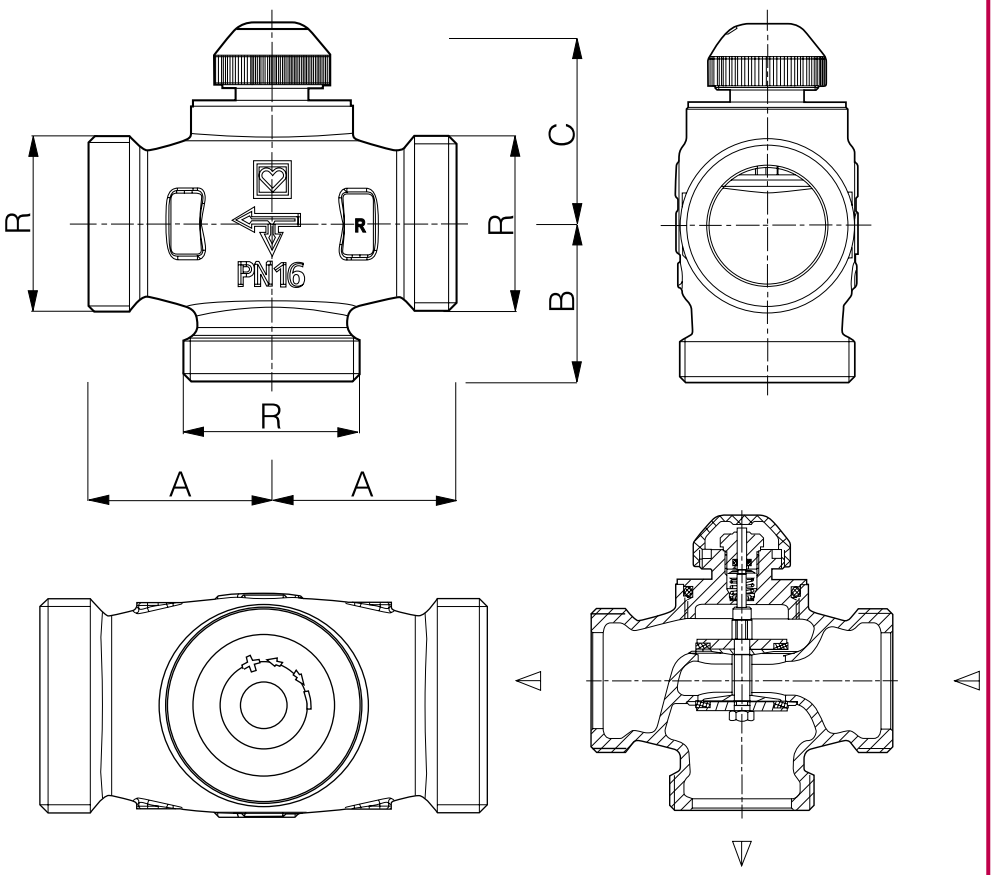
Calis TS RD
100% three-way valve

for heating and cooling

Data sheet for

7761 RD

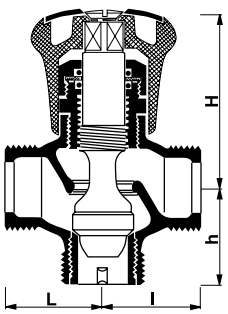
Issue 0506



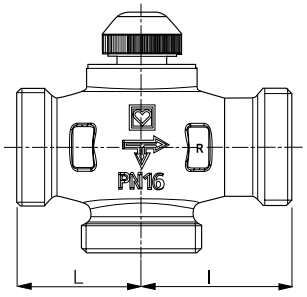
Thermostatic upper part

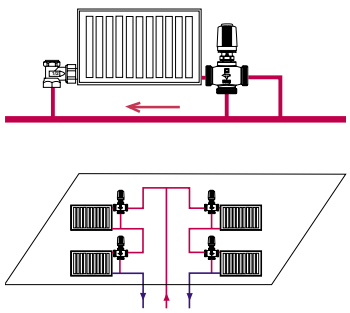
Order number	Dimension	R	A	B	C	kvs	dp (bar) maximum
1 **7761** 38	1/2	3/4	30	30	22	3.00	2.00
1 **7761** 39	3/4	1	37,5	34	22	3.00	2.00
1 **7761** 40	1	1 1/4	45	43	40,5	6.27	0.73
1 **7761** 41	1 1/4	1 1/2	50	43	40,5	6.44	0.73

Dimensions in mm



6161





Special types available upon request

Replacement model for earlier types Calis 6161 Bj 1971

Order number	Model	R Connection	L	l	H open	H closed	H_B	H_M open	H_M closed	h
6161 6161 B 6161 M	Three-way valves without connection	1/2	30	30	60	54	60	60	54	30
		3/4	38	38	65	59	65	65	59	34
		1	45	52	86	80	82	86	80	43
		5/4	50	50	83	77	79	83	77	42

We reserve the right to make alterations in line with engineering advances.

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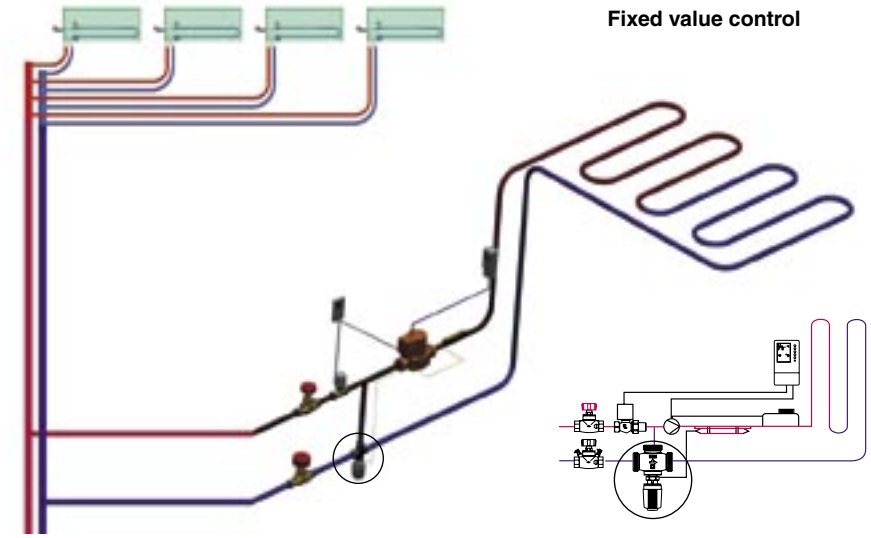
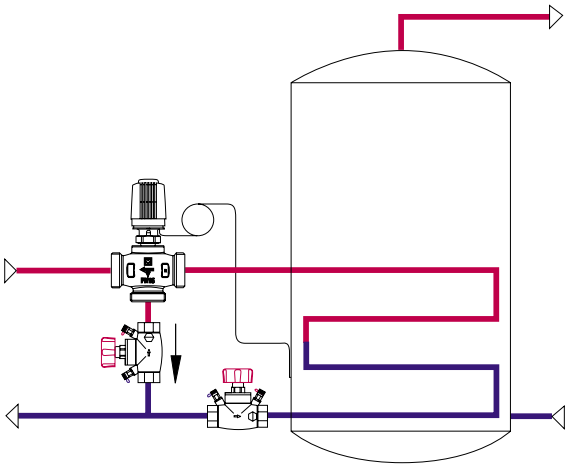
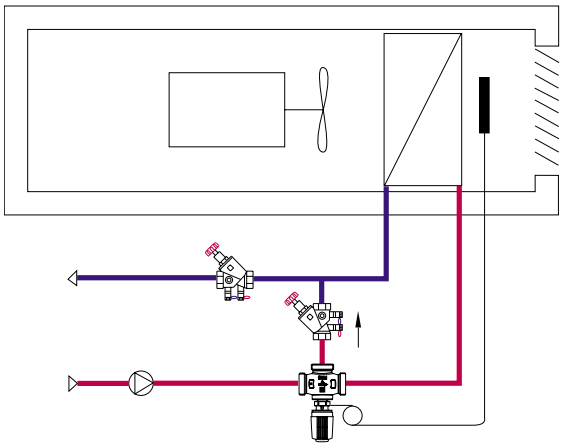
Fixed value control



Boilers for potable water
The sensor element can be used with an insertion pocket, order number 1 **6313** 01.



Fancoil



Area of application

Designs

Valve body made of brass, stainless steel spindle, and EPDM seals. Models DN 15 and DN 20 are in a nickel-plated design, models DN 25 and DN 32 are in unplated design, made of plain brass, all with blue screw cap and without connections. HERZ thermostat threaded connection M 28 x 1.5.

Other designs

7761 TS	DN 15, 20	HERZ-three-way valve for single-pipe heating and for thermostatic operation
7761 TS 3D	DN 15, 20	HERZ-three-way valve for single-pipe heating and for thermostatic operation
774X TS E 3D	DN 20	HERZ-three-way valve for single-pipe heating with increased volume flows and for thermostatic operation
7762	DN 10, 15, 20	HERZ-three-way mixing valve for thermal drives
7763	DN 10, 15, 20	HERZ-three-way mixing valve with 4 connectors for thermal drives
7764	DN 10, 15, 20	HERZ-three-way mixing valve with 4 connectors for thermal drives
4037	DN 15 - 50	HERZ-three-way mixing valve for motor drive
7766	DN 25, 32	HERZ-thermal three-way mixing valve
8100	DN 10 - 25	HERZ-floor heating control set

Separate standard specification sheets are available for these designs.

Operating data

Maximum operating temperature		120 °C
Minimum operating temperature		2 °C
Maximum operating pressure	DN 15, 20	10 bar
Maximum operating pressure	DN 25, 32	16 bar
Maximum pressure drop for thermostatic operation		0.2 bar

Heating water quality according to ÖNORM H 5195 or VDI guideline 2035.

Ammonia contained in hemp damages brass valve body. The mineral oils or lubricants containing mineral oils lead to the swelling and therefore to the damage of EPDM seals. Frost and corrosion protectors based on ethylene glycol are allowed in 15 - 45 % percentage. All specified informations are to be found in standard specification sheets.

When using HERZ compression unions for copper and steel pipes, the permissible temperature and pressure information according to EN 1254-2:1998 table 5 must be noted. For plastic pipe connectors a maximum operating temperature of 80 °C and a maximum operating pressure of 4 bar apply, according to the pipe manufacturer's specifications.

Pipe connection

Nominal values **7761**	Connection thread, flat size sealing	Iron pipe for pipe		Soldered connection for pipe		Welded connection for pipe		Press connection for pipe	
DN 15	3/4	1/2	1 **6220** 21	12	1 **6236** 01	21	1 **6240** 01	14 x 2.0	P **7014** 41
DN 15	3/4	1/2 x 38 mm	1 **6220** 11	15	1 **6236** 11			16 x 2.0	P **7016** 41
DN 15	3/4	1/2 x 44 mm	1 **6220** 22	18	1 **6236** 21			18 x 2.0	P **7018** 41
DN 15	3/4							20 x 2.0	P **7020** 41
DN 15	3/4							20 x 2.5	P **7021** 41
DN 20	1	3/4	1 **6220** 12	15	1 **6236** 02	26.5	1 **6240** 02	16 x 2.0	P **7016** 42
DN 20	1	Reduction 1/2	1 **6220** 02	18	1 **6236** 12	Reduction 21	1 **6241** 02	18 x 2.0	P **7018** 42
DN 20	1			22	1 **6236** 22			20 x 2.0	P **7020** 42
DN 20	1							20 x 2.5	P **7021** 42
DN 20	1							25 x 2.5	P **7025** 42
DN 20	1							25 x 3.5	P **7024** 42
DN 20	1							26 x 3.0	P **7026** 42
DN 25	1 1/4	1	1 **6220** 63	28	1 **6236** 63	33.7	1 **6240** 63	25 x 2.5	P **7025** 43
DN 25	1 1/4							25 x 3.5	P **7024** 43
DN 25	1 1/4							26 x 3.0	P **7026** 43
DN 25	1 1/4							32 x 3.0	P **7032** 43
DN 25	1 1/4							40 x 3.5	P **7040** 43
DN 32	1 1/2	1 1/4	1 **6220** 64	35	1 **6236** 64	47.5	1 **6240** 64	32 x 3.0	P **7032** 44
DN 32	1 1/2							40 x 3.5	P **7040** 44
DN 32	1 1/2							50 x 4	P **7050** 44

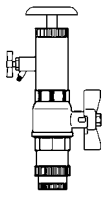
Nuts, connectors and seals are always included in the delivery of HERZ flat-seal connector screws.

Functioning

HERZ Calis TS RD 100 distributor valves are suitable for use as thermostatic control valves for constantly maintaining room temperature or average temperature in closed cold and hot water circuits with almost constant volume flows.
In the open condition of the thermostatic valve, the through port of the valve is open, and the valve is closed by a thermostat or a thermal drive, when the branch is open and the through port is closed.

Changing the thermostatic valve upper parts

The CALIS-TS upper part (DN 15 and DN 20) can be changed under pressure by means the HERZ Changefix Tool 1 **7780** 00. Thus faults can be easily rectified at the seal, e.g. from the residue of foreign bodies such as dirt, welding and soldering remains, which can be easily removed. When using the HERZ Changefix tool, the instructions included should be noted.

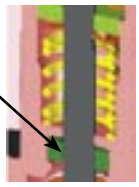


Thermostatic operation

To control the thermostatic upper part all HERZ thermostats with application or immersion sensor as well as the components of the HERZ RTC electronic control systems (room temperature computer, DDC actuator) and HERZ RTR (room thermostats and thermo-motors) can be used.

To avoid sticking, the valve spindle of the thermostatic upper part is protected from deposits by a second O ring.

Two O-rings serve as spindle seals, and these are fitted in an replaceable brass chamber. The O-rings guaranteed maximum freedom from maintenance and offer lasting ease of movement of the valve.



Spindle seal

Changing the O-ring

1. Remove the HERZ thermostatic head or drive.
2. Now the O-ring chamber including the O-ring is unscrewed and replaced with a new one.
   The upper part must be held with a spanner during this change procedure. With the dismantling the valve is automatically completely opened and therefore re-sealed, but some drops of water may escape.
3. Re-assembly in reverse order. When placing the HERZ TS hand wheel, it should be turned to test whether the valve closes.

1 **6890** 00 O-ring set

Seat seal

The valve is fitted with a soft seal, which is constructed for the demands of thermostatic operation.

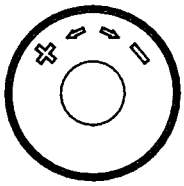
HERZ thermostatic valve
Nominal stroke

The screw cap serves to activate during the building phase (pipe flushing). By removing the screw cap and mounting the HERZ thermostatic head the thermostatic valve is complete without draindown.

Adjustment of the nominal stroke using the screw cap:

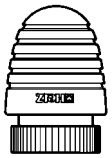
On the periphery of the screw cap in the area of the knurling, there are two adjustment markings (raised) with the markings “+” and “-”

1. Close the valve using the screw cap by turning it clockwise.
2. Marking that position that corresponds to the adjustment marking “+”.
3. Turn the screw cap anti-clockwise until the adjustment marking “-” is located at the 2nd marked position.



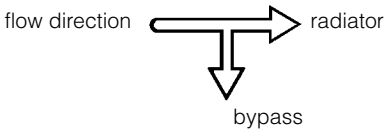
HERZ-TS
Hand wheel

In the unlikely event that a HERZ thermostatic valve lower part is not fitted with a HERZ thermostatic head the HERZ-TS hand wheel 1 **9201** 80 replaces the screw cap.



Installation

The thermostatic valve lower part is mounted in the flow pipe with a flow in the direction of the arrow (shown on the casing).



Accessories

1 **7420** 06 HERZ thermostat with contact sensor 20 - 50 °C
1 **7420** 16 HERZ thermostat with contact sensor 20 - 50 °C
1 **7421** 00 HERZ thermostat with contact sensor 40 - 70 °C
1 **9421** 26 HERZ thermostat with contact sensor 30 - 60 °C
1 **6313** 01 Immersion pocket for contact sensor
1 **1001** 02 T-piece, DN 20

Replacement part

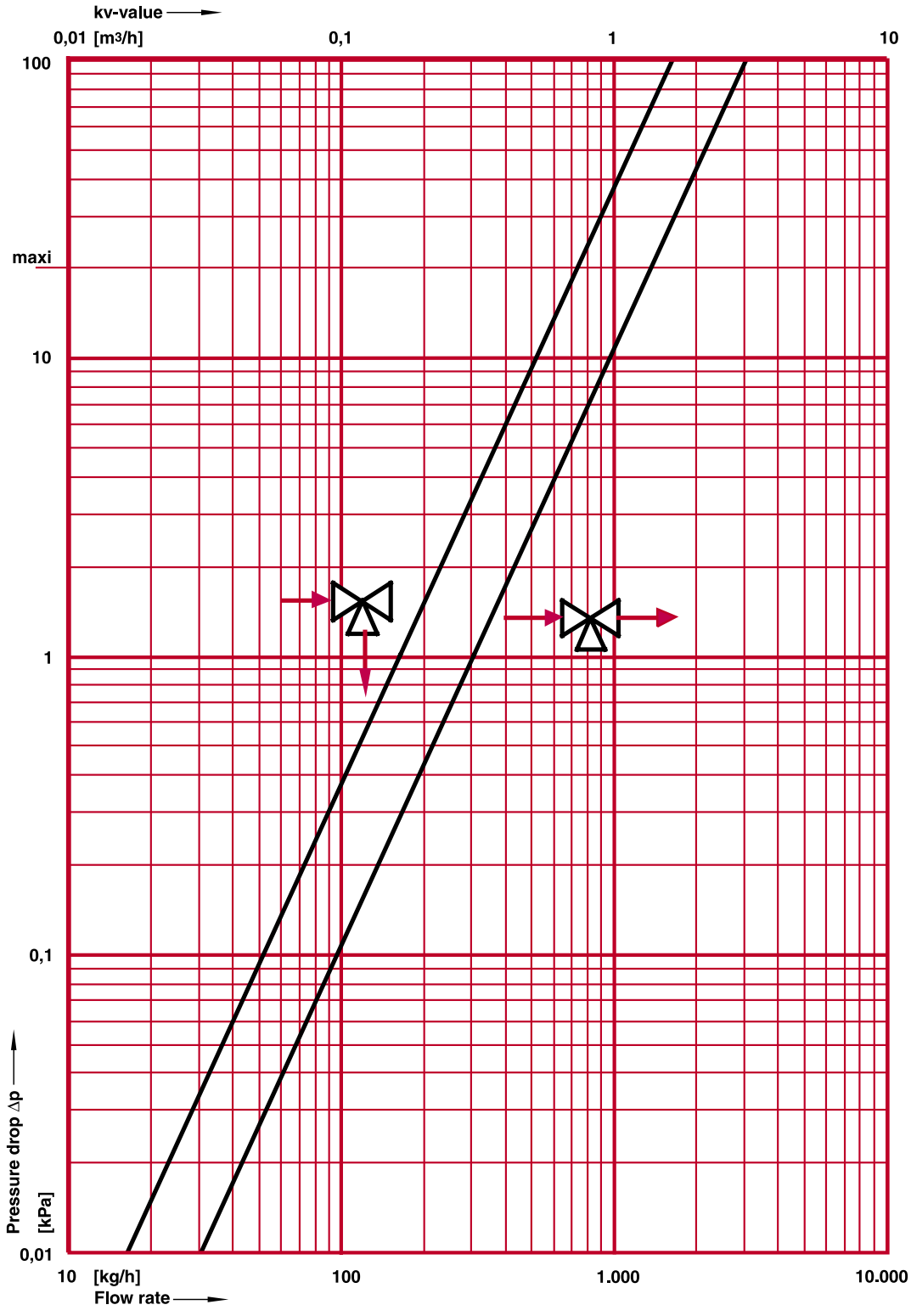
1 **7760** 38-180 Replacement upper part for Calis RD DN 15 and DN 20.
For Valves 1 **7760** 40 and 41 the spare upper parts are not available

HERZ Standard diagram	HERZ Calis TS RD
Order number **7761**	Dim. DN 15 R = 1/2 • DN 20 R = 3/4

The valve construction [Δ p] corresponds to the “German Power Transmission Engineering Association instructions on planning and hydraulic balancing of heating equipment instructions on planning and hydraulic balancing of heating equipment with thermostatic radiator valves”.

Flow characteristics 1 7761 40/41

(Independent for flow path)



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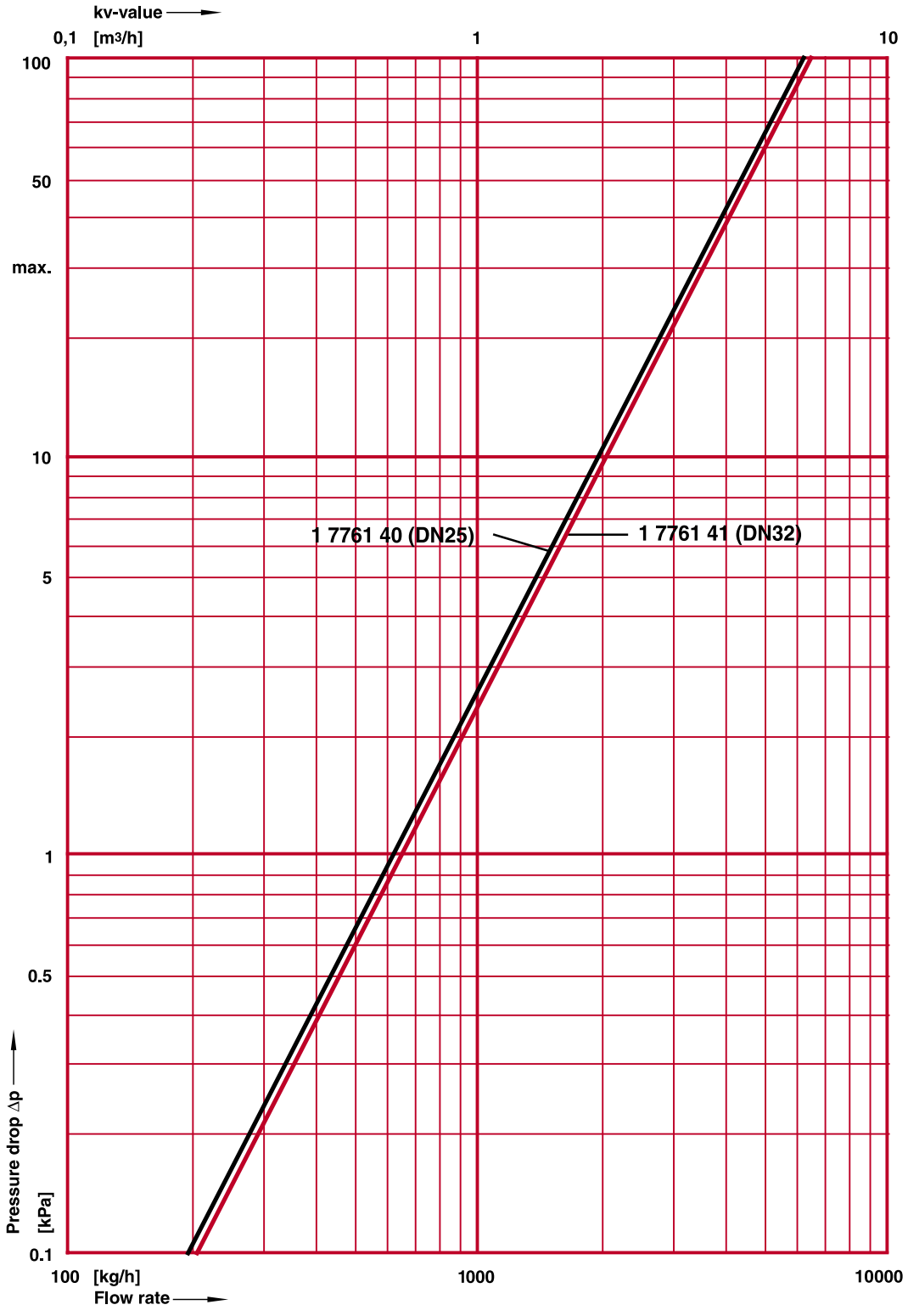
HERZ standard diagram	HERZ Calis TS RD
Order number 1 **7761** 40 • 1 **7761** 41	Dim. DN 25 • DN 32

The valve construction [Δ p] corresponds to the “German Power Transmission Engineering Association instructions on planning and hydraulic balancing of heating equipment instructions on planning and hydraulic balancing of heating equipment with thermostatic radiator valves”.

Flow characteristics 1 7761 40/41

(Independent from pass or branch pipe direction)



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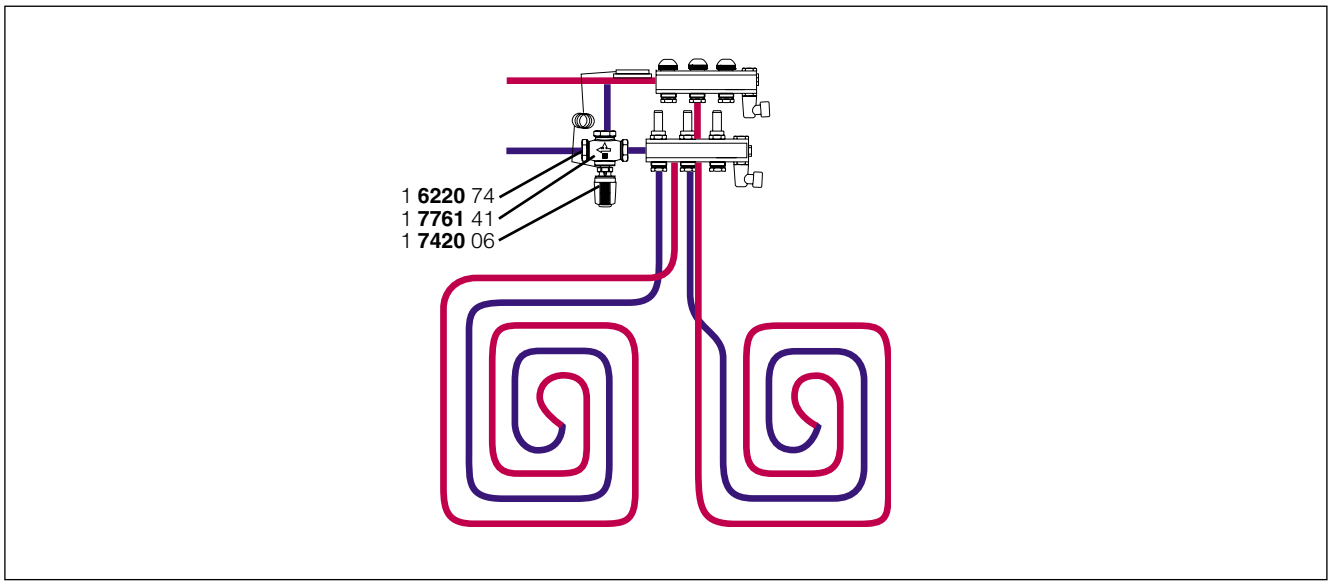
Valve dimensioning:



1) Average of pipe length:

$$L = \frac{A}{a}$$

L	Pipe length per heating circuit [m]
A	Heated surface per heating circuit [m²]
a	Pipe distance [m]

Calculation has to be carry out for each heating circuit.

Samples:	**Beispiel:**
Surface A=	16 [m²]
Pipe distance a=	15 [cm]
Circuit length L=	**107 [m]**

2) Enquiry of water quantity per circiut:

$$q = 3600 \frac{P}{t \cdot c}$$

q	Water quantity [kg/h]
P	Capacity of heating circuit [KW]
t	Temperature difference VL/ RL [K]
c	Spec Heat water, 4.19 [KJ/kg K]

Capacity P=	2 [KW]
Spread t=	10 [K]
Water quantity q=	**172 [kg/h]**

3) Enquiry of pipe resistance

In pipe friction diagram the water quantity (q) and pipe cross section
----> Pipe friction coefficient “R” [Pa/m]

dp = R*L + dp(Flow-Valve) + dp(Return-Valve)

To multiply R-Value by pipe length of longest circuit
and add pressure difference of Flow and Return valves.

R, from table (18 x 2 mm)	120 [Pa/m]
Loss Flow-Valve (from table)	2,5 [kPa]
Loss Return-Valve (from table)	2,5 [kPa]
Total loss	**17,8 [kPa]**

4) Add all water quantity: (Q)

...e.g. Circuit 1-5	927 [kg/h]
Circuit 6	172 [kg/h]
Total water quantity	**1099 [kg/h]**

5) Valve laying (kvs-value)

$$kvs = \frac{Q}{100\sqrt{dp}}$$

Q	Water quantity [kg/h]
dp	Pressure difference [kPa]
kvs	Valve value [m³/h]

Water quantity, Q=	1099 [kg/h]
Pressure difference, dp=	17,8 [kPa]
Valve value kvs=	2,60 [m³/h]

chosen **1 7761** 38 or 39, kvs = **3.0 [m³/h]**