



- V295 is a two-way piston valve with flanged ends
- The valve is balanced (pressure-compensated), thereby requiring a low actuating force.

## APPLICATION

The valve is primarily intended to be used in heating, air conditioning and district heating installations with large pressure drops.

For other types of applications, please contact your nearest TAC sales office.

The V295 valve can be used with the following types of fluids:

- hot water, or deaerated cooling water.
- water with additives such as phosphate or hydrazine.
- deaerated water with glycol-type antifreeze agent (max. 50%), and brines (special packing box required, see "SPARE PARTS").
- with cooling medias at temperatures below 0 °C a stem heater must be fitted, to protect from stem seizure due to freezing. See "ACCESSORIES".

## TECHNICAL DATA

Valve type ..... 2-way compensated piston valve  
 Pressure class ..... PN 25 (bars)  
 Flow characteristic ..... Eq% (logarithmic)  
 Rangeability ..... 25  
 Leakage ..... max. 0,1% of  $K_v$   
 $\Delta p_m$  ..... max. 800 kPa, water  
 Medium temperature:  
   Max. .... 180 °C  
   Min. .... -20 °C  
 Flange connection ..... hole pattern acc. to SS335 and ISO2084  
 Suitable weld flange with collar ..... SS 2034  
 Materials:  
   Body ..... ductile iron SS0727-02  
   Piston and sleeve ..... stainless steel SS2346-02  
   Stem ..... stainless steel SS2346-02  
 Packing box, standard ..... type T  
 Special packing box for max. 50% glycol ..... type Q

Size DN	$K_v$ m <sup>3</sup> /h	h mm	Part number	$K_{v_{min}}$ m <sup>3</sup> /h
40	16	31,5	721-9574-000	0,7
	25	31,5	721-9546-000	1,0
65	37	40,9	721-9550-000	1,5
	51	40,9	721-9554-000	2,0
100	80	50,3	721-9558-000	3,2
	113	50,3	721-9562-000	4,5

### Remarks

The rangeability is the ratio of  $K_v$  to  $K_{v_{min}}$ .  
 $K_v$  is the valve flow at the max. lift and a pressure drop of 100 kPa across the valve.  
 $K_{v_{min}}$  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 IEC534-1.  
 h is the lift of the valve in mm.  
 $\Delta p_m$  is max. pressure drop across a fully open valve.

## FUNCTION AND FLOW CHARACTERISTIC

The valve has a cylindrical piston which moves inside a cylindrical seat, equipped with a number of holes.

When the piston moves upwards the holes are gradually exposed, resulting in increasing flow.

The piston is open at both ends and the valve is therefore compensated. This means that the pressure drop across the valve will not be affected by the movement of the piston. The valve can therefore handle large flows without a corresponding increase in the required actuating force.

The flow characteristic is equal percentage (Eq%, also called logarithmic), giving an equal-percentage change in flow. The latter is necessary to give good control in systems with large load variations.

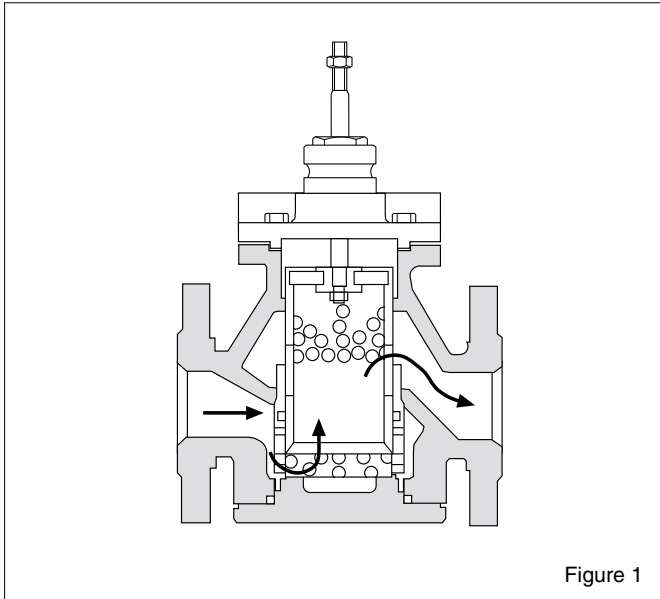


Figure 1

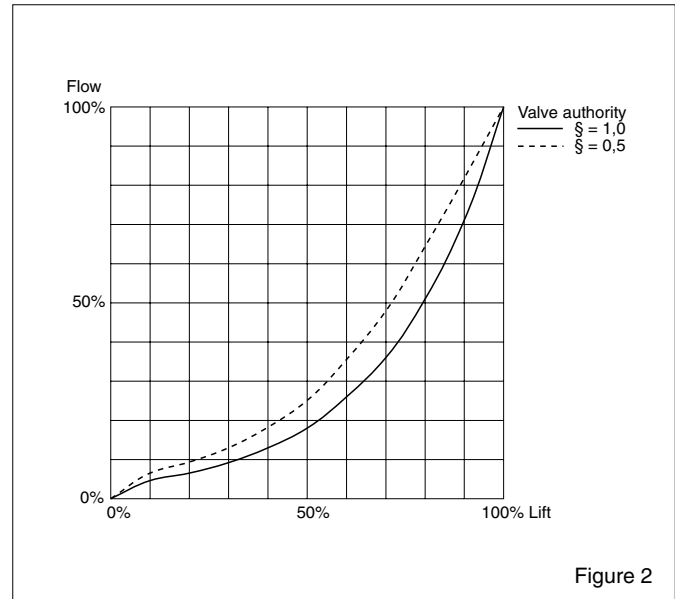


Figure 2

## ACTUATOR AND LINKAGE SELECTION

### Electric actuators

The M5C and M15C actuators are controlled by increase/decrease signals.

The EM5C actuator is controlled by a modulating 2–10 V DC signal.

The linkage need be ordered separately only if the valve and the actuator are delivered as separate items.

Size DN	M5C, EM5C part number	$\Delta P_c$ (kPa)	M15C part number	$\Delta P_c$ (kPa)
40	911-1070-375	1600	911-1070-375	1600
65	911-1070-475	600	911-1070-475	700
100	911-1070-575	–	911-1070-575	450

$\Delta P_c$  = Max. close-off pressure drop across the valve.

## INSTALLATION

The valve is to be installed in the line so that the direction of flow coincides with the arrow on the valve body.

Whenever possible, the valve should be installed in the return line, to avoid exposing the valve to unnecessarily high temperatures. The valve must not be mounted with the actuator under the valve.

To prevent dirt from getting caught between plug and seat, it is recommended to install a strainer upstream of the valve. Also flush and rinse the piping system before installation of the valve.

### A. Typical installation without local circulating pump.

To provide good function the pressure drop across the valve should be no less than half of the available pressure ( $\Delta p$ ). This corresponds to a valve authority of 50%.

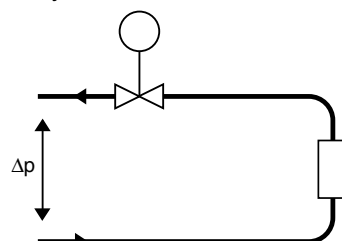


Figure 3

### B. Typical installation with local circulating pump.

The  $K_v$  value of the valve to be selected so that the entire available pressure drop ( $\Delta p$ ) falls across the control valve.

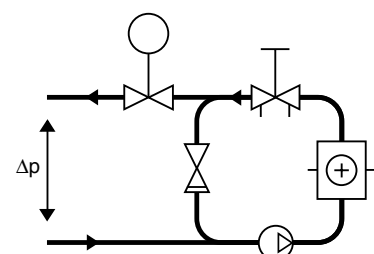


Figure 4

## PRESSURE DROP DIAGRAM

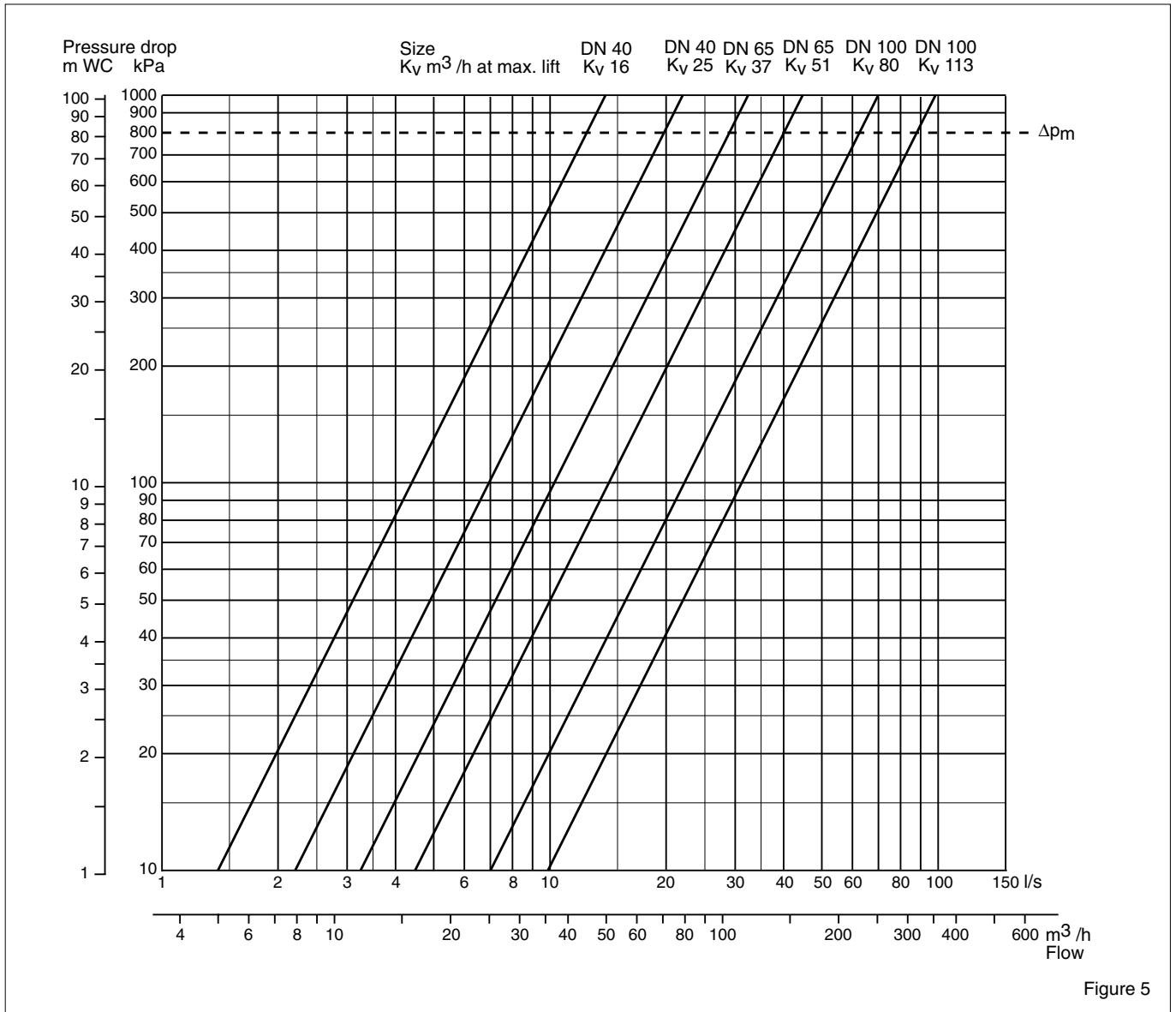


Figure 5

## CAVITATION

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 considerable noise and causing considerable wear on the valve.

By means of the cavitation diagram shown in figure 6 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. 1 000 kPa), plot a horizontal line to the line for the temperature of the liquid (e.g. 120 °C). 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 of cavitation.

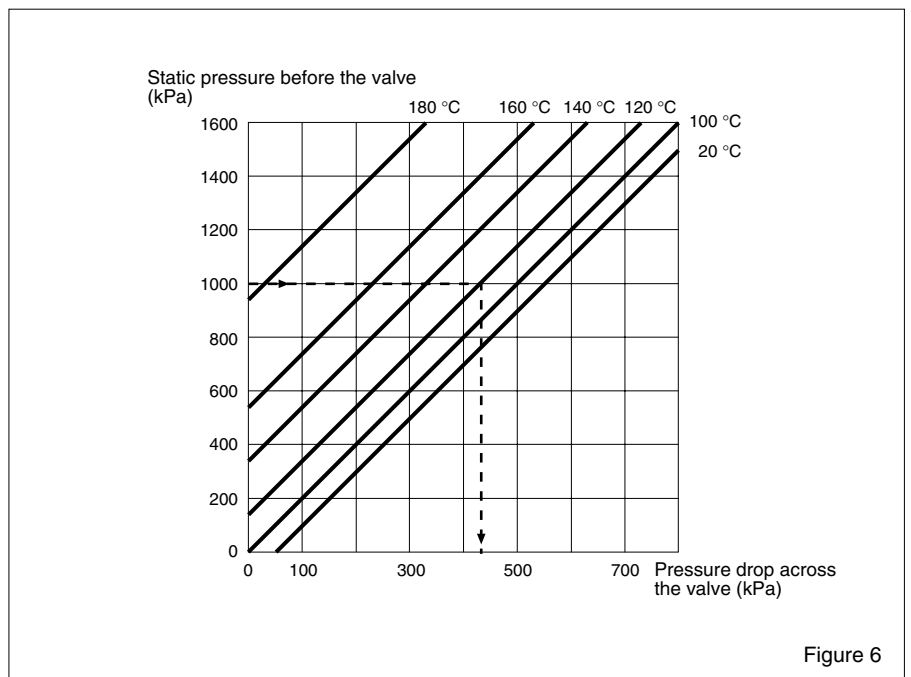


Figure 6

## ORDERING EXAMPLE

The valve can be ordered in the following ways.

1. Valve only

V295 / DN 40 / Kv 16

Valve type      Size      Kv value

2. Complete control valve with fitted actuator, adjusted and ready for use.

M5C / 24 V / 180° / V295 / DN 40 / Kv 16

Actuator designation      Valve type      Size      Kv value

3. Valve and actuator delivered as separate items

Actuator designation      M5C/24 V/180°  
 Valve designation      V295/DN 40/Kv 16  
 Linkage, part number      911-1970-375

Note that the linkage for the electric actuator must also be ordered as a separate item.

## MEASUREMENTS AND WEIGHTS

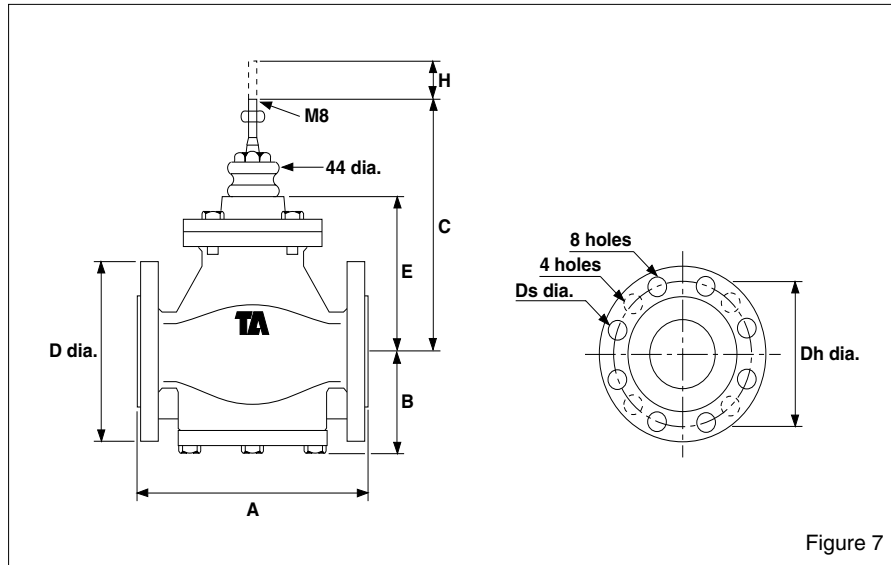


Figure 7

Size DN	Measurements in mm				dia. D	dia. Dh	dia. ds	No. of holes	H	Weight kg
	A	B	C	E						
40	200	82	212	132	150	110	18	4	31,5	15
65	290	106	228	148	185	145	18	8	40,9	32
100	350	124	258	178	235	190	22	8	50,3	54

## SPARE PARTS

### Standard packing box

Type T: max. 180 °C  
 Part number: 080-2064-005.

### Special packing box for max. 50% glycol

Type Q: -20 to 30 °C  
 Part number: 080-4724-005.

## ACCESSORIES

### Stem Heater

Heating element for the valve stem.

Designed for actuators M5C, EM5C and M15C.

Part number: 911-2062-000.