



Catalogue Thermostatic Control Units



## Thermostatic Mixing Valves for secure regulation of domestic water and indoor climate



Each heating, hot water and air-conditioning facility requires its own components and system. There can be no compromise in order to achieve safe, reliable function, and optimum energy efficiency under varying operating conditions. We have the solutions your applications require – and because of this, ESBE is experiencing major successes all over the world. Our broad product range covers the requirement for effective, reliable control of water based systems, both large and small ones.

ESBE world-class Thermostatic Mixing Valves have been developed to satisfy the very highest performance requirements. The valves are used in tap water, underfloor heating and solar heating systems, as well as other applications with high demands for safe and accurate regulation. Available in a number of different designs in terms of performance, connections and temperature range, and with accessories to match.

So, you have everything to gain by choosing ESBE Thermostatic Mixing Valves.



	<p>Select the suitable mixing valve</p> <p>4-12</p>	 <p>Thermostatic Mixing Valves ESBE Series 30</p> <p>13-15</p>	
	 <p>Thermostatic Mixing Valves ESBE Series AS</p> <p>16</p>	 <p>Valve manifold ESBE Series 1450</p> <p>17</p>	
	 <p>Draft regulator ESBE Series C20</p> <p>18</p>	 <p>3-way thermic valve ESBE Series TV</p> <p>19</p>	

*ESBE thermostatic mixing valves are divided into three different groups, depending on application field or requirements to comply with.*

**Series 30 HR/HV**

Are primarily designed to provide a thorough regulation of the tap water temperature at taps or showers where no further temperature-control fittings have been installed.

The quick reaction thermostat and the pressure balanced control valve regulator make the HR/HV provide minimal changes of temperature regardless of varying pressure conditions. Scald safe\*.

The difference between the HR and the HV design is the flow pattern. For further information see page 13.

**Series 30 MR/AS**

The number one choice for tap water systems requiring a scald safe function and where further temperature-control devices have been installed at the taps. This series of valves are also suitable for tap water installations equipped with HWC (hot-water circulation).

The constant temperature control is another field of application for the series 30 MR/AS, making them suitable to be used for smaller underfloor heating purposes.

Series 30MR is suitable for smaller installations (Kvs = 1.2-1.6) and series AS for bigger installations (Kvs = 3.0). For further information see pages 14 and 16.

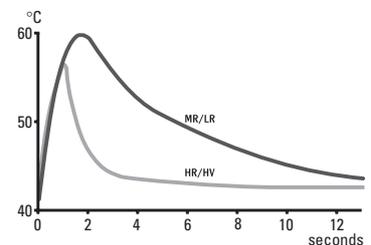
**Series 30 LR**

Is designed for temperature control at tap water installations without any requirements for a scald safe function. For further information see page 15.

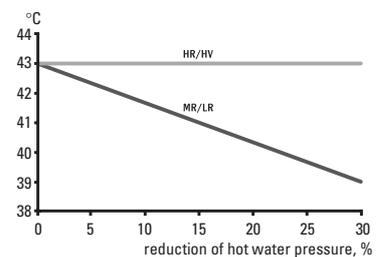
\*) Scald safe means that in the case of a cold water failure, the hot water supply shuts off automatically.

In the diagrams below, you can find the difference between HR/HV and MR/LR according to technical performance.

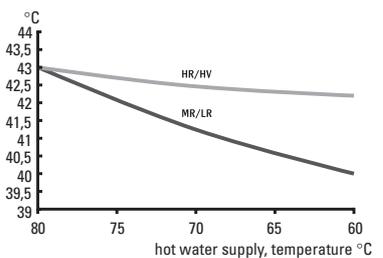
*The valve is cold and "suddenly" hot water is needed - how fast will the valve reach the desired temperature?  
(In the diagram 43°C)*



*Incoming hot water pressure reduces with 30%  
(In the diagram -2 bar). Which temperature change will it be in the valve?*



*If the hot water supply being reduced with 20°C - which temperature change will it be in the valve?*



*The ESBE thermostatic mixing valves offer a great number of optional connections for many various temperature ranges.*

Optional connections:

- Compression fittings . . . . .allow a quick installation with copper tubing or with PEX-tubing.
- External thread and fittings . .suitable for various connections and fittings such as nut/flat seal/solder.
- Internal thread . . . . .to install any other kinds of connections.

Optional temperature ranges

- 35 - 60°C . . . suitable range for central hot-water heating at the heater
- 32 - 49°C . . . suitable range for regulating the temperature at the shower or at the tap.
- 20 - 43°C . . . suitable range for underfloor heating and for tap water regulation in preschools and daycare centres
- 10 - 30°C . . . suitable range for drinking water and water for dairy cows
- 30 - 70°C . . . suitable range for temporary need for hot-water, (such as handling foods)



Compression fittings



External thread



Internal thread



Fittings as an option

Temperature adjustment

ESBE Series 30 are offered with knob or top cover. The round adjusting knob indicates you to turn it for adjusting the temperature. The four-sided top cover indicates you not to turn it (tamper proof or unintentional adjustment), but to lift it off for temperature adjustment. Thereafter it can easily be sealed to meet the requirements which are made by some markets.



Series 30 with top cover



Series 30 with knob

The ESBE thermostatic mixing valves are available with Kvs-values from 1.2 up to 3.0. For domestic tap water applications, please see dimensioning information in the table below.

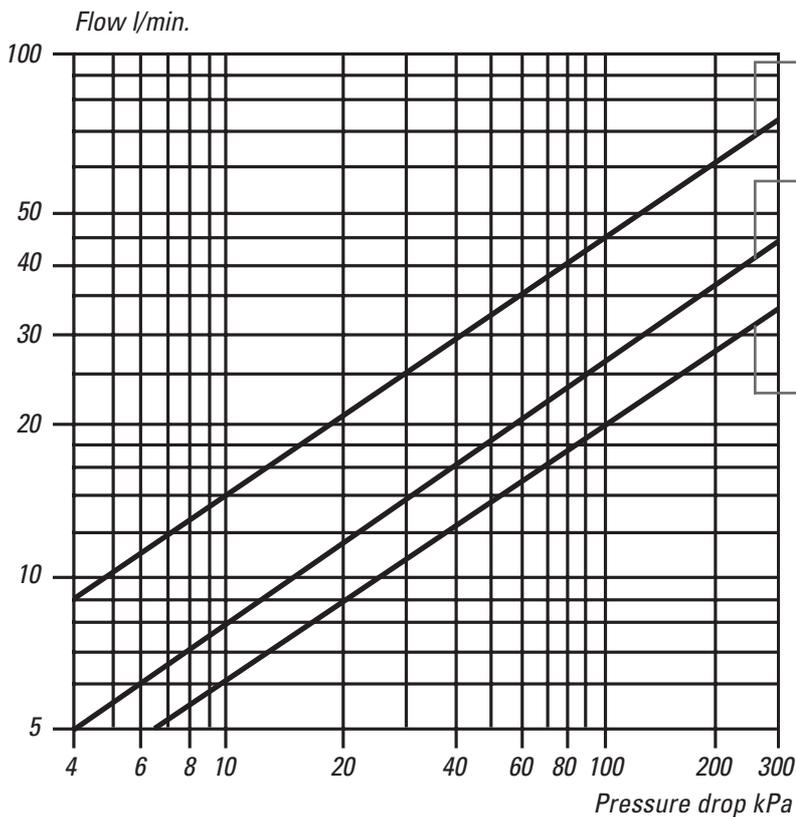
Dimensioning of domestic water applications

The thermostatic mixing valves for domestic tap water applications can be dimensioned according to the number of flats in the house or the number of showers in the sports centre.

Recommended Kvs-values

- One-family-houses or 2 showers . . . . . Kvs = 1.2
- Max 10 flats or 3 showers . . . . . Kvs = 1.5 - 1.6
- Max 20 flats or 6 showers . . . . . Kvs = 3.0

Capacity diagram



Kvs	Art. No.
3.0	476, 476L, 476LX, 478
1.5-1.6	8101, 8102, 8103, 8104, 8105, 8106, 8107, 8108, 8109, 8110, 8203, 8204
1.2	8003, 8007, 8010, 8011, 8131, 8132, 8133, 8134, 8201, 8202, 8301, 8302, 8303, 8310

The Kvs-value is measured at a mixture of equal shares of hot and cold water.

Advice & Directions for dimensioning of valves for tap water applications

The Swedish District Heating Association (Svensk Fjärrvärme) has published advice and directions for dimensioning of tap water installations. According to these directions the relation between Kvs-value and number of flats is the following:

- Kvs 1.6 . . . . . max. 15 flats
- Kvs 2.5 . . . . . max. 30 flats
- Kvs 4 . . . . . max. 70 flats
- Kvs 6.3 . . . . . max. 150 flats

HWC (hot-water circulation) should be installed whenever you must wait more than 20 seconds for hot water at a flow of 0.2 l/s in a block of flats. In one- and two-family houses the wait for 40 seconds can be accepted.

BBR 94, Building Regulations from the National Board of Housing, Building and Planning states the temperature and environment requirements for hot-water.

To sum up; the hot-water temperature at taps shall not be below min. +50°C and not exceed max. +65° C. Considering a certain temperature reduction in the water system, the heater should give min. +60° C (owing the risk of Legionella).

We recommend you to choose thermostatic mixing valves of series 30MR/LR for maximum 10 flats and the series AS for max. 20 flats.

For shower installations the series AS is suitable for max. 6 showers and series 30MR/LR manage max. 3 showers.

In cases where no further temperature-control fitting have been installed between the tap and the mixing valve, we recommend series 30 HR/HV which manage 2 showers.

Facts about the risk of scald burns and Legionella

- The time it takes to suffer third-degree burns by 60-degrees hot-water . . . . . 2-3 s
- The time it takes for a scald safe ESBE mixing valve to close the hot-water in case of cold water failure . . 1-2 s
- Suitable temperature for shower and bath tub . . . . . 40°C
- Recommended min. temperature at taps and in HWC pipes . . . . . 50°C
- Recommended min. temperature in flowing water-heaters . . . . . 55°C
- Recommended min. temperature in water-heaters (storage type) . . . . . 60°C

The Legionnaires' Disease is a pneumonia-like bacterial infection, caused by the Legionella germ. This germ has an optimal growth in water temperatures of 20-45°C. It spreads disease by inhalation of small water drops containing Legionella and can be transferred to the lungs when you take a shower. At a temperature exceeding 50°C, the germ is killed; the higher the temperature the sooner the germs get killed. By keeping the temperature in the water-heater above 60°C and the temperature in the pipes at 55°C, the risk of Legionnaires' disease will be eliminated.

*To achieve a good and safe function it is important to follow the installation instructions. This applies to all products, including the ESBE thermostatic mixing valves!*

Periodic function control – Cause of failure

The function of the mixing valve is especially important at scald safe installations. We recommend performing a periodic check of the function at least once a year. Adjust the mixing temperature if required. If the required temperature cannot be achieved, a valve insert exchange may be required.

Service and maintenance

Under normal conditions maintenance will not be required for ESBE thermostatic mixing valves. If, however, it should prove necessary, the seals (O-rings), the sensing element and the valve plug are easily replaced.

**NOTE!** Before dismantling the valve the water supply should be shut off. Where the valve is fitted below the calorifier this should be drained first.

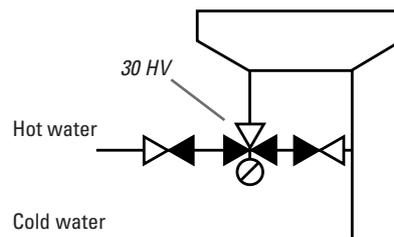
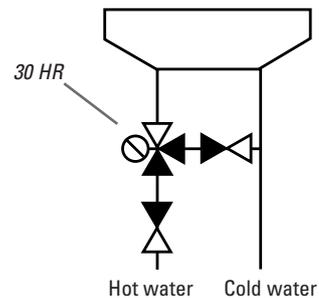
Installation

The mixing valve function works, regardless of mounting position.

Illustration of connection of the series 30 HR/HV at a washing place

These applications with high requirements for scald safety (hospitals, child care centres, etc.) and, in addition, for quick and exact regulation accuracy require the series 30 HR/HV.

Below please find two illustrations of connections at a washing place. The two mixing valve inlets shall be equipped with check valves.



*The ESBE thermostatic mixing valves can be used in a great number of various applications. Below please find some illustrations how to install the thermostatic mixing valves to a tap water system.*

Illustration of connection Fig. 1,  
Tap water without HWC\*

Under the circumstances that no hot-water circulation is existing the valve should be equipped with hot-water blocking devices (heat traps) in the hot-water and the cold-water feed line.

Illustration of connection Fig. 2,  
Hot-water outlet before the valve

Whenever a hot-water outlet is installed before the valve, a check valve must be installed before the hot-water connection to the mixing valve.

Illustration of connection Fig. 3,  
Positioned before a tap

Whenever the valve is installed before a tap, both the inlets shall be equipped with check valves.

Illustration of connection Fig. 4,  
tap water with HWC\*

To get access to hot-water at a tap without waiting, an HWC-pipe with circulation pump shall be installed. Connect each tap to the HWC-pipe. N.B! Series 30LR is not suitable for HWC.

\* HWC = Hot-water circulation

Fig. 1

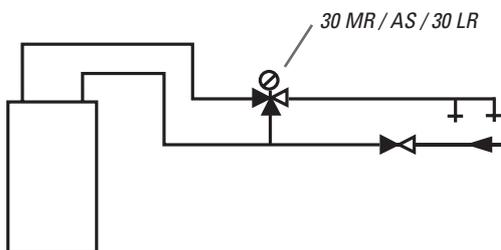


Fig. 2

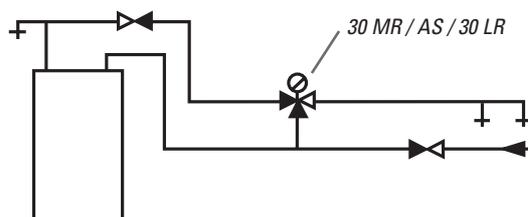


Fig. 3

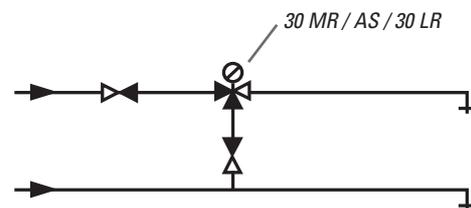
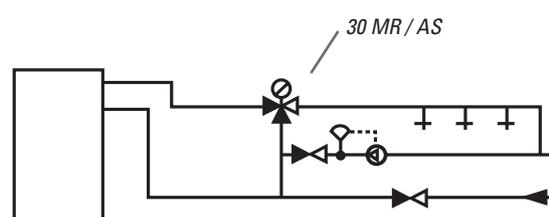


Fig. 4



*When refurbishing your home you may wish to install an underfloor heating in the bathroom, in the entrance or in any room. ESBE thermostatic mixing valves series 30 MR offer a simple and economical solution for underfloor heating regulation.*

### Underfloor heating regulation by use of a thermostatic mixing valve

There are some differences in regulating the underfloor heating compared with radiator systems, such as;

- 1) The supply line temperature should not exceed 55°C. For concrete beams normally 40°C is enough, timber joist floor, however, can require up to 55°C.
- 2) The difference between the supply line temperature and the return temperature (Td) is lower, normally 5°C.

Suitable ESBE mixing valves for underfloor heating systems are series MR, 20–43°C (DN 20, Kvs-value 1.6) or series AS, 20–40°C (DN 25, Kvs-value 3.0).

The advantage of choosing a thermostatic mixing valve for underfloor heating applications is that it limits the supply line temperature without any automatic control device/bypass.

### Dimensioning of underfloor heating

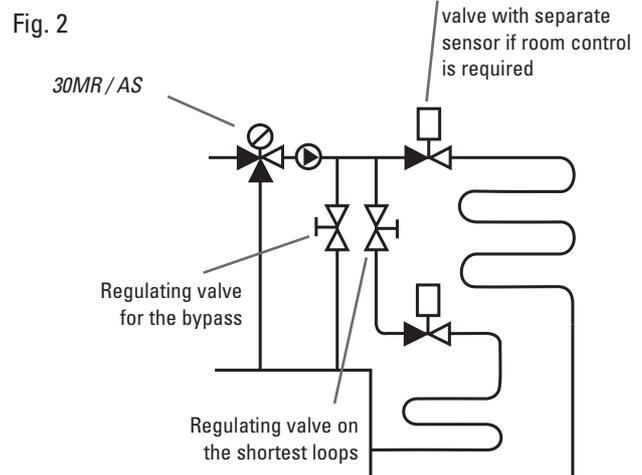
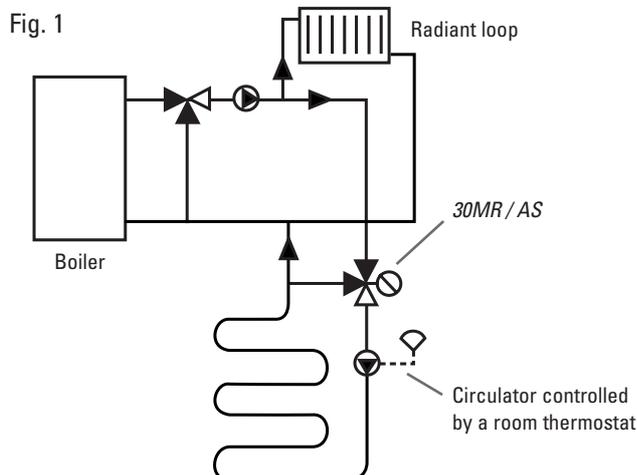
Normal power requirement = 50 W/m<sup>2</sup>. Td = 5°C requires a flow of approx. 0,25 l/s per 100 m<sup>2</sup>. Ex.: A valve of type 30MR DN20 manages approx. 50 m<sup>2</sup> with a pressure drop of 8 kPa and AS DN25 approx. 100 m<sup>2</sup> with a pressure drop of 10 kPa.

Illustration Fig. 1, one underfloor heating loop

The mixing valve has a constant temperature regulation at the set value. Please note that the underfloor heating circuit requires a separate circulation pump and that it can be equipped with a sensor.

Illustration Fig. 2, several underfloor heating loops

The mixing valve has a constant temperature regulation at the set value. This type of application requires valves to balance the flow between the different underfloor heating circuits. For room control facilities, thermostatic valves with separate sensors can be installed.



*To connect two thermostatic mixing valves in series can be beneficial whenever you have an storage tank with a two level tap water outlet or when the hot water is processed in two different heaters. Preference can be given to the most effective option.*

Illustration Fig. 1, in series with double loops  
 Series connection in hot-water heaters with double loops.  
 Should the temperature in the bottom loop be insufficient, the top one will provide the peak heat.

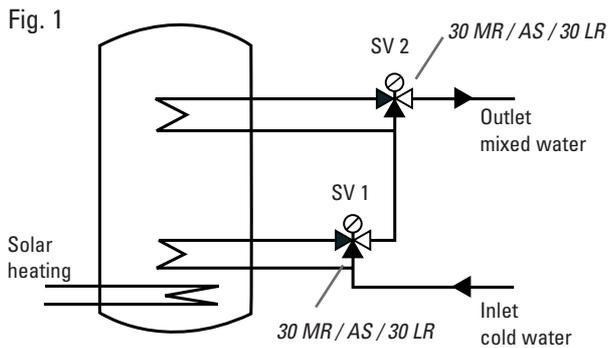
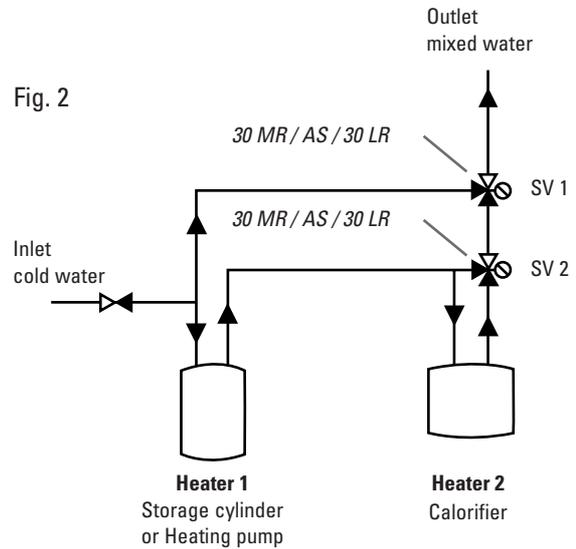


Illustration Fig. 2, two heaters in series  
 Series connection of two heaters. Should the temperature in the first heater be insufficient, the second heater will provide the peak heat. N.B.! Heater No. 2 must constantly be kept warm to avoid cold water addition.



*ESBE thermostatic mixing valves can be suitable to benefit from the highest possible level of energy from the most beneficial heat source of the system.*

Illustration Fig. 1 as a diverting valve

A mixing valve, series AS can be connected as a diverting valve in applications such as solar heat, etc. The connection as showed below provide opportunities for the best possible stratification in the storage tank.

Fig. 1

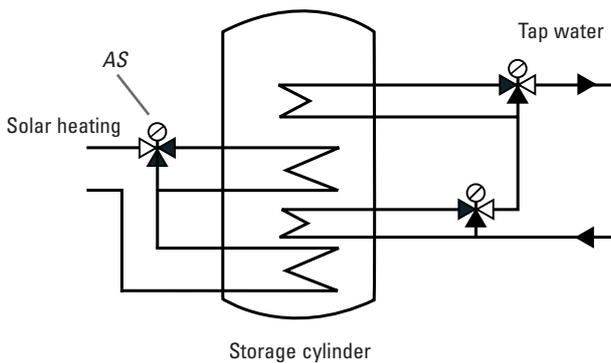
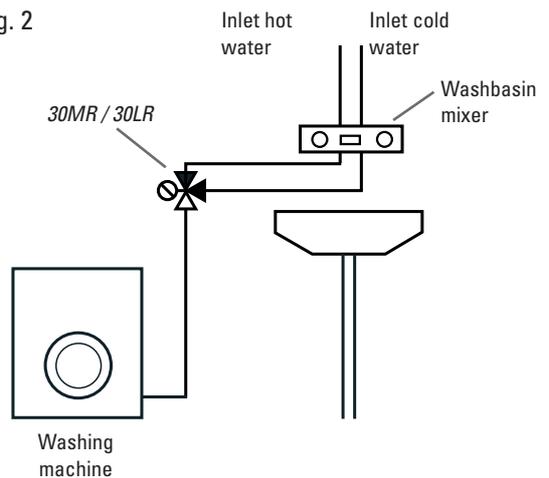


Illustration Fig. 2, hot water to a washing machine

A mixing valve can be used to temper the hot water for a washing machine. This can be cost-effective if you have access to hot water from a solar collector, hot-water pump or a solid fuel system. In this case, the mixing valve is equipped with an adjusting knob to easy adjust to the washing temperature desired.

Fig. 2





## Thermostatic Mixing Valves Series 30 HR / HV

The Series 30 HR/HV are designed to satisfy the highest possible market requirements when it comes to accuracy of regulation, quick reaction and a safe function regardless of varying pressure conditions.

### ESBE series 30 HR / HV

The Series 30 HR /HV are primarily designed to provide a thorough regulation of the tap water temperature at taps or showers where no further temperature-control fittings have been installed. The quick reaction thermostat and the pressure balanced control valve regulator make the HR/HV provide minimal changes of temperature regardless of varying pressure conditions. Scald safe\*.

Come with a top cover, unless otherwise stated.

The difference between the HR and the HV design is the flow pattern:



\* Scald safe means that in the case of a cold water failure, the hot water supply shuts off automatically.

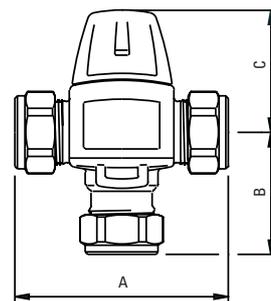
### Material

The valve housing and other metal parts with fluid contact:  
 . . . . . DZR brass, resistant to dezincification

### Technical Data

Pressure class: . . . . . PN 10  
 Max differential pressure: . . . . . 3 bar (0.3 MPa)  
 Pressure drop diagram: . . . . . See page 6  
 Max working temperature: . . . . . 90° C  
 Regulation accuracy: . . . . . According to standards\*

\* For those designs that are not comprised by any standard is accuracy  $\pm 2^{\circ}\text{C}$  at a minimum flow of 2 l/minutes.



### Dimensions, Series 30 HR

Art. No.	Reference	Temp. range	Connections	Knob/Cover	Replaces Art. No.	A	B	C	Kvs	Weight kg
8003	ESBE 30 HR*	35–60°C	Compr. fittings for pipes O.D. 22 mm	Cover	–	90	64	52	1.2	0.64
8007	ESBE 30 HR	35–60°C	External thread 3/4"	Cover	–	70	54	52	1.2	0.52
8010	ESBE 30 HR	32–49°C	External thread 3/4"	Cover	–	70	54	52	1.2	0.52
8011	ESBE 30 HR	35–60°C	External thread 1"	Cover	–	70	54	52	1.3	0.55

### Dimensions, Series 30 HV

Art. No.	Reference	Temp. range	Connections	Knob/Cover	Replaces Art. No.	A	B	C	Kvs	Weight kg
8301	ESBE 30 HV*	35–60°C	Compr. fittings for pipes O.D. 22 mm	Cover	–	90	52	52	1.2	0.57
8302	ESBE 30 HV	35–60°C	External thread 3/4"	Cover	–	70	42	52	1.2	0.45
8310	ESBE 30 HV	32–49°C	External thread 3/4"	Cover	–	70	42	52	1.2	0.45
8303	ESBE 30 HV	35–60°C	External thread 1"	Cover	–	70	42	52	1.3	0.48

\* A non-return valve for the cold water pipe is included.



## Thermostatic Mixing Valves Series 30 MR

The ESBE thermostatic mixing valves series MR offer a good function for universal applications, such as tap water regulation with or without HWC (hot-water circulation) and smaller underfloor heating circuits.

### ESBE series 30 MR

The series 30 MR is the number one choice for domestic water systems requiring a scald safe function and where further temperature-control devices have been installed at the taps. This series of valves is also suitable for tap water installations equipped with HWC (hot-water circulation).

The constant temperature control is another field of application for the series 30 MR/AS, making them suitable to be used for smaller underfloor heating purposes. (up to 50 m<sup>2</sup>).



\* Scald safe means that in the case of a cold water failure, the hot water supply shuts off automatically.

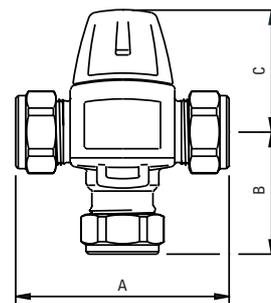
### Material

The valve housing and other metal parts with fluid contact:  
 . . . . . DZR brass, resistant to dezincification

### Technical Data

Pressure class: . . . . . PN 10  
 Max differential pressure: . . . . . 3 bar (0.3 MPa)  
 Pressure drop diagram: . . . . . See page 6  
 Max working temperature: . . . . . 90° C  
 Regulation accuracy: . . . . . According to standards\*

\* For those designs that are not comprised by any standard, the accuracy is ±2°C at a minimum flow of 4 l/minutes. For the series MR this is valid at an unchanged pressure of the incoming cold and hot-water.



### Dimensions, Series 30 MR

Art. No.	Reference	Temp. range	Connections	Knob/Cover	Replaces Art. No.	A	B	C	Kvs	Weight kg
8132	ESBE 30 MR*	35–60°C	Compr. fittings for pipes O.D. 15 mm	Cover	–	90	52	52	1.2	0.49
8131	ESBE 30 MR*	20–43°C	Compr. fittings for pipes O.D. 15 mm	Cover	–	90	52	52	1.2	0.49
8146	ESBE 30 MR	35–60°C	Compr. fittings for pipes O.D. 18 mm	Cover	403	90	52	52	1.5	0.66
8102	ESBE 30 MR*	35–60°C	Compr. fittings for pipes O.D. 22 mm	Cover	470	90	52	52	1.5	0.57
8101	ESBE 30 MR*	20–43°C	Compr. fittings for pipes O.D. 22 mm	Cover	470 L	90	52	52	1.5	0.57
8104	ESBE 30 MR	35–60°C	Internal thread 1/2"	Cover	472	70	42	52	1.5	0.45
8103	ESBE 30 MR	20–43°C	Internal thread 1/2"	Cover	472 L	70	42	52	1.5	0.45
8108	ESBE 30 MR	35–60°C	Internal thread 3/4"	Cover	474	70	42	52	1.6	0.48
8107	ESBE 30 MR	20–43°C	Internal thread 3/4"	Cover	474 L	70	42	52	1.6	0.48
8134	ESBE 30 MR	35–60°C	External thread 1/2"	Cover	–	70	42	52	1.2	0.41
8133	ESBE 30 MR	20–43°C	External thread 1/2"	Cover	–	70	42	52	1.2	0.41
8106	ESBE 30 MR	35–60°C	External thread 3/4"	Cover	471	70	42	52	1.5	0.45
8105	ESBE 30 MR	20–43°C	External thread 3/4"	Cover	471 L	70	42	52	1.5	0.45
8110	ESBE 30 MR	35–60°C	External thread 1"	Cover	475	70	42	52	1.6	0.48
8109	ESBE 30 MR	20–43°C	External thread 1"	Cover	475 L	70	42	52	1.6	0.45

\* A non-return valve for the cold water pipe is included.



## Thermostatic Mixing Valves Series 30 LR

*The ESBE thermostatic mixing valves series LR is primarily designed for tap water regulation at heaters without any requirement for a scald safe function.*

### ESBE series 30 LR

The Series LR is designed for temperature control at tap water installations without any requirements for a scald safe function.

Comes with a knob unless otherwise stated.



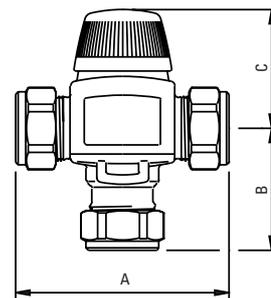
### Material

The valve housing and other metal parts with fluid contact:  
 ..... DZR brass, resistant to dezincification

### Technical Data

Pressure class: ..... PN 10  
 Max differential pressure: ..... 3 bar (0.3 MPa)  
 Pressure drop diagram: ..... See page 6  
 Max working temperature: ..... 90° C  
 Regulation accuracy: ..... According to standards\*

\* For those designs that are not comprised by any standard, the accuracy is  $\pm 2^{\circ}\text{C}$  at a minimum flow of 4 l/minutes. For the series LR this is valid at an unchanged pressure of the incoming cold and hot-water.



### Dimensions, Series 30 LR

Art. No.	Reference	Temp. range	Connections	Knob/Cover	Replaces Art. No.	A	B	C	Kvs	Weight kg
8201	ESBE 30 LR*	35–60°C	Compr. fittings for pipes O.D. 15 mm	Knob	401	90	52	52	1.2	0.49
8203	ESBE 30 LR	35–60°C	Compr. fittings for pipes O.D. 18 mm	Knob	403	90	52	52	1.5	0.62
8204	ESBE 30 LR*	35–60°C	Compr. fittings for pipes O.D. 22 mm	Knob	404	90	52	52	1.5	0.57
8205	ESBE 30 LR*	30–70°C	Compr. fittings for pipes O.D. 22 mm	Knob	–	90	52	52	1.5	0.62
8202	ESBE 30 LR	35–60°C	External thread 1/2"	Knob	410	70	42	52	1.2	0.41

\* A non-return valve for the cold water pipe is included.



## Thermostatic Mixing Valves Series AS

*The ESBE thermostatic mixing valves series AS offer a good function for universal applications, such as tap water regulation with HWC (hot-water circulation) and smaller underfloor heating circuits.*

### ESBE series AS

Whenever the tap water system requires a scald safe\* function, the ESBE series AS is a good choice.

Other fields of application are; tap water temperature limiter, with or without HWC and constant temperature regulation, in applications such as underfloor heating systems (up to 100 m<sup>2</sup>).

The valve is equipped with a self-regulating thermostat, sensing the temperature of the mixed water and directly actuates the valve cone. Within 3 to 10 seconds the temperature is stabilized at the set value.

\* Scald safe means that in the case of a cold water failure, the hot water supply shuts off automatically.

### Technical Data

Pressure class: . . . . . PN 10  
 Max differential pressure: . . . . . 3 bar (0.3 MPa)  
 Pressure drop: . . . . . See diagram page 6  
 Max working temperature: . . . . . 90° C  
 Regulation accuracy: . . . . .  
 . . . . . +/- 3°C at a minimum flow of 4 l/minutes

### Material

The valve housing and other metal parts with fluid contact:  
 . . . . . DZR brass, resistant to dezincification

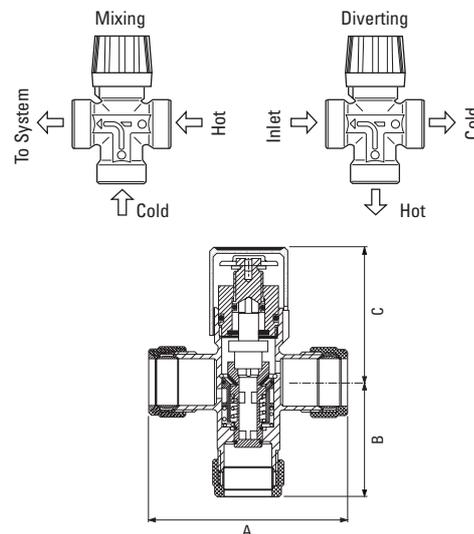
### Dimensions, Series AS

Art. No.	Reference	Temp. range	Connections	A	B	C	Weight Kg	Kvs
476	ESBE AS*	38-65°C	Compr. fittings for pipes O.D. 28 mm	95	65	65	0.85	3.0
476 L	ESBE AS*	20-40°C	Compr. fittings for pipes O.D. 28 mm	95	65	65	0.85	3.0
476 LX	ESBE AS*	10-30°C	Compr. fittings for pipes O.D. 28 mm	95	65	65	0.85	3.0
478	ESBE AS	38-65°C	External thread 1"	70	52	65	0.66	3.0
478 H	ESBE AS	30-70°C	External thread 1"	70	52	65	0.66	3.0

\* A non-return valve for the cold water pipe is included.

### How to use the valves

1. Mixing of domestic hot and cold water.
2. Maintaining a constant supply temperature in a closed heating system.
3. Diverting flow to "hot" or to "cold" depending upon inlet temperature.





**Valve manifold Series 1450**

*The ESBE series 1450 is a compact valve combination for hot water storage. Incoming cold-water have the following incorporated components; Non return and shut-down device and connections for safety valve, vacuum valve etc. The incoming hot-water is regulated within a temperature range of 35 to 60°C by thermostatic mixing valves of type series 30 MR.*

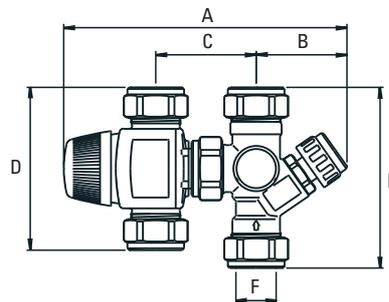
**Technical Data**

Pressure class: . . . . . PN 10  
 Max working temperature: . . . . . 90°C  
 Temperature range: . . . . . 35-60°C

The manifold has 2 connections with internal threads DN 15 to connect safety valve, vacuum valve, HWC-pipe etc.  
 The combination comes with one DN 15 outlet, plugged with a brass plug. The stem and the cone of the valve tube are made of brass.

**Material**

The valve housing and other metal parts with fluid contact:  
 . . . . . DZR brass, resistant to dezincification



Art. No.	Connections	A	B	C	D	E	F
1450 004	Compr. fittings for pipes O.D. 22 mm	165	55	54 – 60	92	99	22
1450 005	Compr. fittings for pipes O.D. 22 mm	165	55	54 – 60	92	99	22
1450 007	Compr. fittings for pipes O.D. 22 mm	165	55	54 – 60	92	99	22

1450 005 = 1450 004 incl Safety valve 1050 015  
 1450 007 = 1450 005 incl Vacuum valve 441.



## Draft regulator Series C20

*The ESBE draft regulator is a self contained thermostatic expansion control device intended to regulate the temperature of solid fuel fired boilers*

### Application

The ESBE Draft Regulator is a self contained thermostatic expansion control device intended to regulate the temperature of solid fuel fired boilers without requiring any electrical installation or complicated linkage.

The thermostatic control head senses the boiler temperature and regulates the air vent position and in that way the combustion air through an adjustable lever and chain. The ESBE Draft Regulator is fully adjustable within the optional ranges of 40–90° and 75–85°C.

Connection is through a threaded boss directly into the boiler waterway.

### Mounting

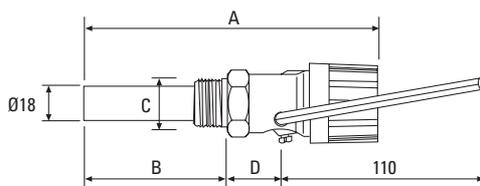
The regulator may be mounted either vertically or horizontally with the chain connected to the air vent with the lever and chain adjusted so that the air damper just closes when the required temperature has been achieved. Fine adjustment of boiler temperature is made by rotating the control knob, each graduation of the knob corresponds to 10°C or 2°C dependent on operating range.

### Technical Data

Max working temperature: . . . . . 90°C  
 Connection: . . . . . 3/4" or 1" BSP male  
 Regulating range: . . . . . 40–90°C or 75–85°C  
 Lifting force: . . . . . 12 Newtons at 40–100°C  
 . . . . . 15 Newtons at 75–85°C  
 Lifting stroke: . . . . . 60 mm  
 Chain length: . . . . . 1.6 m

### Service and maintenance

Under normal conditions service and maintenance is not required, however, should the need arise the thermostatic element may be replaced after first removing the regulator from the immersion pocket.

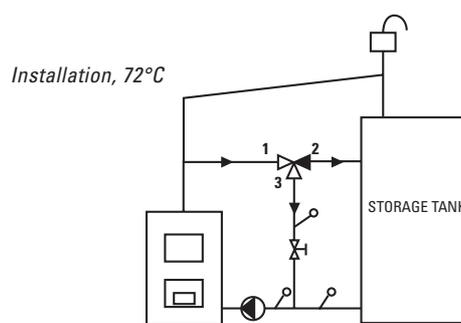
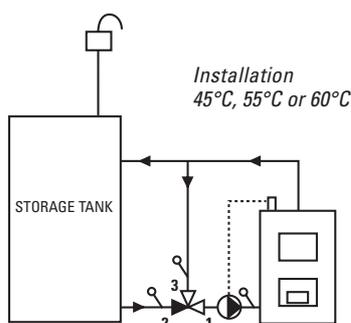


Art. No.	Temp. range	Lifting force	A	B	C	D	Weight Kg
501	40–90°C	1.2 kp / 12 N	154	75	G 3/4	30	0.47
502	40–90°C	1.2 kp / 12 N	154	75	G 1	30	0.47
511	75–85°C	1.5 kp / 15 N	154	75	G 3/4	30	0.47



## Thermic valve

## 3-way Series TV



The ESBE 3-way thermic valve is designed to load storage tanks at solid fuel systems. The valve brings a higher return temperature to the boiler, meaning increased efficiency through, reduced tar formation and a longer life for the boiler by preventing condense of fluegases.

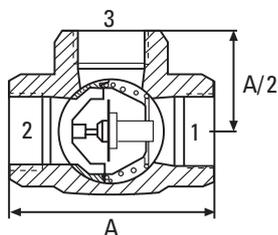
### Application

Typical applications are in heating installations where solid fuel boilers are used to feed storage tanks. The TV valve will protect the boiler from low return water temperatures. It can either be installed in the hot water feed (72°C) or in the return line (45°C, 55°C or 60°C).

The latter is recommended as it offers a simpler pipe layout for expansion (see examples) as well as prolonging the life of the thermostat.

### Function

Port 2 opens with the temperature rise. The valve is available in four versions, for 45°C, 55°C, 60°C and 72°C opening temperatures. Port 2 will be fully open at 10°C higher than the initial opening temperature. The valve can be mounted in any position.



### Technical Data

Pressure class: . . . . . PN 6  
 Max working temperature: . . . . . 110°C  
 Connections: . . . . . Internal threaded Rp

### Material

Valve body and cover: . . . . . Cast iron EN-JL602N

### Media

Water with the following additives:  
 - Glycol, up to a maximum of 50% (as anti-freeze)  
 - Oxygen absorbing compounds

### Service and maintenance

We recommend equipping the valve connections with shut-down devices. This to facilitate the future service.

The TV valve does not need any maintenance under normal conditions. However spare thermostats are available and easy to replace if necessary.

Thermostat 60°C . . . . . Art.No. 10001  
 Thermostat 72°C . . . . . Art.No. 10002  
 Thermostat 45°C . . . . . Art.No. 10349  
 Thermostat 55°C . . . . . Art.No. 10470

Art. No.	Reference	Dimension	Opening temperature	A mm	Kvs *	Weight kg
461	TV 25	Rp 1 (= 1" BSP)	+72°C	105	9	1.5
462	TV 32	Rp 1 1/4 (= 1 1/4" BSP)	+72°C	115	14	2.0
463	TV 40	Rp 1 1/2 (= 1 1/2" BSP)	+72°C	120	17	2.4
464**	TV 25	Rp 1 (= 1" BSP)	+60°C	105	9	1.5
465**	TV 32	Rp 1 1/4 (= 1 1/4" BSP)	+60°C	115	14	2.0
466**	TV 40	Rp 1 1/2 (= 1 1/2" BSP)	+60°C	120	17	2.4

\*Kvs-value in m<sup>3</sup>/h at a pressure drop of 1 bar.

\*\* For 45°C: add L after the Art. No. For 55°C: add M after the Art. No.



## ESBE company – Focusing on motorized valves

ESBE develops, manufactures and markets motorized valves for regulating hydronic systems in small and large buildings. By concentrating on a defined product line we can generate greater strength and increased competence within this field. This makes us specialist with unique knowledge of control units specifically for hydronic systems.

With more than 60 years of experience, we have sound knowledge of development and manufacture of products within heat regulation and our aim is to continually improve

both products and our company. We strive to offer solutions that provide maximum financial benefit and optimum energy efficiency.

Our attitude is that a product does not necessarily have to be ugly, unwieldy and difficult to handle just because it is tucked away in a corner somewhere. On the contrary, we focus on the design. We want to make the products both aesthetically pleasing and simple to use.



### ESBE rotary motorized valves

Our broad range of mixing valves for regulation of heating/cooling systems is available in a number of different designs. We also offer a range of actuators for simple and compact assembly on the valve. These can be supplied as complete control units, thus guaranteeing safe and problem-free operation year after year.



### ESBE linear motorized valves

Our linear valves with innovative and unique solutions are based on comprehensive development. In practice this leads to high regulating precision, with quiet, reliable function and efficient energy use. Together with our actuators this provides a complete, easy-to-install combination that is optimally suited to your application.

## More info on ESBE's website

Find out more about us and our products on our website, [www.esbe.se](http://www.esbe.se). Here you will find our product catalogues and quick guides plus contact information for all

our offices and representatives. You can also download tools such as ESBE Dimensions, our calculation program for determining the correct valve.



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