



Other valves

VZL 2/VZL 3/VZL 4

Description

VZL valves provide a high quality, cost effective solution for the control of hot and/or chilled water for fan coil units, small reheaters, and recoolers in temperature control systems.

The valves are used in combination with:

- AMV(E) 130(H)/140(H) ABNM A5 with extension plug;
- AMV(E) 13 (SU) and TWA-ZL actuators.

Note: TWA-ZL thermal actuator does not close port B. In case that stem extension plug is not used together with AMV(E) 130(H)/140(H) dead zone in valve close position will occur.

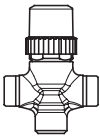
Features & benefits

- Reduced k_{VS} on B port (VZL 3 & VZL 4 only)
- Linear characteristic
- Linear bypass on 3 and 4 port valves
- Valves are supplied with screwed plastic cover for manual operation
- Connections: flat end or conex
- Water quality acc. to VDI 2035 requirements

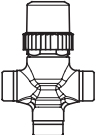
Ordering

Product code numbers

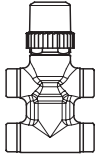
2-way valve VZL 2

Picture	DN	k_{VS}	max. Δp	Code No.	
	(mm)	m^3/h	(bar)	Flat End	Conex
	15	0.25	2.5	065Z2070	065Z2040
		0.4	2.5	065Z2071	065Z2041
		0.63	2.5	065Z2072	065Z2042
		1.0	2.0	065Z2073	065Z2043
		1.6	2.0	065Z2074	065Z2044
	20	2.5	1.0	065Z2075	065Z2045
		3.5	1.0	065Z2076	065Z2046

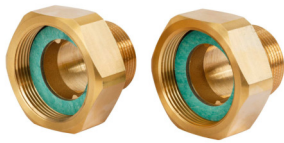
3-way valve VZL 3

Picture	DN	k_{VS} (A - AB)	k_{VS} (B - AB)	max. Δp	Code No.
	(mm)	m^3/h		(bar)	Flat End
	15	0.25	0.25	2.5	065Z2080
		0.4	0.25	2.5	065Z2081
		0.63	0.4	2.5	065Z2082
		1.0	0.63	2.0	065Z2083
		1.6	1.0	2.0	065Z2084
	20	2.5	1.6	1.0	065Z2085
		3.5	2.5	1.0	065Z2086

4-way valve VZL 4

Picture	DN	k_{VS} (A - AB)	k_{VS} (B - AB)	max. Δp	Code No.	
	(mm)	m^3/h		(bar)	Flat End	Conex
	15	0.25	0.25	2.5	065Z2090	065Z2060
		0.4	0.25	2.5	065Z2091	065Z2061
		0.63	0.4	2.5	065Z2092	065Z2062
		1.0	0.63	2.0	065Z2093	065Z2063
		1.6	1.0	2.0	065Z2094	065Z2064
	20	2.5	1.6	1.0	065Z2095	065Z2065
		3.5	2.5	1.0	065Z2096	065Z2066

Accessories code numbers



003H6902

Thread tailpieces, PN 25, DN 15, R 1/2; G 3/4, External Thread

Tailpiece ext.thr R1/2 PN25 (G3/4)



065Z7017

TAIL PIECE SET FOR VZ DN20,SOLDERING

TAIL PIECE SET FOR VZ DN20,SOLDERING



003Z0249

Adapter 2 mm for AB-QM

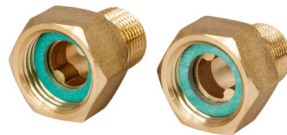
Adapter 2 mm for AB-QM



065F0006

Valve st.boxRAV,VMT/A/V,KOVM,AVD(S)A I-p

Valve st.boxRAV,VMT/A/V,KOVM,AVD(S)A I-p



065Z7015

TAIL PIECE SET FOR VZ DN15,THREADED

TAIL PIECE SET FOR VZ DN15,THREADED



065Z7016

TAIL PIECE SET FOR VZ DN15,SOLDERING

TAIL PIECE SET FOR VZ DN15,SOLDERING

Product details

General data

Technical data

Control characteristic	Linear
Control range	min. 30:1

Leakage loss, closed valve		A - $AB \leq 0.05\%$ of k_{VS}
		B - $AB \leq 1\%$ of k_{VS}
Medium		Circulation water / Glycolic water up to 50 %
Medium temperature	°C	2 ... 120
Max. operating pressure	bar	16
Stroke	mm	2.8
Connection		External thread (flat connection (MS 58) or conex)

Sizing

Example

Design data:

Flow rate: 0.3 m³/h

System pressure drop: 20 kPa

Locate the horizontal line representing a flow rate of 0.3 m³/h (line A). The valve authority is given by the equation:

$$\text{Valve authority, } N = \frac{\Delta P_1}{\Delta P_1 + \Delta P_2}$$

Where:

ΔP_1 = pressure drop across the fully open valve,

ΔP_2 = pressure drop across the rest of the circuit with a fully open valve

The ideal valve would give a pressure drop equal to the system pressure drop (i.e. an authority of 0.5):

If $\Delta P_1 = \Delta P_2$,

$$N = \frac{\Delta P_1}{\Delta P_1 + \Delta P_2} = 0.5$$

In this example an authority of 0.5 would be given by a valve having a pressure drop of 20 kPa at that flow rate (point B).

The intersection of line A with a vertical line drawn from B lies between two diagonal lines;

this means that no ideally-sized valve is available. The

intersection of line A with the diagonal

lines gives the pressure drops stated by real, rather than ideal, valves. In this case, a valve with

k_{VS} 0.63 would give a pressure drop of 25 kPa (point C):

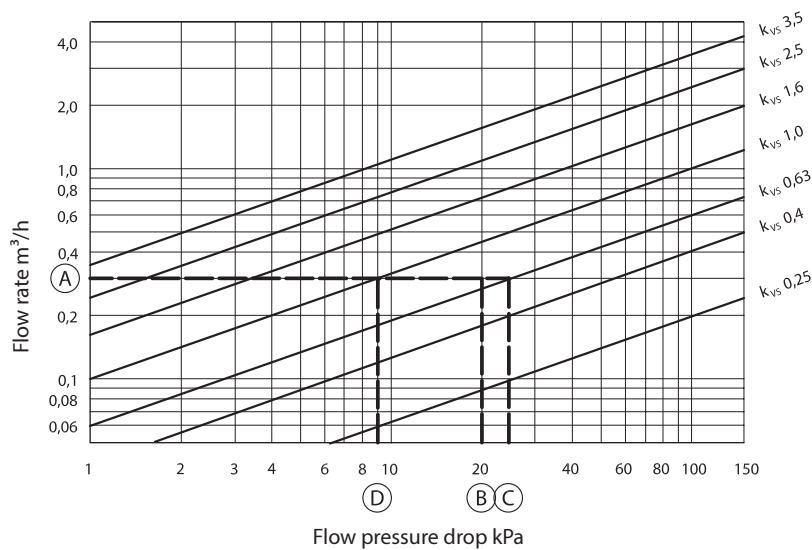
$$\text{hence valve authority} = \frac{25}{25+20} = 0.56$$

The second-largest valve, with k_{VS} 1, would give a pressure drop of 9 kPa (point D):

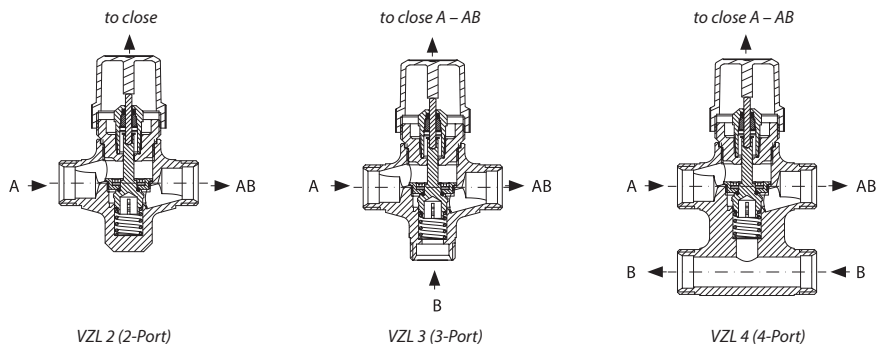
$$\text{hence valve authority} = \frac{9}{9+20} = 0.31$$

Generally, for a 3 port application, the smaller valve would be selected (resulting in a valve authority higher than 0.5, and therefore improved controllability). However, this will increase the total pressure and should be checked by the system designer for compatibility with available pump head, etc.

The ideal authority is 0.5 with a preferred range of between 0.4 and 0.7.



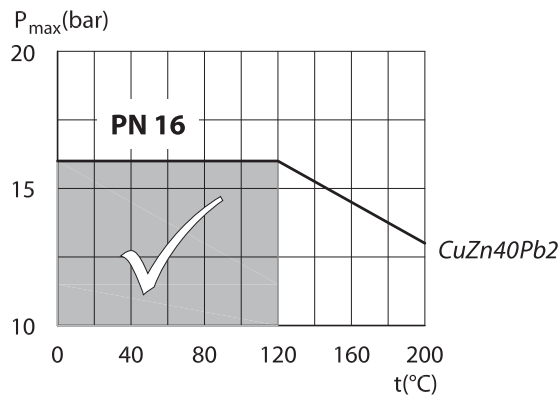
Design



Materials

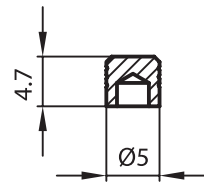
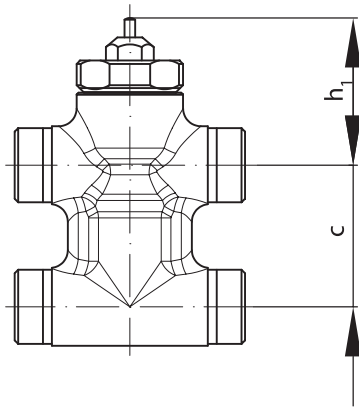
Body	Brass CuZn40Pb2
Seat cone and stem	Brass CuZn39Pb3
Stuffing box	EPDM

Pressure and temperature data

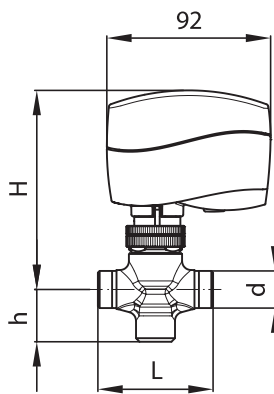


Maximum allowed operating pressure as a function of medium temperature (according to EN 1092-3)

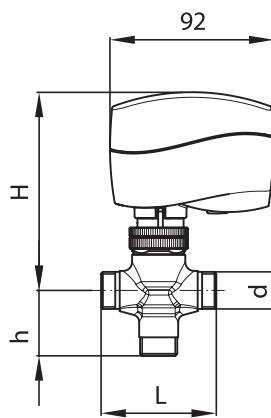
Dimensions



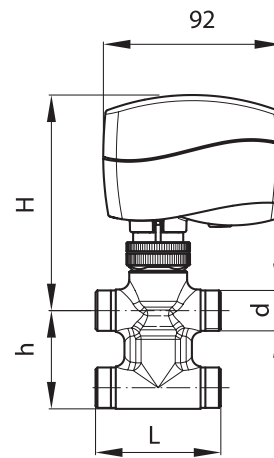
stem extension plug



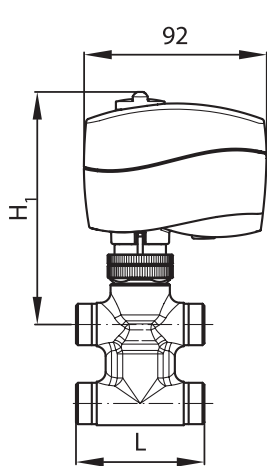
AMV(E) 130/140 + VZL 2 + stem extension plug



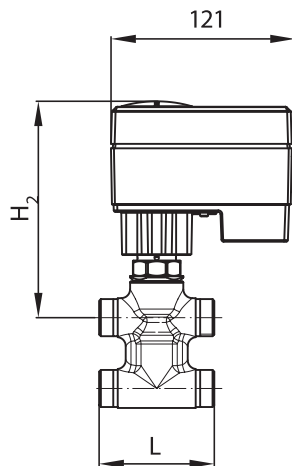
AMV(E) 130/140 + VZL 3 + stem extension plug



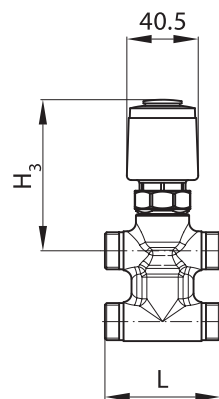
AMV(E) 130/140 + VZL 4 + stem extension plug



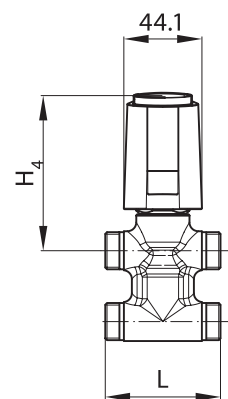
AMV(E) 130H/140H + VZL + stem extension plug



AMV(E) 13 SU + VZL



TWA-ZL + VZL



ABNM A5 + VZL + stem extension plug

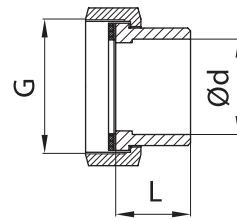
VZL 2/3/4

Valve type	d	L	H	H ₁	H ₂	H ₃	H ₄	c	h	h ₁	Valve weight (kg)
VZL 2 DN 15	G 1/2"	65	111	117	140	88	93.5	-	29.5	47.5	0.27
VZL 2 DN 20 *	G 3/4"	77	117	123	146	94	99.5		34		0.47
VZL 3 DN 15	G 1/2"	65	111	117	140	88	93.5		35		0.28
VZL 3 DN 20	G 3/4"	77	117	123	146	94	99.5		35		0.4
VZL 4 DN 15	G 1/2"	65	111	117	140	88	93.5	40	51		0.39
VZL 4 DN 20 *	G 3/4"	77	117	123	146	94	99.5	50	65		0.59

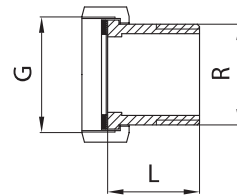
* conex valves DN 20 - G 1 1/8" 14 TPI

Tailpieces for soldering

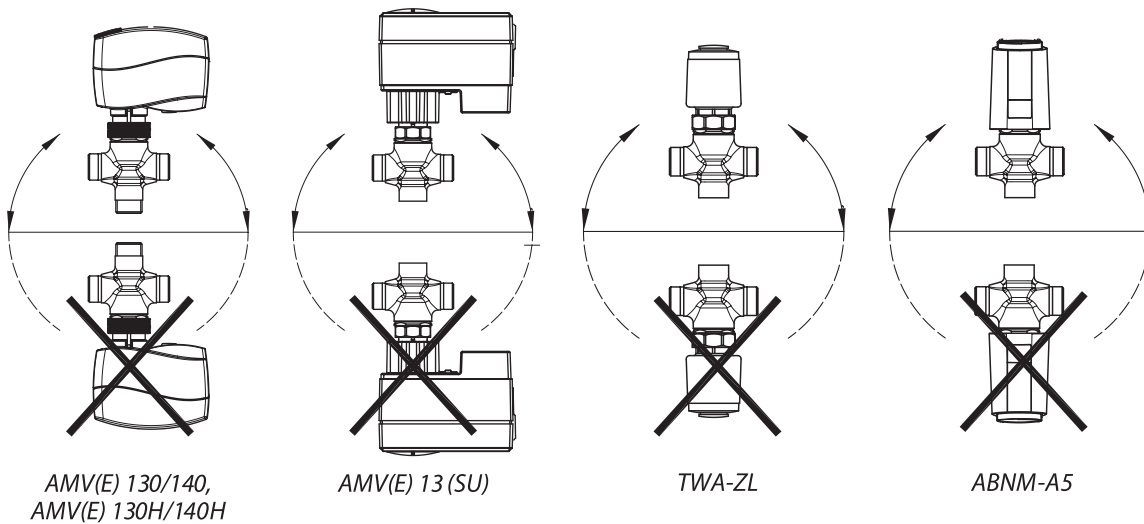
G	Ød	L	Weight (kg)
	mm		
1/2"	12	15	0.11
3/4"	15	20	0.17

**Tailpieces with external thread**

G	R (")	L (mm)	Weight (kg)
1/2"	3/8	23	0.11
3/4"	1/2	26	0.17



Installation



Valve mounting

Before valve mounting the pipes have to be cleaned and free from abrasion. Valve must be mounted according to flow direction as indicated on valve body. Mechanical loads of the valve body caused by the pipes are not allowed. Valve should be free of vibrations as well. Installation of the valve with the actuator is allowed in horizontal position or upwards. Installation downwards is not allowed.

Application schemes for 3-way and 4-way mixing valves

3-way and 4-way valves are mixing valves meaning that A and B ports are inlet ports, and AB port is outlet port (fig. 1). In case valve should be used as diverting valve it is a solution to install valve in return pipe (fig. 2)



To prevent damages, starting max. Δp must not exceed 1 bar for DN 20 and 2/2.5 bar for DN 15, when installing the valve.

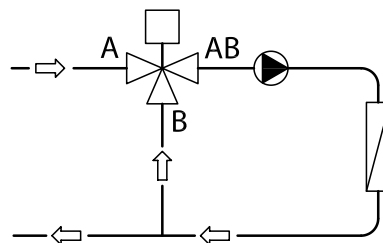


Fig. 1 Mixing valve used in mixing application

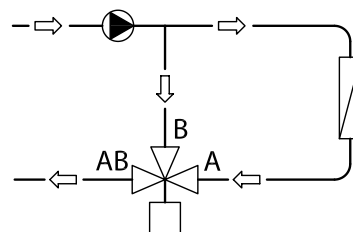
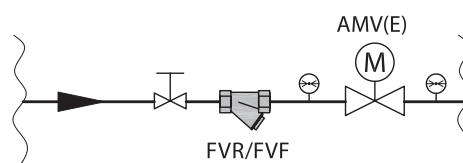


Fig. 2 Mixing valve used in diverting application

Note:

Install a strainer upstream of the valve (e.g. Danfoss FVR/FVF)



Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Certification body	Approval topic
UA Declaration	Danfoss UA 10.01.23 Heat Control Valves	Danfoss	
Export Control Declaration	Butterfly, other valves, Manual balancing valves, one pipe solution valves and hot water balancing valves	Danfoss	
Manufacturer's Declaration	Danfoss MD BF24042023-en01.01	Danfoss	PED, Pressure, EU RoHS

Contact details

Online support

Danfoss offers a wide range of support along with our products, including digital information, software, mobile apps and expert guidance. See the possibilities below.



The Danfoss Design center

Discover the Design Center, our advanced digital platform that streamlines product selection. With integrated tools and enhanced type pages, it's simpler than ever to access product information and documentation, and to select the right products. Check the availability of Danfoss products at partner locations and enjoy seamless transitions from selection to purchase with our basket-to-basket functionality. Whether you're buying from our distributors or directly from the Product Store, the Design Center simplifies your experience. Learn more at: designcenter.danfoss.com.



The Danfoss product store

The Danfoss Product Store is a one-stop shop available 24/7 for our customers, no matter where you are in the world or what area of industry you work in. Browse our catalog, check product details and documentation, view your prices and product availability, and quickly finalize your purchase. Start browsing at: store.danfoss.com.



Danfoss Partner Portal/Product Data tool

Designed to support you with easy access to product data extracts, essential resources, tools, and information. The Partner Portal provides a centralized hub for product documentation, training materials, marketing assets, and technical support, ensuring you have everything you need to succeed and grow your business with Danfoss. The Partner Portal is available 24/7 at: partner.danfoss.com and is ready to support your business.



Find technical documentation

Find technical documentation you need to get your project up running. Get direct access to our official collection of data sheets, certificates and declarations, manuals and guides, 3D models and drawings, case stories, brochures, and much more. Start searching now at: documentation.danfoss.com.



Danfoss Learning

Danfoss Learning is a free online learning platform. It features courses and materials specifically designed to help engineers, installers, service technicians, and wholesalers better understand the products, applications industry topics, and trends that will help you do your job better. Find your local Danfoss website here: learning.danfoss.com.



Get local information and support

Local Danfoss websites are the main sources for help and information about our company and products. Find product availability, get the latest regional news, or connect with a nearby expert - all in your own language. Find your local Danfoss website here: danfoss.com.

Danfoss A/S

Climate Solutions . danfoss.com . +45 7488 2222

Any information, including, but not limited to information on selection of product, its application or use, product design, weight, dimensions, capacity or any other technical data in product manuals, catalogues description, advertisements, etc. and whether made available in writing, orally, electronically, online or via download, shall be considered informative, and is only binding if and to the extent, explicit reference is made in a quotation or order confirmation. Danfoss cannot accept any responsibility for possible errors in catalogues, brochures, videos and other material. Danfoss reserves the right to alter its products without notice. This also applies to products ordered but not delivered provided that such alterations can be made without changes to form, fit or function of the products. All trademarks in this material are property of Danfoss A/S or Danfoss group companies. Danfoss and the Danfoss logo are trademarks of Danfoss A/S. All rights reserved.
