V265

Balanced 2-way Piston Valve
Nodular Iron, PN 25 (362 psi)

F-20-20

2001-11-13

- V265 is a flanged 2-way piston valve.
- The valve is balanced which gives a relatively low torque.
- The valve has two restricting steps with an intermediate pressure balancing chamber. Each step will take its share of the total pressure drop, in order to avoid cavitation in any part of the valve.

APPLICATIONS

The valve is primarily intended for use in district heating systems where very large pressure drops and restricting effects occur.

For use in other applications, please consult your nearest TAC representative.

The valve can handle the following types of media:
- Heating water and deaerated cooling water.
- Water with the addition of phosphate and hydrazine for water treatment.
- Deaerated water with anti-freezing solution e.g. glycol (max. 50%) and brine, when equipped with a special stem packing. See ”SPARE PARTS”.
- If cooling media with a temperature below 0 °C are used, the valve must be equipped with a heater (stem heater) to prevent the valve stem from freezing.

TECHNICAL DATA

Type ..... 2-way balanced piston valve
Pressure rating ..... PN 25 (362 psi)
Flow characteristic ..... equal %
Rangeability 20
Leakage ..... max. 0,1% of Kv
ΔPm ..... 1600 kPa (232 psi)
Medium temperature:
Max. ..... 180 °C (356 °F)
Min. ..... –10 °C (14 °F)
Flange ..... hole position acc. to SS 335 and ISO 2084
Suitable welding flange with collar ..... SS 2034
Material:
Body ..... nodular iron SS 0727-02
Piston and sleeve ..... stainless steel SS 2346-02
Stem ..... stainless steel SS 2346-02
Stem packing ..... type T

Explanations

The rangeability is the ratio of Kv to Kv min (C_V to C_{Vmin}).

K_v (C_v) is the flow through the valve in m^3/h at specified lift and at a pressure drop of 100 kPa across the valve.

Kv min (Cv min) is the minimum controllable flow at a pressure drop of 100 kPa within the range in which the valve characteristic conforms to the slope requirements specified in IEC 534-1.

h is the valve lift in mm (in.).

ΔPm is the maximum pressure drop across the fully open valve.

Size DN	Size in.	K_V m^3/h	Cv	h mm	h in.	Part number	$K_{V\,min}$ m^3/h	$C_{V\,min}$
40	1½	12.5	14.6	31.5	1.24	721-6540-000	0.6	0.7
		25	29.3	31.5	1.24	721-6544-000	1.2	1.4
65	2½	32	37.4	40.9	1.61	721-6548-000	1.6	1.9
		50	58.5	40.9	1.61	721-6552-000	2.5	2.9
100	4	73	85.4	50.3	1.98	721-6556-000	3.6	4.2
		93	108.8	50.3	1.98	721-6560-000	4.6	5.4

FUNCTION AND VALVE CHARACTERISTIC

The valve has a cylindrical piston running in a sleeve which are both provided with a number of holes. When the piston moves upwards the holes will successively be exposed and the flow will increase.

The pressure drop in the valve is decreased in two steps. The first step occurs when the water passes through the sleeve into the cylinder. The second step occurs when the water passes from the cylinder and out through the other port. The cylinder operates simultaneously as an intermediate pressure balancing chamber.

Since the piston is open in both ports the valve is balanced. This means that the pressure drop across the valve does not affect the motion of the valve. Therefore, the valve can handle large flows and pressure drops without the required torque increasing correspondingly.

The flow characteristic is equal percentage. This is necessary to ensure a good control function in systems with large variable loads.

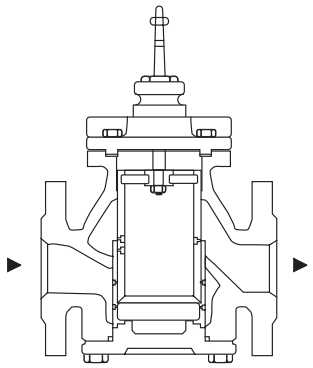
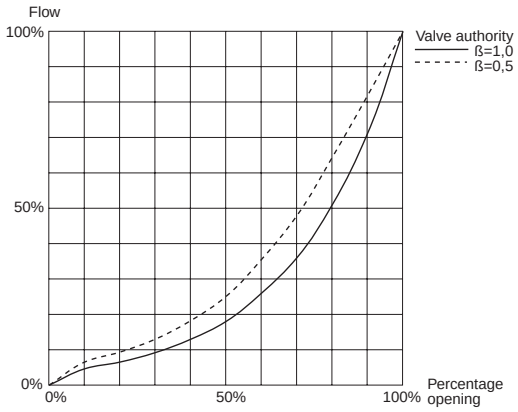


Figure 1



Flow characteristic

Figure 2

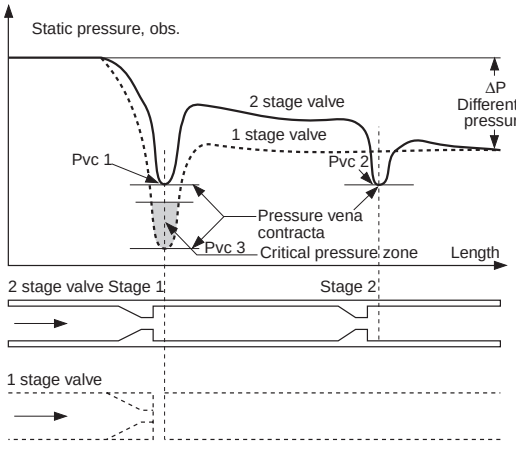


Figure 3

SELECTION OF ACTUATOR

The recommended actuator is TAC Forta M800.

ΔPc = Highest pressure drop across valve in closed position.

Size		M800 ΔP_c	
DN	in.	kPa	psi
40	1½	1600	232
65	2½	700	102
100	4	450	65

INSTALLATION

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

If possible the valve should be mounted in the return piping in order not to expose the actuator to unnecessary rise in temperature.

The valve must not be mounted with the actuator below the valve. To ensure that suspended solids will not be jammed between the piston and sleeve, a filter should, if possible, be installed upstream from the valve, and the piping system should be flushed before the valve is installed.

A. Circuit without local circulating pump.
To ensure satisfactory function the pressure drop across the valve should be at least half the available pressure drop (ΔP). This corresponds to a valve authority of 50%.

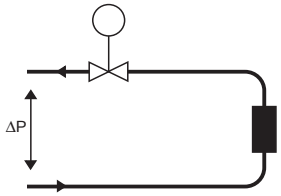


Figure 4

B. Circuit with local circulating pump. The Kv (Cv) value of the valve should be selected so that the entire available pressure (ΔP) is across the valve.

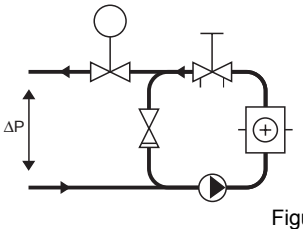


Figure 5

PRESSURE DROP CHART

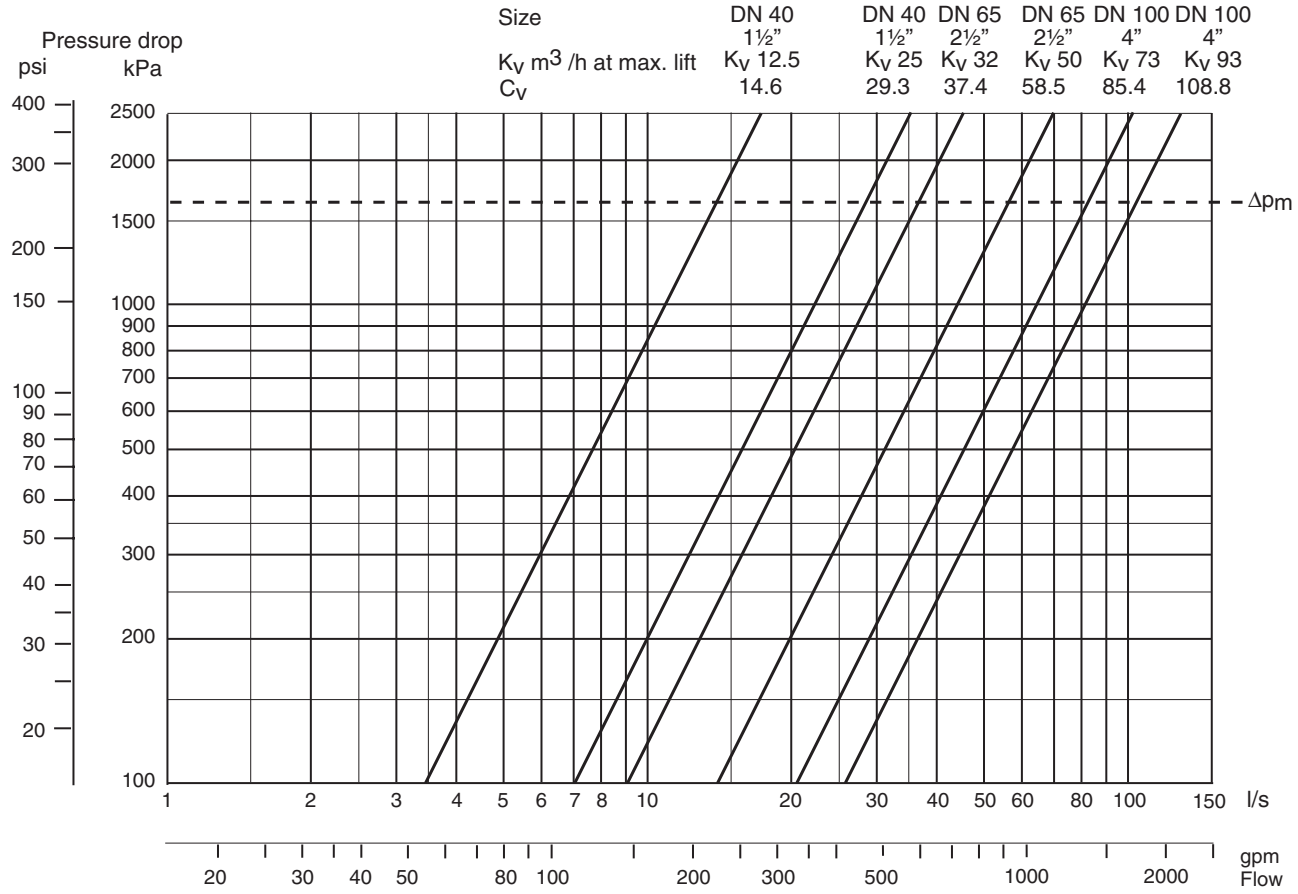


Figure 6

CAVITATION

Cavitation occurs in a valve when the flow rate between piston and sleeve becomes so high that gas bubbles are generated in the water.

When the flow rate then decreases, the gas bubbles are compressed (imploded) which causes excessive noise, and valve wear.

Cavitation risk can be checked from the chart.

Plot the appropriate static pressure upstream of the valve on the vertical axis. Project this point to the right, to the line corresponding to the temperature of the medium at the valve. Project this point of intersection onto the horizontal axis and read the maximum permissible pressure drop across the valve.

There is a cavitation risk if the calculated pressure drop is higher than the read value.

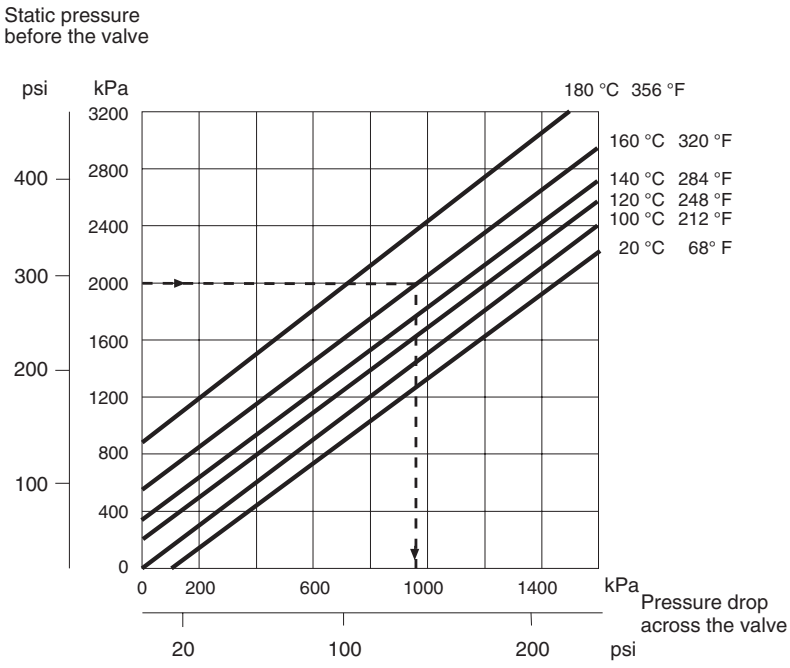


Figure 7

DIMENSIONS AND WEIGHTS

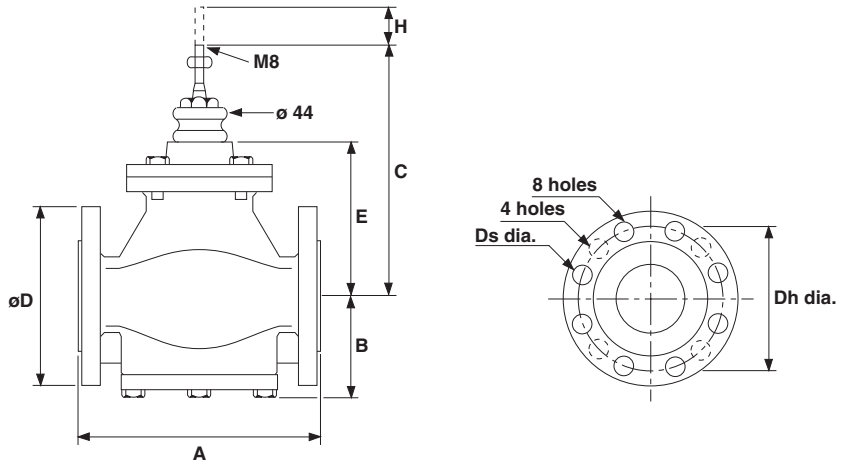


Figure 8

Size		Dimensions														Weight	
		A		B		C		E		dia D		dia Dh		dia Ds		No. of	H			
DN	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	holes	mm	in.	kg	lb.
40	1½	200	7.9	82	3.2	212	8.3	132	5.3	150	5.9	110	4.3	18	0.7	4	31.5	1.24	15	30.9
65	2½	290	11.4	106	4.7	228	9	148	5.8	185	7.3	145	5.7	18	0.7	8	40.9	1.61	32	71
100	4	350	13.8	124	4.9	258	10.2	178	7.0	235	9.3	190	7.5	22	0.9	8	50.3	1.98	54	119

SPARE PARTS

Standard packing box
Type T: max. 180 °C (356 °F)
Part number: 080-2064-005.
Special packing box for max. 50% glycol
Type Q: –20 to 30 °C (–4 to 86 °F)
Part number: 080-4724-005.