

V321

Flanged Three-way Plug Valve PN16

The V321 valve can be used in a wide range of applications, such as heating, cooling, and air handling. A stainless steel seat and plug provide a long life.

The valve can handle the following types of media:

- Hot and chilled water.
- Water with antifreeze additives such as glycol, up to 50%.



Specifications

Design	Three-way plug valve Stem up closed (A-AB)
Pressure class	PN 16
ΔP_m	See sizing table
ΔP_c	See sizing table
Connection	Flange according ISO 7005-2
Flow Characteristics	
A - AB	EQ%
B - AB	Linear
Max Fluid Velocity	2 m/s
Stroke	
DN65-100	30 mm
DN125-150	40 mm
Rangeability	
Kvs / Kv_{min} (EN 60534-1)	>30
Leakage	
A - AB	<0.05% of Kvs
B - AB	<0.05% of Kvs
Stem	
DN65-100	Ø10mm, M10 thread connection (fitted with stem adaptor to M8)
DN125-150	Ø10mm, M10 thread connection (fitted with Hex Bush for M22/M50)
Medium Temperature	
Maximum	130 °C
Minimum	-10 °C
If the valve is used for media at temperatures below 0 °C, it should be equipped with a stem heater in order to prevent ice formation on the valve stem (see Accessories).	

Materials	
Body	Grey cast iron GG25
Stem	Stainless steel SS 1.4021
Plug	Stainless steel SS 1.4021
Seat	Stainless steel SS 1.4021
Gland Seals	EPDM

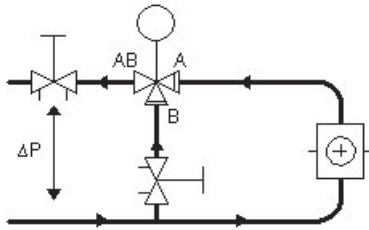
Ordering Table

Size Configuration		Kvs (m ³ /h)	Part Number	Actuator
DN	In.			
65	2½"	63	7312153020	M800, M1500, MV15B, M3000, M700
80	3"	100	7312157020	
100	4"	160	7312161020	
125	5"	220	7312165010	M22, M50
150	6"	320	7312169010	

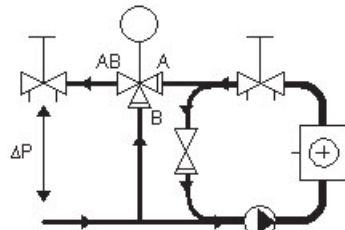
- The rangeability is the ratio of Kvs and Kv_{min} .
- Kvs is the flow capacity of a fully open valve, measured in m³/h at a pressure drop of 100 kPa.
- Kv_{min} is the minimum controllable flow at a pressure drop of 100 kPa, within the flow range where the characteristic meets the requirements on characteristic slope according to EN 60534-1.
- ΔP_c is the max. pressure differential across a closed valve.

Installation

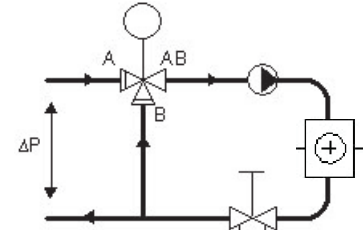
The V321 valve should, if possible, be installed in the return line in order to avoid exposing the actuator to high temperatures. The valve must not be installed with the actuator mounted below the valve. To ensure that suspended solids will not become jammed between the valve plug and seat, a filter should, if possible, be installed upstream of the valve, and the pipe system should be flushed before the valve is installed.



A. Mixing circuit without local circulation pump. To ensure satisfactory performance, the pressure drop across the valve should be at least half the available pressure differential (ΔP). This corresponds to a valve authority of 50%



B. Injection circuit with local circulation pump. The Kvs value of the valve should be selected so that the entire available pressure differential (ΔP) will be across the valve



C. Mixing circuit with local circulation pump. The Kvs value of the valve should be selected so that the pressure drop across the valve will be at least as high as (ΔP)

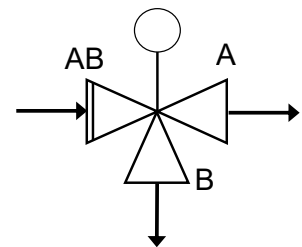
Valve and Actuator Sizing Tables

Mixing Application, (Circuits A, B, C)

Size		Kvs m ³ /h	ΔP_m kPa	Max Close Pressure, ΔP_c (kPa)					
DN	In.			M800	M1500/ MV15B	M3000	M700 SR	M22**	M50**
65	2½"	63	100	140	290	700	80	-	-
80	3"	100	80	90	180	440	40	-	-
100	4"	160	60	50	110	280	-	-	-
125	5"	220	60	-	-	-	-	110	330
150	6"	320	60	-	-	-	-	70	220

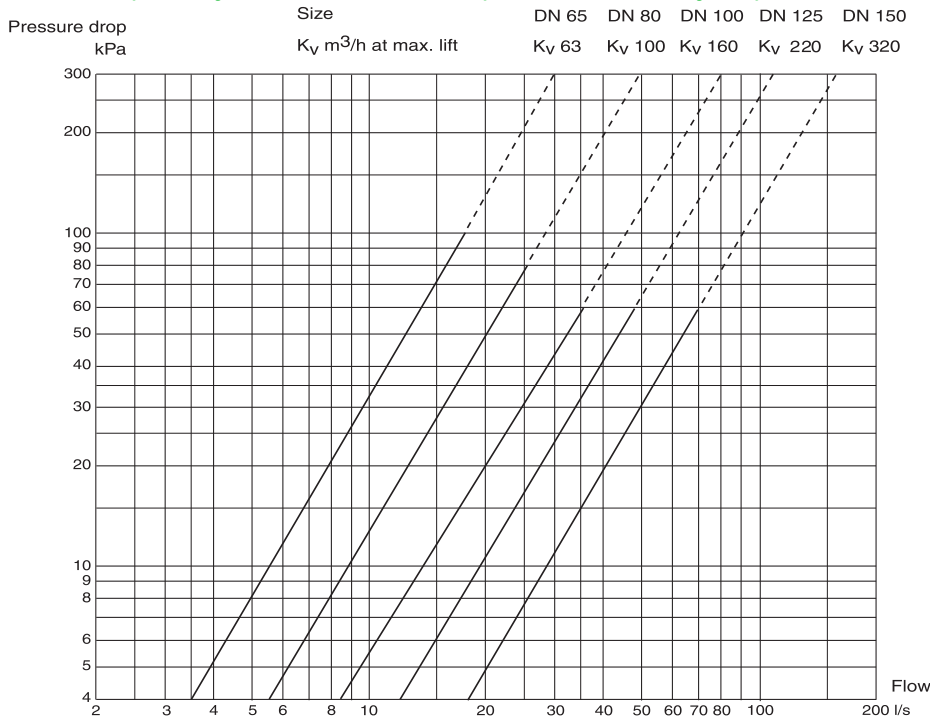
Diverting Application

Size		Kvs m ³ /h	ΔP_m kPa	Max Close Pressure, ΔP_c (kPa)					
DN	In.			M800	M1500/ MV15B	M3000	M700 SR	M22**	M50**
65	2½"	63	100	70	145	350	40	-	-
80	3"	100	80	45	60	220	20	-	-
100	4"	160	60	25	55	140	-	-	-
125	5"	220	60	-	-	-	-	55	165
150	6"	320	60	-	-	-	-	35	110



ΔP_c = Maximum allowed pressure differential across a closed valve (a function of actuator performance)
 ΔP_m = Maximum allowed pressure drop across a fully 'open' valve (a function of hydronic valve performance)
 **M22 and M50 actuators will not fit to valves DN65-100
 Note: Never exceed a fluid velocity above 2m/s

Flow Capacity / Pressure Drop Charts Fully Open Valve



1 Bar = 100 kPa = 14.5 psi
 1 m³/h = 0.2778 l/sec = 16.67 l/min = 4.403 US gpm
 To avoid cavitation, valves should not be selected if the flow and pressure drop intersect on the dotted section of the capacity line. To avoid risk of cavitation the fluid velocity should never exceed 2 m/s.

Flow Equations

$$K_v = \frac{Q}{\sqrt{\Delta P}}$$

K_v = Flow coefficient, m³/h @ 1 bar
 Q = Volume flow rate, m³/h

$$\Delta P = \left(\frac{Q}{K_v} \right)^2$$

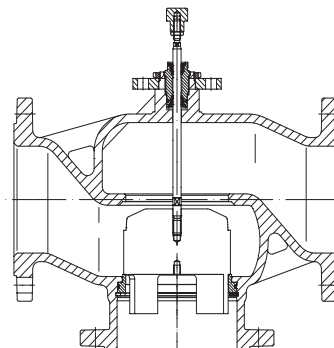
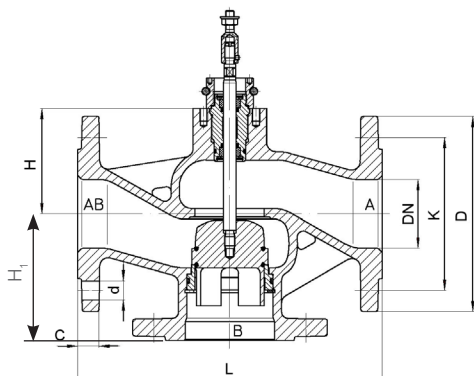
ΔP = Pressure drop, bar

$$Q = K_v \sqrt{\Delta P}$$

Dimensions and Accessories

DN65, 80, 100 for M800, M1500, M700

DN125, 150



Part No.	Size (DN)	Stroke	Dimensions (mm)							Weight (kg)
			L	H	H1	d	D	K	C	
7312153020	65	30	290	100	120	4x18	185	145	20	14.8
7312157020	80	30	310	110	130	8x18	200	160	22	21
7312161020	100	30	350	125	150	8x18	220	180	24	31
7312165010	125	40	400	154	200	8x18	250	210	26	52
7312169010	150	40	480	178	210	8x22	285	240	26	76

Accessories and Spare Parts

Description	Part Number
Gland Packing Box (DN56-150)	100108220
Service kit - Former Range manufactured: pre 2007	
Gland Packing Box for DN125 & DN150 valves with 18mm diameter valve stem (Valve body part numbers: 7312165000 / 7312169000)	100108230
V321 Replacement Valve/Actuator Linkages	
Stem adaptor (M10 to M8), DN65-100	8800133000
Replacement Hex Bush Stem adaptor (M10), DN125-150	100108240
Conversion kit to M800, M1500, M3000, M700 Actuator	
For an installed V321 with M16 actuator, DN65-100	8800130000
Stem Heater	
V321, DN65-100	8800110000
V321, DN125-150	8800111000