

V321



Three-way Plug Valve, Flanged, PN16

The V321 valve can be used in a wide range of applications, such as heating, cooling, and air handling.

The valve can handle the following types of media:

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

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).

SPECIFICATIONS

Type

Design Three-way plug mixing valve
 Stem up closed (A-AB)
 Pressure class PN 16
 ΔP_m See sizing table page 2
 ΔP_c See sizing table page 2
 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

$K_{vs} / K_v \text{ min}$ (IEC 534-1) >30

Leakage

A - AB <0.05% of K_{vs}
 B - AB <0.05% of K_{vs}

Stem

DN65-100 M10
 (fitted with Forta stem adaptor to M8)
 DN125-150 M10
 (fitted with Hex Bush for M22/M50)

Medium Temperature

Maximum 130 °C
 Minimum -10 °C

Materials

Body Grey cast iron GG25
 Stem Stainless steel SS 1.4021
 Plug Stainless steel SS 1.4021
 Seat Stainless steel SS 1.4021
 Packing box EPDM

ORDERING TABLE

Size		K_{vs} m ³ /h	Part Number	Actuator Configuration
DN	In.			
65	2½"	63	731-2153-010	Forta
80	3"	100	731-2157-010	Forta
100	4"	160	731-2161-010	Forta
125	5"	220	731-2165-010	M22 / M50
150	6"	320	731-2169-010	M22 / M50

Key to Technical Specification

- The rangability is the ratio of K_{vs} and K_{vmin} .
- K_{vs} is the flow capacity of a fully open valve, measured in m³/h at a pressure drop of 100 kPa.
- K_{vmin} 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 IEC534-1.
- ΔP_c is the max. pressure differential across a closed valve.

VALVE AND ACTUATOR SIZING TABLE

Size		K _{vs} m ³ /h	ΔP _m kPa	Max Close Pressure, ΔP _c (kPa)				
DN	In.			Forta M800	Forta M1500/ MV15B	Forta M3000	M22**	M50**
65	2½"	63	100	140	290	700	-	-
80	3"	100	80	90	180	440	-	-
100	4"	160	60	50	110	280	-	-
125	5"	220	60	-	-	-	110	330
150	6"	320	60	-	-	-	70	220

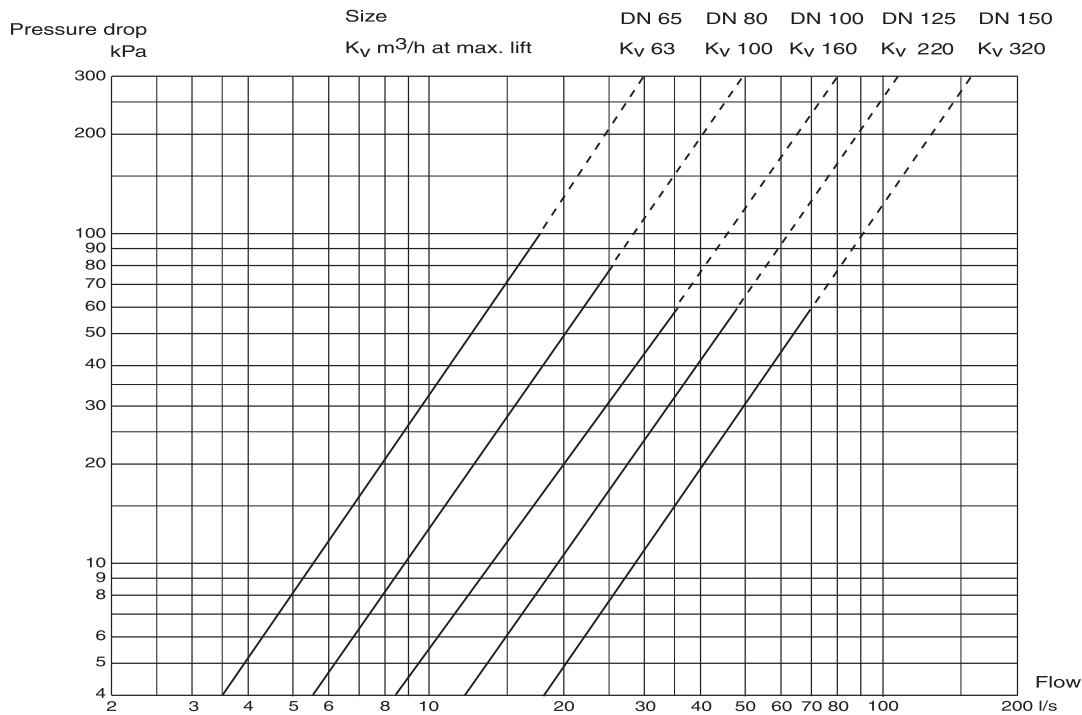
100 kPa = 1 bar

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

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

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

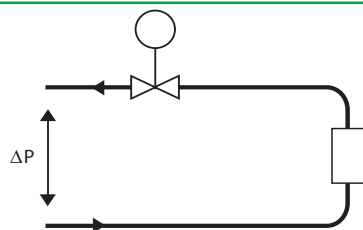
ΔP = Pressure drop, bar

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

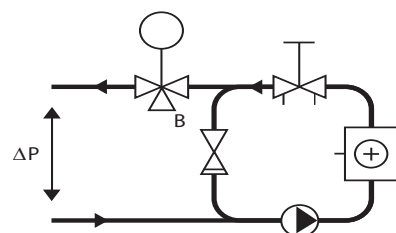
INSTALLATION

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.

SYSTEM SCHEMATICS



A. Typical installation without local without local circulation pump.



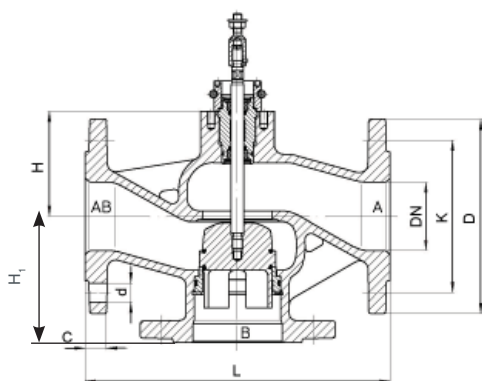
B. Typical installation with local circulation pump.

To obtain good function the pressure drop across the valve should be no less than half of the available pressure drop (ΔP). This will give a valve authority of 50%.

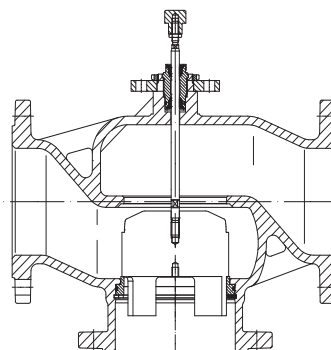
The K_{vs} value of the valve to be selected so that the entire available pressure drop (ΔP) falls across the control valve.

DIMENSIONS AND WEIGHT

DN65, 80, 100
(Forta actuator configuration)



DN125, 150
(M22 / M50 Actuator configuration)



Part No.	Size DN	Stroke mm	Dimensions							Weight kg
			L mm	H mm	H ₁ mm	d mm	D mm	K mm	C mm	
731 2153 010	65	30	290	100	120	4x18	185	145	20	14.8
731 2157 010	80	30	310	110	130	8x18	200	160	22	21
731 2161 010	100	30	350	125	150	8x18	220	180	24	31
731 2165 010	125	40	400	154	200	8x18	250	210	26	52
731 2169 010	150	40	480	178	210	8x22	285	240	26	76

Accessories and Spare Parts

Gland Service Kit (Packing Box)

DN65-100	1 001 0822
DN125-150	1 001 0823

V321 Replacement Valve/Actuator Linkages

Forta Stem adaptor (M10 to M8), DN65-100	880 0133 000
Replacement Hex Bush Stem adaptor (M10), DN125-150	1 001 08240

Conversion kit to Forta Actuator

Installed V321 with M16 actuator, DN65-100	880 0130 000
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Stem Heater

V321, DN65-100	880 0110 000
V321, DN125-150	880 0111 000

Blanking Flange Set

To convert installed V321, 3 way valves to a 2 way valve, e.g. installations upgrading from fixed speed to variable speed pumps.

Loose kits containing Flange Plate, gasket, appropriate sized nuts and bolts

DN	65	80	100	125	150
Part No.	913-0065-000	913-0080-000	913-0100-000	913-0125-000	913-0150-000