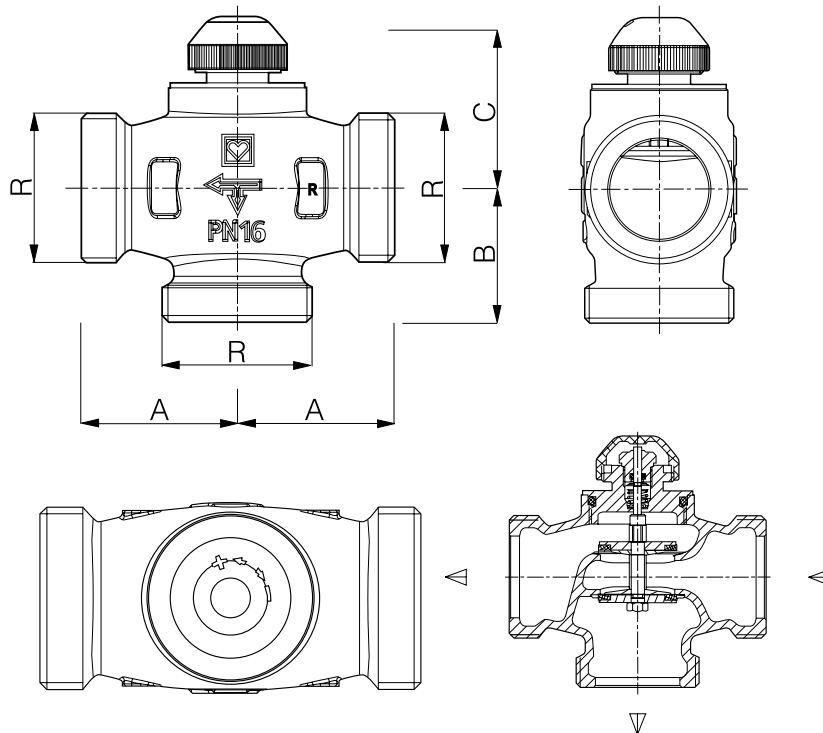


HERZ Calis TS RD

100% three-way valve for heating and cooling

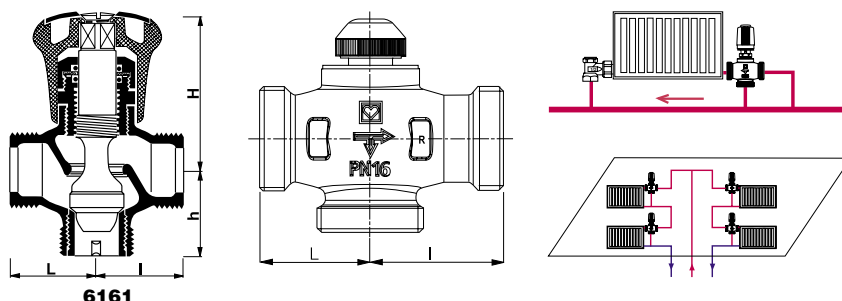
Datasheet for 1 7761 RD, Issue 0716

☑ Dimensions in mm



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

☑ Special types available upon request
Replacement model for earlier types Calis 6161 Bj 1971



Order number	Model	R Connection	L	I	H open	H closed	H _B	Hm open	Hm 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

☑ Materials

Valve body	brass (CC754S-GM)
Spindle	stainless steel
Seals	EPDM
Upper part cover	blue plastic cap
Thermostat threaded connection	M 28 x 1.5.

☑ 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.

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 25 - 50 % percentage. All specified informations are to be found in standard specification sheets.

Compression unions for metal pipe

When using compression unions for steel and copper pipes the temperature and pressure information according to EN 1254-2:1998 table 5 must be taken into account.

Plastic pipe connections and press fittings

The plastic pipe connections are suitable for application categories 4 and 5 according to ISO 10508 (surface heating and radiator connection) and pipes made of PE-RT (DIN 4721), PE-MDX (DIN 4724), PB and PE-X (DIN 4726) as well as plastic/aluminium composite pipes (ÖNORM B 5157). The maximum temperature for this is 95 °C at 10 bar. The user must select the operating pressure P_{oper} and operating temperature T_{oper} for the given type of pipe by adhering to the standard values and permissible operating data of the pipe manufacturer. Deviations to these details are specially stated in the documents.

☑ Other models

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 se

☑ Functioning

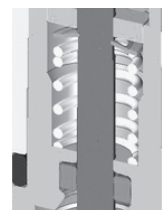
HERZ Calis TS RD 100 distributor valves are suitable for use as thermostatic control valves for constantly maintaining room temperature or average temperature in closed cold and hot water circuits with almost constant volume flows. In the open condition of the thermostatic valve, the through port of 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. The valve is fitted with a soft seal, which is constructed for the demands of thermostatic operation.

☑ 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

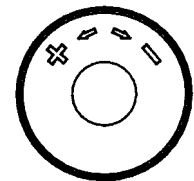
☑ HERZ thermostatic valve nominal stroke

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:

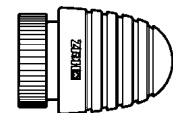
On the periphery of the screw cap in the area of the knurling, there are two adjustment markings (raised) with the markings “+” and “-”

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.



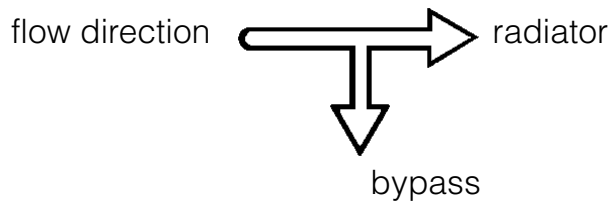
☑ HERZ thermostatic valve nominal stroke

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).

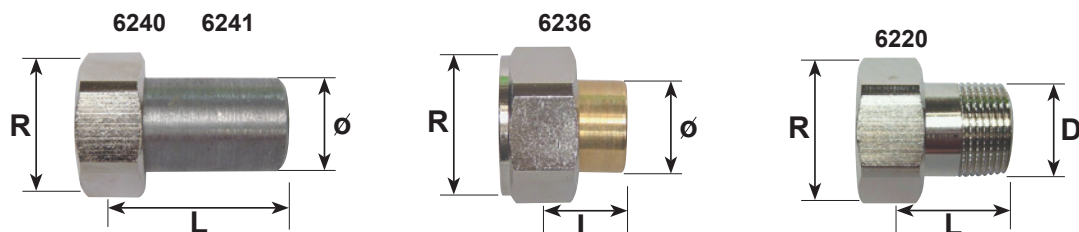


☑ Accessories

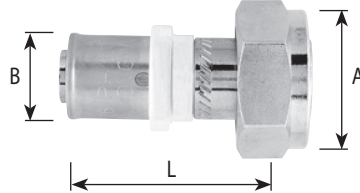
- 1 **7420 06** HERZ thermostat with contact sensor 20 - 50 °C
- 1 **7421 00** HERZ thermostat with contact sensor 40 - 70 °C
- 1 **6313 01** Immersion pocket for contact sensor
- 1 **1001 02** T-piece, DN 20

6221

☑ Connection elements

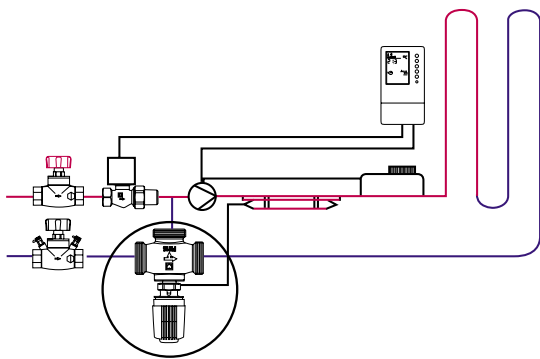
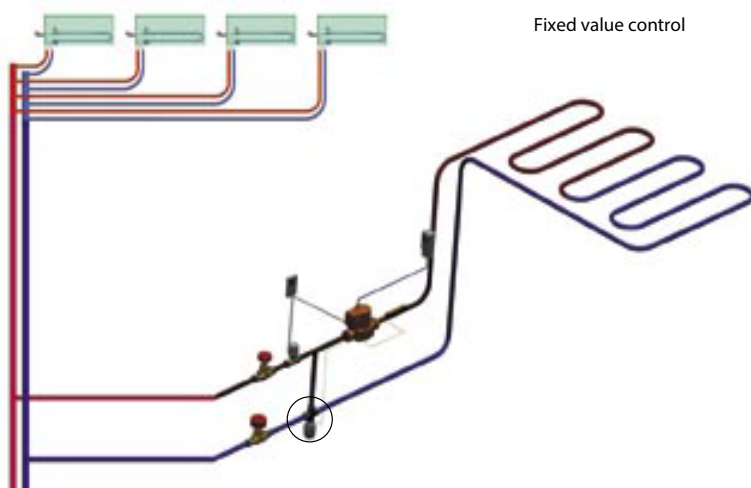


Size	Order number	R	D	ø	L
DN 15	1 6220 21	3/4	1/2	-	30
DN 15	1 6220 11	3/4	1/2	-	38
DN 20	1 6220 12	1	3/4	-	34
DN 20	1 6220 22	1	3/4	-	44
DN 20	1 6221 02	1	1/2	-	33
DN 25	1 6220 63	1 1/4	1	-	35
DN 32	1 6220 64	1 1/2	1 1/4	-	40
DN 15	1 6236 11	3/4	-	15	17
DN 15	1 6236 01	3/4	-	12	14
DN 15	1 6236 21	3/4	-	18	19
DN 20	1 6236 22	1	-	22	23
DN 20	1 6236 02	1	-	15	18
DN 20	1 6236 12	1	-	18	19
DN 25	1 6236 63	1 1/4	-	28	24
DN 32	1 6236 64	1 1/2	-	35	27
DN 15	1 6240 01	3/4	-	21	45
DN 20	1 6240 02	1	-	27	45
DN 20	1 6241 02	1	-	21	45
DN 25	1 6240 63	1 1/4	-	34	51
DN 32	1 6240 64	1 1/2	-	42	54

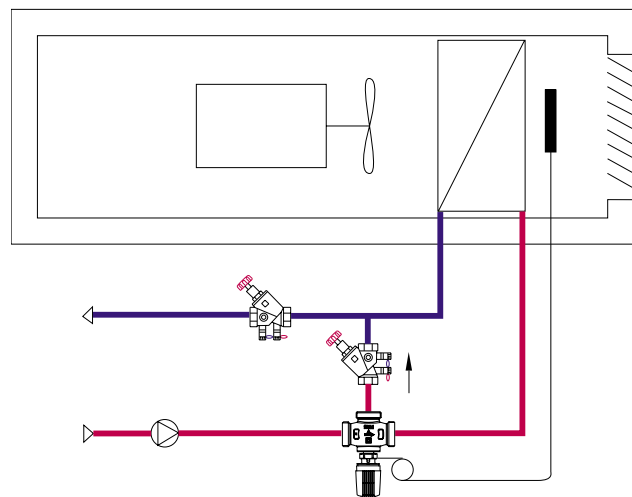
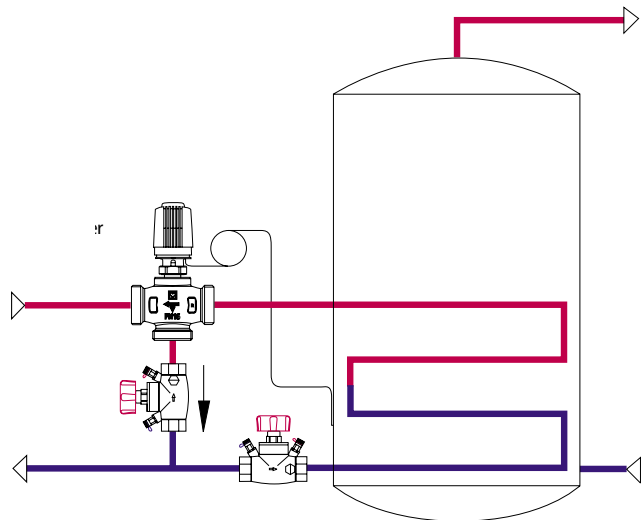


Size	Order number	A	L	L
DN 15	P 7014 41	G 3/4	14 x 2	45
DN 15	P 7016 41	G 3/4	16 x 2	45
DN 15	P 7018 41	G 3/4	18 x 2	45
DN 15	P 7020 41	G 3/4	20 x 2	45
DN 20	P 7016 42	G 1	16 x 2	40
DN 20	P 7018 42	G 1	18 x 2	35
DN 20	P 7020 42	G 1	20 x 2	40
DN 20	P 7026 42	G 1	26 x 3	50
DN 25	P 7026 43	G 1 1/4	26 x 3	50
DN 25	P 7032 43	G 1 1/4	32 x 3	50
DN 25	P 7040 43	G 1 1/4	40 x 3,5	70
DN 32	P 7032 44	G 1 1/2	32 x 3	50
DN 32	P 7040 44	G 1 1/2	40 x 3,5	70
DN 32	P 7050 44	G 1 1/2	50 x 4	70

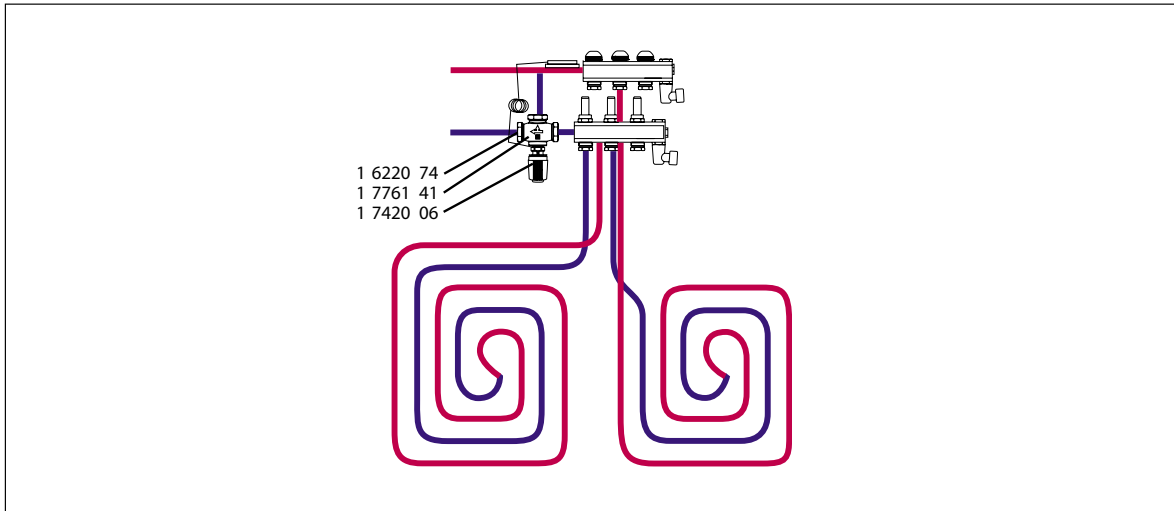
☑ Area of application



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



☑ 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]

Samples:	Sampels:
Surface A=	16 [m ²]
Pipe distance a=	15 [cm]
Circuit length L=	107 [m]

Calculation has to be carry out for each heating circuit

2) Enquiry of water quantity per circuit:

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

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]

$$dp = R \cdot L + dp(\text{Flow-Valve}) + dp(\text{Return-Valve})$$

To multiply R-Valvue 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 [m ³ /h]

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

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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 38/39

