Control valves

for floor heating systems

To be precise.

Heimeier

Control valves for floor heating systems

Description

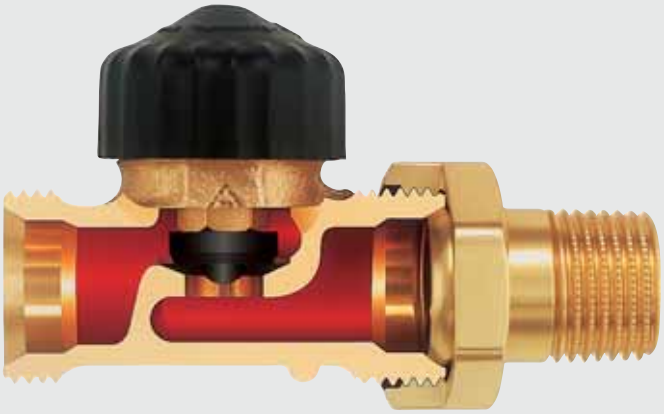
HEIMEIER supply pipe control valves and lockshields for heating manifolds are produced from corrosion resistant gunmetal in three different connection versions, specifically designed for installation on manifolds.

On the pipe side, the universal connection system offers the option of connecting plastic, copper, precision steel or multilayer pipes of different measurements with the compression fittings which have been developed for this type of pipe.

For HEIMEIER control valves, only use the appropriate, labelled HEIMEIER compression fittings (label e. g. 15 THE).

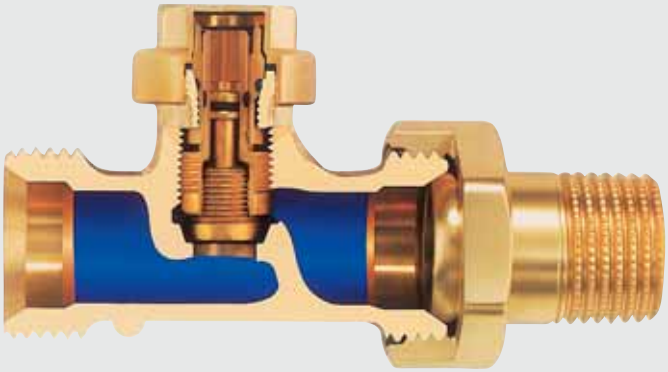
Assembly

Supply pipe control valve



- **Body made of corrosion-resistant gunmetal**
- **Stainless spindle with double O-ring sealing**
- **The outer O-ring and thermostatic insert can be replaced during operation**
- **Can be manually adjusted with a handwheel cap**
- **Thermostatic operation with thermostatic head F or with thermal and motorized actuators with the corresponding room thermostats**
- **Universal connection options on both sides**

Lockshield



- **Body made of corrosion-resistant gunmetal**
- **Finest presetting through a double-cone construction, no stroke restriction**
- **Spindle sealing by O-rings**
- **No change to the presetting when opening or closing**
- **Universal connection options on both sides**

Application

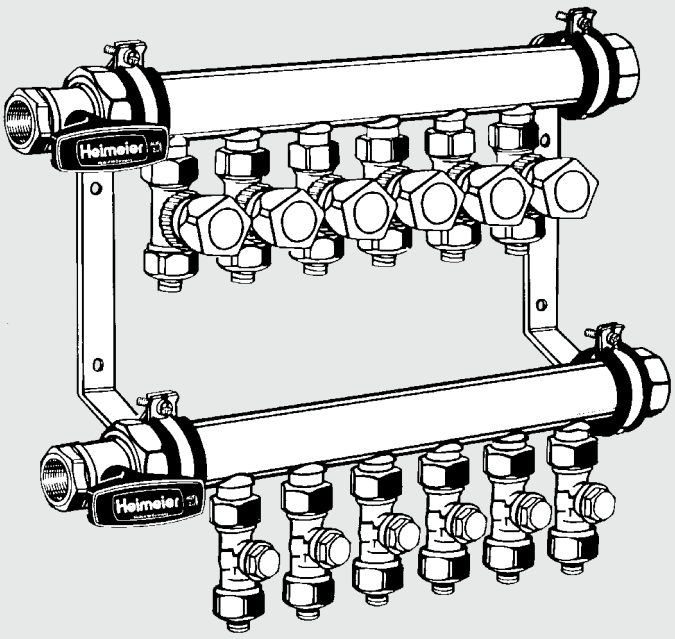
The supply pipe control valve is used

– Without a handwheel,
for individual room temperature control with thermostatic head F, or with thermal and motorized actuators in connection with the appropriate room thermostats.

– With a handwheel,
for manual operation. This model can be retrofitted to thermostatic individual room temperature control at low cost.

The hydraulic balancing of the heating circuits is carried out on the lockshields. Due to a special double cone construction, the presetting is not readjusted when the lockshield is opened or closed.

Sample application



Heating manifold

Note

The contents of the heat transfer medium should comply with VDI guideline 2035 to prevent damage and scale deposit formation in warm water heating systems. For industrial and long-distance energy systems, see the applicable codes VdTÜV 1466 and AGFW 5/15. A heat transfer medium containing mineral oils, or any type of lubricant containing mineral oil can have extremely negative effects on the source apparatus and usually leads to the disintegration of EPDM seals.

When using nitrite-free frost and corrosion-resistance solutions with an ethylene glycol base, pay close attention to the details outlined in the manufacturers' documentation, particularly details concerning concentration and specific additives.

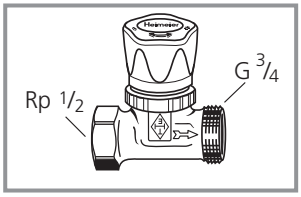
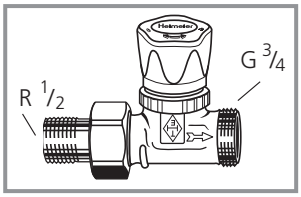
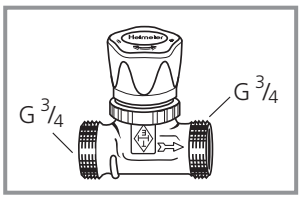
– The thermostatic valve bodies can be used with all HEIMEIER thermostatic heads and thermal or motorized actuators. The optimal tuning of the components with each other guarantees the greatest possible safety.

When using actuators from other manufacturers, ensure that their pressure power in the closing area is adapted to thermostatic valve bodies with soft sealing valve discs.

Control valves for floor heating systems

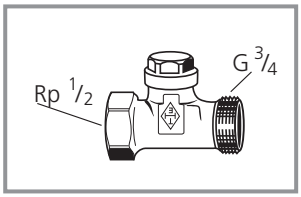
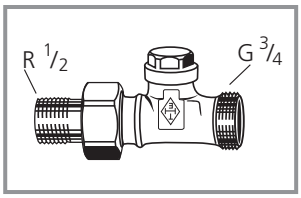
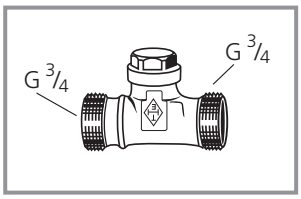
Article numbers

Supply pipe control valve with thermostatic insert

Illustration	Model Straight form NW 15 (1/2")	k_v value [m³/h] P-band [K] 1.0	2.0	3.0	k_{vs} value [m³/h]	Gunmetal Art. no.
	Connection Rp 1/2 sleeve female thread **with handwheel**	0.38	0.79	1.10	1.70	**1302-02.000**
	without handwheel but with protection cap	0.38	0.79	1.10	1.70	**1322-02.000**
	Connection R 1/2 nipple **with handwheel**	0.38	0.79	1.10	1.70	**1304-02.000**
	without handwheel but with protection cap	0.38	0.79	1.10	1.70	**1324-02.000**
	Both connection sides with male thread G 3/4 for compression fittings **with handwheel**	0.38	0.79	1.10	1.70	**1308-02.000**
	without handwheel but with protection cap	0.38	0.79	1.10	1.70	**1328-02.000**

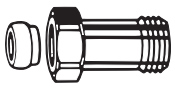
Permitted operating temperature TB 120°C.
Permitted operating pressure PB 10 bar.

Lockshield

Structure	Model Straight form DN 15 (1/2")	$k_v$value [m³/h] with presetting 0	1	2	3	4	k_{vs} value [m³/h] 5	Gunmetal Art. no.
	Connection Rp 1/2 sleeve female thread	0.09	0.30	0.65	1.01	1.14	1.31	**0402-02.000**
	Connection R 1/2 nipple	0.09	0.30	0.65	1.01	1.14	1.31	**0404-02.000**
	Both connection sides with male thread G 3/4 for compression fittings	0.09	0.30	0.65	1.01	1.14	1.31	**0408-02.000**

Permitted operating temperature TB 120°C.
Permitted operating pressure PB 10 bar.

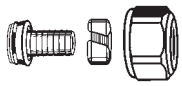
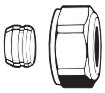
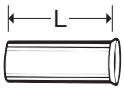
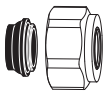
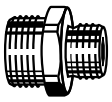
Accessories

Illustration	Description	L [mm]	Art. no.
	**Handwheel** for all HEIMEIER thermostatic valve bodies. With direct connection, white.		**1303-01.325**
	**Thermostatic insert** Replacement insert. Stuffing box with black label.		**1302-02.300**
	**Hexagonal key** for opening and closing the lockshield. SW 5 DIN 911.		**0301-05.256**
	**Length adjustment fitting** G $^{3}/_{4}$ x G $^{3}/_{4}$, to cramp on plastic, copper, precision steel or multi-layer pipes.	Brass 25 50	 **9703-02.354** **9704-02.354**

1 mm = 0,0394 inch

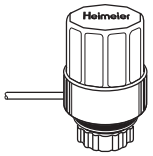
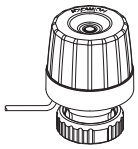
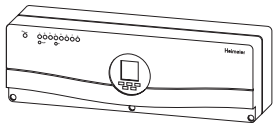
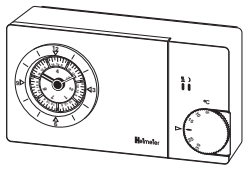
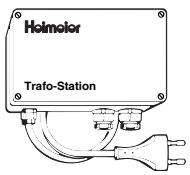
Control valves for floor heating systems

Accessories

Illustration	Description	L [mm]	Ø pipe	Art. no.
	**Compression fitting** for plastic pipes. Male thread connection G 3/4.		 12 x 2 14 x 2 16 x 2 17 x 2 18 x 2 18 x 2.5 20 x 2 21 x 2.5	Brass **1301-12.351** **1301-14.351** **1301-16.351** **1301-17.351** **1301-18.351** **1302-18.351** **1301-20.351** **1301-21.351**
	**Compression fitting** For copper or precision steel pipes. Metal-to-metal joint Male thread connection G 3/4. For a pipe wall thickness of 0.8 1 mm, support sleeves should be used. Note the information provided by the manufacturer.		 10 12 14 15 16 18	Brass **1300-10.351** **1300-12.351** **1300-14.351** **1300-15.351** **1300-16.351** **1300-18.351**
	**Support sleeve** For copper or precision steel pipes with a wall thickness of 1 mm.	18.5 25.0 25.0 26.0 26.3 26.8	10 12 14 15 16 18	**1300-10.170** **1300-12.170** **1300-14.170** **1300-15.170** **1300-16.170** **1300-18.170**
	**Compression fitting** for copper or precision steel pipe. Nickel plated brass. Soft sealed.		12 14 15 16 18	**1313-12.351** **1313-14.351** **1313-15.351** **1313-16.351** **1313-18.351**
	**Compression fitting** for multi-layer pipe, brass. Male thread connection G 3/4.		 14 x 2 16 x 2 18 x 2	Brass **1330-14.351** **1330-16.351** **1330-18.351**
	**Double connection fitting** G 3/4 x R 1/2, to clamp on plastic, copper, precision steel or multi-layer pipes.	 26 26		Brass **1301-12.083** Nickel-plated **1321-12.083**
	**Double nipple** G 3/4 x G 3/4. Both sides to clamp plastic, copper, precision steel or multi-layer pipes.			Brass **1301-03.081**

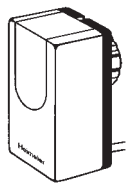
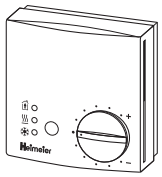
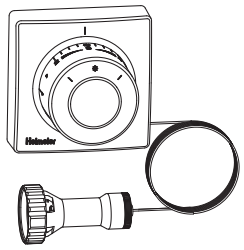
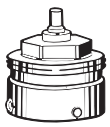
1 mm = 0,0394 inch

Overview of appliances

Illustration	Description	Model	Art. no.
 	**Thermal Actuator** Suitable for all HEIMEIER thermostat valve bodies.		
	EMO T thermal two-point actuator for heating, ventilation and air conditioning systems. Built-in overvoltage protection guarantees security of operation (with 230 V model)	230 V currentless, closed (NC) 24 V currentless, closed (NC) 230 V currentless, opened (NO) 24 V currentless, opened (NO)	**1831-00.500** **1841-00.500** **1835-00.500** **1845-00.500**
	EMOtec thermal two-point actuator for floor heating. With position indicator (model NC).	230 V currentless, closed (NC) 24 V currentless, closed (NC) 230 V currentless, opened (NO) 24 V currentless, opened (NO)	**1807-00.500** **1827-00.500** **1809-00.500** **1829-00.500**
		For technical data, see brochure "EMO T"/"EMOtec"	
 	**Radiocontrol F** radio control system for individual room temperature control of floor, wall or ceil heating and cooling in connection with thermal two-point actuators (e.g. "EMO T"/"EMOtec").		
	Room transmitter battery-driven electronic two-point controller, including battery.		**1630-00.500**
	Central unit receives the room transmitters radio signals. With 8 output channels for the connection of the thermal actuators.	without week clock with week clock	**1631-00.000** **1632-00.000**
		For techn. data, see brochure Radiocontrol F	
	**Thermostat P** electronic two-point room thermostat for time-dependent control of the room temperature, with analog 7-day automatic timer, pulse-width modulation output signal (PWM) and floating change-over contact.	230 V 24 V	**1932-00.500** **1942-00.500**
	Protective body Lockable surface body for thermostat P, transparent.		**1930-02.433**
		For technical data, see brochure "Thermostat P"	
	**Room thermostat** with thermal recirculation, controls the room temperature in connection with thermal actuators.	230 V without temperature decrease 230 V with temperature decrease 24 V without temperature decrease 24 V with temperature decrease	**1936-00.500** **1938-00.500** **1946-00.500** **1948-00.500**
		For technical data, see brochure "Room thermostat"	
	**Central transformer** As a supply transformer, to make the lower voltage of 24 V available and to distribute the voltage.	without pump control with pump control	**1610-00.000** **1611-00.000**
		For technical data, see brochure "EMO T"/"EMOtec"	
	**Transformer station** As a supply transformer, to make the lower voltage of 24 V available.		**1600-00.000**
		For technical data, see brochure "EMO T"/"EMOtec"	

Control valves for floor heating systems

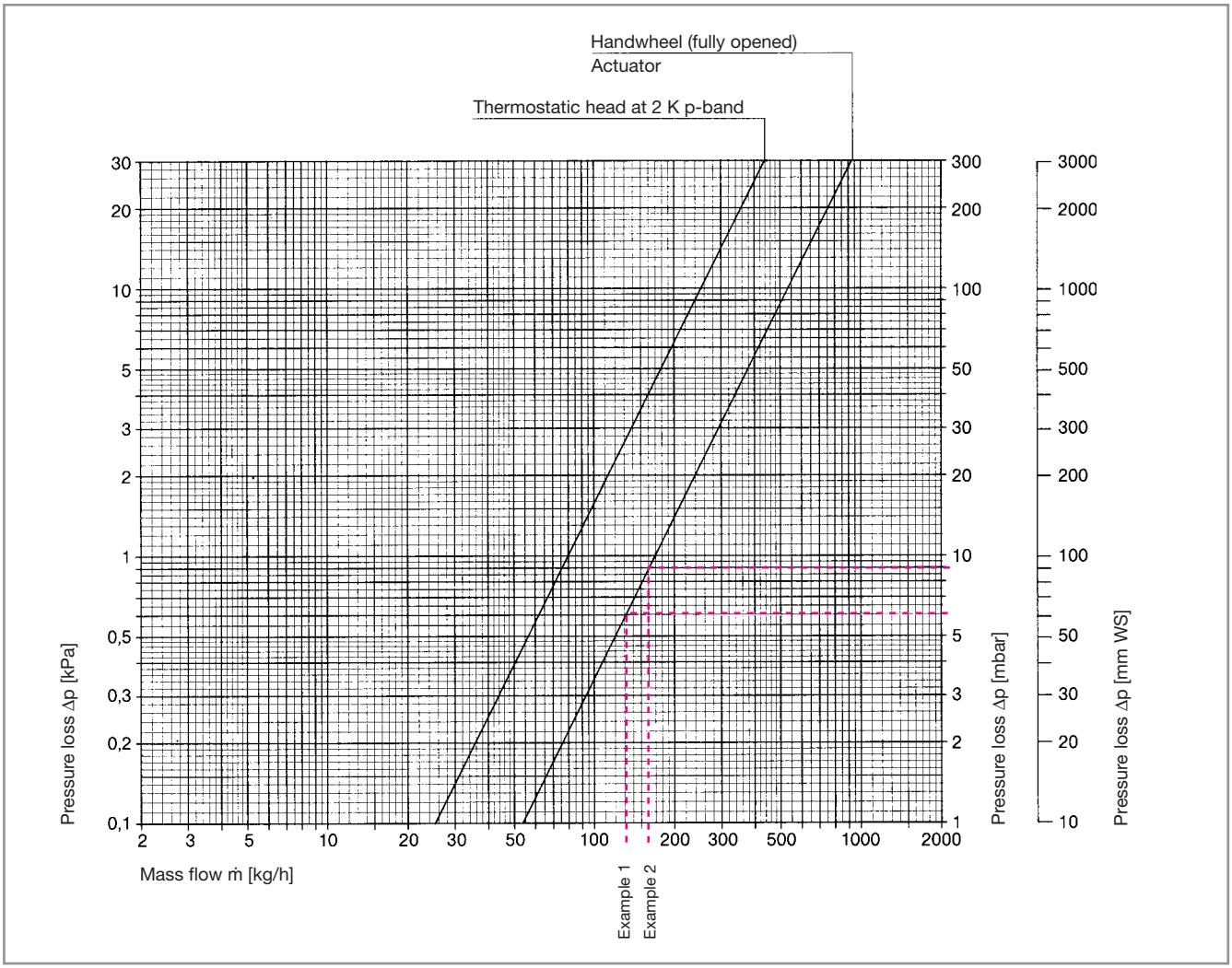
Overview of appliances

Illustration	Description		Art. no.
	**Motorized actuators** EMO 1, EMO 3, EMO EIB and EMOLON. Can be used with all HEIMEIER thermostatic valve bodies and three-way reversing valves. For technical data, see brochure "EMO, EMO EIB and EMOLON"	**Model** EMO 1 Proportional actuator 0-10 V DC EMO 3 Three-point actuator EMO EIB for direct connection to the European installation bus EMOLON for use in LonWorks®networks	 **1860-00.500** **1880-00.500** Standard **1865-00.500** with 2 binary inputs **1864-00.500** **1867-00.500** LP variants (FT variant available on request)
	**Electronic room temperature controller** Thermostat E 1 and thermostat E 3 are used in connection with the EMO 1 motorized actuators or EMO 3. To make the operating voltage (24 V AC) available safety isolating transformers compliant with EN 60742, e. g. HEIMEIER transformer station, should be used.	**Model** Thermostat E 1 constant controller Thermostat E 3 three-point controller For technical data, see brochure "Thermostat E"	 **1960-01.500** **1980-01.500**
	**Thermostatic head F** Remote dial. Number 1–5. Liquid-filled thermostat. High precision control. Setting range from 6°C to 27°C (43°F - 81°F). **For swimming baths in medicinal spa pools** Setting range from 15°C to 35°C (59°F - 95°F).	**Capillary tube** 2.00 m (6,56 ft) 5.00 m (16,40 ft) 8.00 m (26,25 ft) 10.00 m (32,81 ft) 12.00 m (39,37 ft) 15.00 m (49,21 ft) 2.00 m (6,56 ft) 5.00 m (16,40 ft)	 **2802-00.500** **2805-00.500** **2808-00.500** **2810-00.500** **2812-00.500** **2815-00.500** **2822-00.500** **2825-00.500**
	**Connection to other brands** in connection with HEIMEIER actuators or Thermostatic head F. For installation onto thermostatic valve bodies of the brands shown.	Danfoss RA Danfoss RAV Danfoss RAVL Vaillant (Ø ≈ 30 mm) TA (M 28 x 1,5) Herz Markaryd Comap Oventrop (M 30 x 1,0) Giacomini Ista Rotex Uponor (Velta) - Euro-/Kompakt distributor or return valve 17 - Provario distributor	**9702-24.700** **9800-24.700** **9700-24.700** **9700-27.700** **9701-28.700** **9700-30.700** **9700-41.700** **9700-55.700** **9700-10.700** **9700-33.700** **9700-36.700** **9700-32.700*)** **9700-34.700*)** **9701-34.700*)**

*) only in connection with thermal or motorized HEIMEIER actuators.

Technical data

Diagram supply pipe control valve NW 15



Thermostatic head with valve body	k_v value [m^3/h]					k_{vs} value	Permitted operating temperature	Permitted operating pressure	Permitted p-band, when the valve is still closed Δp [bar]		
	P-band [K]								Th.-head	EMO T/NC EMOtec/NC EMO 1/3 EMOEIB/LON	EMO T/NO EMOtec/NO
	1.0	1.5	2.0	2.5	3.0	[m^3/h]	TB [°C]	PB [bar]			
NW 15 (1/2") Straight	0.38	0.59	0.79	0.95	1.10	1.70	120*)	10	1.0	2.7	3.5

*) with protection cap or actuator 100°C (212°F)

Sample calculation 1

Target: Heating circuit 1 total pressure loss

Given:
- Heat flow, incl. floor loss $\dot{Q}$ = 1490 W
- Temperature spread Δt = 8 K (44/36°C)
- Heating pipe ø = 17 x 2 mm
- Pipe length incl. feed l = 90 m

Solution:
- Mass flow $\dot{m} = \frac{\dot{Q}}{c \cdot \Delta t} = \frac{1490}{1.163 \cdot 8} = 160$ kg/h
- Pressure loss in supply pipe control valve (with actuator) Δp_V = 9 mbar
- Pressure loss in the lockshield (with open presetting) Δp_{RV} = 15 mbar (diagram, page 10)
- Pressure gradient in heating pipe R = 1.2 mbar/m
- Pressure loss in the heating pipe $\Delta p_R = R \cdot l = 1.2 \cdot 90 = 108$ mbar
- Total pressure loss in the heating circuit 1 $\Delta p_{HK1} = \Delta p_V + \Delta p_{RV} + \Delta p_R = 132$ mbar

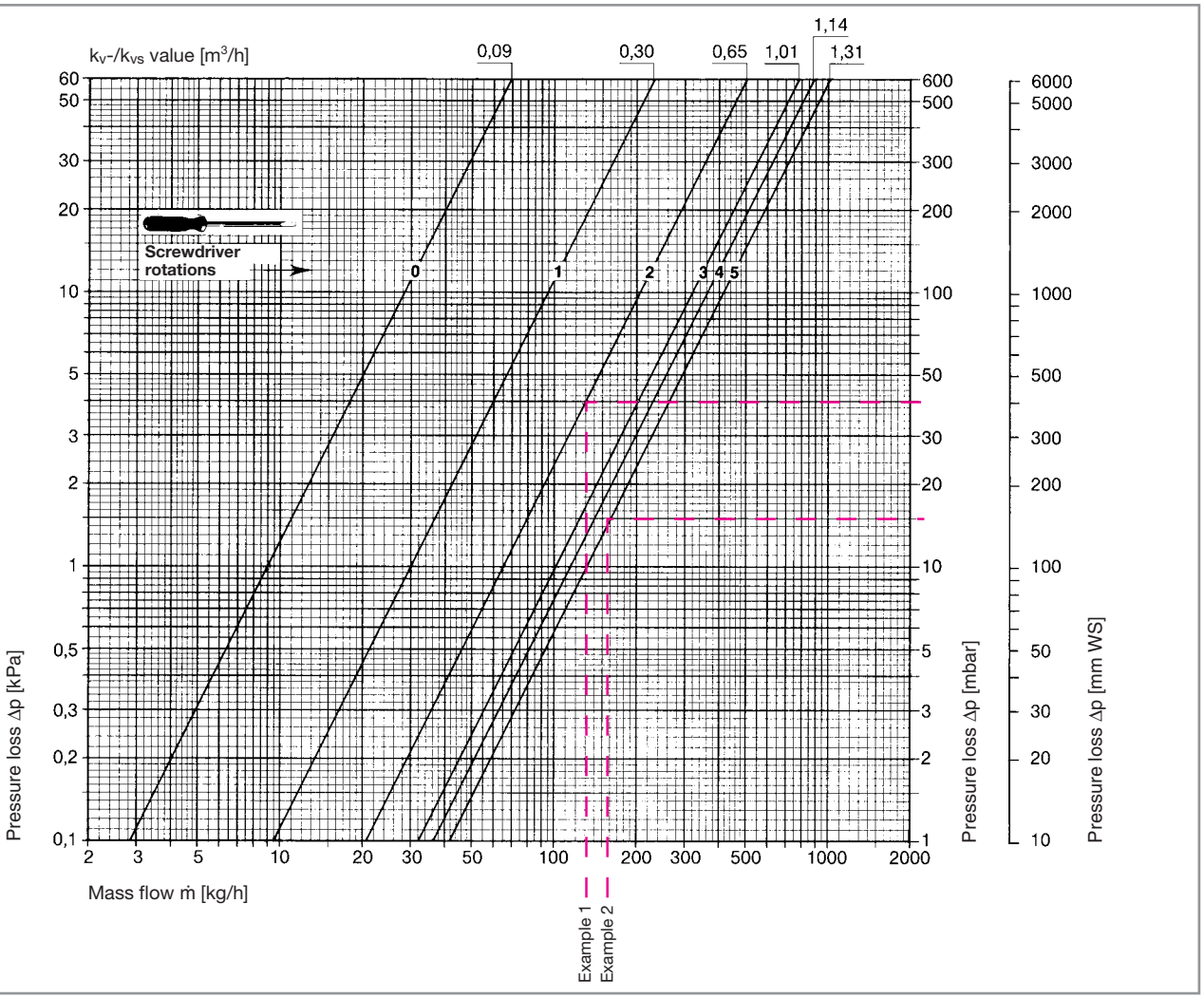
Formula:

$C_v = \frac{k_v}{0{,}86}$

$k_v = C_v \cdot 0{,}86$

Technical data

Diagram lockshield NW 15



Sample calculation 2

Target: Presetting value for lockshield, heating circuit 2

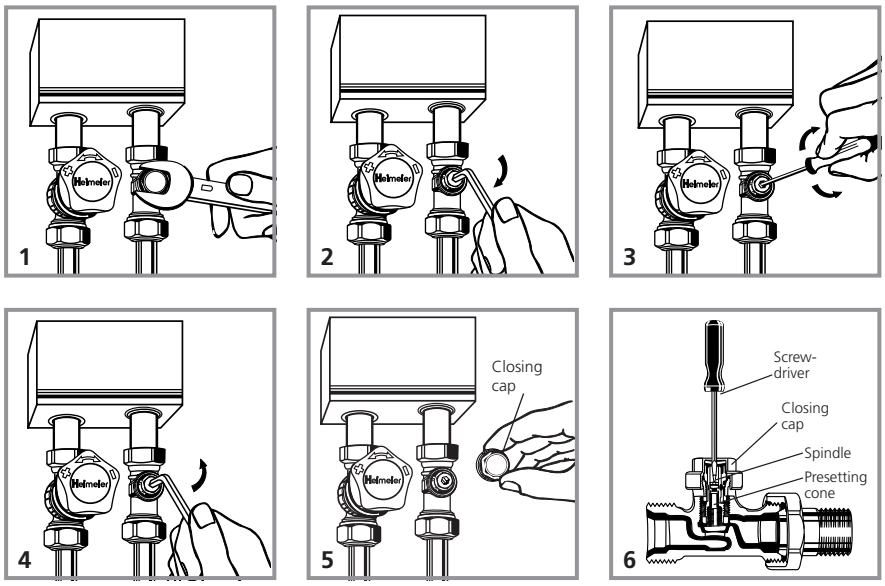
Given:	Heat flow, incl. floor loss	$\dot{Q}$	= 1210 W
	Temperature spread	Δt	= 8 K (44/36°C)
	Heating pipe	ø	= 17 x 2 mm
	Pipe length incl. feed	l	= 86 m
	Pressure loss in the least efficient heating circuit	Δp_{HK1}	= 132 mbar (example, page 9)
Solution:	Mass flow	$\dot{m}$	$= \frac{\dot{Q}}{c \cdot \Delta t} = \frac{1210}{1.163 \cdot 8}$ = 130 kg/h
	Pressure loss in the supply pipe valve (with handwheel)	Δp_V	= 6 mbar (diagram, page 9)
	Pressure gradient in the heating pipe	R	= 1.0 mbar/m
	Pressure loss in the heating pipe	Δp_R	= R · l = 1.0 · 86 = 86 mbar
	Pressure loss in the lockshield	Δp_{RV}	= $\Delta p_{HK\,1} - \Delta p_V - \Delta p_R$ = 40 mbar
	Presetting, from the diagram		= 2.0 turns

Formula:

$C_v = \frac{k_v}{0{,}86}$

$k_v = C_v \cdot 0{,}86$

Operation



Lockshield

Presetting

1. Unscrew the closing cap with an open-jawed spanner SW 19.

2. Close the spindle by turning it to the right with a 5 mm hexagonal key until it stops.

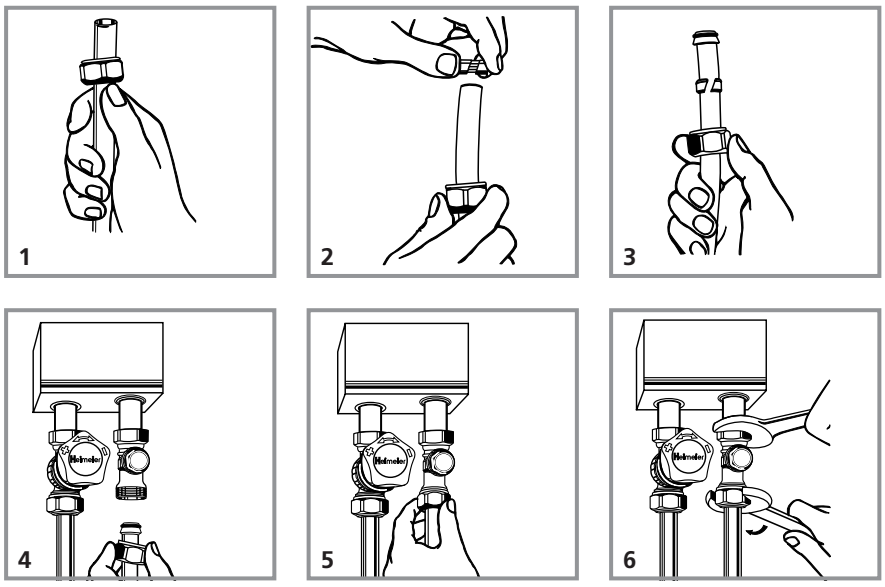
3. Screw in the presetting cone with a 4 mm screw driver by turning it to the right until it stops (smallest setting value is 0). Set the required mass flow by turning the screw driver to the left. Take the setting value from the diagram.

4. Open the spindle by turning it to the left with a 5 mm hexagonal key until it stops.

5. Unscrew the closing cap and screw it tight with an open-jawed wrench SW 19.

6. There will be no changes to the presetting when the lockshield is opened or closed.

Installation



Plastic pipe

1. Cut off the plastic pipe at right angles and trim. Push the compression ring nut over the pipe.

2. Pull the compression ring over the pipe.

3. Position the hose nozzle and guide it while firmly holding the compression ring nut.

4. Push back the inserts and the plastic pipe.

5. Unscrew the compression ring nut by hand (push the plastic pipe until it stops).

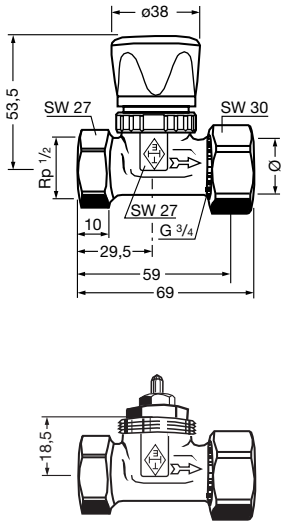
6. Hold control valve with open-jawed wrench SW 27 and pull it tight with open-jawed wrench SW 30 (starting torque experimental value approx. 25 – 30 Nm).

Control valves for floor heating systems

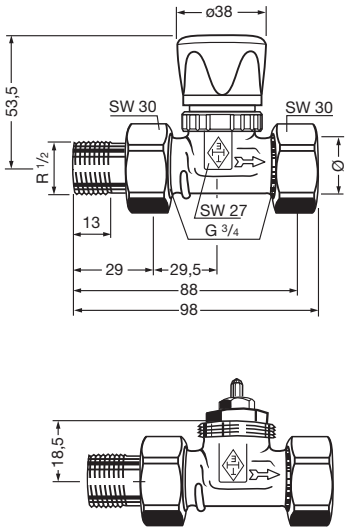
Dimensional data sheet

Supply pipe control valves

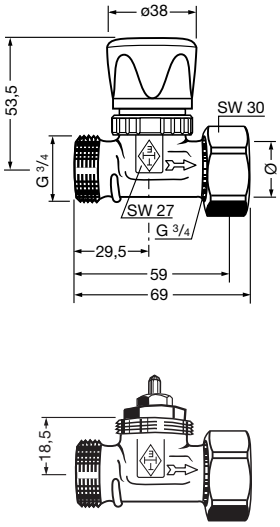
1302-02.000



1304-02.000

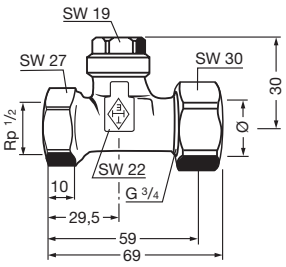


1308-02.000

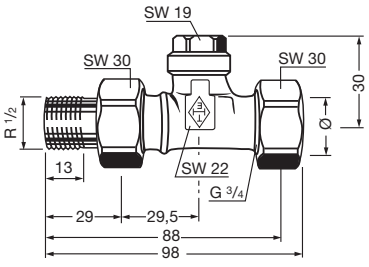


Lockshields

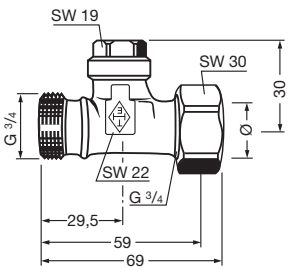
0402-02.000



0404-02.000



0408-02.000



1 mm = 0,0394 inch

Theodor Heimeier Metallwerk GmbH
Postfach 1124, 59592 Erwitte, Germany
Phone +49 2943 891-0
Fax +49 2943 891-100
www.heimeier.com

Printed on chlorine-free bleached paper.
We reserve the right to make technical changes.

Brochure 4.3
4300-18.483 / 04.07