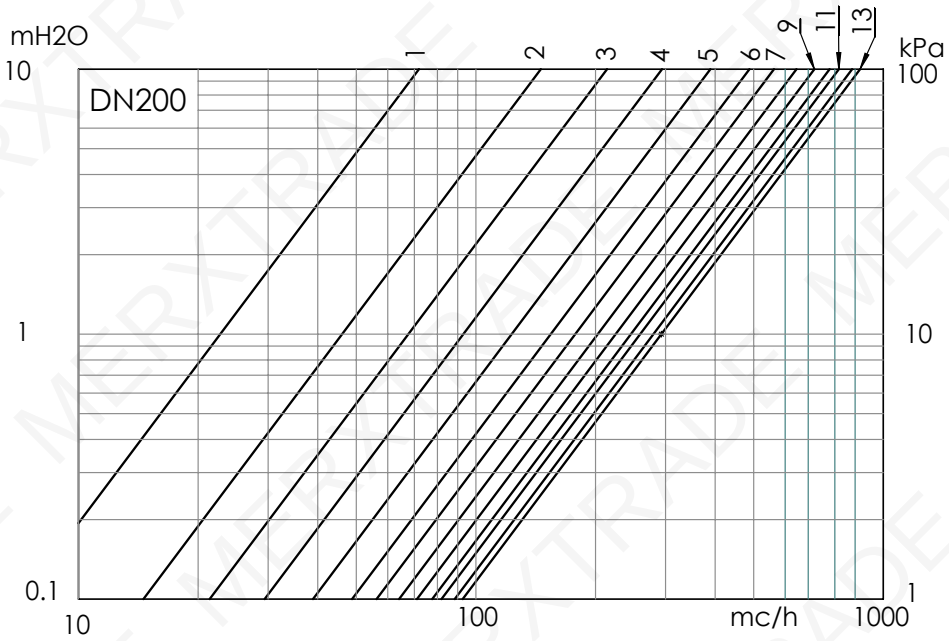


Kv chart *(mc/h per bar)*

Position	Kv
0.0	0
0.5	24,7
1.0	44,1
1.5	73,3
2.0	99,2
2.5	130,3
3.0	170,6
3.5	202,4
4.0	226,7
4.5	248,5
5.0	274
5.5	292
6.0	303,7
6.5	315
7.0	331,5
7.5	342,8
8.0	357,8
8.5	370,5

DN 200

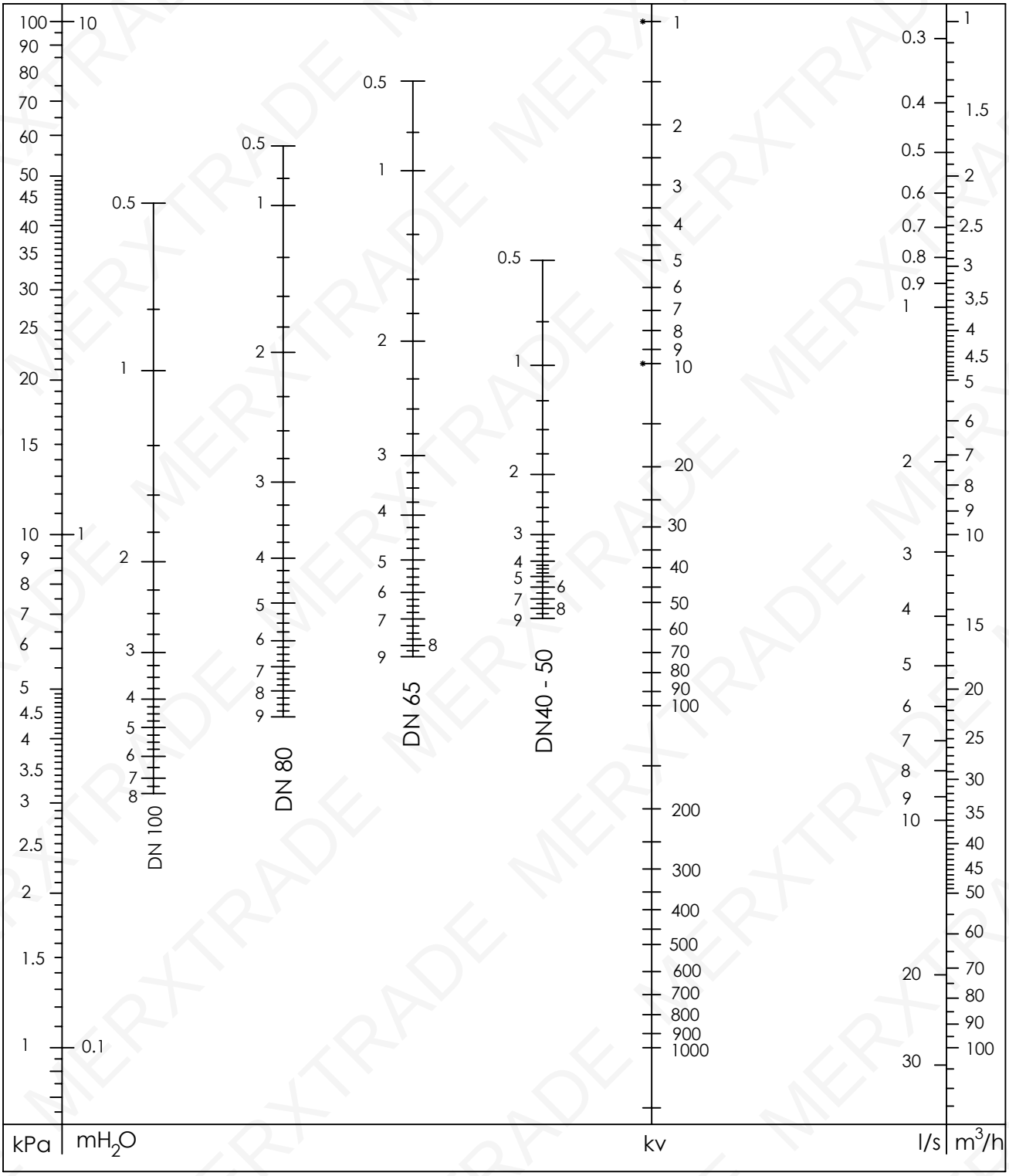
Head loss



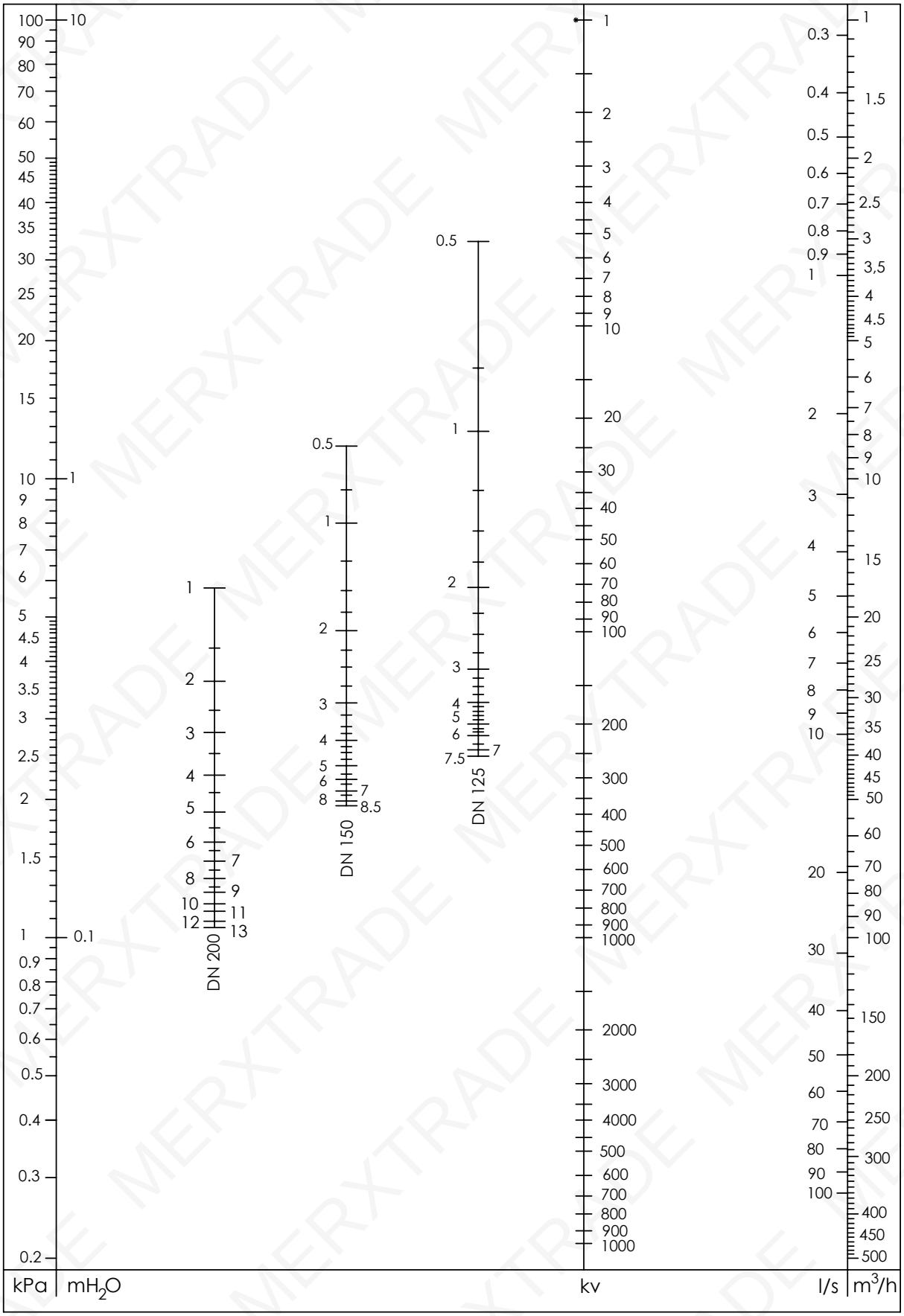
Kv chart *(mc/h per bar)*

Position	Kv	*Position*	Kv
0.0	0	8.0	640,0
1.0	71,9	8.5	682,6
1.5	112,9	9.0	711,1
2.0	145,5	9.5	750,9
2.5	181,0	10.0	776,1
3.0	213,5	10.5	796,5
3.5	250,3	11.0	818,7
4.0	294,1	11.5	849,9
4.5	335,2	12.0	884,2
5.0	388,6	12.5	912,5
5.5	437,7	13.0	927,1
6.0	487,3		
6.5	519,6		
7.0	562,1		
7.5	601,0		

Regulation chart - DN 40 / 50 / 65 / 80 / 100



Regulation chart - DN 125 / 150 / 200



Instructions and Recommendations for series Ekoflux S

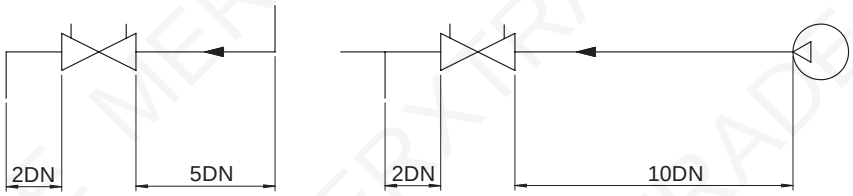
RECOMMENDATIONS

Before carrying out maintenance or dismantling the valve: ensure that the pipes, valves and fluids have cooled down, that the pressure has decreased and that the lines and pipes have been drained in case of toxic, corrosive, inflammable and caustic liquids. Temperatures above 50°C and below 0°C might cause damage to people.
Commissioning, decommissioning and maintenance interventions must be carried out by trained staff, taking account of the instructions and local safety regulations.

ADVICE FOR PLANT LAYOUT

> In order to ensure that temperature and pressure limits are not exceeded, the system should be fitted with a thermostat and pressure switches.
> Observe the following minimum distances between the valve and other system components.

DISTANCE FROM	*UPSTREAM*	*DOWNSTREAM*
Pompe / *Pumps*	10 x DN	-
Gomiti - Derivazioni / *Bends - T's*	5 x DN	2 x DN



ABOUT CAVITATION

NB: the flow must be free of cavitation.
As the liquid flows through the valve, as a result of section reduction, its velocity and its dynamic pressure increase, and the corresponding static pressure decreases. If the static pressure value drops below the vapour pressure level, steam bubbles will form. These bubbles will be carried away by the fluid, and implode when the static pressure exceeds the vapour pressure again. Bubble implosion generates high temperatures and pressure shock waves locally, which will damage the valve and cause vibrations and noise. Higher temperatures, lower static pressure and higher pressure drops across the valve usually increase the risk of cavitation.

STORING

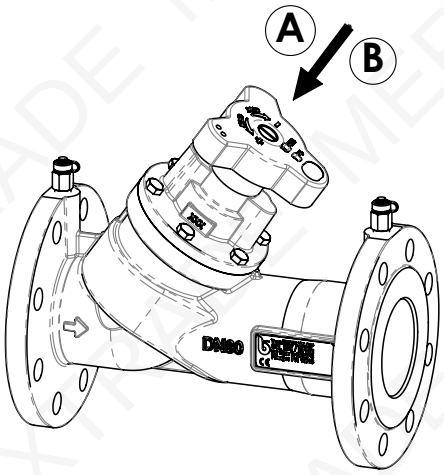
- Keep the valve in a dry place, protect from damage and dirt.
- Handle with care, avoid hitting, avoid knocks, especially on the weaker parts (hand wheel).
- Do not lift the valve by the hand wheel.
- Use suitable, sturdy packing for transport.

INSTALLATION

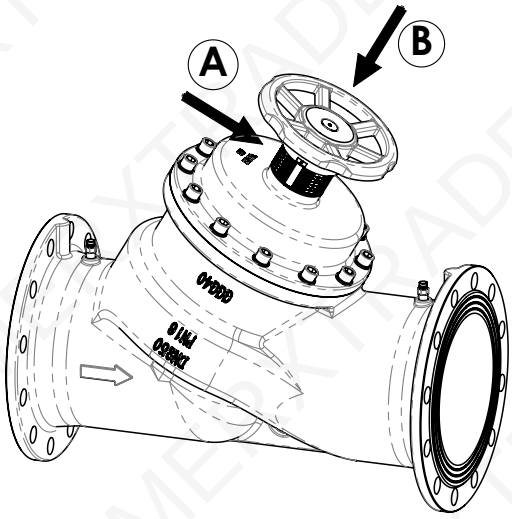
- do not lift the valve by the hand wheel.
- before installing, check that:
• the piping is clean,
• the valve is clean and undamaged,
• the flange sealing surfaces are clean and undamaged.
- The valve is unidirectional; respect the flow direction indicated by the arrow on the body.
- Use suitable gaskets and check they are correctly centred.
- Do not weld the flanges to the piping after installation of the valve.
- Water hammers might cause damage and ruptures. Avoid inclination, twisting and misalignments of the piping which may subject the installed valve to excessive stresses. It is recommended that elastic joints be used in order to reduce such effects as much as possible.
- Tighten the bolts crosswise.

We recommend to provide enough free room for valve operating and for:
A= Position indicator reading
B = Memory stop operating

To operate memory stop:
DN40-50: 2,5 mm Allen key
DN65-400: flat point screwdriver



DN40-DN200



DN250-DN400

COMMISSIONING

- It is advisable to flush the system clean. Keep the valve fully open when flushing.

- If a system pressure test is required, the maximum allowed pressure PS may be exceeded by up to a maximum of 24 bar. Pressure tests must be carried out at room temperature and with the valve fully open.

MEASURING

Pay close attention during measurement in the case of hot media.

- Pressure test plugs are self-sealing. Unscrew the pressure test plug cap and insert the probe (fig. 2A).

- Screw the probe ring nut to the pressure test plug (fig. 2B).

- We recommend placing an isolation valve (S) on the probe.

- After measuring, unscrew and extract the probe. Screw the plug cap back on.

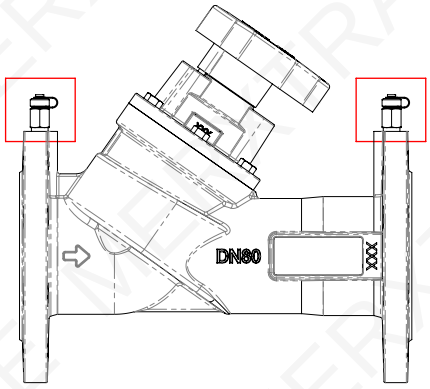


FIG.2A

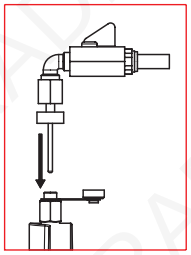
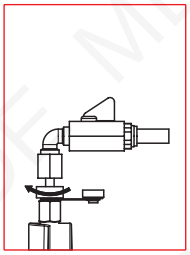


FIG.2B

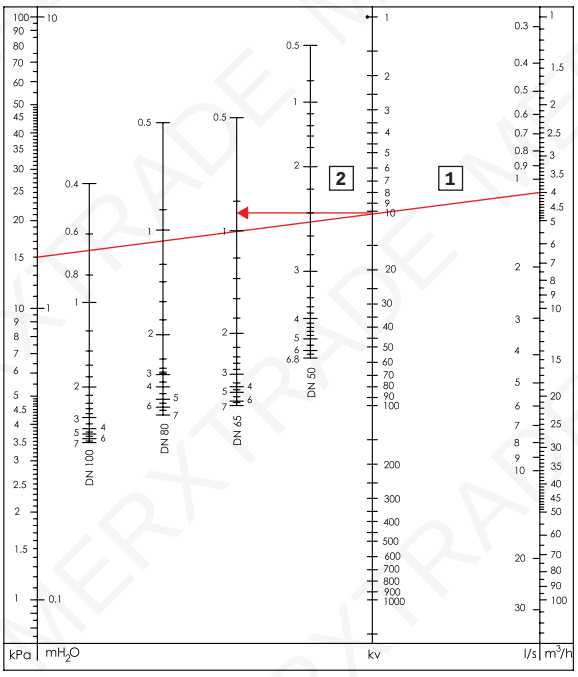


REGULATION CHART - UTILIZATION EXAMPLE

DATA*: for a DN 65 valve, given a design flow rate of 4.2 m3/h and a required pressure drop for balancing of 15 kPa.*

Draw a straight line (1) between the given values of flow rate and pressure drop. From the intersection of this line and the vertical line Kv, draw a horizontal line (2) to meet the DN 65 bar.

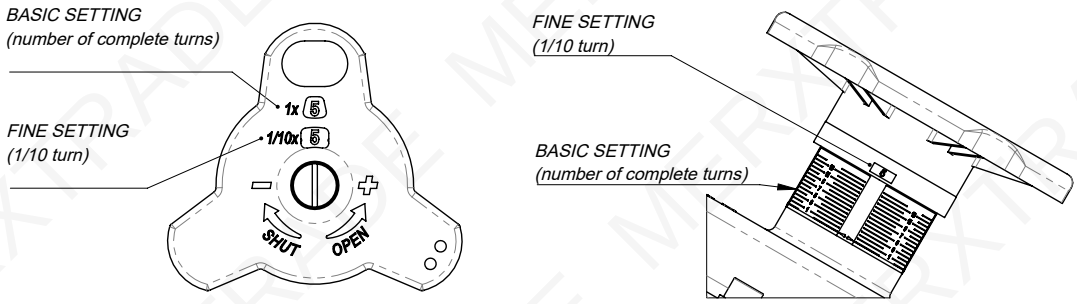
The value read (e.g. 0.8) is the presetting position.



SETTING

The regulation position can be read from the digital setting scales, showing basic settings (number of complete turns) and fine setting (1/10 turn)(fig.3). Intermediate positions can be adjusted continuously. Presetting position can be retrieved by means of an adjustable stem travel stopper.

FIG.3



DN40-DN200 **DN250-DN400**

Given the flow rate and the required pressure drop, obtained from the regulation chart the setting position, the valve is set as follows:

- *Close the valve fully*
- *Open to the calculated value, read on the digital scales.*
- *Remove the upper screw.*
- *With a flat head corkscrew, turn the inner stem travel stopper stem clockwise until it stops.*
- *Replace the upper screw. Now the valve can be closed, but the set opening position cannot be overrun.*

To check the setting position:

- *Close the valve fully*
- *Open to the stop position. The presetting position is shown by the digital scales.*

DIFFERENTIAL PRESSURE ADJUSTMENT FACTORS

Previous charts are valid for water. If an antifreeze is added to water, the viscosity and specific density change and this causes a variation of the pressure drop, flow rate being equal, especially at low temperatures. Once you have the pressure drop required to balance the water-antifreeze mix, in order to use the regulation chart, the pressure drop adjusted for pure water must be calculated, by dividing the pressure drop by the adjustment factor. The adjustment factor is given by the following formula:

$f=Cx+b$ *(where f=adjustment factor; X= glycol percentage; C, b = constants)*

	Ethylene glycol		Propylene glycol	
Temperature °C	**C**	**b**	**C**	**b**
80	0,0034	0,850	0,0030	0,850
65	0,0037	0,880	0,0040	0,880
50	0,0043	0,911	0,0050	0,911
35	0,0047	0,951	0,0061	0,951
20	0,0053	1,000	0,0069	1,000
5	0,0061	1,055	0,0073	1,055

EXAMPLE: *for a DN 65 valve, for water mixed with 40% ethylene glycol, temperature 50°C, given a design flow rate of 4.3 m3/h and a required pressure drop for balancing of 15 kPa.*
*The adjustment factor is 1.083 (0.0043*40+0.911). Pressure drop adjusted for pure water is 15/1.083=13.85 kPa. Therefore, the presetting position given by the regulation chart is 0.9.*

CONVERSION OF UNITS OF MEASURE

FROM	MULTIPLY BY	TO OBTAIN
kPa	0.01	bar
kPa	0.1097	mH2O
kPa	0.145	psi
m3/h	0.2778	l/s
m3/h	16.6667	l/min
m3/h	264.172	gph (US)
m3/h	4.402	gpm (US)
l/min	0.2642	gpm (US)
TO OBTAIN	DIVIDE BY	FROM

DISPOSAL

For valve operating with hazardous media (toxic, corrosive…) , if there is a possibility of residue remaining in the valve, take due safety precaution and carry out required cleaning operation. Personnel in charge must be trained and equipped with appropriate protection devices.
Prior to disposal, disassemble the valve and separate the component according to various materials. Please refer to product literature for more information. Forward sorted material to recycling (e.g. metallic materials) or disposal, according to local and currently valid legislation and under consideration of the environment.

***DN 250-400** flanged balancing valve*

Serie Ekoflux S

brandoni

DN250-DN400

DN 250-400 flanged balancing valve

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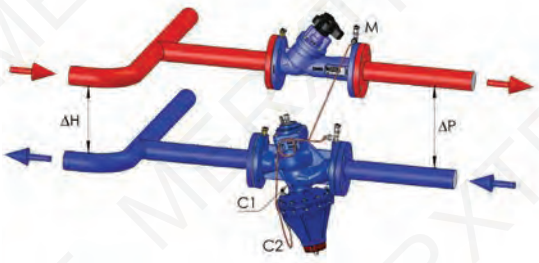
- *Pressure gauge probe adaptor*



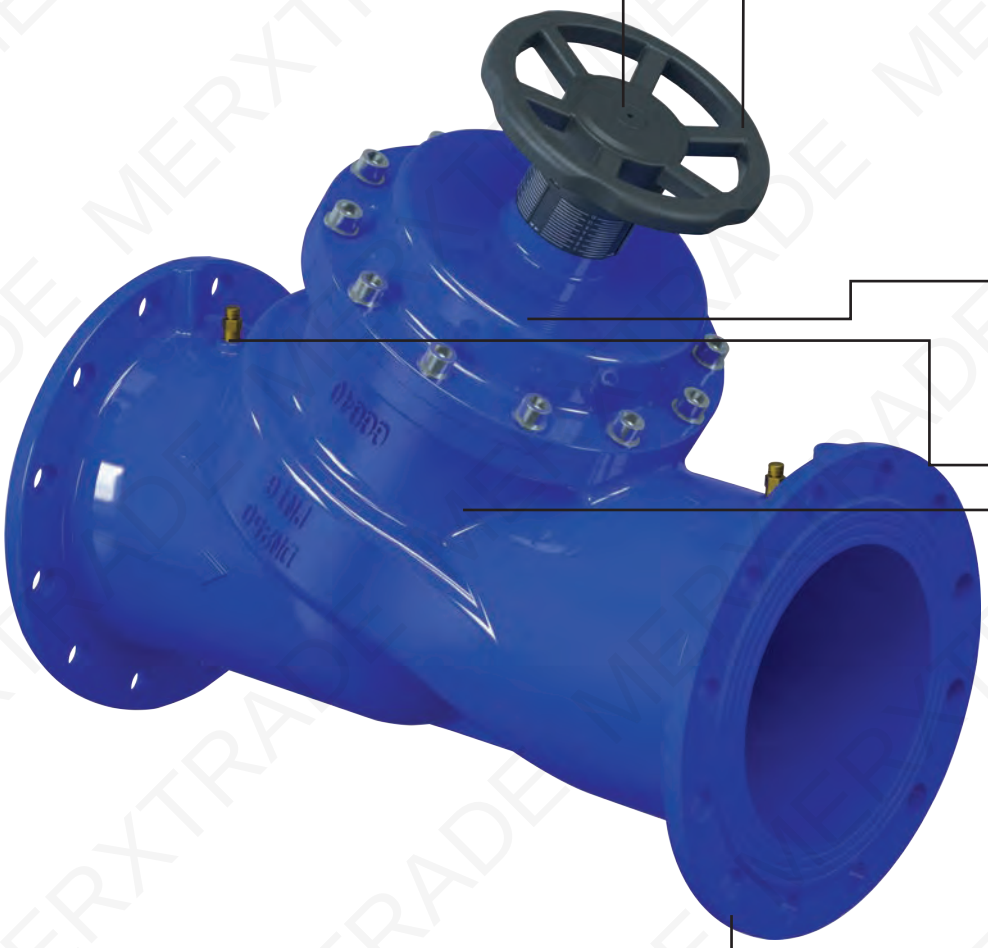
CE

In conformity with directive 2014/68/UE (ex 97/23/CE PED)

***Design and testing standards** (correspondences):*

Face-to-face: EN 558-1 ISO 5752
Flanges: EN 1092 ISO 7005
Marking: EN19
Testing: according to EN 12266

***Markings and dataplate:** product type (EKOFLUX.S/P), flow arrow, DN, PN, temperature, shell material, flange, CE mark (DN65 and above)*



Preset position memory: the preset value is maintained also when the valve is moved.

Continuous pre-regulation allows controlling the precise loss of pres-sure and flow rate.
The adjustable hand wheel allows reading the position indicator in 4 dif-ferent positions.

Stem seal with double o-ring.

Self-sealing test point for quick-in-stalling pressure or temperature probes.

The shutter with EPDM seal pro-duces a perfect seal,
when maintenance work is done on the system.

Internal and external epoxy coating, high temperature resistance, envi-ronmentally-friendly water based paint.

DN 250-400 flanged balancing valve

EKOFLUX.S

Body: ductile iron Seal: FKM
Temp: -10 +120°C

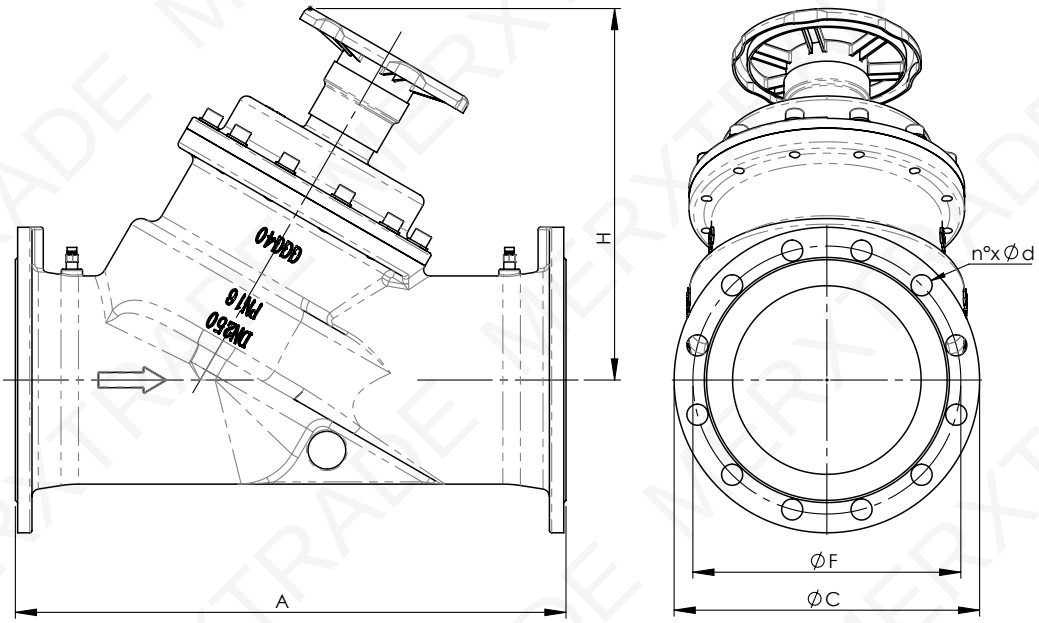
Accessories

PPA1

Pressure gauge probe adaptor. 1/4" F brass body and stainless steel probe.

EKOFLUX.FLEX1

Electronic instrument for the mea-surement of the differential pressu-re, the flow rate and the balancing of the circuit.



Dimensions *(mm)*

DN		250	300	350	400
A	EN 558-1/1	730	850	980	1100
H		460	600	614	642
V		250	250	250	250
C		405	460	520	580
F	EN1092 PN16	355	410	470	525
n x D		12 x 28	12 x 28	16 x 28	16 x 31

Weight *(kg)*

kg		146	200	300	416

Materials

	Component	Material
1	*Body*	Ductile iron
2	*Stem*	Brass
3	*Ring nut*	-
4	*Disc Seal*	FKM
5	*Disc*	Ductile iron
6	*Limiting screw*	*Brass*
7	*Handwheel + position indicator*	"DN250-300 Nylon DN350-400 Nylon + / Nylon + Ductile iron "
8	*est plus*	Brass
9	*O-Ring*	FKM
10	*nuts and bolts*	galvanized carbon steel

DN 250-400 flanged balancing valve

Maximum pressure

Fluids	
Water, water - glycol mixtures (MAX 50% glycol)	16 bar

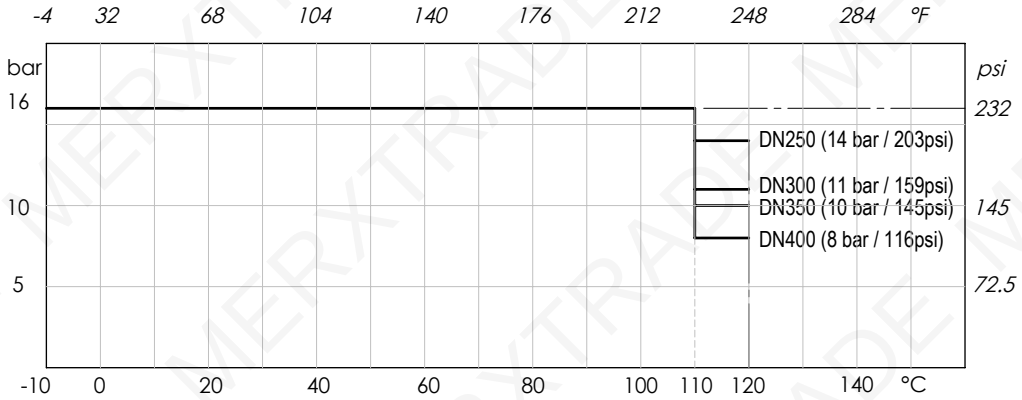
Not suitable for gas. Do not use with oils, hydrocarbons and with hazardous, corrosive and abrasive fluids.

Temperature

Temperature	min °C	Max°C / max°C
	-10	120

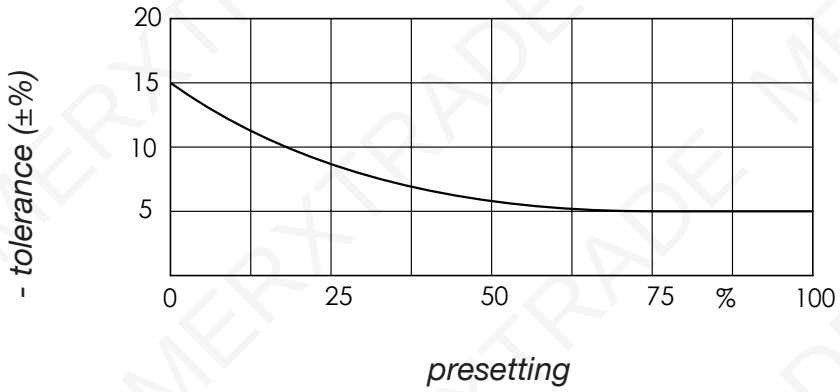
NB: the maximum working pressure decreases while temperature increases, please refer to "pressure/temperature" chart

Pressure/temperature chart



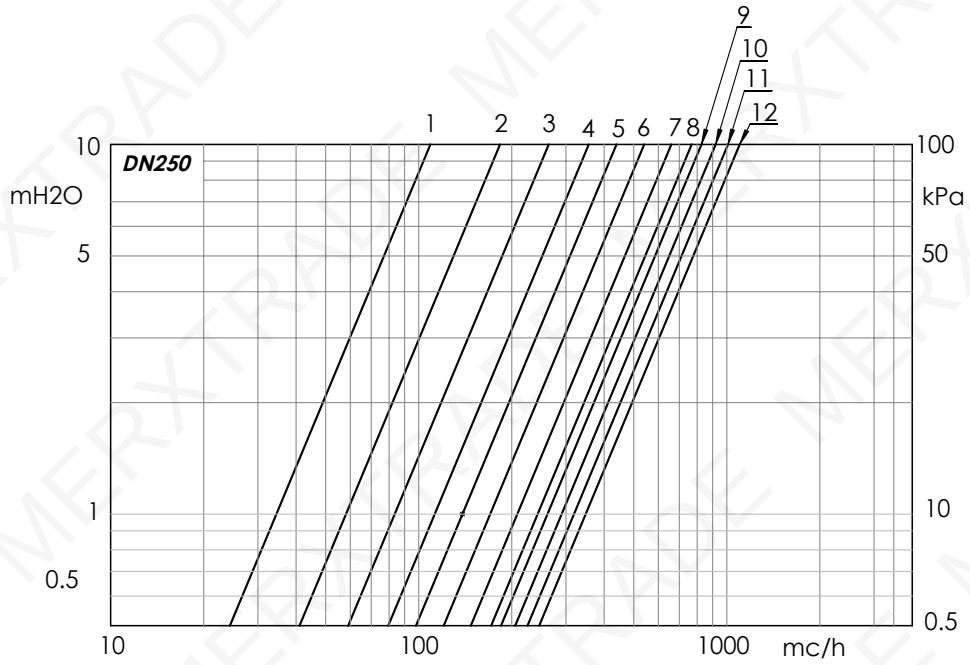
Flow rate deviation vs. regulation position

Flow tolerance depending on presetting



DN 250

Head loss

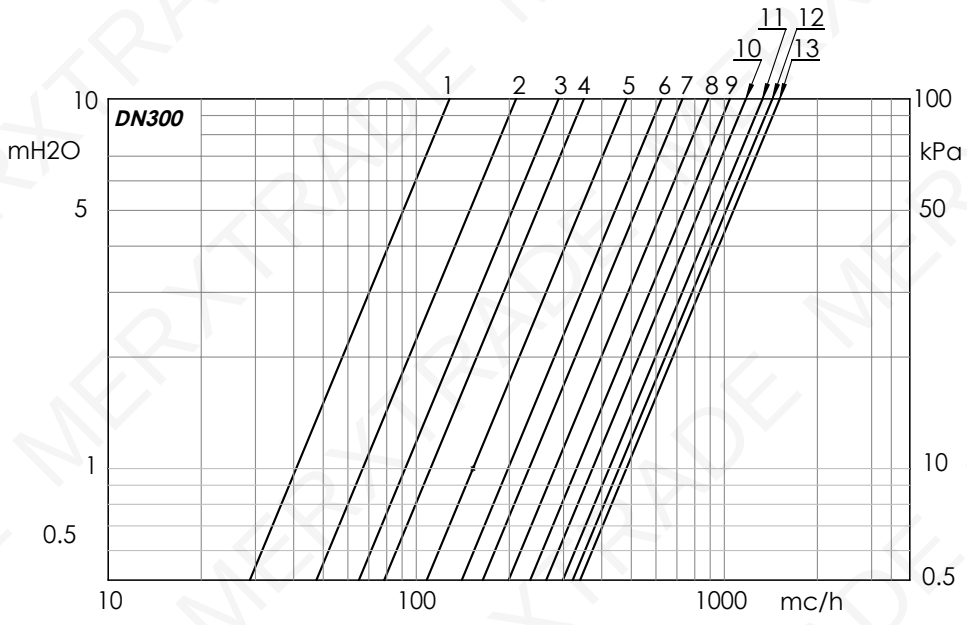


Kv chart (mc/h per bar)

Position	Kv
1	109
2	184
3	264
4	356
5	438,8
6	538,6
7	661,7
8	770
9	826,7
10	920
11	1010
12	1102,5

DN 300

Head loss

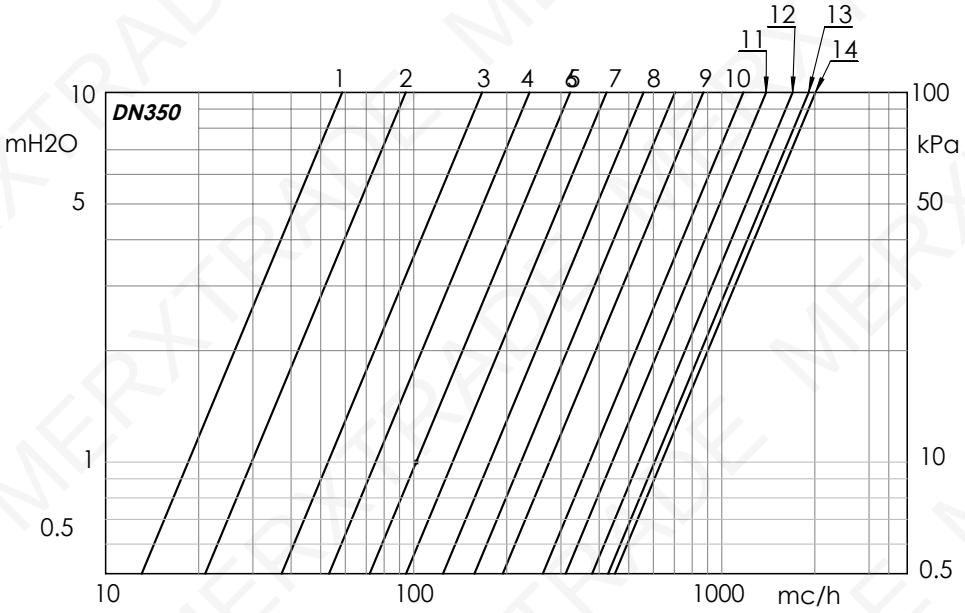


Kv chart (mc/h per bar)

Position	Kv
1	128
2	211
3	290,3
4	350,5
5	481,2
6	624,1
7	731
8	886,9
9	1042,1
10	1177,2
11	1330
12	1429
13	1516

DN 350

Head loss

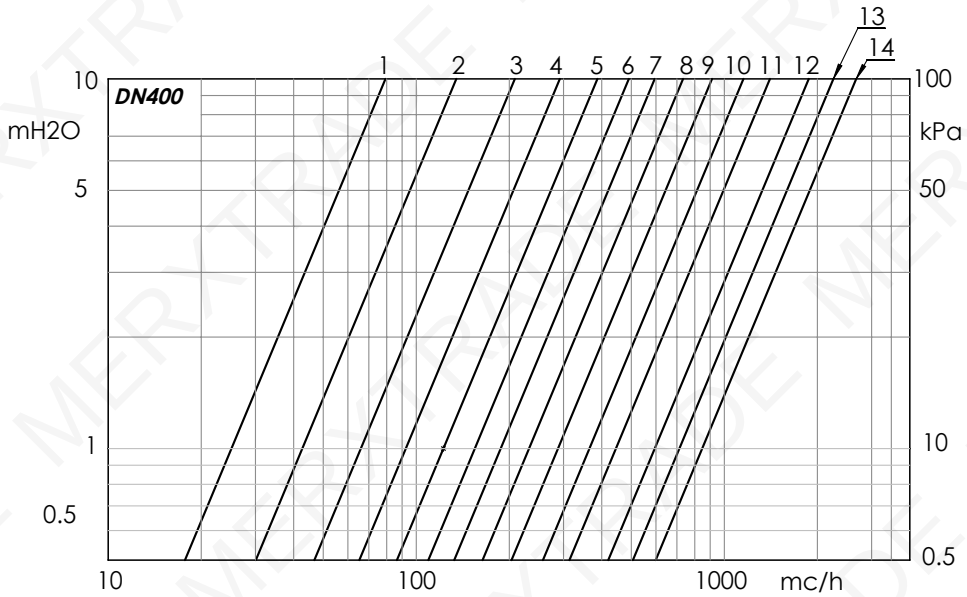


Kv chart (mc/h per bar)

Position	Kv
1	58,7
2	94
3	167,1
4	237,8
5	322,4
6	421,8
7	557
8	707
9	871,7
10	1175,5
11	1396
12	1697,8
13	1917,5
14	2012

DN 400

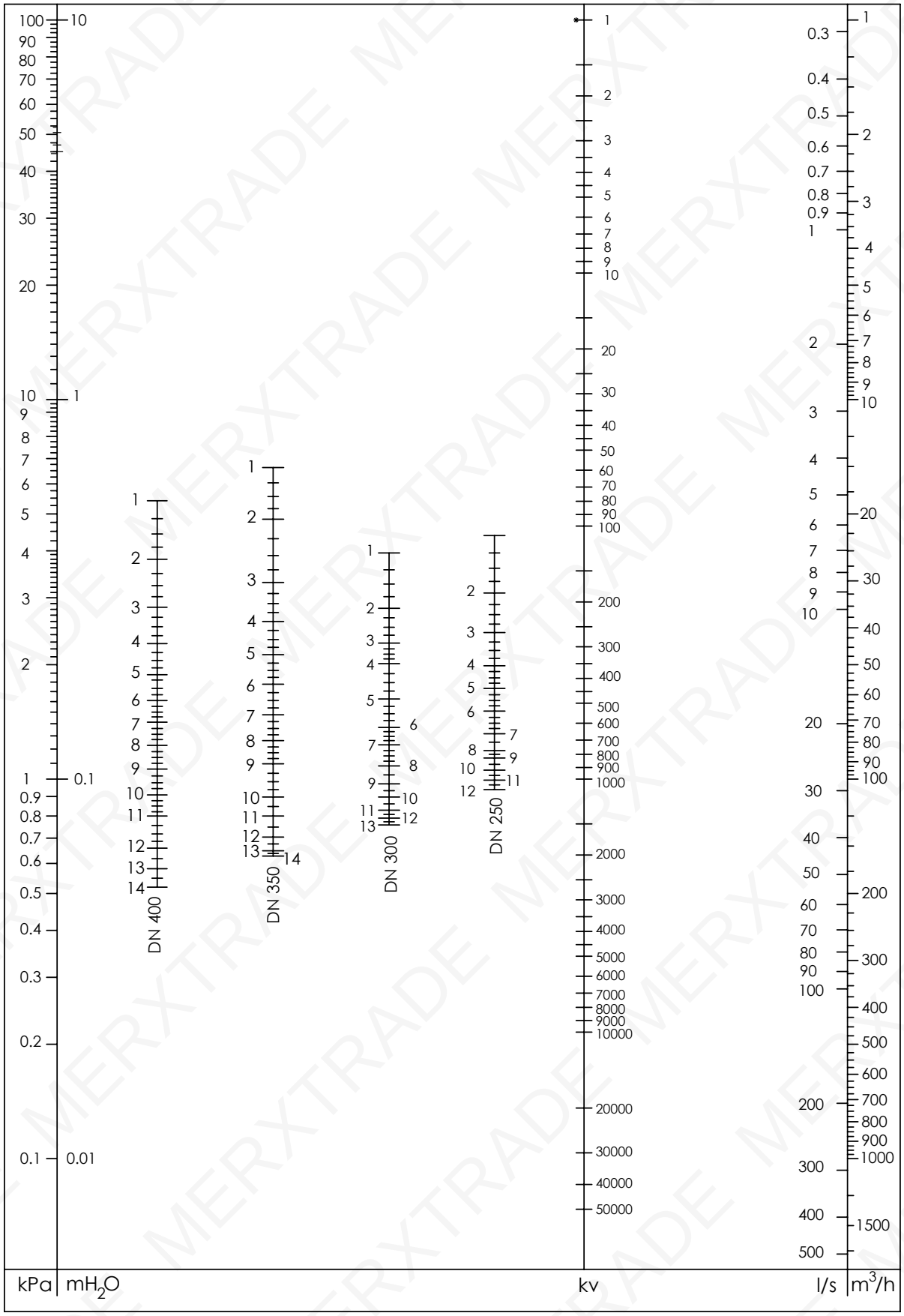
Head loss



Kv chart (mc/h per bar)

Position	Kv
1	79.4
2	135,2
3	209
4	292
5	387
6	490
7	595
8	734
9	911
10	1153
11	1407
12	1879
13	2256
14	2677

Regulation chart - DN 250 / 300 / 350 / 400



Instructions and Recommendations for series Ekoflux S DN 250-400

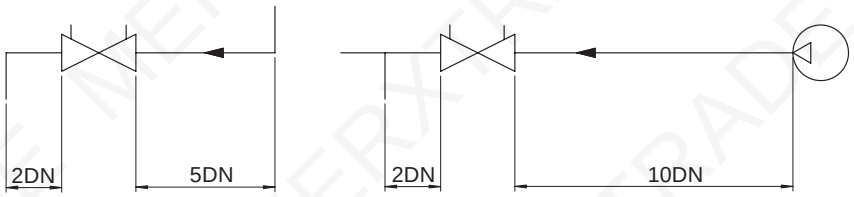
RECOMMENDATIONS

Before carrying out maintenance or dismantling the valve: ensure that the pipes, valves and fluids have cooled down, that the pressure has decreased and that the lines and pipes have been drained in case of toxic, corrosive, inflammable and caustic liquids. Temperatures above 50°C and below 0°C might cause damage to people.
Commissioning, decommissioning and maintenance interventions must be carried out by trained staff, taking account of the instructions and local safety regulations.

ADVICE FOR PLANT LAYOUT

> In order to ensure that temperature and pressure limits are not exceeded, the system should be fitted with a thermostat and pressure switches.
> Observe the following minimum distances between the valve and other system components.

DISTANCE FROM	*UPSTREAM*	*DOWNSTREAM*
Pumps	10 x DN	-
Bends - T's	5 x DN	2 x DN



ABOUT CAVITATION

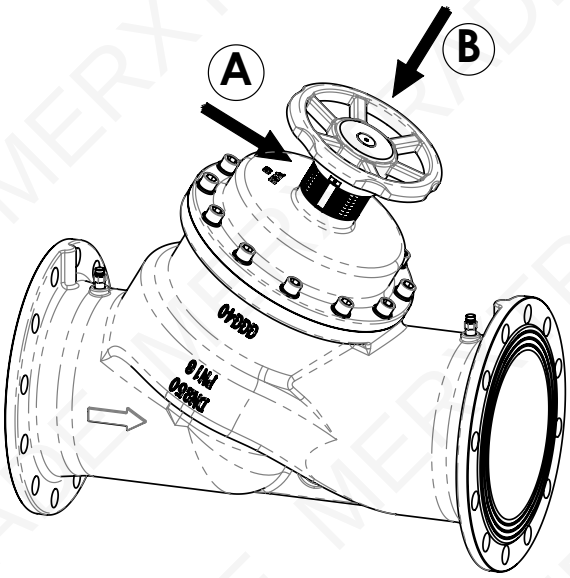
NB: the flow must be free of cavitation.
As the liquid flows through the valve, as a result of section reduction, its velocity and its dynamic pressure increase, and the corresponding static pressure decreases. If the static pressure value drops below the vapour pressure level, steam bubbles will form. These bubbles will be carried away by the fluid, and implode when the static pressure exceeds the vapour pressure again. Bubble implosion generates high temperatures and pressure shock waves locally, which will damage the valve and cause vibrations and noise. Higher temperatures, lower static pressure and higher pressure drops across the valve usually increase the risk of cavitation.

STORING

- Keep the valve in a dry place, protect from damage and dirt.
- Handle with care, avoid hitting, avoid knocks, especially on the weaker parts (hand wheel).
- Do not lift the valve by the hand wheel.
- Use suitable, sturdy packing for transport.

INSTALLATION

- do not lift the valve by the hand wheel.
- before installing, check that:
• the piping is clean,
• the valve is clean and undamaged,
• the flange sealing surfaces are clean and undamaged.
- The valve is unidirectional; respect the flow direction indicated by the arrow on the body.
- Use suitable gaskets and check they are correctly centred.
- Do not weld the flanges to the piping after installation of the valve.
- Water hammers might cause damage and ruptures. Avoid inclination, twisting and misalignments of the piping which may subject the installed valve to excessive stresses. It is recommended that elastic joints be used in order to reduce such effects as much as possible.
- Tighten the bolts crosswise.



We recommend to provide enough free room for valve operating and for:
A= Position indicator reading
B = Memory stop operating

COMMISSIONING

- It is advisable to flush the system clean. Keep the valve fully open when flushing.

- If a system pressure test is required, the maximum allowed pressure PS may be exceeded by up to a maximum of 24 bar. Pressure tests must be carried out at room temperature and with the valve fully open.

MEASURING

Pay close attention during measurement in the case of hot media.

- Pressure test plugs are self-sealing. Unscrew the pressure test plug cap and insert the probe (fig. 2A).

- Screw the probe ring nut to the pressure test plug (fig. 2B).

- We recommend placing an isolation valve (S) on the probe.

- After measuring, unscrew and extract the probe. Screw the plug cap back on.

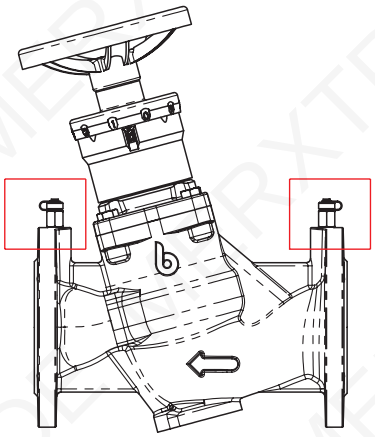


FIG.2A

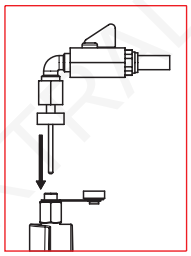
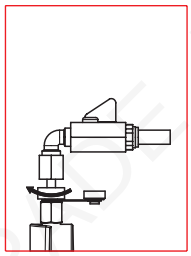


FIG.2B



DIFFERENTIAL PRESSURE ADJUSTMENT FACTORS

Previous charts are valid for water. If an antifreeze is added to water, the viscosity and specific density change and this causes a variation of the pressure drop, flow rate being equal, especially at low temperatures. Once you have the pressure drop required to balance the water-antifreeze mix, in order to use the regulation chart, the pressure drop adjusted for pure water must be calculated, by dividing the pressure drop by the adjustment factor. The adjustment factor is given by the following formula:

f=Cx+b *(where f=adjustment factor; X= glycol percentage; C, b = constants)*

	Ethylene glycol		Propylene glycol	
Temperature °C	**C**	**b**	**C**	**b**
80	0,0034	0,850	0,0030	0,850
65	0,0037	0,880	0,0040	0,880
50	0,0043	0,911	0,0050	0,911
35	0,0047	0,951	0,0061	0,951
20	0,0053	1,000	0,0069	1,000
5	0,0061	1,055	0,0073	1,055

EXAMPLE: *for a DN 65 valve, for water mixed with 40% ethylene glycol, temperature 50°C, given a design flow rate of 4.3 m3/h and a required pressure drop for balancing of 15 kPa.*
*The adjustment factor is 1.083 (0.0043*40+0.911). Pressure drop adjusted for pure water is 15/1.083=13.85 kPa. Therefore, the presetting position given by the regulation chart is 0.9.*

CONVERSION OF UNITS OF MEASURE

FROM	MULTIPLY BY	TO OBTAIN
kPa	0.01	bar
kPa	0.1097	mH2O
kPa	0.145	psi
m3/h	0.2778	l/s
m3/h	16.6667	l/min
m3/h	264.172	gph (US)
m3/h	4.402	gpm (US)
l/min	0.2642	gpm (US)
TO OBTAIN	**DIVIDE BY**	**FROM**

DISPOSAL

For valve operating with hazardous media (toxic, corrosive...) , if there is a possibility of residue remaining in the valve, take due safety precaution and carry out required cleaning operation. Personnel in charge must be trained and equipped with appropriate protection devices.
Prior to disposal, disassemble the valve and separate the component according to various materials. Please refer to product literature for more information. Forward sorted material to recycling (e.g. metallic materials) or disposal, according to local and currently valid legislation and under consideration of the environment.