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REV 0504

9500

DRV BALANCING VALVES

VIR™

VIR,
leader in the design
and manufacture of brass,
bronze and plastic valves,
puts thirty years of experience
into the development
of new solutions.

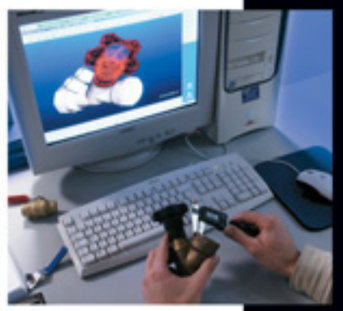
VIR combines tradition,
skill and innovation
to meet all customer needs,
and this commitment has led
to the development of our new line
of Balancing valves.
For this new line of valves,
VIR developed the design
and tests, as well as the entire
production process, from casting
the bronze elements to machining,
assembly and inspection.

USA operation

RED WHITE Valve Corp.
California USA

Headquarter

VIR S.p.A.- Valduggia
Italy



HYDRAULIC BALANCING

DRV

VODRV

DRV

In almost all distribution networks, difficulties are often encountered in delivering the desired flow rate to each individual terminal. This is due to the different levels of resistance offered by each branch of the system.

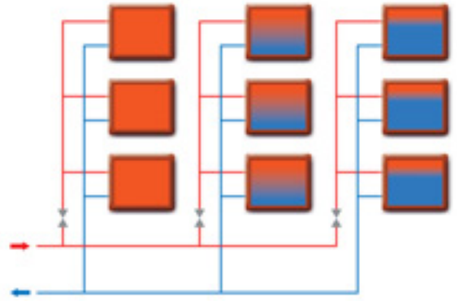
Inadequate flow rate can lead to the malfunction of terminals, which, in the example of heating and air-conditioning systems, can result in temperature differences of up to 5 or 6 degrees for each zone served by the system.

This in turn leads to increased consumption, premature wear to system components (e.g. pumps) and unwanted noise. By installing VIR balancing valves, flow rates can be balanced so that the operating values needed for the system to function properly are reached.

In addition, using the piezometric heads mounted on the valve, with the system running and using the appropriate instrument, the flow rate in the stretch where it is installed can be checked.

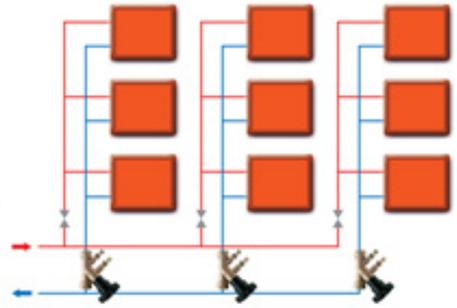
UNBALANCED SYSTEM

Without a regulating device, the various resistances between the different branches of the system can lead to an incorrect distribution of flow rates. These differences are due to the different lengths and layout, or simply to the installation of terminals that require different capacities.



BALANCED SYSTEM

With the installation of VIR balancing valves, resistance values can be levelled out, thus ensuring delivery of the correct flow rate to each branch.



DETERMINATION OF SETTING VALUES

Knowing the pressure drop Δp that we want to create using a valve with capacity Q, and cross-referencing the two sizes on the graphs given in the graph section of this brochure, we obtain the numbers that the valve knob should be set to.

Alternatively, we can calculate Kv analytically using the formula below and position the valve as indicated in the tables below the graphs in the appropriate section.

$$Kv = 36 \times \frac{Q}{\sqrt{\Delta p}}$$

Where: Q = flow rate in l/s

Δp = pressure drop in Kpa

or

$$Kv = \frac{Q}{\sqrt{\Delta p}}$$

Where: Q = flow rate in m^3/h

Δp = pressure drop in bar

Once we have determined the numbers that the valve wheel should be set to, we can proceed with presetting.

PRESETTING

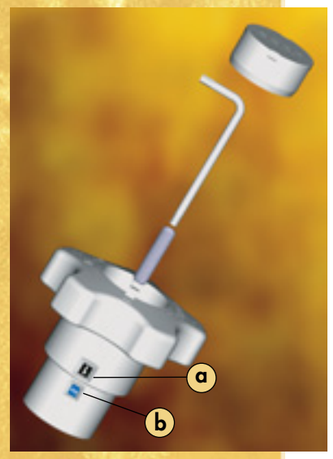
Once the required Kv value has been calculated, presetting is the operation by which the valve opening is blocked at the number of revs and tenths of revs giving that value.

After this operation, it will still be possible to close the valve.

Each time it is opened again, the wheel will always stop at the preset value, so that it can be moved without worrying about “losing” the calibration value.

On systems where there is a danger of the valves being moved or tampered with, the valves can be plumbed using the holes provided.

BRONZE DOUBLE REGULATING VALVE PN25
DRV-9500 / VODRV-9505



PRESETTING FIG.9500/9505

VIR bronze Balancing valve are supplied with the suitable allen key. The warning and instruction leaflet provides clear instructions for valve operation.

1. The preset valve is adjusted with the hand wheel, two windows indicate the valve setting:
- The display "a" indicates tenths of a turn.
- The display "b" indicates a full revolution.
2. Carefully remove the cover plug in the centre of the hand wheel by using a small screwdriver in the slot and gently prising it off.
3. With the valve at the required preset value, turn the enclosed allen key clockwise until you feel resistance.
4. Refit the cover plug
5. The valve can be “tamper proof” by means of sealing wire.

PRESETTING FIG.9550/9555

VIR cast iron Balancing valve are supplied with the suitable screw driver. The warning and instruction leaflet provides clear instructions for valve operation.
The number of full revolutions is indicated on the linear scale “C”. Fine adjustment is visible on the circular pitch “D” one turn is divided into ten parts.

1) Take of cup “A”
2) Close the valve completely and check if the linear scale “C” and circular pitch “D” indicate “O” adjustment.
3) Open the valve as required set the number of full revolutions on the linear scale “C” and tenth of turn on the circular pitch “D”
4) Insert enclosed screwdriver “E” into the hole at screw “B”
Screw in the locking screw located inside the stem until you feel resistance
5) Put the cup “A” on the head of bolt “B”
6) The valve can be “tamper proof” by means of sealing wire.

INSTALLATION

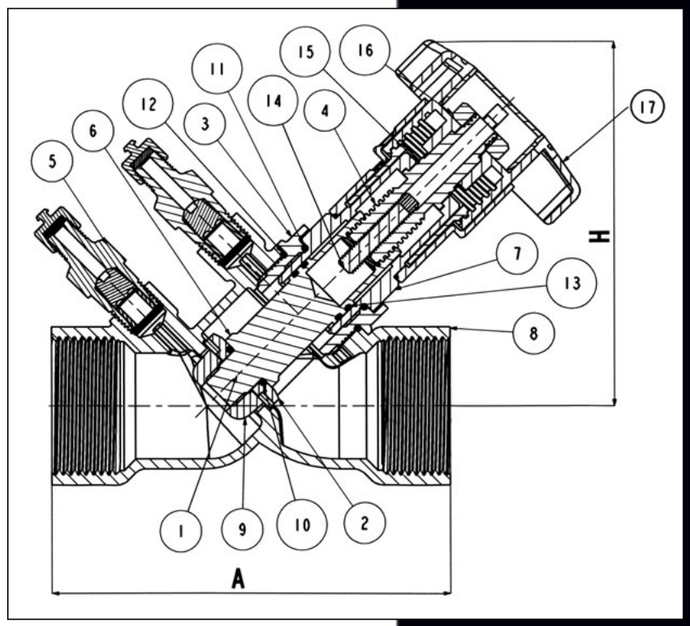
- The valve must be installed with minimum of 3 D (3x nominal pipe diameter) straight pipe in the upstream side.
- Take off the plastic covers from the flanges.
- Blow inside valve by compressed air.
- The pipeline should be placed in such a way that valve body does not carry bending moments or tension forces.
- The linear scale and the plastic set should be protected against painting.
- The valves could be installed in every position in inlet and outlet pipe lines preferably with the hand wheel in down direction.
- Attention should be paid to flow direction indicated by the arrow on the valve body.
- Before starting pipeline work (especially after repairs) whole pipe line should be rinsed out by full open valves in order to remove all solid residues which could be dangerous for sealing surfaces.
- The valve is opened by anti-clockwise rotation of the hand wheel.
- It is prohibited to use additional lever for turning the hand wheel.

MAINTENANCE

Every part of the valve is designed in such a way that the whole valve is maintenance free. The materials are carefully matched with the parts to make the friction as small as possible. However due to safety reasons every valve should be inspected regularly. Before valve removal from the plant or before service the suitable part of the pipeline should be closed.

Variable Orifice with linear scale and circular scale.

- Maintenance free valve
- Low flow resistance
- Complies to BS7350 requirements
- Hand wheel embraces a vernier scale for accurate setting
- Valves have unique design which enables the disc to be locked in the set position
- Valve is supplied with a allen key
- Two points (inlet/outlet) are available on the body of the valve for fixing the test point for measurement of delta P/flow rate

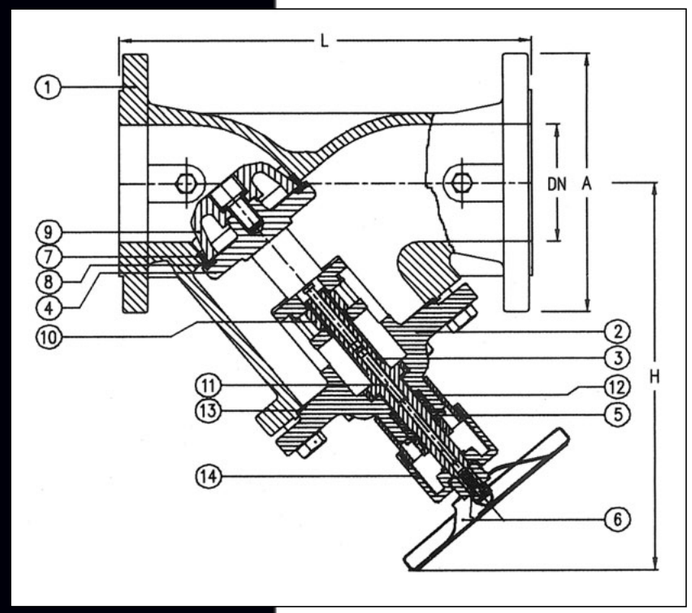


Pressure Max 25 bar
Temperature Max 130 °C/266 °F
Temperature Min -10 °C/14 °F

POS	COMPONENT	MATERIAL	
1	DISK FACE	P.T.F.E.	
2	DISK	BRASS BS 2784 CZ 132	ONLY 1" 1/4 - 1" 1/2 - 2"
3	UNION	BRASS BS 2872 CZ 132 (DZR)	ONLY 1" 1/4 - 1" 1/2 - 2"
4	STEM	BRASS BS 2874 CZ 114	
5	TEST POINT	BRASS BS 2874 CZ 132 (DZR)	
6	DISK	BRASS BS 2874 CZ 132 (DZR)	
7	BONNET	BRASS BS 2874 CZ 132 (DZR)	
8	BODY	BRONZE BS 1400 LG2	
9	BALANCING CONE	BRASS BS 2874 CZ 132 (DZR)	
10	O-RING GASKET	PEROX EPDM	ONLY 1" 1/4 - 1" 1/2 - 2"
11	O-RING GASKET	PEROX EPDM	
12	O-RING GASKET	PEROX EPDM	ONLY 1" 1/4 - 1" 1/2 - 2"
13	O-RING GASKET	PEROX EPDM	
14	SCREW	STEEL	
15	SPRING	STEEL	
16	NUT	STEEL FE42 UNI5334	
17	HANDWHEEL	ABS BLACK COLOR	

DN	A (mm)	H (mm)	Peso in grammi
1/2"	90	90	505
3/4"	102	90	565
1"	110	90	705
1" 1/4	121	116	1005
1" 1/2	142	116	1355
2"	161	116	1925

CAST IRON
DOUBLE REGULATING VALVE PN16
DRV-9550 / VODRV-9555



Variable Orifice with linear scale and circular scale.

- Maintenance free valve
- Low flow resistance
- Complies to BS7350 requirements
- Hand wheel embraces a vernier scale for accurate setting
- Valves have unique design which enables the disc to be locked in the set position with a screwdriver
- Valve is supplied with a screwdriver
- Two points (inlet/outlet) are available on the body of the valve for fixing the test point for measurement of delta P/flow rate

Pressure Max 16 bar
Differention pressure:
Max 16 bar
Temperature Max 130°C/266°F
Temperature Min -10°C/14°F

DN	A (mm)	L (mm)	H (mm)	Peso in Kg
65	185	290	300	20,50
80	200	310	330	25,30
100	220	350	335	35,00
125	250	400	355	50,00
150	285	480	405	73,50

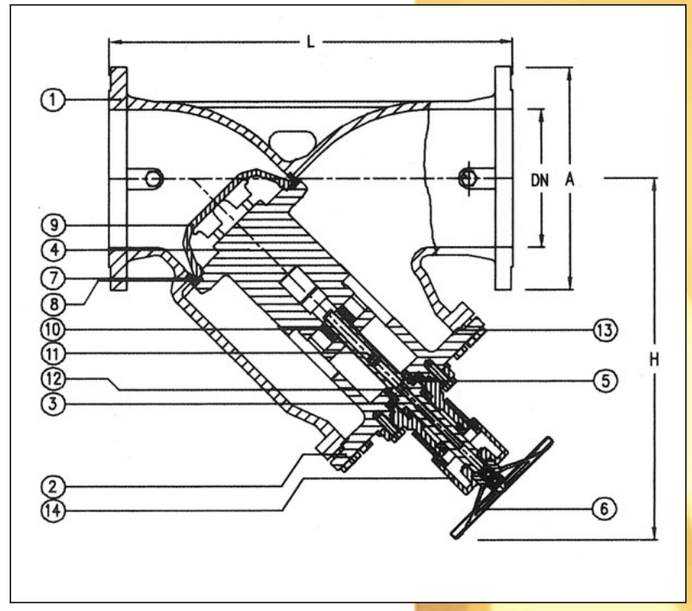
POS	COMPONENT	MATERIAL
1	BODY	CAST IRON 1691GG25
2	BONNET	CAST IRON 1691GG25
3	STEM	H.T. BRASS CuZn39Pb2
4	DISC HOLDER	CAST IRON 1691GG25
5	BEARING BUSH	BRONZE CuSn 5ZnPb
6	HANDWHEEL	STEEL
7	SEAT	STAINLESS STEEL X10Cr13
8	DISC RING	P.T.F.E.
9	REGULATING DISC	CAST IRON 1691GG25
10	STEM NUT	BRONZE CuZn39Pb2
11	SHAFT	H.T. BRASS CuZn39Pb2
12	O-RING	EPDM
13	BONNET GASKET	GRAPHITE
14	POSITION INDICATOR	ABS BLACK COLOR

CAST IRON
DOUBLE REGULATING VALVE PN16
DRV-9550 / VODRV-9555

Variable Orifice with linear scale and circular scale.

- Maintenance free valve
- Low flow resistance
- Complies to BS7350 requirements
- Hand wheel embraces a vernier scale for accurate setting
- Valves have unique design which enables the disc to be locked in the set position with a screwdriver
- Valve is supplied with a screwdriver
- Two points (inlet/outlet) are available on the body of the valve for fixing the test point for measurement of delta P/flow rate

Pressure Max 16 bar
Differential pressure:
Max 6 bar (DN200-DN250)
Max 4 bar (DN300)
Temperature Max 130°C/266°F
Temperature Min -10°C/14°F



POS	COMPONENT	MATERIAL
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3	STEM	H.T. BRASS CuZn39Pb2
4	DISC HOLDER	CAST IRON 1691GG25
5	BEARING BUSH	BRONZE CuSn 5ZnPb
6	HANDWHEEL	STEEL
7	SEAT	STAINLESS STEEL X10Cr13
8	DISC RING	P.T.F.E.
9	REGULATING DISC	CAST IRON 1691GG25
10	STEM NUT	BRONZE CuZn39Pb2
11	SHAFT	H.T. BRASS CuZn39Pb2
12	O-RING	EPDM
13	BONNET GASKET	GRAPHITE
14	POSITION INDICATOR	ABS BLACK COLOR

DN	A (mm)	L (mm)	H (mm)	Peso in Kg
200	340	600	580	147,00
250	405	730	655	215,00
300	460	850	640	280,00

OPTIONS

95VR001
ALLEN KEY
mm 3 for presetting from 1/2" to 2"

95VR003
SCREWDRIVER size1
for presetting
from DN65 to DN150

95VR004
SCREWDRIVER size2
for presetting
from DN200 to DN300

95TP 1 red
95TP 2 blue
PRESSURE TEST POINT

95TPEX
EXTENSION
for Fig 95TP

95TPX1
RED TAG
for Fig 95TP1

95TPX2
BLUE TAG
for Fig 95TP2

BLISTER PACK
95TPB 1 red
95TPB 2 blue
10pz
Fig 95TP
with blue
or red tag

34Q
DRAIN VALVE 1/4"
screw operation

MANOMETER
95MM001 - radial 1/4"
95MM002 - axial 1/4"

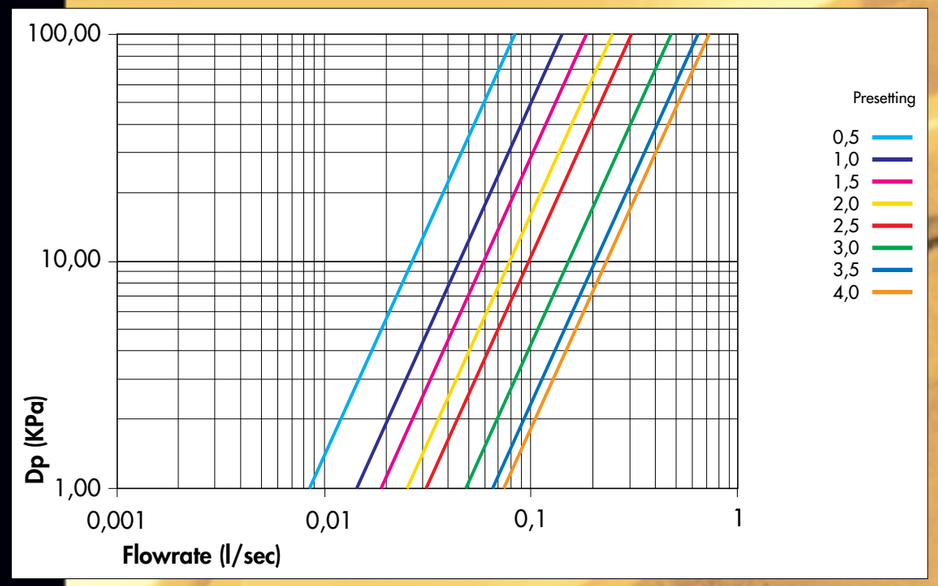
95VR002
SEALING WIRE

95DPM
DIGITAL MANOMETER

95MS
METERING STATION
available from 1/2" to 2"

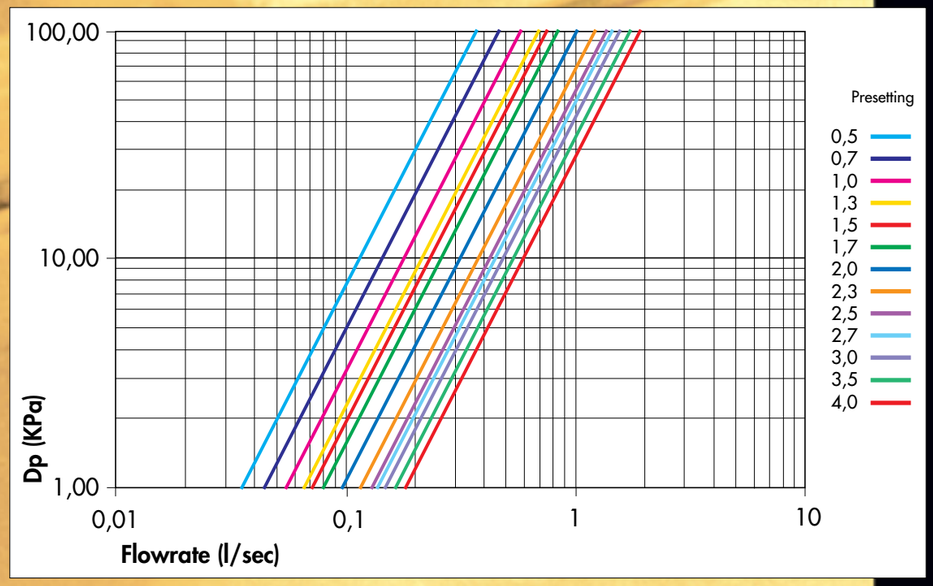
Cod	Description	Pezzi per confezione
95 VR001	ALLEN KEY	1
95VR003	SCREWDRIVER SIZE1	1
95VR004	SCREWDRIVER SIZE2	1
95TP1	TEST POINT RED	10
95TP2	TEST POINT BLUE	10
95PTEX	EXTENSION	10
95TPX1	RED TAG	10
95TPX2	BLUE TAG	10
95TPB1	BLISTER PACK 10 PCS RED TAG	1
95TPB2	BLISTER PACK 10 PCS BLUE TAG	1
95VR002	SEALING WIRE	1
95MM001	RADIAL MANOMETER	1
95MM002	AXIAL MANOMETER	1
95DPM	DIGITAL MANOMETER	1
34Q	DRAIN VALVE	10
995MS	METERING STATION	1

Kv 9500/9505 1/2"



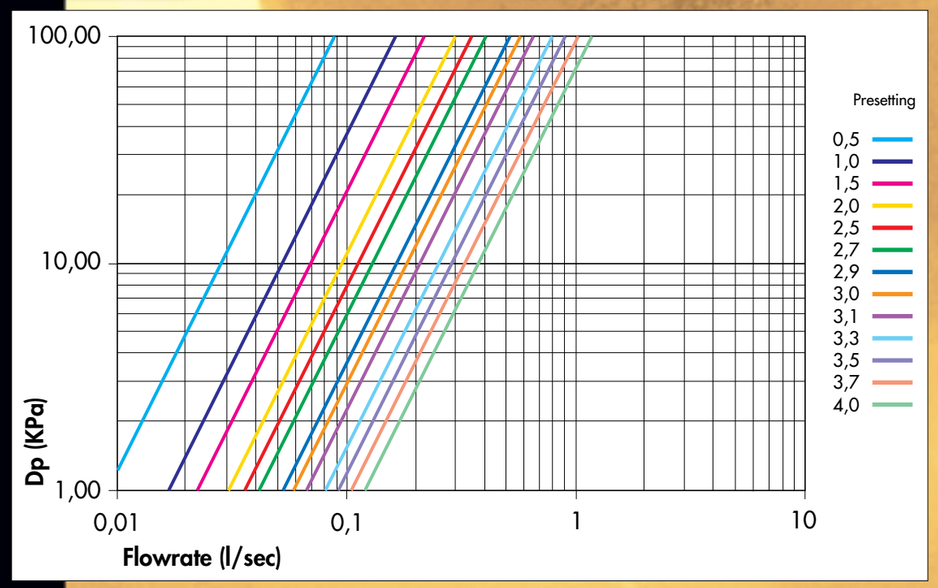
PRESETTING	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0
Kv (m³/h)	0,30	0,50	0,67	0,90	1,10	1,70	2,30	2,60
K	1191,0	429,0	239,0	132,0	89,0	37,0	20,2	15,8

Kv 9500/9505 1"



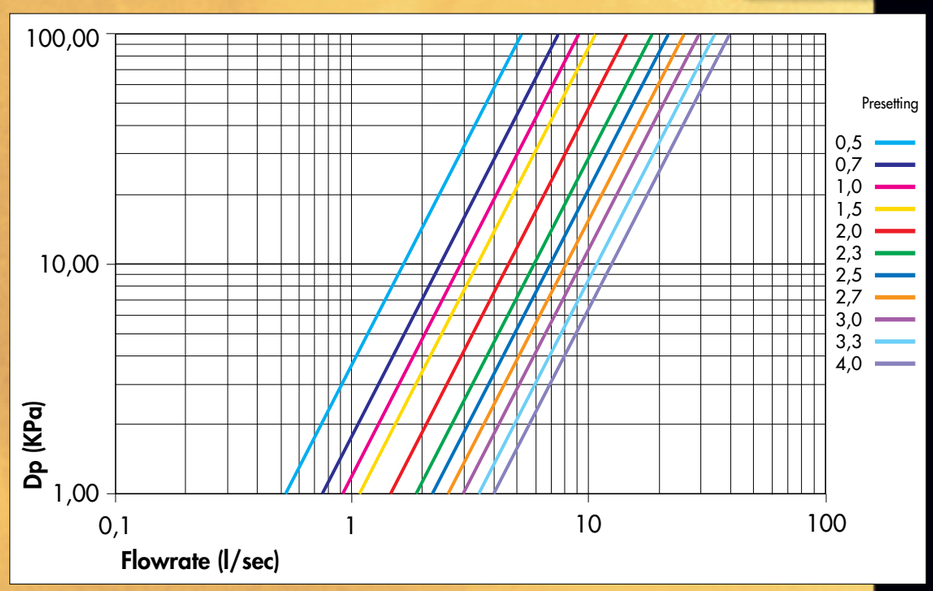
PRESETTING	0,5	0,7	1,0	1,3	1,5	1,7	2,0	2,3	2,5	3,0	3,5	4,0
Kv (m³/h)	1,3	1,7	2,0	2,4	2,6	2,9	3,5	4,2	4,7	5,5	6,0	6,6
K	524,0	306,4	221,3	153,7	131,0	105,3	72,2	50,2	40,0	30,3	24,5	20,3

Kv 9500/9505 3/4"



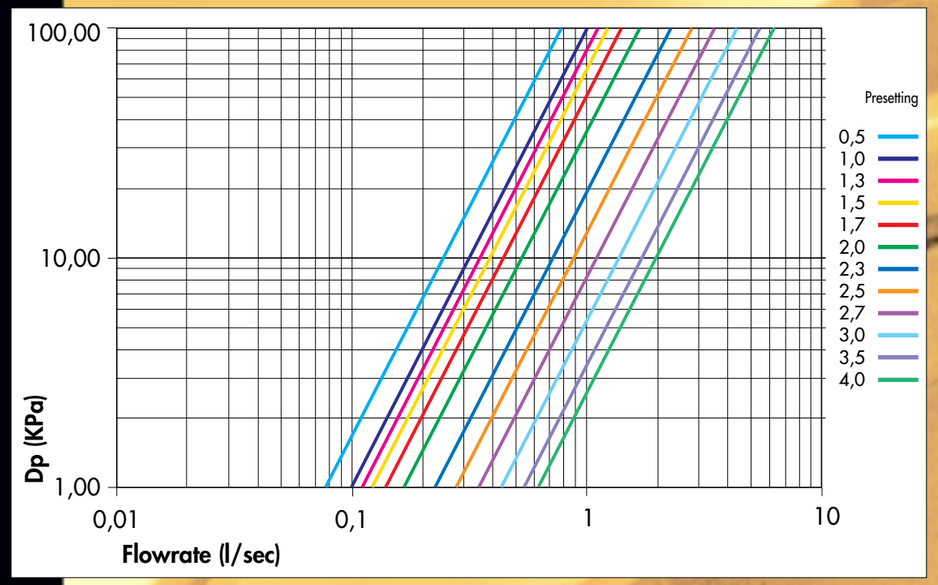
PRESETTING	0,5	1,0	1,5	2,0	2,3	2,5	2,7	2,9	3,0	3,1	3,3	3,5	3,7	4,0
Kv (m³/h)	0,3	0,6	0,8	1,1	1,2	1,3	1,5	1,9	2,1	2,4	2,9	3,3	3,7	4,3
K	3192,0	966,0	543,0	287,0	241	206,0	155	96	78,8	60	41,3	31,9	25,3	18,8

Kv 9500/9505 1"1/4



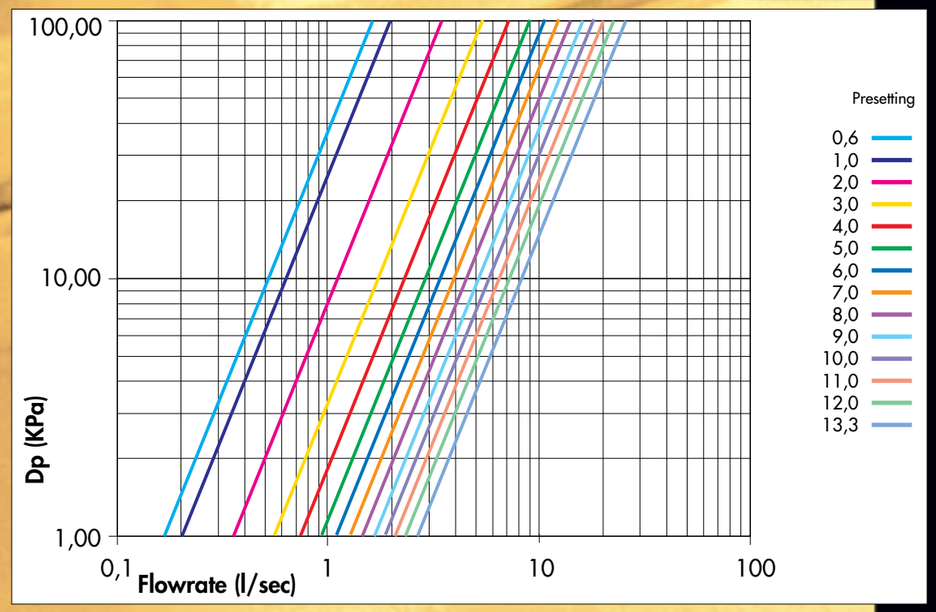
PRESETTING	0,5	0,7	1,0	1,5	2,0	2,3	2,5	2,7	3,0	3,3	4,0
Kv (m³/h)	1,9	2,7	3,3	3,9	5,3	6,8	8,0	9,3	10,7	12,5	14,5
K	743,9	368,3	246,6	176,5	95,6	58,0	41,9	31,0	23,4	17,1	12,7

Kv 9500/9505 1 1/2"



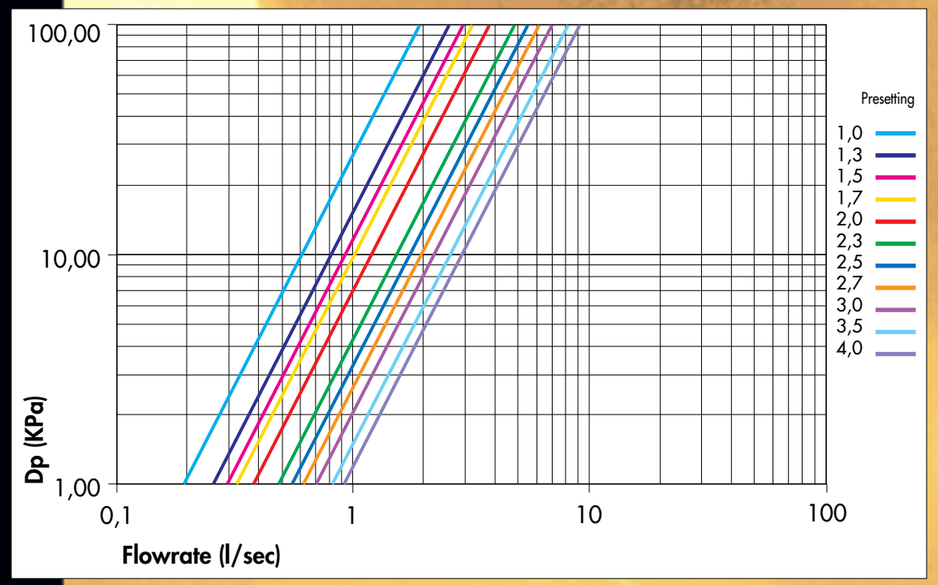
PRESETTING	0,5	1,0	1,3	1,5	1,7	2,0	2,3	2,5	2,7	3,0	3,3	3,5	3,7	4,0
Kv (m^3/h)	2,8	3,6	4,0	4,4	5,0	6,0	8,2	10,0	12,5	15,5	18,3	19,5	20,8	22,5
K	627,5	379,6	307,5	254,1	196,8	136,6	73,1	49,2	31,4	20,4	14,6	12,9	11,3	9,7

Kv 9550/9555 65mm



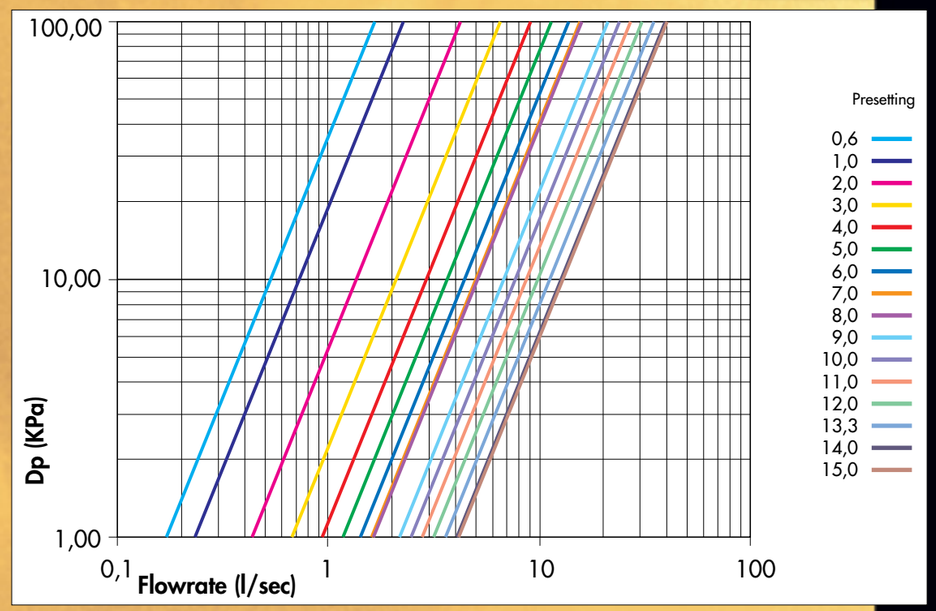
PRESETTING	0,66	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0	13,33
Kv (m^3/h)	6,05	7,35	13,04	20,01	26,87	33,39	39,67	46,10	52,23	59,76	66,83	75,17	84,15	96,94

Kv 9500/9505 2"



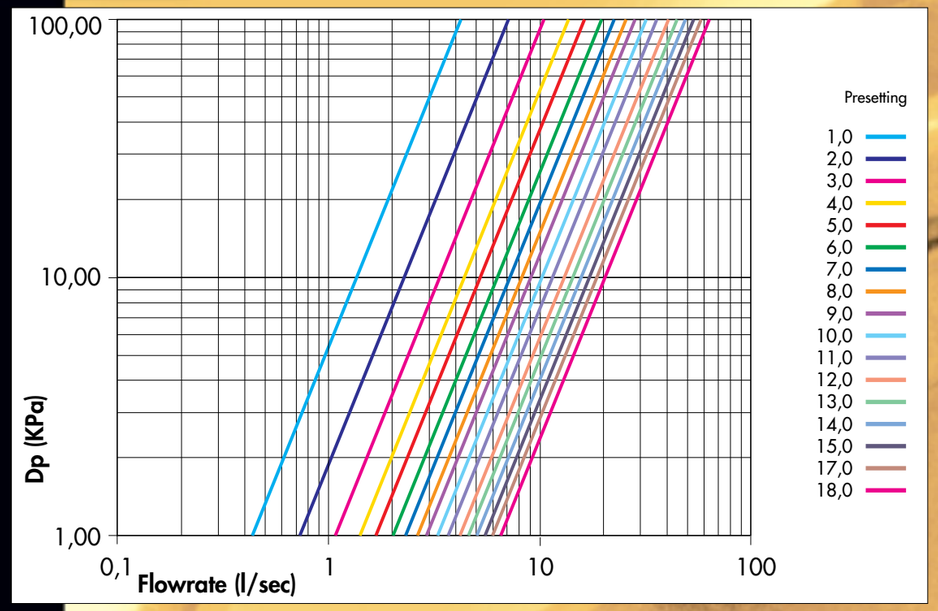
PRESETTING	1,0	1,3	1,5	1,7	2,0	2,3	2,5	2,7	3,0	3,5	4,0
Kv (m^3/h)	7,0	9,3	10,7	11,6	13,9	17,3	20	22,0	25,1	29,5	33,1
K	257	145,6	110	93,6	65,1	42	31,4	26	19,9	14,4	11,4

Kv 9550/9555 80mm



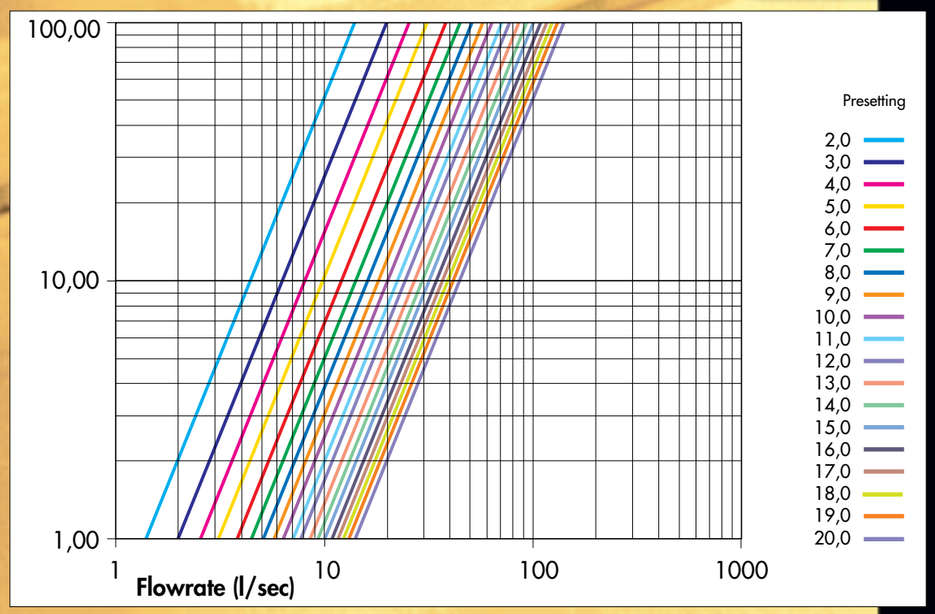
PRESETTING	0,66	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0	13,33	14,0	15,0
Kv (m^3/h)	6,15	8,30	15,45	24,30	33,62	41,79	50,48	59,14	67,88	77,30	88,14	100,14	112,87	128,87	146,77	148,95

Kv 9550/9555 100mm



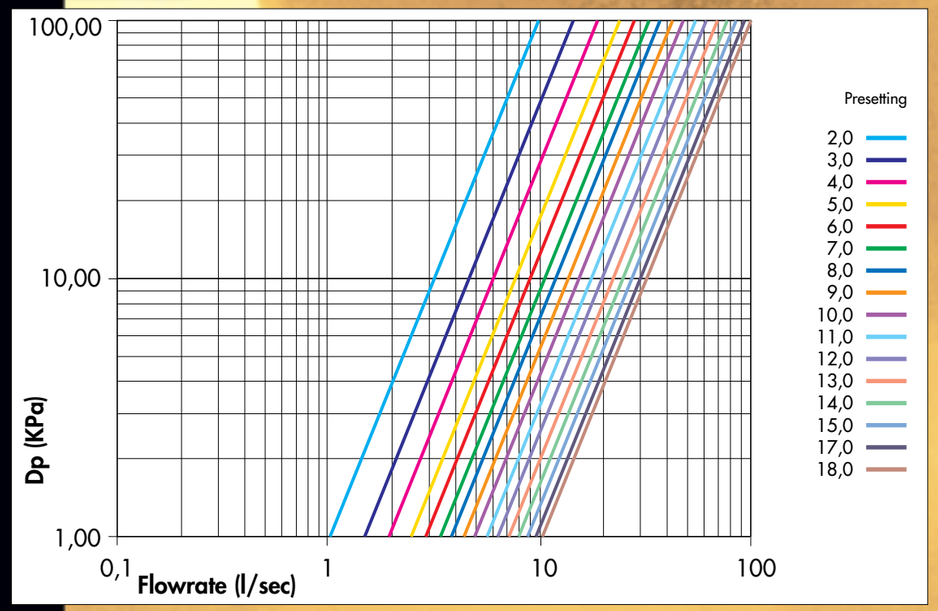
PRESETTING	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0	13,0	14,0	15,0	17,0	18,0
Kv (m^3/h)	15,64	26,20	37,79	50,32	60,24	72,15	82,31	94,13	105,04	117,73	132,55	148,00	163,24	178,82	197,47	214,96	234,60

Kv 9550/9555 150mm



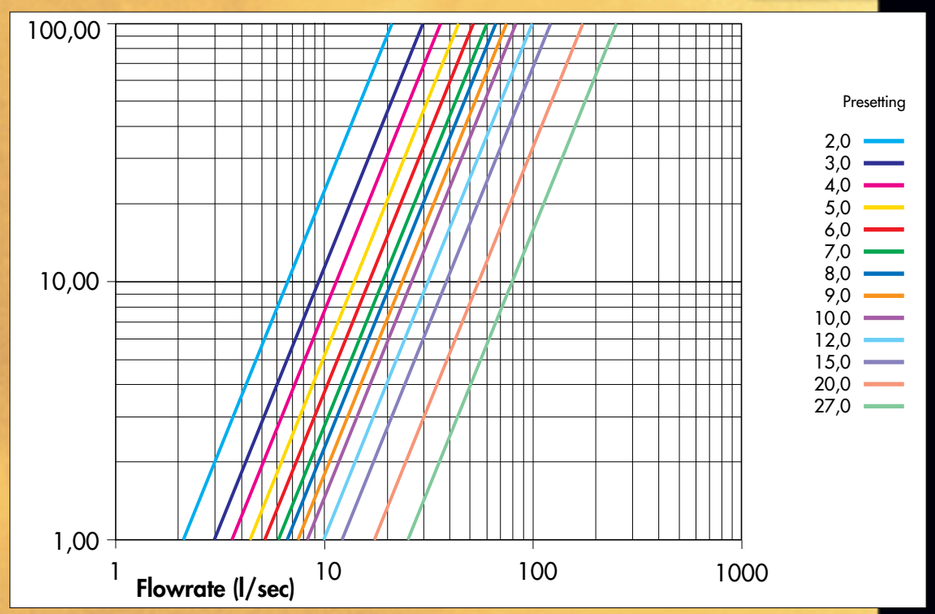
	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0	13,0	14,0	15,0	16,0	17,0	18,0	19,0	20,0
	50	71,4	91	111,4	137	160	183,1	205,7	227,1	253,1	276,9	304,5	332,6	361,7	390	417	445,7	472,5	500,6

Kv 9550/9555 125mm



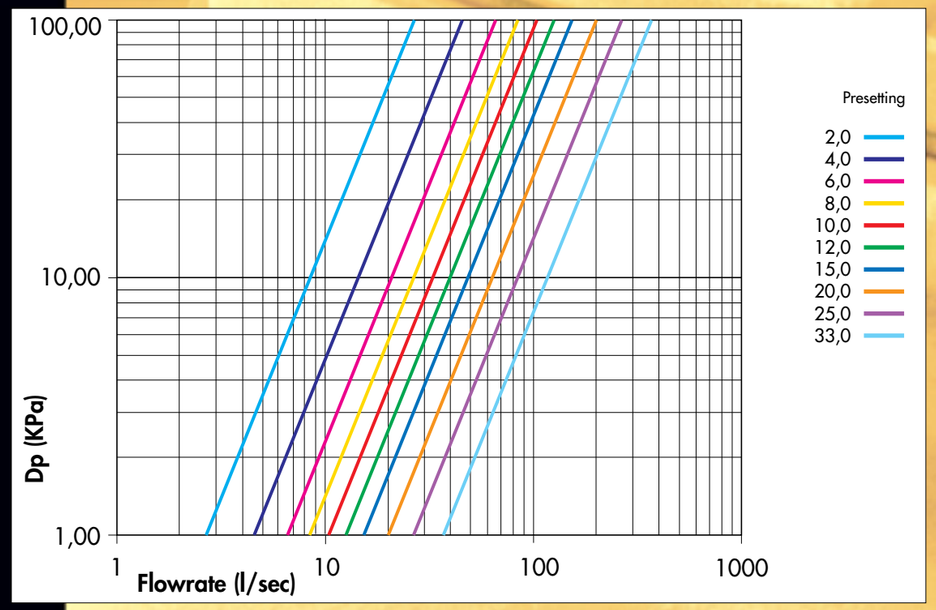
PRESETTING	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0	13,0	14,0	15,0	17,0	18,0
Kv (m^3/h)	36,60	52,50	69,30	87,00	103,90	120,10	137,40	156,70	175,20	202,50	228,10	255,90	285,50	313,50	342,60	370,80

Kv 9550/9555 200mm



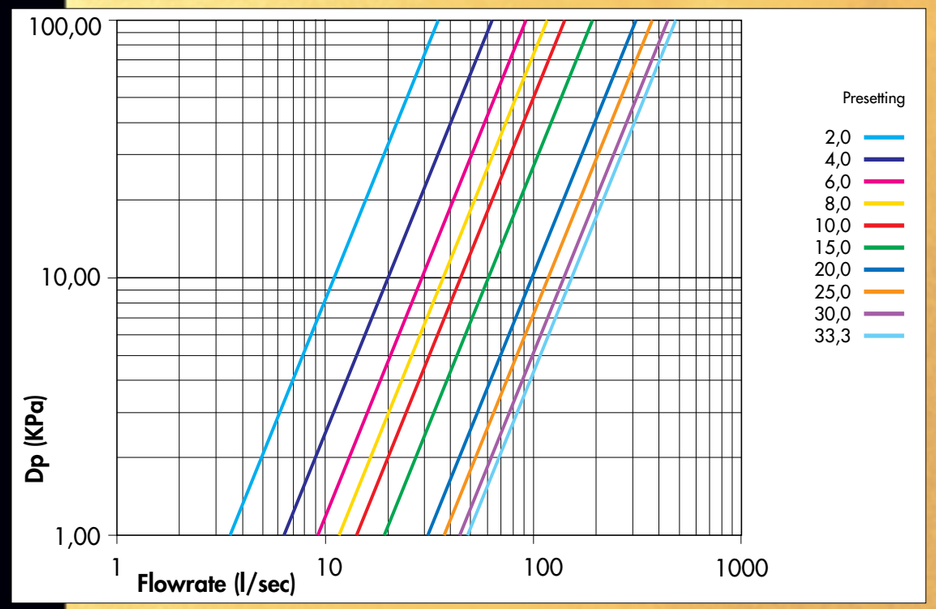
	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0	13,0	14,0
	75,5	105	132	160	188	215	243	270	296	327	355	382	412
	15,0	16,0	17,0	18,0	19,0	20,0	21,0	22,0	23,0	24,0	25,0	26,0	27,0
	441	477	518	553	590	628	668	707	750	790	828	867	910

Kv 9550/9555 250mm



PRESETTING	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0	13,0	14,0	15,0	16,0	17,0
Kv (m^3/h)	96	127	162	198	232	263	300	332	367	400	447	469	506	539	572	606
PRESETTING	18,0	19,0	20,0	21,0	22,0	23,0	24,0	25,0	26,0	27,0	28,0	29,0	30,0	31,0	32,0	33,0
Kv (m^3/h)	646	684	721	762	805	848	891	930	961	1031	1078	1126	1173	1217	1257	1302

Kv 9550/9555 300mm



PRESETTING	2,0	4,0	6,0	8,0	10,0	15,0	20,0	25,0	30,0	33,3
Kv (m^3/h)	124,1	225,7	328,4	411,3	520,3	680	1111	1331	1592	1718
K	840,9	254,2	120,1	76,6	47,8	28	10,5	7,35	5,11	4,39

CONVERSION CHARTS

PRESSURE

bar	kPa	lbf/in^2	kgf/cm^2	in H_2O	mm H_2O	in Hg	mm Hg
1	100	14,5	1,020	401,5	$10,198 \times 10^3$	29,53	750,1
0,0100	1	1,145	0,0102	4,015	101,98	0,2953	7,501
0,06895	6,895	1	0,07031	27,68	703,07	2,036	51,71
0,9807	98,07	14,22	1	393,7	1×10^4	28,96	735,6
$2,491 \times 10^{-3}$	0,2491	0,03613	$2,54 \times 10^{-3}$	1	25,4	0,07356	1,868
$9,81 \times 10^{-5}$	$9,81 \times 10^{-3}$	$1,42 \times 10^{-3}$	1×10^{-4}	0,0394	1	$2,896 \times 10^{-3}$	0,0735
0,03386	3,386	0,4912	0,03453	13,6	345,44	1	25,4
$1,333 \times 10^{-3}$	0,1333	0,01934	$1,360 \times 10^{-3}$	0,5352	13,594	0,03937	1

FLOWRATE

l/s	gpm	m^3/s	m^3/h	ft^3/s	ft^3/min
1	13,20	1×10^{-3}	3,6	0,0353	2,119
0,07577	1	$7,577 \times 10^{-5}$	0,2728	$2,676 \times 10^{-3}$	0,1605
1000	$1,320 \times 10^4$	1	3600	35,31	2119
0,2778	3,666	$2,778 \times 10^{-4}$	1	$9,810 \times 10^{-3}$	0,5886
28,32	373,7	0,02832	101,9	1	60
0,4719	6,229	$4,719 \times 10^{-4}$	1,699	0,01667	1

POWER

W (W=J/s)	kW	Btu/h	kcal/h
1	$1x 10^{-3}$	3,412	0,860
1000	1	3412,1	860
0,2931	$2,2931x 10^{-4}$	1	0,2519
1,1628	$1,163 \times 10^{-3}$	3,968	1

TEMPERATURE

°C = (°F - 32) / 1,8
°F = (°C x 1,8) + 32

VIR S.p.A. reserve the right to make adjustments to these data far technical and commerciai reasons and also due to VIR Sp.A. continuing product's improvement. You can obtain information about the changes with communication by e-mali to tcnsales@vironline.com