Duolux

Radiator connection valves series

HEIMEIER

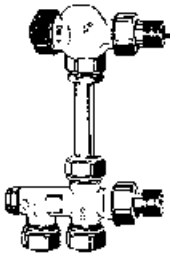
Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

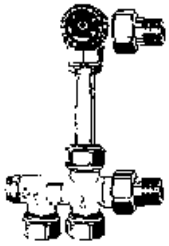
Duolux is a complete series of valves for radiators in two-pipe or single-pipe heating systems. Centre-to-centre distance of pipe connections 35 mm.

Overview of valves

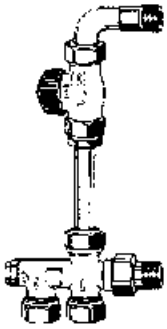
Two-pipe system



Two-pipe distributor with and without shut-off. Axial valve with black protection cap. Ascending pipe and compression fittings.



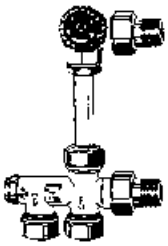
Two-pipe distributor with and without shut-off. Double angle valve for left or right connection. Black protection cap. Ascending pipe and compression fittings.



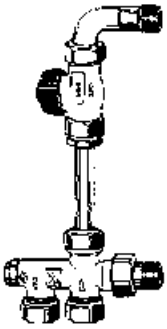
Two-pipe distributor with and without shut-off. Straight valve with bended nipple and black protection cap. Ascending pipe and compression fittings.

Single-pipe system

Single-pipe distributor with and without shut-off. Axial valve with blue protection cap. Ascending pipe and compression fittings.



Single-pipe distributor with and without shut-off. Double angle valve for left or right connection. Blue protection cap. Ascending pipe and compression fittings.



Single-pipe distributor with and without shut-off. Straight valve with bended nipple and blue protection cap. Ascending pipe and compression fittings.

2-pipe system

Technical Description

HEIMEIER Duolux is a complete series of valves for two-pipe heating systems. The valves are connected to radiators in single-storey heating circuits.
Duolux is comprised of a two-pipe distributor, an ascending pipe, and thermostatic valve body with black protection cap.
The distributor body is made of corrosion-resistant gunmetal (nickel-plated) and is designed for connections to plastic, copper, precision steel, or multi-layer pipes.
For HEIMEIER valves, use only the HEIMEIER compression fittings which have been designed and indicated for the particular application (e.g. ID no. 15 THE).
The two-pipe distributor equipped with a built-in presetting cone enables hydraulic balancing directly on the radiator.
This presetting concurrently assumes the function of the return shut-off so that the radiator can be removed without draining the system.

Assembly

Duolux two-pipe system
with axial thermostatic valve body and black protection cap

with presetting cone and shut-off
Connector thread M 24 x 1.5

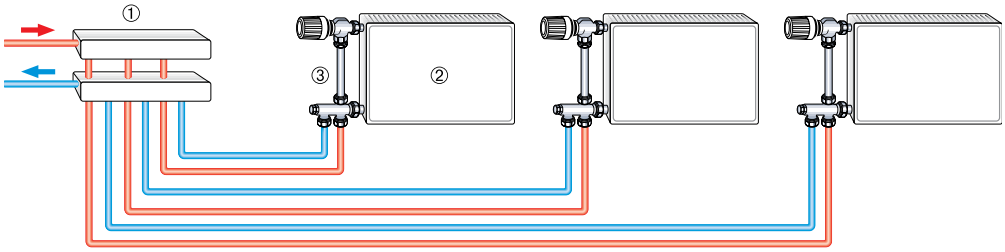
without shut-off
Connector thread M 24 x 1.5

- **Body made of nickel-plated corrosion-free gunmetal**
- **Presetting with shut-off function, soft seal**
- **Compression fittings for connection to all typical kinds of pipes of standard diameters**
- **Various thermostatic valve bodies adapt to every type of installation**

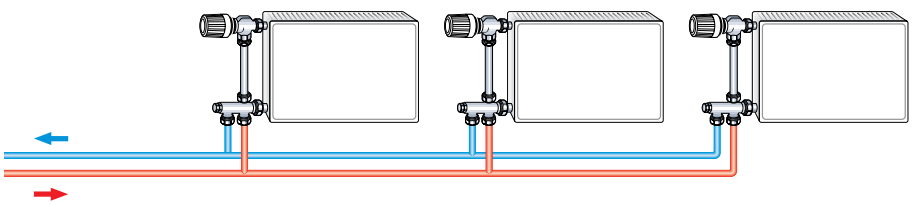
Application

Duolux was developed specially to simplify the connection of radiators to hot water heating systems. For these multiradiator systems, also known as „spaghetti“ systems, each radiator is connected directly to a central singlestorey heating manifold with its own supply and return pipe.
If the manifold does not include presetting connection devices, Duolux two-pipe distributors equipped with built-in presetting cones enable an hydraulic balancing between the radiators.

Sample application
Two-pipe connection system
All radiators connected in parallel



„Classical“ two-pipe system
Supply and return pipe lines at base bord, for example



1. Single-storey heating circuit manifold
2. Radiator
3. Duolux for two-pipe systems

Notes

– To avoid damage and the formation of scale deposit in the hot water heating system, the composition of the heat transfer medium should be in accordance with the VDI guideline 2035. For industrial and long-distance energy systems, see the applicable codes VdTÜV and 1466/AGFW FW 510. 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 lead 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 concerning concentration and specific additives.

– The thermostatic valve bodies can be used with all TA Hydronics thermostatic heads and thermal or motorized actuators. The optimal tuning of the components guarantees maximum safety. When using actuators from other manufacturers, make sure that the pressure power is appropriate for thermostatic valve bodies with soft sealing valve discs.

Operation

Presetting

Release and unscrew blanking plug (size 19). Check the zero position using a hexagon key (3 mm), i. e. presetting cone must be open all the way by turning to the left (anticlockwise). Make the required adjustment based on the diagram by turning to the right (clockwise). Screw on blanking plug and tighten.

Shut-off

Release and unscrew blanking plug (size 19). Using a hexagon key (3 mm), shut off return by turning all the way right. Screw off blanking plug. Exchange protection cap for thermostatic head, close valve and secure valve body with a plug cap G 3/4 once the radiator has been removed. Important: Before shutting off the return, determine the preset number of rotations to the left. This helps to guarantee that, after connecting a radiator, the original presetting can be reestablished.

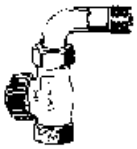
Articles

Axial thermostatic valve body
With black protection cap.
Nickel-plated gunmetal. DN 15 (1/2").

	Article No
	2225-02.000

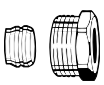
Double angle thermostatic valve body With black protection cap
Nickel-plated gunmetal. DN 15 (1/2").

	Article No
Connection to radiator – left	2311-02.000
Connection to radiator – right	2310-02.000



Straight thermostatic valve body with bended nipple
With black protection cap.
Nickel-plated gunmetal. DN 15 (1/2").

	Article No
	2206-02.000



Compression fitting
for precision steel pipes.
Metal-to-metal joint. Brass nickel-plated.
Female thread connection Rp 1/2.

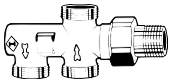
	Article No
	2201-15.351

Precision steel pipe
For supply pipe. Chrome-plated.
Ø 15 mm. 1100 mm long.

	Article No
	3831-15.169

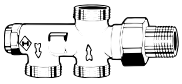
Compression fitting
For precision steel pipe. Nickel-plated.
Male thread connection M 24 x 1.5.

Article No
3800-15.351



Two-pipe distributor
DN 15 (1/2”). Nickel-plated gunmetal.

Article No
3800-02.000

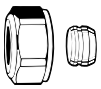


Two-pipe distributor
With shut-off and presetting.
DN 15 (1/2”). Nickel-plated gunmetal.

Article No
3801-02.000

Allen key
size 3 DIN 911 for shut-off and adjustment.

Article No
3831-03.256

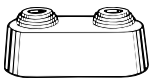


Compression fitting
for copper or precision steel pipe.
Nickel-plated.
Male thread connection M 24 x 1.5.
For pipe wall thicknesses from 0.8–1 mm, apply support sleeves
For details, refer to the pipe manufacturer.

Ø Pipe	Article No
10	3800-10.351
12	3800-12.351
14	3800-14.351
15	3800-15.351
16	3800-16.351

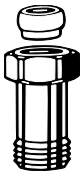
Supporting sleeves
for copper or precision steel pipe with a wall thickness of 1 mm.

L	Ø	Article No
25,0	12	1300-12.170
26,0	15	1300-15.170
26,3	16	1300-16.170



Double rosette
White plastic. Can be divided in the centre. For various pipe diameters.
Distance between center points 35 mm. Total height max. 31 mm.

Article No
3800-00.093

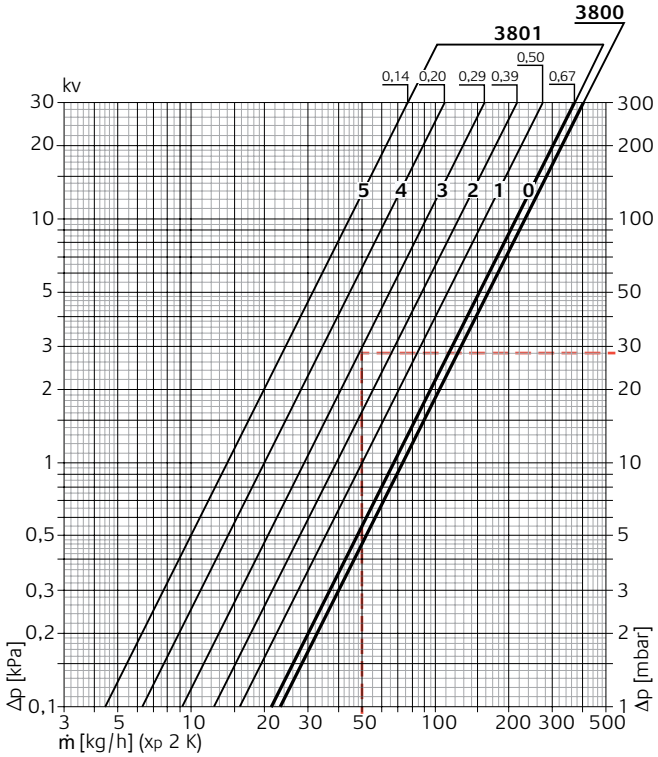


Length compensator
For connecting to plastic, copper, precision steel, or multi-layer pipe.
Nickel-plated brass.

L [mm]	Article No
25,0	9715-02.354
50,0	9716-02.354

Technical data – two-pipe system

Diagram of Duolux two-pipe distributor with valve body and thermostatic head
3800 without presetting
3801 with presetting



Two-pipe distributor with thermostatic head and valve body	kv-value (at presetting 0) P-band xp [K]			kvs		kvs value without thermostatic valve	Permitted operating temperature	Permitted operating pressure	Permitted differential pressure, with valve Δp [bar]		
	1,0	1,5	2,0	Straight	Axial Double angle		TB [°C]	PB [bar]	Th.-head	EMO T-TM/NC EMOtec/NC EMO 1/3 EMO EIB/LON	EMO T/NO EMOtec/NO
DN 15 (1/2") with presetting	0,36	0,54	0,67	1,08	0,98	1,29	120*)	10	1,0	3,5	3,5
DN 15 (1/2") without presetting	0,37	0,56	0,73	1,35	1,16	1,83	120*)	10	1,0	3,5	3,5

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

Sample calculation

Goal: Set value for Duolux two-pipe distributor with shut-off

Given:
- Heat flow $\dot{Q}$ = 870 W
- Temperature adjustment Δt = 15 K (70/55 °C)
- Pipe dimension Ø = 12 x 2 mm
- Pipe length l = 15 m
- Pressure loss bad radiator Δ_{pHK1} = 53,5 mbar

Solution:
- Mass flow rate $\dot{m} = \dot{Q} / (c \cdot \Delta t) = 870 / (1{,}163 \cdot 15) = 50$ kg/h
- Pressure difference in line R = 1,7 mbar/m
- Pressure loss in line $\Delta p_R = R \cdot l = 1{,}7 \cdot 15 = 25{,}5$ mbar
- Pressure loss in line $\Delta p = \Delta p_{HK1} - \Delta p_R = 53{,}5\text{-}25{,}5 = 28{,}0$ mbar

Presetting value from diagram 3 rotations

$$c_V = \frac{k_V}{0{,}86}$$

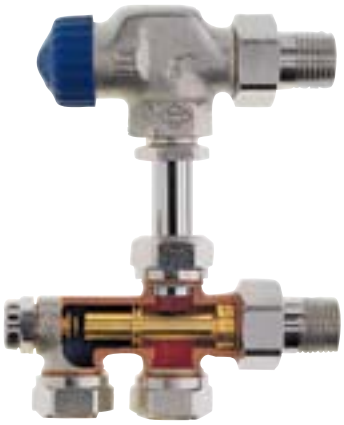
$$k_V = c_V \cdot 0{,}86$$

Single-pipe system

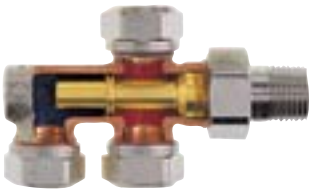
Technical Description
HEIMEIER Duolux is a complete series of valves for radiators in single-pipe heating systems.
Duolux is comprised of a single-pipe distributor, an ascending pipe, and thermostatic valve body with blue protection cap. The distributor body is made of corrosion-resistant gunmetal (nickel-plated) and is designed for connections to plastic, copper, precision steel, or multi-layer pipes.
For HEIMEIER valves, use only the HEIMEIER compression fittings which have been designed and indicated for the particular application (e.g. ID no. 15 THE).
The circuit flow rate is designed to be distributed to 50% radiator and 50% bypass.
In the model with the return shut-off, a radiator may be removed without draining the system.
The bypass remains open, independent of the shut-off, so that circuit operation is not interrupted.

Assembly

Duolux single-pipe system
with axial thermostatic valve body and blue protection cap.



with shut-off
Connector thread M 24 x 1.5



without shut-off
Connector thread M 24 x 1.5

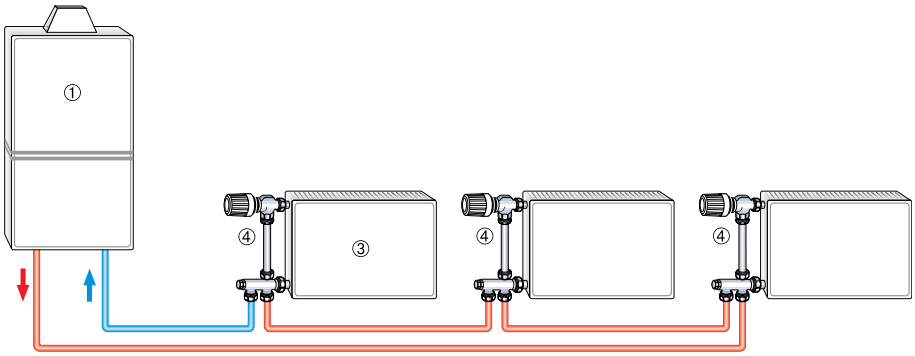
- **Body made of nickel-plated corrosion-free gunmetal**
- **Return shut-off with soft seal**
- **Mass flow rate distribution 50/50%, simple definition of heating capacity correction factors**
- **Universal connection**
- **Combines with various thermostatic valve bodies**

Application

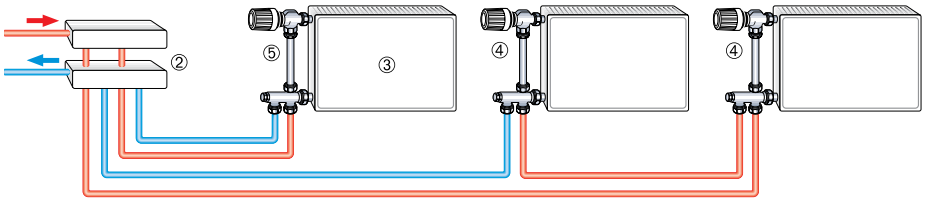
With a single-pipe system, all radiators in a heating circuit are connected to a closed circular pipeline. Duolux guarantees that a defined portion of the circuit mass flow rate is fed to individual radiators. This portion is set at the factory to 50%, which means the heating capacity correction factors can be more simply defined.
In order to allow for an optimal adaptation to the particular installation site, the Duolux single-pipe distributor with thermostatic valve bodies can be combined in three different variations.
With single-pipe systems, radiators with a closed valve can be minimally heated by the heat flow in the bypass.

Sample application

Single-pipe single-storey heating system
Series connection of all radiators



Single-pipe system with individual radiators connected as in the two-pipe system



1. Wall mounted gas fired heater
2. Heating circuit manifold
3. Radiator
4. Duolux for single-pipe systems
5. Duolux for two-pipe systems

Notes

– To avoid damage and the formation of scale deposit in the hot water heating system, the composition of the heat transfer medium should be in accordance with the VDI guideline 2035. For industrial and long-distance energy systems, see the applicable codes VdTÜV and 1466/AGFW FW 510. 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 lead 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 concerning concentration and specific additives.

– The thermostatic valve bodies can be used with all TA Hydronics thermostatic heads and thermal or motorized actuators. The optimal tuning of the components guarantees maximum safety. When using actuators from other manufacturers, make sure that the pressure power is appropriate for thermostatic valve bodies with soft sealing valve discs.

Operation

Shut-off
Release and unscrew blanking plug (size 19). Using a hexagon key (3 mm), shut off return by turning all the way right.
Screw off blanking plug.
Exchange thermostatic head with protection cap, close valve and secure valve body with a plug cap G 3/4 once the radiator has been removed.
The bypass remains open, independent of the shut-off. This guarantees that operation of the pipeline is not interrupted.

Articles

Axial thermostatic valve body
With blue protection cap. Nickel-plated gunmetal. DN 15 (1/2").

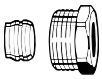
	Article No
	2245-02.000

Double angle thermostatic valve body
With blue protection cap. Nickel-plated gunmetal. DN 15 (1/2").

	Article No
Connection to radiator – left	2341-02.000
Connection to radiator – right	2340-02.000

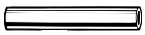
Straight thermostatic valve body with bended nipple
With blue protection cap. Nickel-plated gunmetal. DN 15 (1/2").

	Article No
	2244-02.000



Compression fitting
for precision steel pipes. Metal-to-metal joint. Brass nickel-plated.
Female thread connection Rp 1/2.

	Article No
	2201-15.351

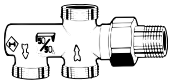


Precision steel pipe
For supply pipe. Chrome-plated.
Ø 15 mm. 1100 mm long.

	Article No
	3831-15.169

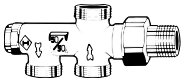
Compression fitting
For precision steel pipe. Nickel-plated.
Male thread connection M 24 x 1.5.

	Article No
	3800-15.351



Single-pipe distributor 50/50
DN 15 (1/2"). Nickel-plated gunmetal.

	Article No
	3802-02.000



Single-pipe distributor 50/50
With shut-off.
DN 15 (1/2"). Nickel-plated gunmetal.

	Article No
	3803-02.000

Allen key
size 3 DIN 911 for shut-off and adjustment.

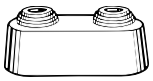
Article No
3831-03.256

Compression fitting
for copper or precision steel pipe. Nickel-plated. Male thread connection M 24 x 1.5. For pipe wall thicknesses from 0.8–1 mm, apply support sleeves For details, refer to the pipe manufacturer.

Ø Pipe	Article No
10	3800-10.351
12	3800-12.351
14	3800-14.351
15	3800-15.351
16	3800-16.351

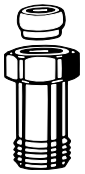
Supporting sleeves
for copper or precision steel pipe with a wall thickness of 1 mm.

L	Ø Pipe	Article No
25,0	12	1300-12.170
26,0	15	1300-15.170
26,3	16	1300-16.170



Double rosette
White plastic (RAL 9016). Can be divided in the centre. For various pipe diameters. Distance between center points 35 mm. Total height max. 32 mm.

Article No
3800-00.093

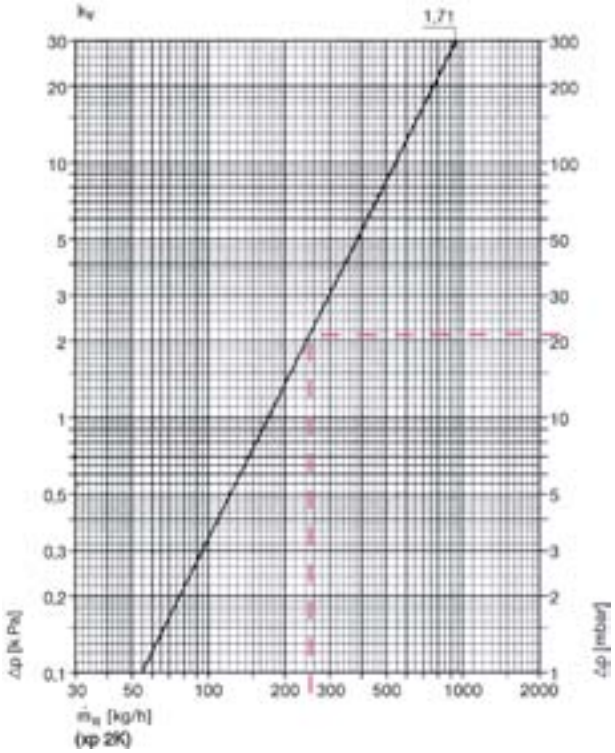


Length compensator
For connecting to plastic, copper, precision steel, or multi-layer pipe. Nickel-plated brass.

L [mm]	Article No
25,0	9715-02.354
50,0	9716-02.354

Technical data – Single-pipe system

Diagram of Duolux single-pipe distributor with valve body and thermostatic head
3802 without shut-off
3803 with shut-off



Equal pipe lengths [m]

Kv	12 x 1	14 x 1	15 x 1	16 x 1
1,71	1,7	4,7	7,1	10,6

Copper pipe
ϑ = 80 °C (176 °F)
v = 0,5 m/s

Single-pipe distributor with thermostatic head and valve body	2 K p-band Mass flow distribution [%]	2 K p-band Kv value	Permitted operating temperature TB [°C]	Permitted operating pressure PB [bar]
DN 15 (1/2") with and without shut-off	50/50	1,71	120*)	10

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

Sample calculation

Goal: Pressure loss in single-pipe circuit

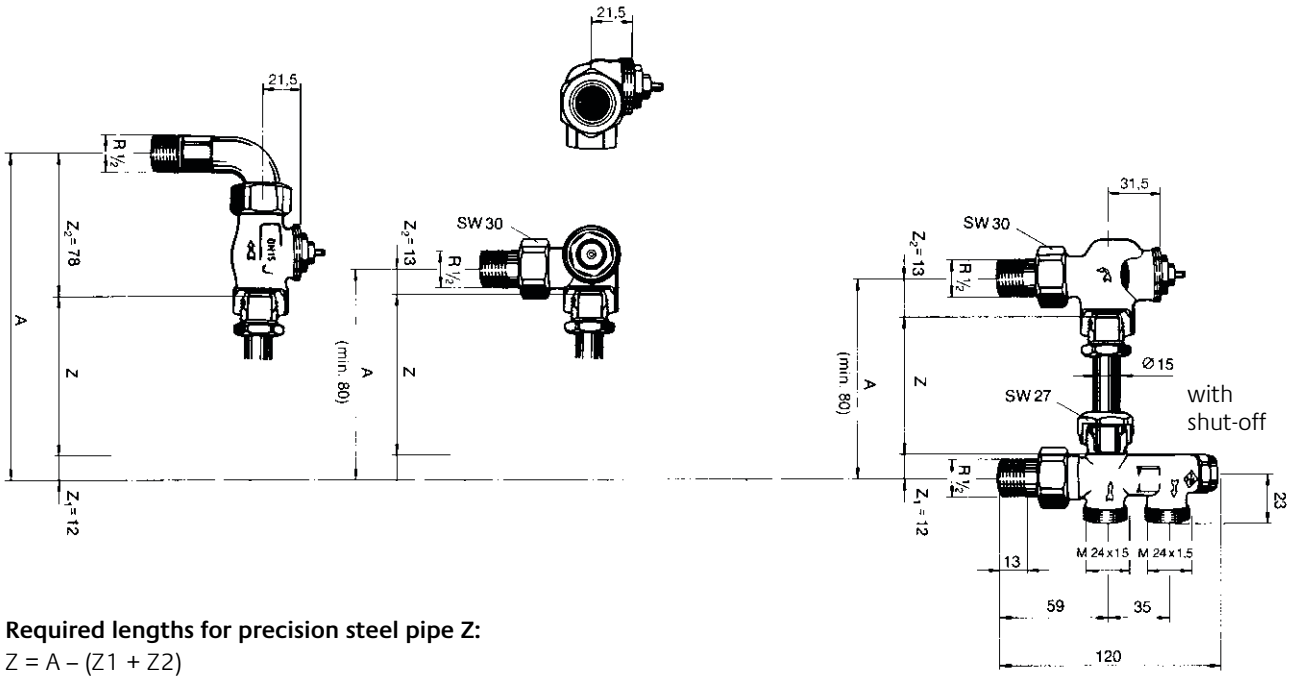
Given:	Heat flow in closed circuit	$\dot{Q}$ = 5820 W
	Temp. flux	Δt = 20 K (75/55 °C)
	Pipe dimension	Ø = 16 x 2 mm
	Length of pipeline	l = 25 m
	Total Individual resistors	$\sum\xi$ = 7,0
	Number of radiators	n = 5
Solution:	Mass flow rate in circuit	$\dot{m}_R = \dot{Q} / (c \cdot \Delta t) = 5820 / (1{,}163 \cdot 20) = 250$ kg/h
	Pressure drop in line	R = 4,2 mbar/m (v = 0,61 m/s)
	Pressure loss in line	$\Delta p_R = R \cdot l = 4{,}2 \cdot 25 = 105$ mbar
	Pressure loss individual resistors	$Z = 5 \cdot \sum\xi \cdot v^2 = 5 \cdot 7{,}0 \cdot 0{,}61^2 = 13$ mbar
	Pressure loss Duolux	Δp_V = 21 mbar
	Pressure loss single-pipe circuit	$\Delta p_{ges} = \Delta p_V \cdot n + \Delta p_R + Z = 21 \cdot 5 + 105 + 13 = 223$ mbar

$c_V = \frac{k_V}{0{,}86}$

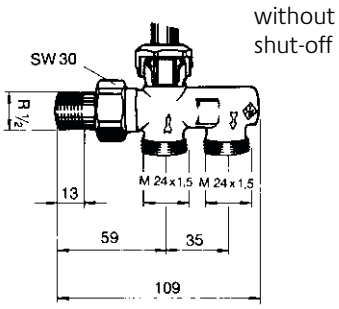
$k_V = c_V \cdot 0{,}86$

Dimensions

Duolux
Single- and two-pipe systems



Required lengths for precision steel pipe Z:
Z = A – (Z1 + Z2)



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