M 943
13.04.05 MZ

THREADED THREE-PORT SEAT VALVES PN 16 ; 1…120 °C

VRG 3.. – VRB 3.. Eng.

• Body in G25 cast iron (VRG); in bronze Rg5 (VRB); plug in brass; spindle in stainless steel
• Connections complete with female threaded unions ISO 228/1

1. APPLICATION

VRG and VRB valves are designed for controlling the flow of hot or chilled water in heating and air-handling systems and for controlling, in the distribution circuit, the DHW temperature.
Permitted fluids: hot or superheated water max 120 °C, chilled water min 1 °C (glycol max 30%).
Operated by linear actuators type CLE, CLF or CEF U16.. (with spring-return closure).

2. OPERATION

The control component of the valve is an appropriately-shaped plug which, operated by the linear movement of the spindle, controls the temperature (mixing) or the flow (diverting) of the water in the user system.

3. MODELS

Model	DN body mm	DN valvei connect. inches	DN pipe connect inches	Kvs (1) m³/h	Run mm.	Suitable actuators									
						CLE 16.. 500 N 11 s/mm		**CLE 10..** 300 N 7 s/mm		**CLF 16..** 1,000 N 11 s/mm		**CLF 04..** 600 N 3 s/mm		**CEF U16..**(4) 450 N 11 s/mm	
cast iron		male	female			bar(2)	s(3)	bar(2)	s(3)	bar(2)	s(3)	bar(2)	s(3)	bar(2)	s(3)
VRG 311	15	1"	1/2"	0.63	10	16	110	9	70	16	110	16	30	16	110
VRG 312	15	1"	1/2"	1.0	10	16	110	9	70	16	110	16	30	16	110
VRG 313	15	1"	1/2"	1.6	10	16	110	9	70	16	110	16	30	16	110
VRG 314	15	1"	1/2"	2.5	10	16	110	9	70	16	110	16	30	16	110
VRG 315	15	1"	1/2"	4.0	10	16	110	9	70	16	110	16	30	16	110
VRG 320	20	1"1/4	3/4"	6.3	15	11	165	4	105	16	165	13	45	10	165
VRG 325	25	1"1/2	1"	10	15	6	165	2	105	16	165	8	45	5	165
VRG 332	32	2"	1"1/4	16	15	3	165	1	105	9	165	5	45	2.5	165
VRG 340	40	2"1/4	1"1/2	25	15	2	165	–	–	6	165	3	45	2	165
VRG 350	50	2"3/4	2"	40	15	1	165	–	–	3	165	2	45	0.5	165
bronze															
VRB 311	15	1"	1/2"	0.63	10	16	110	9	70	16	110	16	30	16	110
VRB 312	15	1"	1/2"	1.0	10	16	110	9	70	16	110	16	30	16	110
VRB 313	15	1"	1/2"	1.6	10	16	110	9	70	16	110	16	30	16	110
VRB 314	15	1"	1/2"	2.5	10	16	110	9	70	16	110	16	30	16	110
VRB 315	15	1"	1/2"	4.0	10	16	110	9	70	16	110	16	30	16	110
VRB 320	20	1"1/4	3/4"	6.3	15	11	165	4	105	16	165	13	45	10	165
VRB 325	25	1"1/2	1"	10	15	6	165	2	105	16	165	8	45	5	165
VRB 332	32	2"	1"1/4	16	15	3	165	1	105	9	165	5	45	2.5	165
VRB 340	40	2"1/4	1"1/2	25	15	2	165	–	–	6	165	3	45	2	165
VRB 350	50	2"3/4	2"	40	15	1	165	–	–	3	165	2	45	0.5	165

4. ACCESSORIES

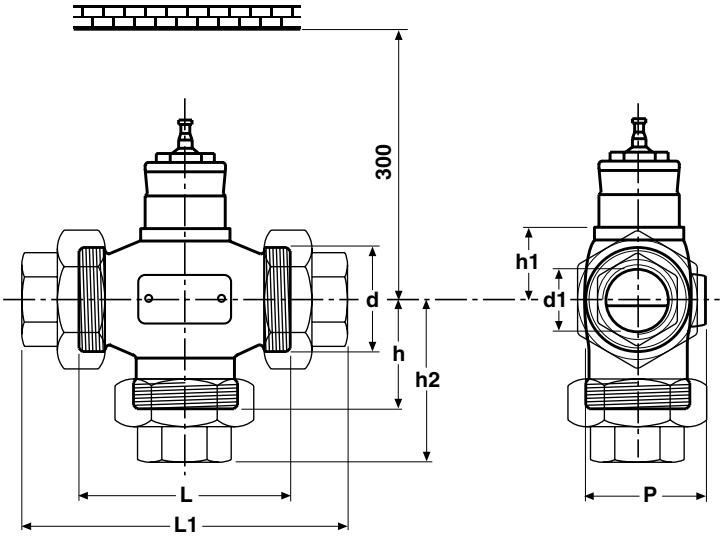
Code	Description	Valves
TVG G15	Female 1" plug with gaskets for converting from 3 to 2 ports	311…315
TVG G20	Female 1"1/4 cplug with gaskets for converting from 3 to 2 ports	320
TVG G25	Female 1"1/2 plug with gaskets for converting from 3 to 2 ports	325
TVG G32	Female 2" plug with gaskets for converting from 3 to 2 ports	332
TVG G40	Female 2"1/4 plug with gaskets for converting from 3 to 2 ports	340
TVG G50	Female 2"3/4 plug with gaskets for converting from 3 to 2 ports	350
ARS 104	Spindle heater (24 V~) for use with fluid temperature from – 10 to 0 °C	

(1) : Kvs = flow coefficient: flow in m³/h with valve open and pressure drop of 100 kPa.
(2) : bar = maximum differential pressure Δp permitted by actuator (100 kPa = 10 mWG = 1 bar).
(3) : s = time in seconds necessary for actuator to make a complete valve run.
(4) : actuator with spring-return closure.

5. TECHNICAL DATA

Valve body :	
VRG 3..	G 25 cast iron
VRB 3..	Rg 5 bronze
Spindle	stainless steel
Plug	brass
Spindle gasket	O-Ring
Connections	female threaded unions (ISO 228/1)
Nominal pressure	1,600 kPa (16 bar)
Fluid temperature	1...120 °C
Run :	
VRG / VRB 311...315	10 mm
VRG / VRB 320...350	15 mm
Control features:	
throughport	equal percentage
by pass	linear
Control ratio	30:1
Let by :	
throughport	0.05 Kvs
by pass	1% Kvs

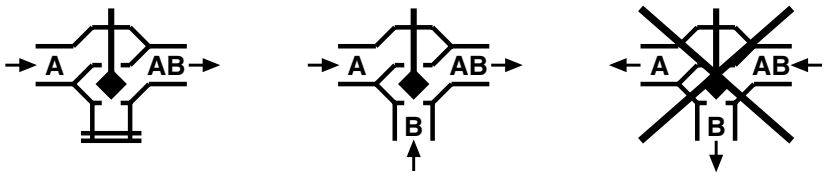
6. OVERALL DIMESIONS



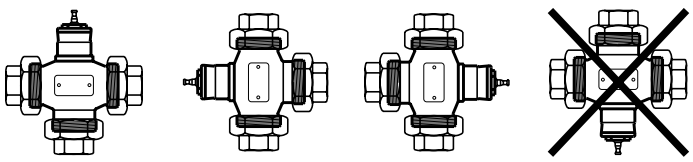
Model	d inches	d1 inches	L mm	L1 mm	P mm	h mm	h1 mm	h2 mm
VR.. 311...315	1"	1/2"	80	127	42	40	23	64
VR.. 320	1"1/4	3/4"	80	128	55	55	24	79
VR.. 325	1"1/2	1"	95	149	60	60	24	88
VR.. 332	2"	1"1/4	112	175	72	66	31	99
VR.. 340	2"1/4	1"1/2	132	202	80	75	35	110
VR.. 350	2"3/4	2"	160	234	103	85	41	122

7. INSTALLATION

Before mounting the valve ensure that in the pipework there is no extraneous material such as residues from welding or threading.
The pipework must not be subject to vibrations and must be perfectly aligned with the valve connections in order to avoid dangerous stresses.
Pay careful attention to the direction of the fluid, embossed on the valve body, according to the type of hydraulic circuit controlled. To avoid vibration problems it is advisable to always install the valve with the AB port for output water (9. EXAMPLES OF PLANTS).

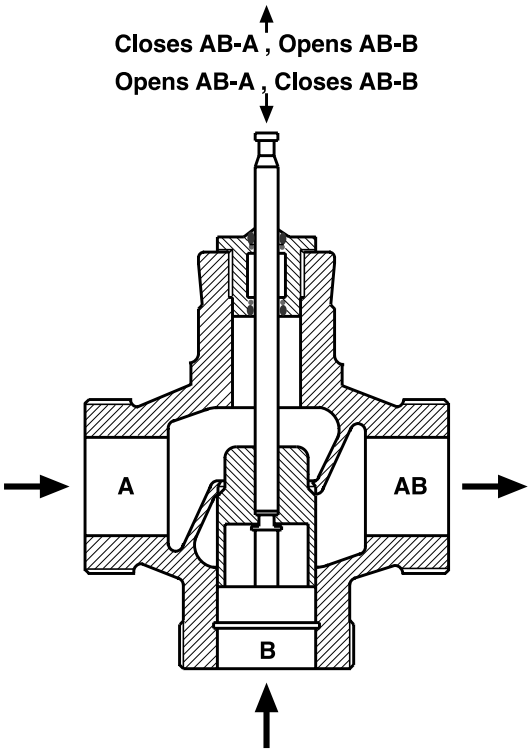


The valve can be installed in any position except that with the spindle pointing downwards.
Leave sufficient space on the spindle side for mounting the actuator (6. OVERALL DIMENSIONS).



8. CONSTRUCTION

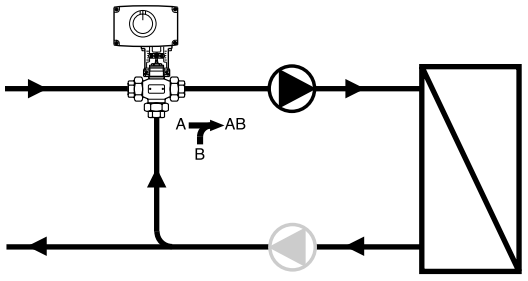
The body of the valve is made of G 25 cast iron (VRG 3..), or of Rg5 bronze (VRB 3..), the spindle is in stainless steel and the plug in brass.
The spindle is rendered watertight by two O-Rings inserted between the Teflon self-cleaning rings, these in turn being enclosed in an easily-replaceable sealing block.
The top of the spindle is recessed for fitting in the actuator coupling block.
The valves are supplied with female screwed flat unions with seals.



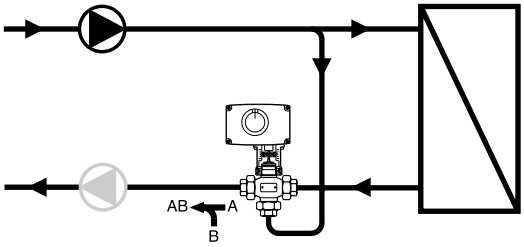
1 – Spindle
2 – Sealing block
3 – O-Ring seal
4 – Valve body
5 – Plug
6 – Seat
AB – Port always open
A – Throughport
B – By pass

9. EXAMPLES OF PLAN

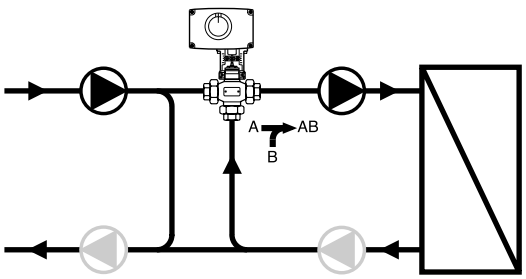
Control of a mixing system



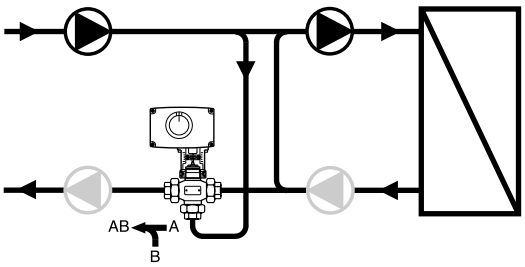
Control of a diverting system



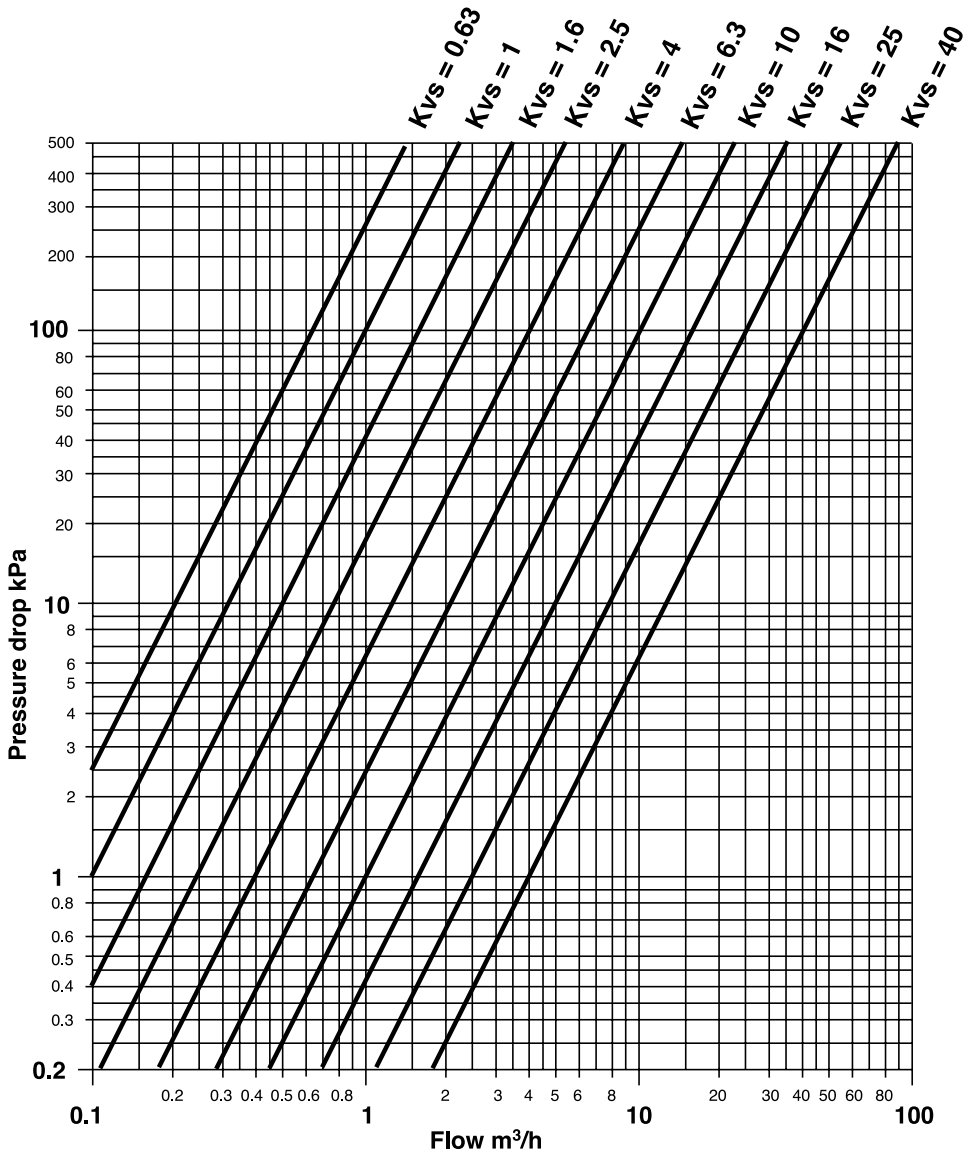
Control of a mixing system with primary pump



Control of a injection system with primary pump



10. PRESSURE DROP CHART



Kvs = flow coefficient : flow in m³/h with valve open and pressure drop of 100 kPa.
(100 kPa = 10 mWG = 1 bar)

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