V311

Three-way Plug Valve, Flanged PN 16

V311 can be used in a wide range of applications, such as heating, cooling, air handling and domestic hot water systems. Soft EPDM seals provide tight shut off.

The valve can handle the following types of media:

- Hot and chilled water.
- Water with antifreeze additives such as glycol.

If the valve is used for media at temperatures below 0 °C (32 °F), it should be equipped with a stem or yoke heater in order to prevent ice formation on the valve stem.

SPECIFICATIONS

Design . . . . . .three-way plug valve stem up closed
. . . . (A port / B-AB open)
Pressure class . . . . PN 16
Flow characteristic A - AB . . . . EQM
Flow characteristic B - AB . . . . . . .Complementary
Stroke . . . . 20 mm
Rangeability Kv/Kv_{min} . . . .>50
Leakage A - AB and B - AB . . . . Tight sealing
ΔPm . . . . 400 kPa (58 psi), water
Max. temperature of medium:. . . . . .120 °C
Min. temperature of medium: . . . .–20 °C
Connection. . . . . . Flange according to ISO 7005-2

Materials

Body . . . . .Nodular iron EN-JS 1030
Stem . . . . Stainless steel SS 2346
Plug . . . . .Brass CW602N
Plug Seal . . . . EPDM
Seat . . . . .Nodular iron EN-JS 1030
Standard packing box . . . . Venta (EPDM)
Pressure Equipment Directive PED 97/23/EC Cat. 0

Size		Kv	Part number
DN	in.	m³/h	
15	½"	1.6	731-1117-000
15	½"	2.5	731-1121-000
15	½"	4.0	731-1125-000
20	¾"	6.3	731-1129-000
25	1"	10	731-1133-000
32	1¼"	16	731-1137-000
40	1½"	25	731-1141-000
50	2"	38	731-1145-000

Key to Technical specification

- The rangability is the ratio of Kv and Kv_{min}.
- Kv (Cv) is the flow through the valve in m³/h at the specified valve lift and at a pressure drop of 100 kPa across the valve.
- Kv_{min} is the minimum controllable flow (m³/h) at a pressure drop of 100 kPa within the range in which the valve characteristics conform to the slope requirements of IEC 534-1.

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DESIGN AND CHARACTERISTICS

The design of the V311 gives good resistance against solid particles in the fluid. The plug is guided throughout the lift, which reduces the risk of vibrations.

The V311 is designed to be used as a mixing valve.

The valve closes port A with the stem up.

The flow characteristics A -AB of the V311 is equal percentage modified.

The flow characteristics B - AB is complement to A - AB for constant sum of flow at ß= 0,5.

CHARACTERISTICS

Installed characteristics β = 0,5

DESIGN

CAVITATIONS

Cavitation takes place in a valve when the velocity of the flow between the plug and seat increases to the extent that gas bubbles are created in the water.

When, after the plug and seat, the velocity decreases, the gas bubbles collapse (implode), generating conciderable noise and causing conciderable wear on the valve.

By means of the cavitation diagram shown in the figure it can be checked if risk of cavitation exists with the working conditions in the pertinent installation.
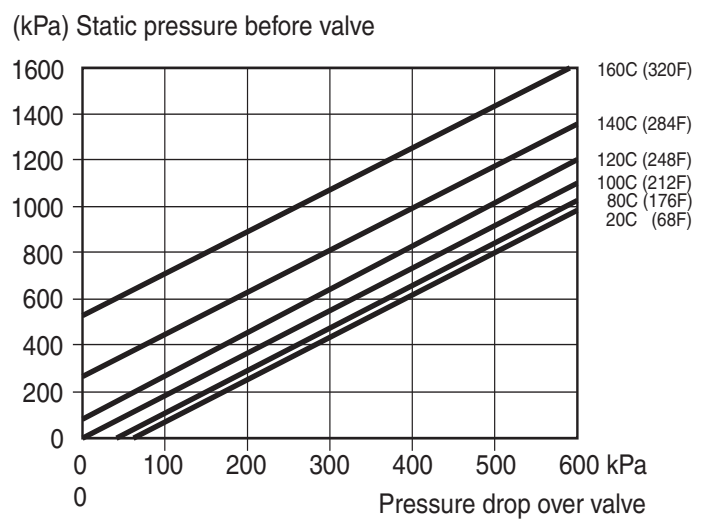
Proceed as follows: Using the static pressure before the valve (e.g. 1000 kPa), plot the horizontal line to the line for the temperature of the liquide (e.g. 120 °C).
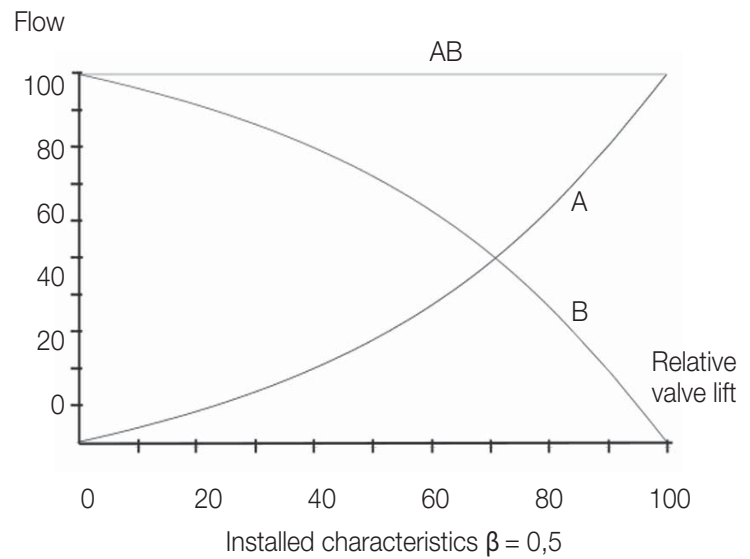
CAVITATIONS

Pressure drop chart at the beginning of cavitation

Pressure drop limit where cavitation might occur is dependent of valve inlet pressure and temperature of water.

From the intersection point, plot a vertical line downwards and read off the max.permissible pressure drop across the valve.

If the computed pressure drop exceeds the value read from the diagram there is risk for cavitation.

SPECIFICATION OF ACTUATOR

Use the diagram below to select actuator motor for the
V311 to close required ΔPc. A suitable actuator is selected,
using the summary data sheet F-10-6.
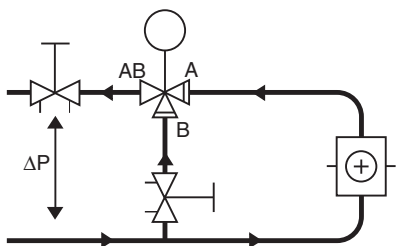
ACTUATOR POWER
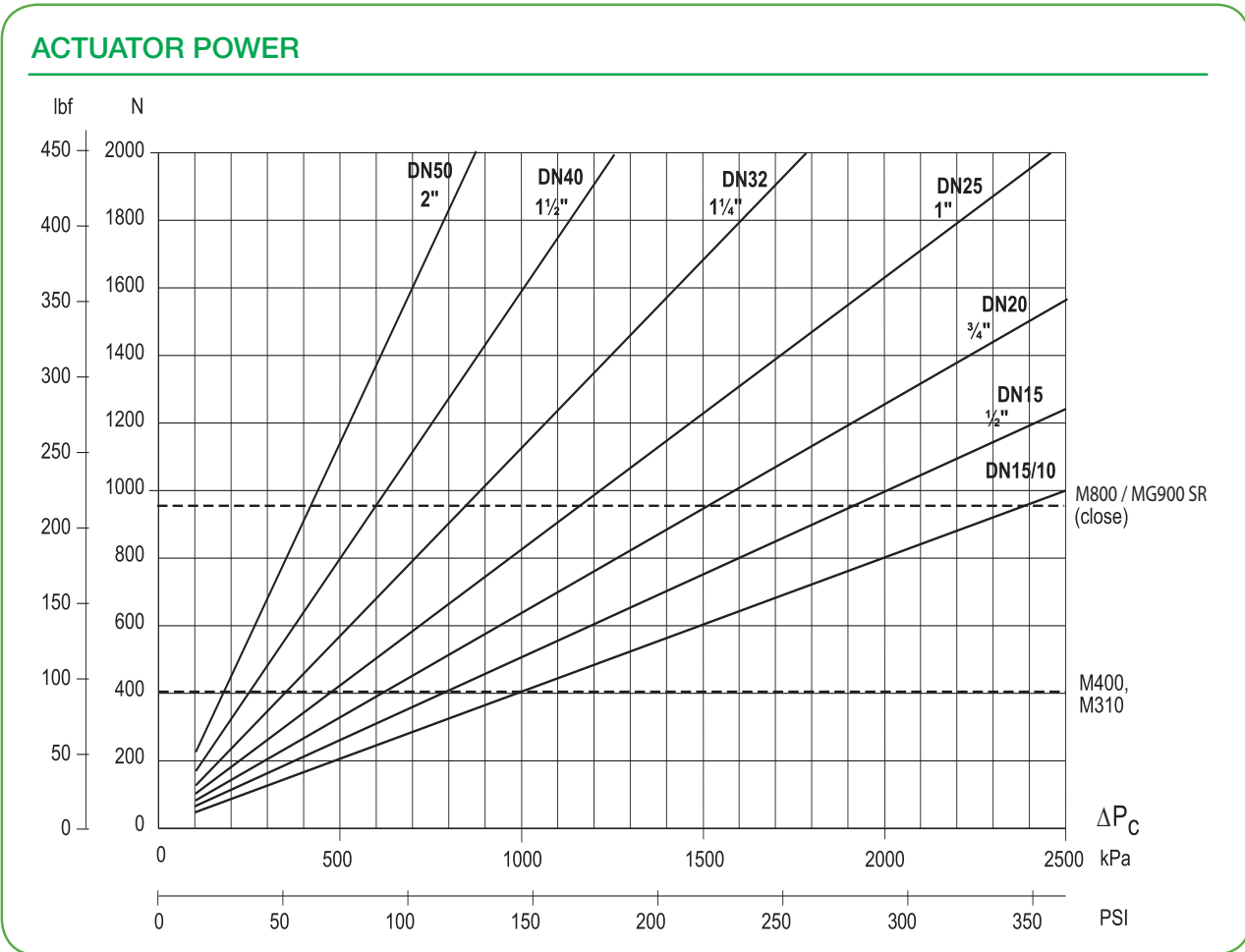
INSTALLATION

The valve should be mounted with flow direction
in accordance with the valve marking.

It is recommended to install the valve in the re-
turn pipe, 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 be installed upstream of the valve, and
the pipe system should be flushed before the
valve is installed.

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INSTALLATION

A. Circuit without local circulating 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%.
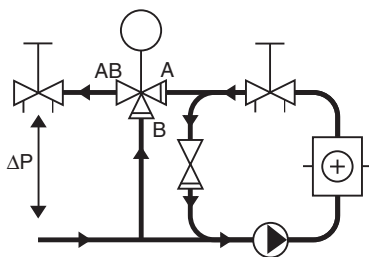
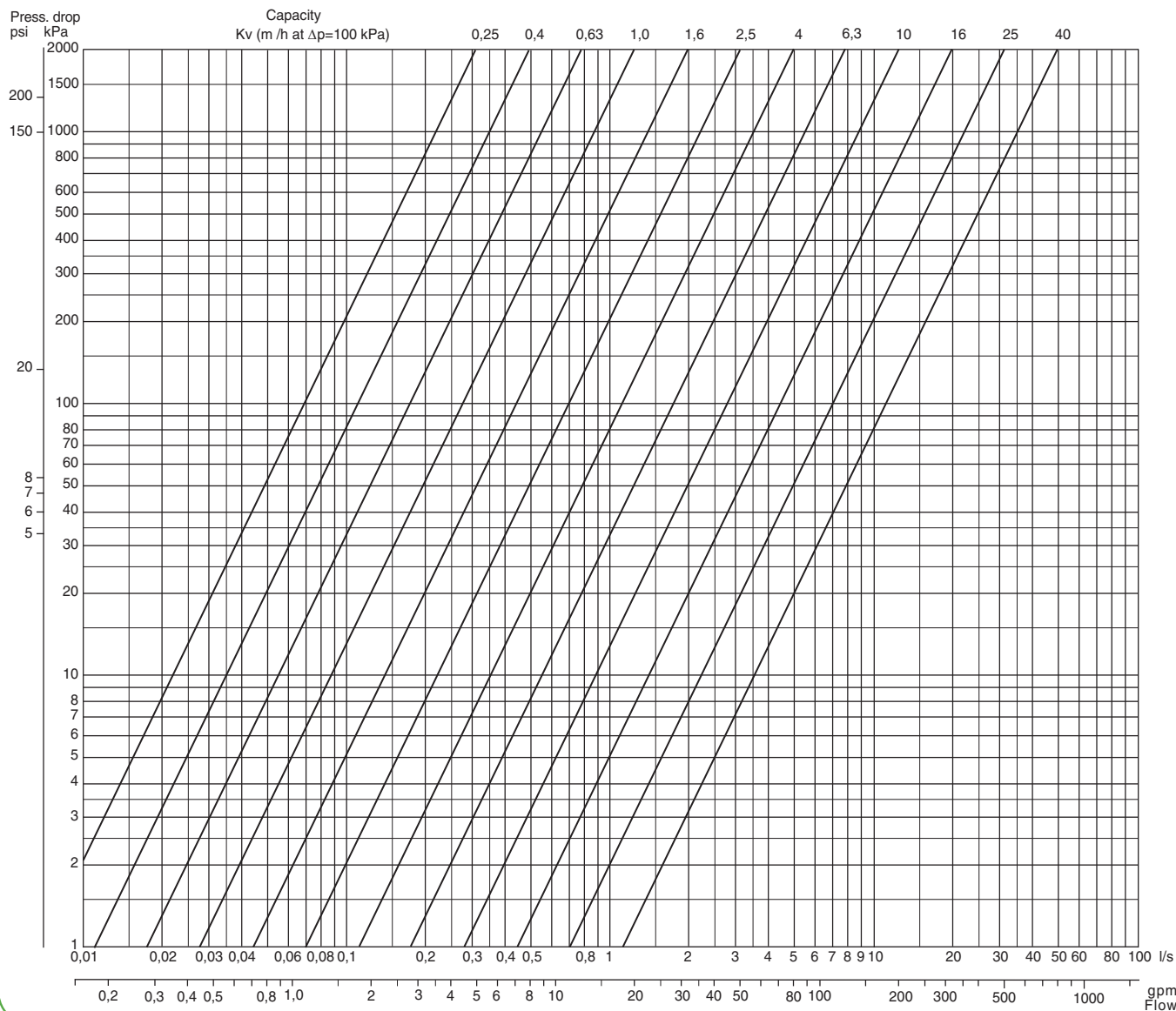B. Circuit with local circulating pump.

The K_V value of the valve to be selected so that the entire available pressure drop, ΔP, falls across the control valve.
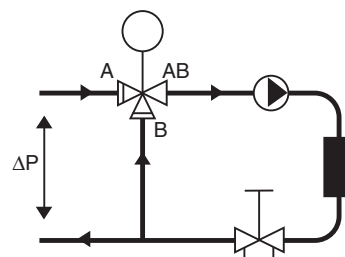
C. Circuit with local circulating pump.

The K_V value of the valve to be selected so that the pressure drop across the control valve becomes equal to or greater than ΔP.

PRESSURE DROP CHART

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DIMENSIONS AND WEIGHT
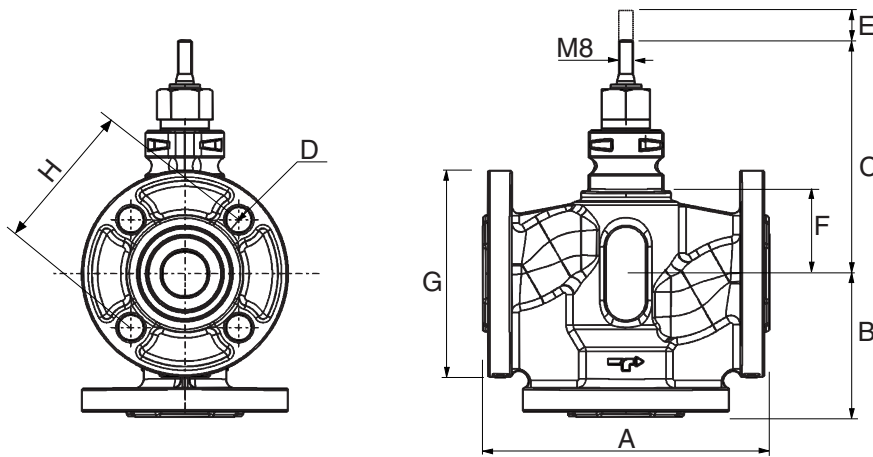
Part No 731-	Conn.		Dimensions								Weight
			A	B	C	D	E	F	G	H	
	DN	In.	mm	mm	mm	mm	mm	mm	mm	mm	kg
1117	15	½	130	65	123	4x14	20	38	95	65	2.5
1121	15	½	130	65	123	4x14	20	38	95	65	2.5
1125	15	½	130	65	123	4x14	20	38	95	65	2.5
1129	20	¾	150	75	126	4x14	20	41	105	75	3.2
1133	25	1	160	80	131	4x14	20	46	115	85	3.8
1137	32	1¼	180	90	144.5	4x19	20	59.5	140	100	6.6
1141	40	1½	200	100	146	4x19	20	61	150	110	7.5
1145	50	2	230	115	161	4x19	20	76	165	125	10.0

SPARE PARTS

Stuffing box

Standard type S . . . . max 150 °C (302 °F)
Item number 1-001-0800-0

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