ESBE®

2012/13 CATALOGUE

RELIABLE VALVES AND
ACTUATORS FOR
YOUR DAILY WORK.

IT WORKS.

For more than 100 years we have been establishing new standards time after time for what valves and actuators can do in different systems. All our products have one or more of the following features in common: they use less energy, they enhance comfort and they improve safety; in systems for heating, cooling and tap water.

All the time in your daily work, installing valves and actuators, it is important that you can rely on the products you use. We can ensure you of this. It works!

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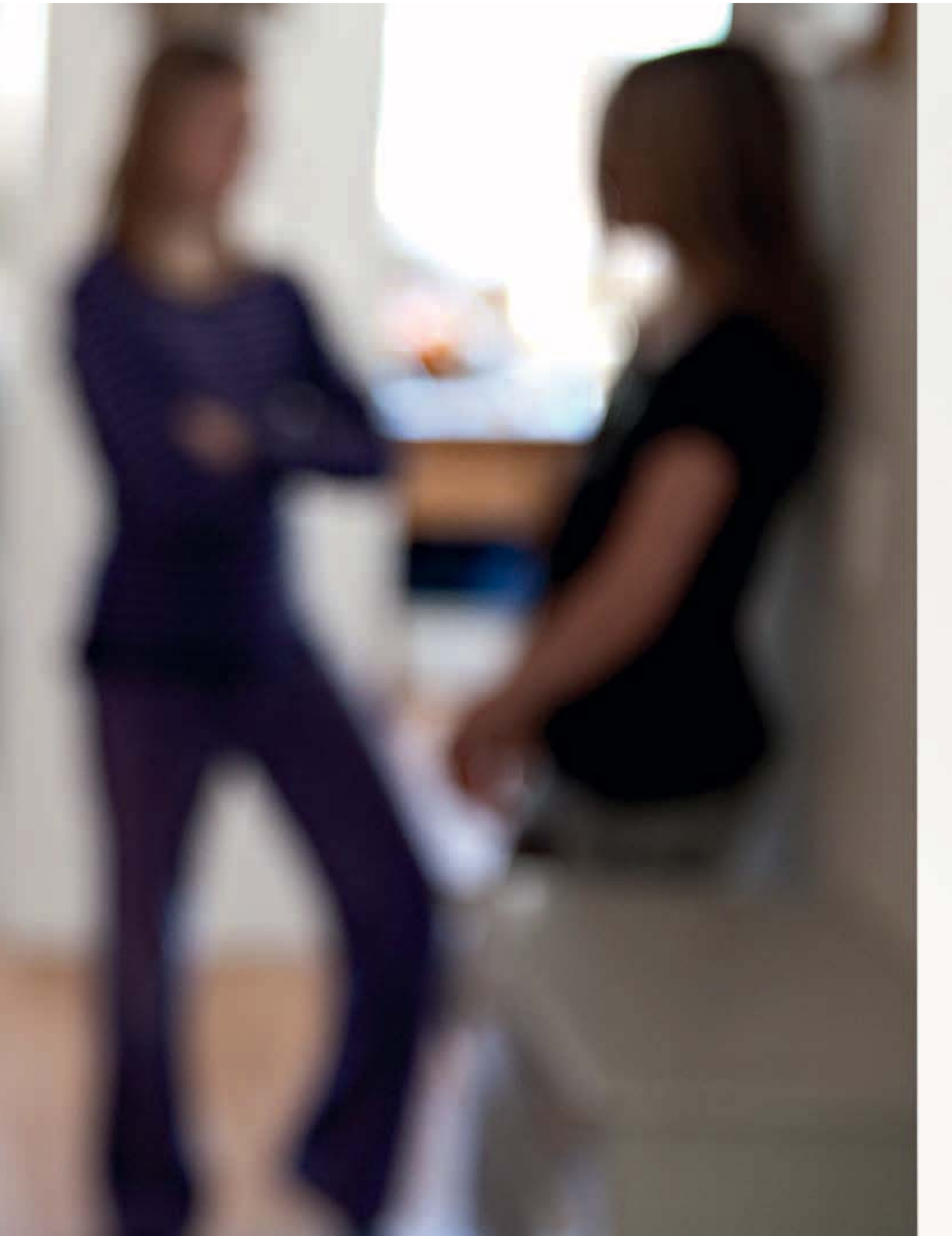
ESBE CATALOGUE 2012/13


GNOSJÖ VVS A
— Allt inom värme och sanitet —
0722-104 128 • 0722-104 880
OPEL VIVARO

IT'S SWEDISH.

ESBE is a truly Swedish company. Our product development and manufacturing are still based in the small Swedish village of Reftele – where it all started. We are proud of the fact that Sweden and Swedish products have a good reputation all over the world. This inspires us in our daily business.

At the same time, ESBE has a local presence nowadays via our own colleagues and sales agents around Europe, which are, of course, not all Swedish. But we are glad to have their help spreading the ESBE brand even further and with one common goal: to get more installers to discover the world of ESBE and choosing the right product for optimizing energy savings, comfort and safety.



HIDDEN BEHIND.

The room sensor unit of the CRB controller might be an extreme exception in our assortment, since it is clearly visible in the living area. Most of our other products are normally hidden away near the heat source. But in our opinion there is no need for a product to be ugly, clumsy and hard to use only because it is hidden. Therefore we design all our products to be both aesthetically pleasing and easy to use.

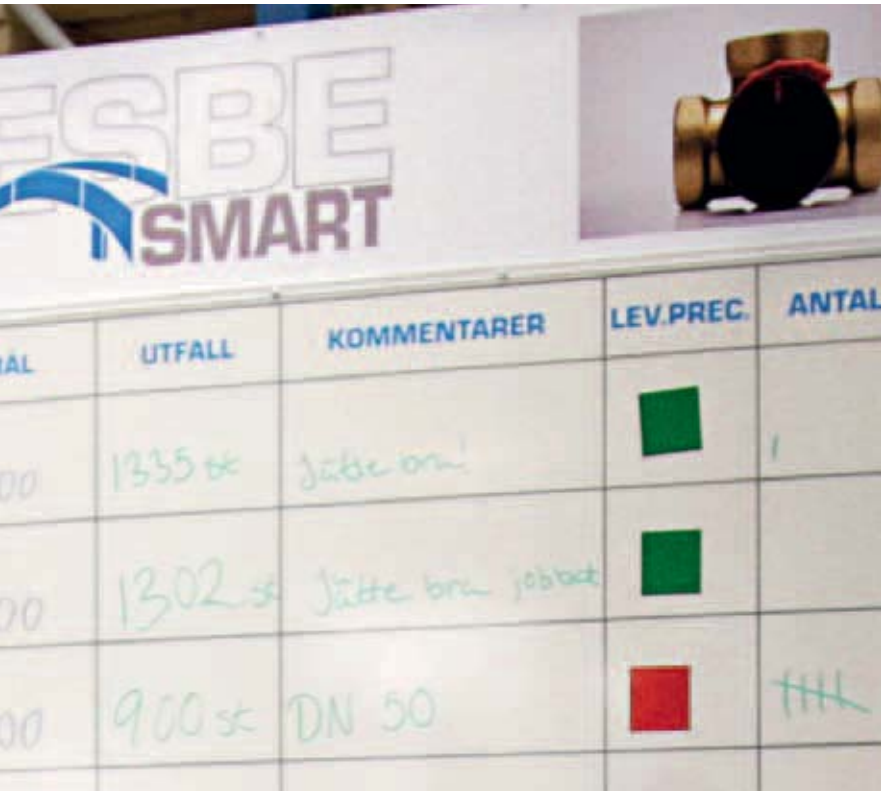

ABB

THE FACTORY.

We continually and consistently move forward, and collaborate with our customers as well as with our suppliers. We have done so for 100 years – it's our way of working – and a tradition that we do not intend to break.

And speaking of long-term thinking, there has been a very popular trend the last few years towards outsourcing. At ESBE we have been insourcing instead and invested a lot in our factory plant. Why, you might ask? Well, the main reasons are that we want to have full control of our total production flow and secure our product quality and delivery performance.


ESBE


ESBE
SMART
UTFALL
KOMMENTARER
LEV.PREC.
ANTAL
1335 st
Jätte bra!
1302 st
Jätte bra jobbat
900 st
DN 50


ESBE

QUALITY IS SMART WORK.

We know that it takes more than modern products and modern production facilities when you want to stay in the lead. The input of each individual is essential for total quality. The people within our organization and their attitude and willingness to continually further develop themselves and constantly improve internal processes and routines are very important for the success of the company. At ESBE we constantly work with these matters in our own way, we call it SMART.

KNOW-HOW NEEDS TO BE SPREAD.

With our products, our collective experience, expertise and application knowledge we are considered to be in a market leading position. But, at the same time, we are aware that we need to continously improve in spreading our knowledge even more. One way of doing this is by using the improved and new tools described below.

ESBE HYDRONIC SELECTION

A software which provides support in control valve sizing, application and selection. Free download available on our website.

ESBE VALVE SELECTION

A slide-chart that helps you to find out the correct valve dimension for the system. Ask for it at your closest ESBE contact or order from our website.

ESBE WEB

Our website gives you product news and up-to-date versions of mounting instructions, data sheets and much more.

CERTIFICATES AND PRODUCT DECLARATIONS.

You should never need to feel unsure. We work hard to secure that our technical data in product documentation is correct. This is done partly through validation in our own advanced lab. In addition, if it is needed, we make external tests for our products at authorized test institutes.

You will find the certificates and product declarations at our website. If you happen to miss something, don´t hesitate to contact your usual ESBE contact.

GOST product certificates

ESBE AB is quality certified according to ISO9001 since 1995 and enviromentally certified according to ISO14001 since 1999.

Declarations of conformity

WRAS product certificates

OUR PROMISE TO YOU AND YOUR CUSTOMERS.

COMFORT
You, as our customer, must be sure that your customers also receive the maximum perceived comfort with a product from ESBE. Regulating the water should be done quickly, efficiently and with high temperature accuracy. In our commitment to comfort we are directly relying on you. In return, we provide products for your OEM production or field installation which are the smartest, easiest to use and most efficient on the market.

SAFETY
A product from ESBE, installed correctly, should never fail. This is of course necessary in every case but also crucial since some products within our assortment prevents scalding in tap water systems, managing and regulating very high water temperatures. The quality and quality control must therefore be at a level of one hundred percent.

ENERGY SAVINGS
The cold Nordic climate in which we live and work has taught us that every wasted drop of hot water is a failure. Our products and system knowledge is built to always, always and always optimize the energy usage. That these efforts also contribute to save and preserve our common environment and the future is of course something we welcome.

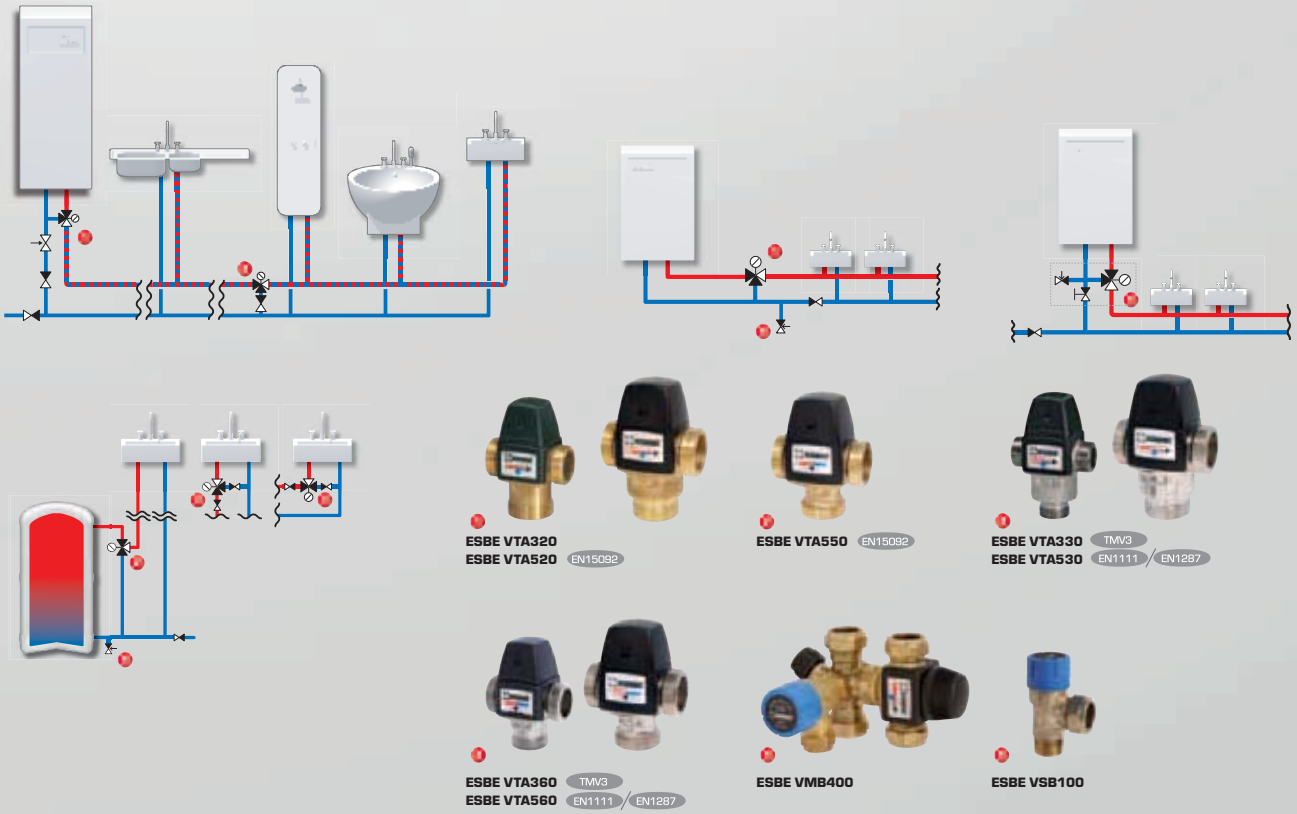
Within these three areas, we always have a chance to continually develop, refine and improve. This is not only our ambition, it's a promise.

INSPIRATION EXAMPLES

No matter what the application is, as long as it involves hydronic system control, we can offer the right products and knowledge to support you – who will design efficient systems.

N.B. The application examples inside this catalogue are overall idea sketches. Always also take local laws and regulations into consideration.

DOMESTIC HOT WATER



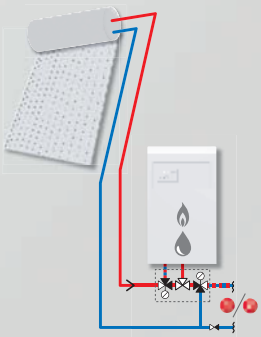
PRODUCT HIGHLIGHTS.

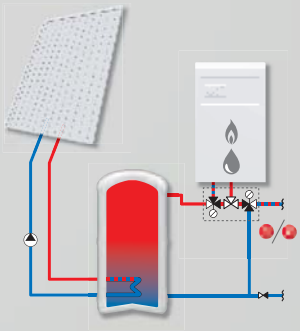
- ESBE BASIC VTA320, VTA520
  – For antiscald function and legionella protection in all kinds of tap water systems.

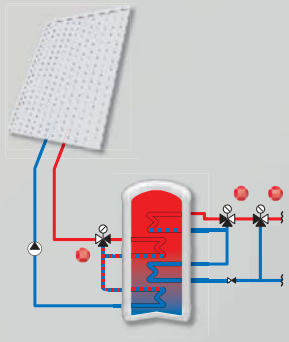
- ESBE PREMIUM VTA330, VTA360
  – For "point-of-use" domestic hot water applications.
  – Complies with the highest standards on the market, such as WRAS/TMV3 (UK).

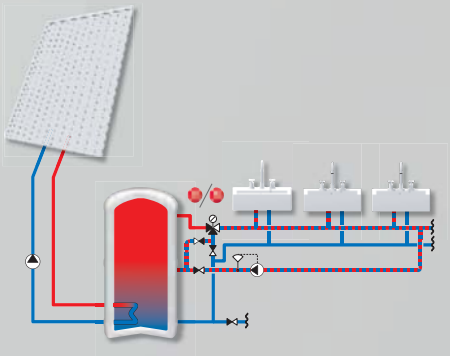
- ESBE PREMIUM VTA530, VTA560
  – Offers high flow capacity in domestic hot water systems with demands of high regulation accuracy according to European norms EN15092 and EN1111.

SOLAR









ESBE VMC300

ESBE VMC500

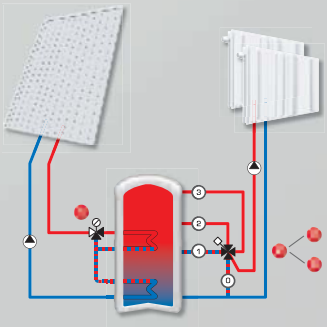
ESBE VTD300

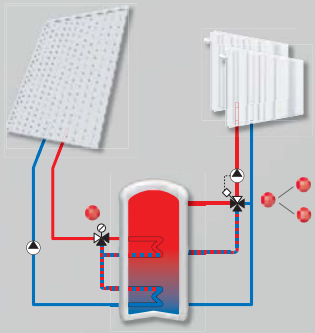
ESBE VTS520

ESBE VTA320
ESBE VTA520

PRODUCT HIGHLIGHTS.

- ESBE SOLAR KIT VMC300, VMC500
  – Makes it easy to utilise solar energy in combination with a new or existing gas boiler.
- ESBE SOLAR VTS500
  – Ideal in solar applications because of its high temperature resilience.
  – High flow capacity.
- ESBE VTD300
  – Mounted on the primary side of the storage tank it offers smart and easy loading of the solar energy.





ESBE VTD300

ESBE 5MG

ESBE 95-270M

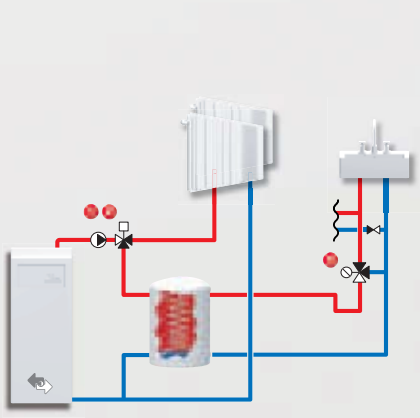
ESBE VRB140

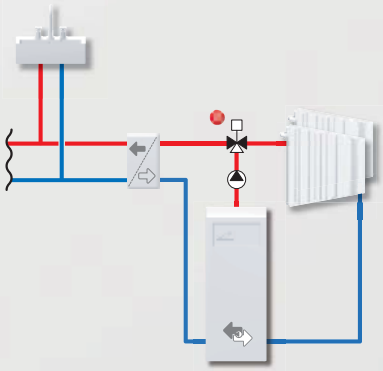
ESBE CRB100

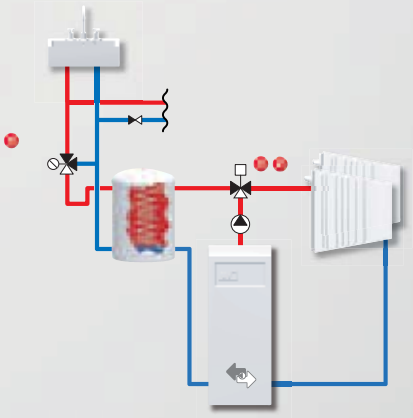
- ESBE 5MG
  – Maximum advantage of the stratification in the solar storage tank in combination with actuator 95–270M or controller 90C.
- ESBE VRB140
  – Utilizing of stratification and availability to full range of ESBE controllers, such as CRB100 or 90C.

ESBE 90C

HEAT PUMPS







ESBE VRG330

ESBE ARA600

ESBE VZA, VZB

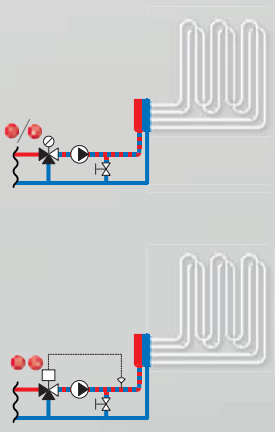
ESBE VRG230

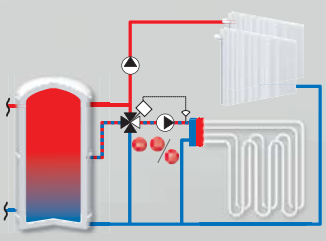
ESBE VTA320

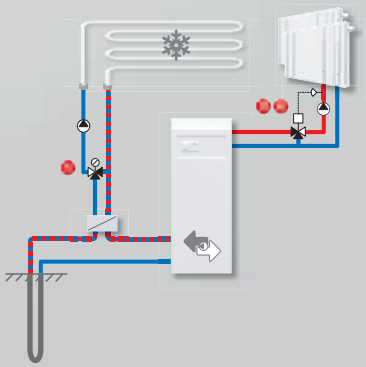
PRODUCT HIGHLIGHTS.

- ESBE VRG330
  – Special version of 3-way valve with high flow capacity. Recommended in combination with fast ARA600 (15 seconds, 2-point).
- ESBE VZA, VZB
  – For heat pump applications with high performance requirements such as quick change-over (3 seconds), compact dimensions and flexible assembly solutions.
- ESBE VRG230
  – Symmetrical flow layout for easy installation and use together with ARA600.

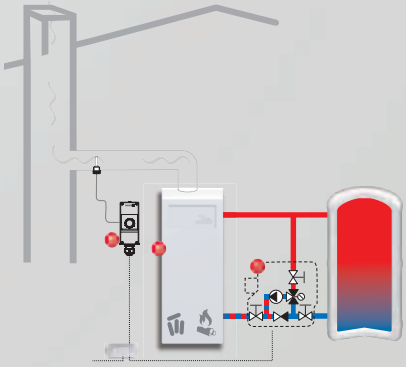
UNDERFLOOR HEATING

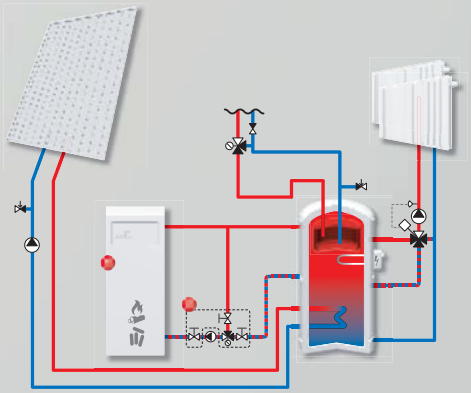


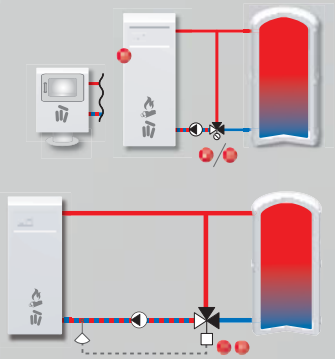




WOOD & PELLET







ESBE LTC100

ESBE VTC510

ESBE VTC530

ESBE VTC300

ESBE ATA200

ESBE CTF150

PRODUCT HIGHLIGHTS.

- ESBE LTC100
  – A compact load unit that offers stable return temperature to the boiler for long service life and less pollutions.
- ESBE VTC530
  – Insulated load valve with shut off valves makes it easy to add your favorite circulation pump.
- ESBE VTC510, VTC300
  – Compact and accurate load valves covering all needs from small pellets stoves up to big wood boilers.

ESBE VRB140

ESBE CRA110

ESBE VTA570

ESBE VTA320

ESBE VRG130

ESBE VRB140

ESBE CRA110

ESBE CRB100

PRODUCT HIGHLIGHTS.

- ESBE BASIC VTA570, VTA320
  – Easy and quick installation, no electricity or signal needed, for under floor heating temperature control.
  – The flow pattern plus special connections offer easy assembly with circulation pump, providing a compact unit.
- ESBE VRG130/VRB140 + ESBE CRA110/CRB100
  – Regulation with mixing valves gives possibility of higher flow rates together with controller CRA110. But also access to a more sophisticated solution with controller CRB100.

RELIABLE AND ROBUST.
ENERGY SAVING.
QUICK AND EASY TO HANDLE.

ESBE rotary valves and actuators regulate the heating comfort of millions of households. Our offer is a wide range of rotary valves in a number of different designs for the regulation of heating and cooling. Add to that many different actuators for simple and quick installation to the valve. Giving you a complete motorized valve that guarantees reliable, energy-efficient operation for many years to come.

CONTENTS ROTARY MOTORIZED VALVES

FEATURES AND BENEFITS

A REALLY QUICK AND EASY INSTALLATION.

1. Simple to adapt. The valve scale is simple to adapt to suit how you connect the hot and cold water. You simply pull the adjusting knob straight out, turn the scale and push the knob in again – no tools required.

The actuator is just as simple to adapt according to your actual installation. Choose between the two scales supplied depending on the valve connection.

2. Few parts, few tools. Fitting an actuator is simpler than ever: remove the valve knob and scale, push on the shaft coupling followed by the actuator, mount a screw in place and fit the actuator's adjusting knob. Done!

3. Simple to install the valve. The valve without mounting plate allows you more room to tighten the valve in cramped spaces and close to walls.

4. A secure installation for internal threaded valve. The key handle is wide and has two, instead of six, edges. This provides a better grip with less risk of slipping with the pipe wrench or box wrench.

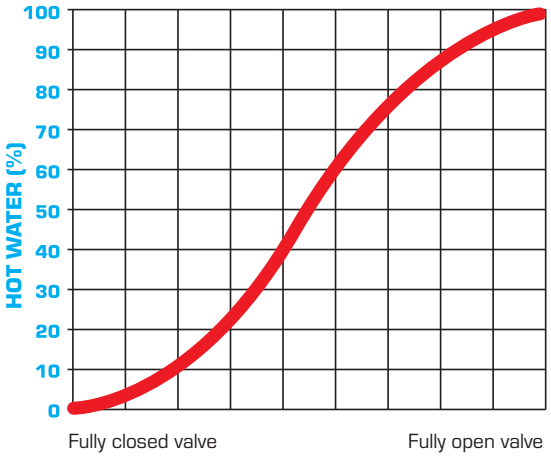
5. A flexible cable connection. The actuators are supplied complete with a connection cable but also with an extra cable port. The advantage is that you can run a separate cable directly to a circulation pump, for instance, without going via a central controller.

The ESBE actuator series ARA600 have a nice design that pleases both aesthetical aspects as well as easy handling.

MAKE USE OF THE VALVE'S ENTIRE ANGLE OF ROTATION.

When you adjust a motorized valve you want it to respond rapidly and correctly. There should be minimal delay and great precision; from fully closed to fully open valve. Our valves make use of the valve's entire angle of rotation.

The diagram next to here shows how much hot water valves allow through relative to the valve position. This is as close to ideal regulation as you can get, providing increased comfort and lower energy consumption. You'll notice the difference immediately. You can be sure of that.



Our valves make use of the valve's entire angle of rotation. The diagram shows how much hot water valves allow through, relative to the valve position.

THE MOTORIZED VALVE IS COMPACT.

For installation purposes, millimetres can be invaluable. Particularly if you want to integrate a valve and actuator into a heat pump, boiler, pump group or other finished product.

But more compact products are also in demand for standard installations. Primarily to allow you more space during actual installation. It makes access easier and installation quicker.

The actuator's operational position is in a pushed-in position. Consequently, the motorized valve takes up less space during normal operation. As simple as it is clever.

STABLE INSTALLATION PROVIDES BEST POSSIBLE REGULATION.

A stable construction is a real challenge. We solved this challenge with four fixing points around the spindle instead of one. The mounting between valve and actuator has greater stability and adjustment is smoother as a result.

Unstable installation where the actuator moves impairs regulation and the actuator must "parry" even small movements. This causes wobbly regulation, with comfort levels and energy consumption suffering as a result of large temperature fluctuations and unnecessary excess heat.

Making regulation smoother also ensures a significantly longer service life for the actuator. Quite simply, it doesn't need to work as hard.

An ESBE valve mounted together with an ESBE actuator have a real tight grip to eachother which improves the regulation and ensures a longer service life.

AS CLOSE TO FULLY LEAK-PROOF AS IS POSSIBLE.

Saving energy is something we know our customers are very keen on. And if you can also choose a rotary valve rather than the considerably more expensive linear valves – well, then we're right on the mark.

Our rotary valves already boasted exceptionally low internal leakage – largely thanks to our own patent from 2003. Leakage was so low that the valve range was nominated "Best heating product of the year". We have now succeeded in reducing leakage even further.

From 0.1 to 0.05 percent for leak rate. This is at double pressure, i.e. at 100 kPa (1.0 bar). Valve operated as diverter, leakage is even lower: 0.02 percent.

A more fully leak-proof valve is difficult to achieve for a rotary valve. It's time to replace all those old valves leaking valuable energy.

The ESBE valve series VRG and VRB have some significant advantages such as low leak-rate, ideal regulation and high durability material, DZR brass.

VALVES IN DZR BRASS – FROM DN 15 RIGHT UP TO DN 50.

Brass is an excellent material. It is suitable for most applications such as radiator heating systems, floor heating, tap water, cooling systems and other oxygenated systems. All valve sizes – from DN 15 right up to DN 50 – are available in brass, but not just any ordinary brass. We use a special alloy known as DZR (Dezincification Resistant Brass, CW 602N) in valve housings and slides. It provides several functional benefits that you don't get with a valve construction that combines cast iron with brass.

Dezincification is the most difficult form of corrosion to tackle in a plumbing fitting. In simpler brass, the zinc is released, leaving a brittle and porous copper mass. The result? Shorter service life and inferior function. So that's the difference between brass and brass.

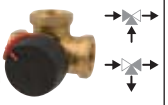
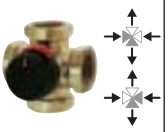
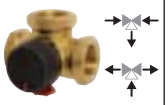
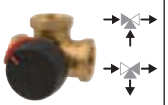
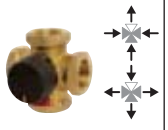
DZR's more even internal surface layer also means that dirt and deposits cannot adhere as easily. This means less wear and tear and cleaner water. Our alloy also has a low lead content compared with many other makes. It is naturally particularly suitable for tap water installations.

It doesn't get much better than this.

FEATURES AND BENEFITS

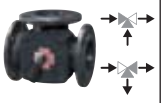
A WIDE ASSORTMENT of valves and added to that various actuator and controller possibilities. That is a fact. Therefore you might have use for the selection guide below to help you find the best combination for your system and application.

● Recommended ● Secondary alternative

	ACTUATORS						CONTROLLERS			
	 ARA600			 90			 90C	 CRB100	 CRA110	 CRA120
	3-P	2-P	Prop.	3-P	2-P	Prop.				
 VRG130	●	●	●	●*	●*	●*	●	●	●	●*
 VRG140	●	●	●	●*	●*	●*	●	●	●	●*
 VRG230	●	●	●	●*	●*	●*	●	●	●	●*
 VRG330	●	●	●	●*	●*	●*	●	●	●	●*
 VRB140	●	●	●	●*	●*	●*	●	●	●	●*
 5MG				●**		●**	●			

*Additional adaptor kit necessary, see product page.

** Only type 95-270M and 92P4.

	ACTUATORS						CONTROLLERS			
	 ARA600			 90			 90C	 CRB100	 CRA110	 CRA120
	3-P	2-P	Prop.	3-P	2-P	Prop.				
 3F	≤ DN40			●	●	●	●	≤ DN40	≤ DN40	●
 4F	≤ DN40			●	●	●		≤ DN40	≤ DN40	●
 TM	●	●	●				●	●	●	
 T				●	●	●				●
 HG	●	●	●				●	●	●	
 H				●	●	●				●

ESBE GUIDE
SELECT THE MOST SUITABLE MIXING VALVE

In the following pages you will be able to find the valve best matching your system and application requirements.

HOW TO SELECT A ROTARY MIXING VALVE

ESBE 3-way mixing valves are usually connected as a mixing valve, but it may also be used as a change-over valve or diverting valve.

If high return temperature is required (mostly solid fuel installations) a 4-way mixing valve is recommended. In all other applications/installations a 3-way valve is preferred.

In systems with two heat sources or storage tanks, the VRB-valve helps to prioritize the cheapest energy source and keeps a good temperature stratification in the storage tank.

FIELDS OF APPLICATION

1) Control of (fluid) water based systems for heating and cooling: radiator heating, floor heating and other surface heating and cooling systems.
2) Change-over or diverting valve (only 3-way valves).

Make sure that the nominal pressure, the differential pressure as well as the leak rate are within acceptable values. This information is stated for each valve.

SELECTION OF MIXING VALVE SIZE

Each size of mixing valve has a Kvs-value (capacity in m^3/h at a pressure drop of 1 bar) stated. It is the Kvs-value as well as the system the valve serves that decides which valve to choose. You find suitable Kvs-values in the graphs at page 32-33.

For a radiator system $\Delta t = 20°C$ is usually chosen and for under floor heating $\Delta t = 5°C$.

Suitable pressure drop should be in the range 3–15 kPa. As a rule of thumb, the lowest Kvs-value is chosen, if there are two alternatives within the pressure drop range.

MATERIAL/MEDIA

Valve series VRG, VRB and 5MG are made of a special brass alloy (DZR) and therefore also suitable for domestic water installations.

ESBE´s other series of mixing valves may only be used in closed systems where the water is not oxygenated.

A maximum of 50% glycol for freezing protection and oxygen absorbing compounds are allowed as additives. As both the viscosity and the thermal conduction are affected when glycol is added to the system water, this fact has to be considered when dimensioning the valve. A good rule is to choose one size higher Kv-value when 30 - 50 % glycol is added. A lower concentration of glycol does not affect the valve performance.

CE

VALVES, RE. PED 97/23/EC

Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice).
According to the directive the equipment shall not carry any CE-mark.

DISPOSAL OF VALVES

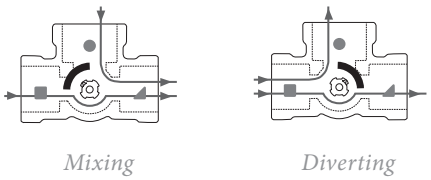
The products must not be disposed of together with domestic waste, but should be treated as metal scrap. Local and currently valid legislation must be observed.

DISPOSAL OF ACTUATORS AND REGULATORS

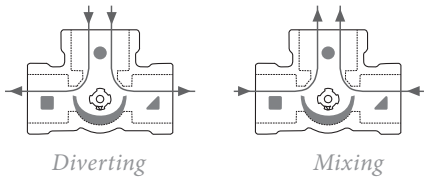
The device must not be disposed of together with domestic waste. This applies in particular to the printed circuit card. Legislation may demand special handling of certain components, or it may be desirable from an ecological point of view. Local and currently valid legislation must be observed.

ESBE GUIDE
SELECT THE MOST SUITABLE MIXING VALVE

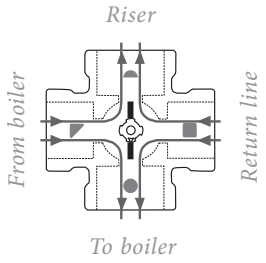
OPERATION 3-WAY VALVES
VRG130, 330
The required system temperature is obtained by adding a suitable proportion of return water to the boiler flow.



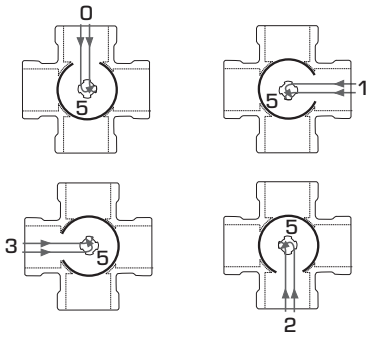
VRG230
Valves with special design of the inner parts, suitable for applications which requires mid-port changeover operation. Can be placed in both diverting and mixing positions.



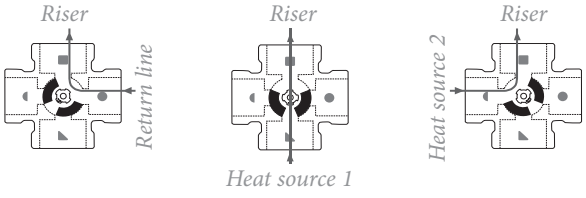
OPERATION 4-WAY VALVES
VRG140
The valves have a double mixing function, i.e. a proportion of the hot water supplied from the boiler is mixed with the return water. This results in a higher return water temperature, reducing the risk of corrosion and assuring a longer life for the boiler.



OPERATION 5-WAY VALVES
5MG
Mixing valve with 4 inlets for use in systems with three heat sources or three layers in a storage tank.



OPERATION BIVALENT VALVES
VRB140
Mixing valve with 3 inlets for use in systems with two heat sources or two layer storage tank.



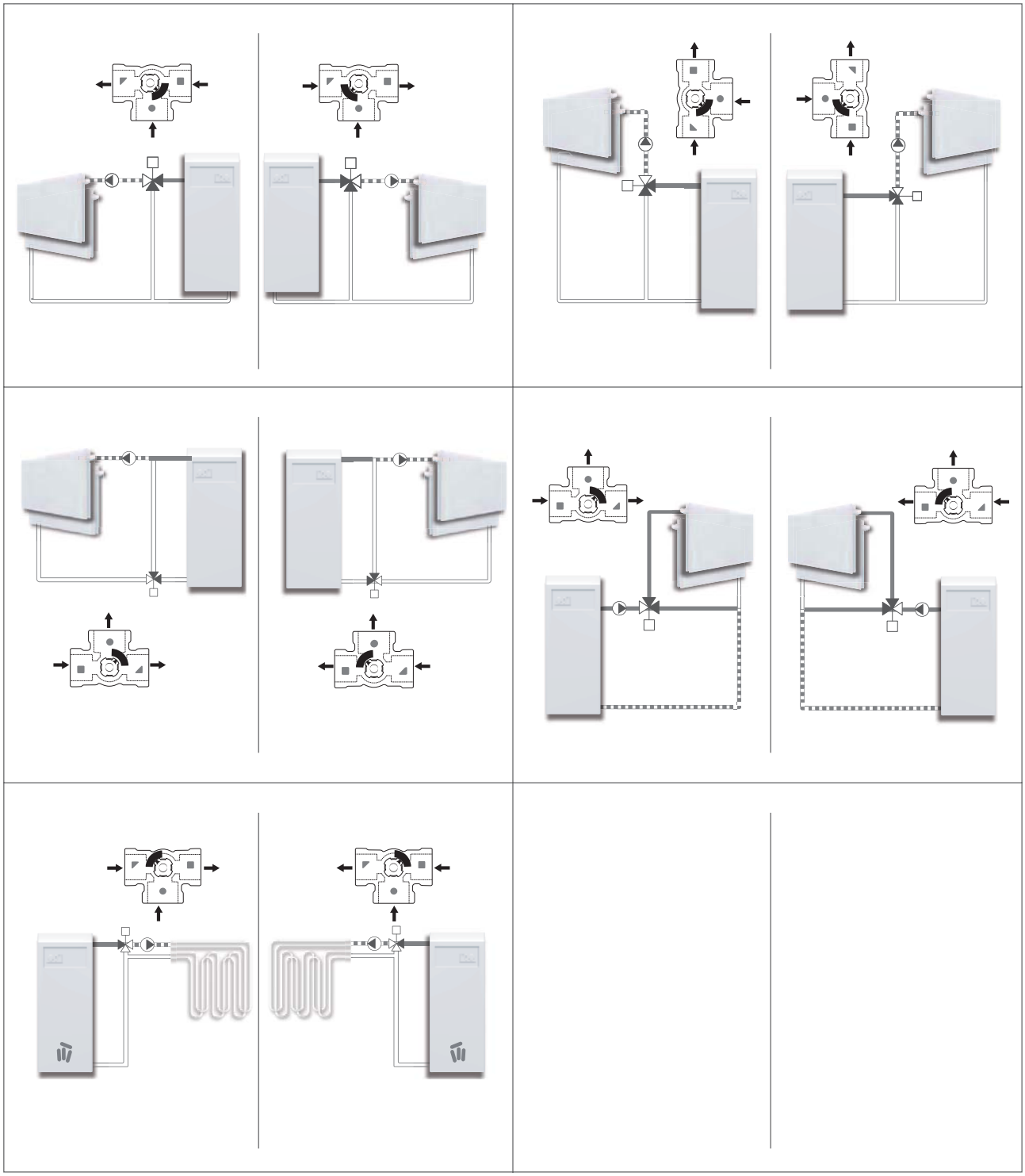
ESBE GUIDE
SELECT THE MOST SUITABLE MIXING VALVE

● Recommended ◍ Secondary alternative ○ Not applicable

Note: The illustrations always shows the mid position of the valve.

APPLICATION EXAMPLES ARE VALID FOR

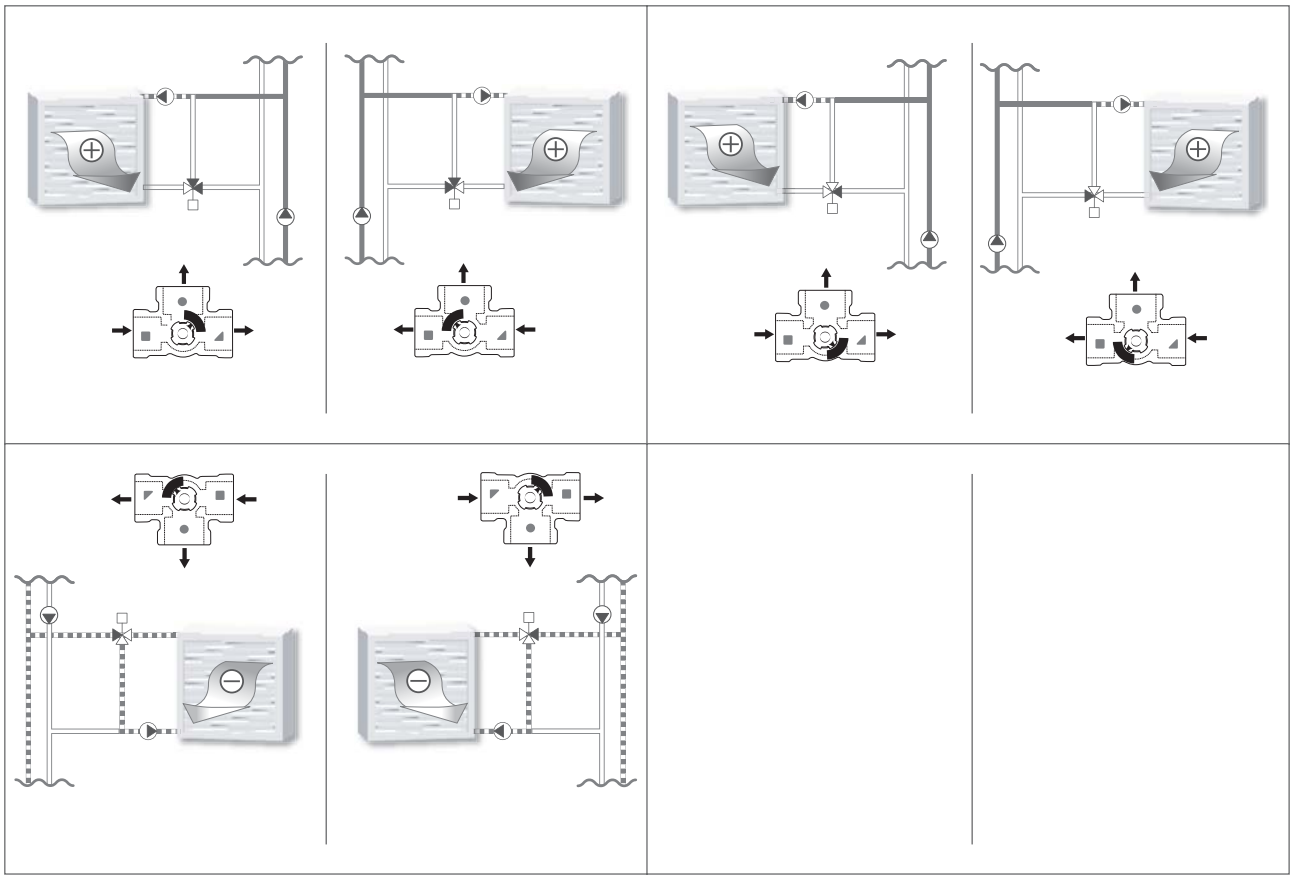
● VRG130 ○ VRG140 ○ VRG230 ◍ VRG330 ○ VRB140 ○ 5MG ● 3F ○ 4F



ESBE GUIDE
SELECT THE MOST SUITABLE MIXING VALVE

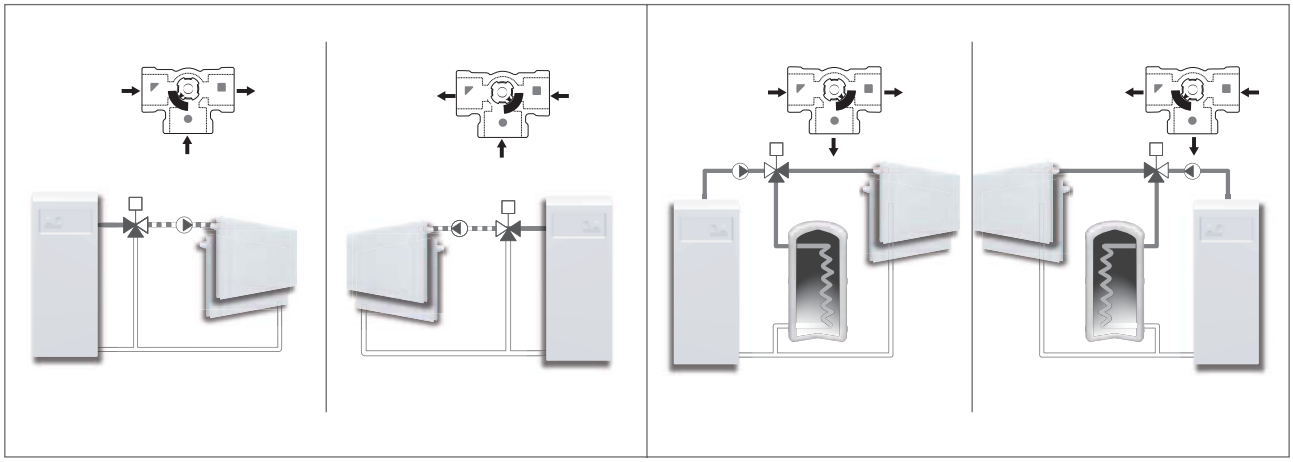
APPLICATION EXAMPLES ARE VALID FOR

● VRG130 ○ VRG140 ○ VRG230 ○ VRG330 ○ VRB140 ○ 5MG ○ 3F ○ 4F



APPLICATION EXAMPLES ARE VALID FOR

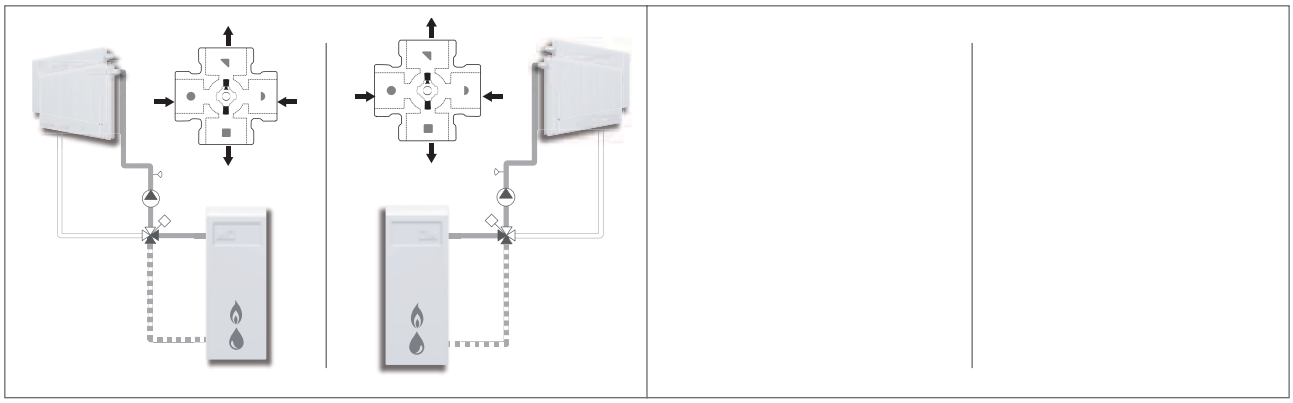
● VRG130 ○ VRG140 ○ VRG230 ● VRG330 ○ VRB140 ○ 5MG ● 3F ○ 4F



ESBE GUIDE
SELECT THE MOST SUITABLE MIXING VALVE

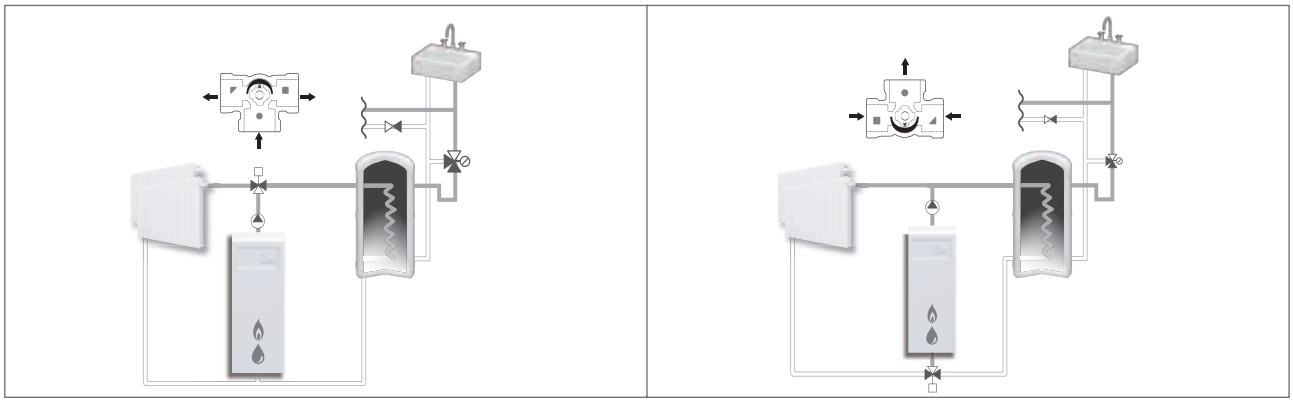
APPLICATION EXAMPLES ARE VALID FOR

○ VRG130 ● VRG140 ○ VRG230 ○ VRG330 ○ VRB140 ○ 5MG ○ 3F ● 4F



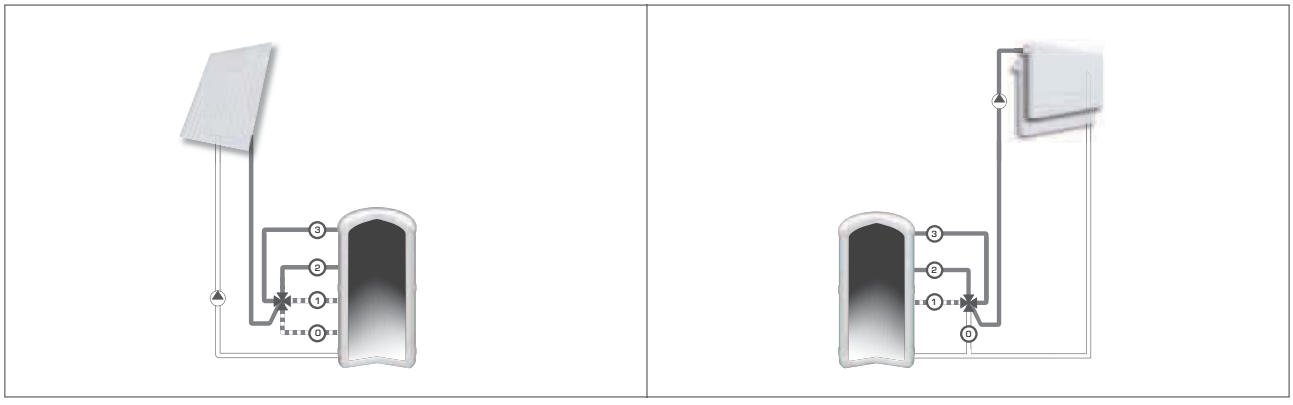
APPLICATION EXAMPLES ARE VALID FOR

○ VRG130 ○ VRG140 ● VRG230 ● VRG330 ○ VRB140 ○ 5MG ○ 3F ○ 4F



APPLICATION EXAMPLES ARE VALID FOR

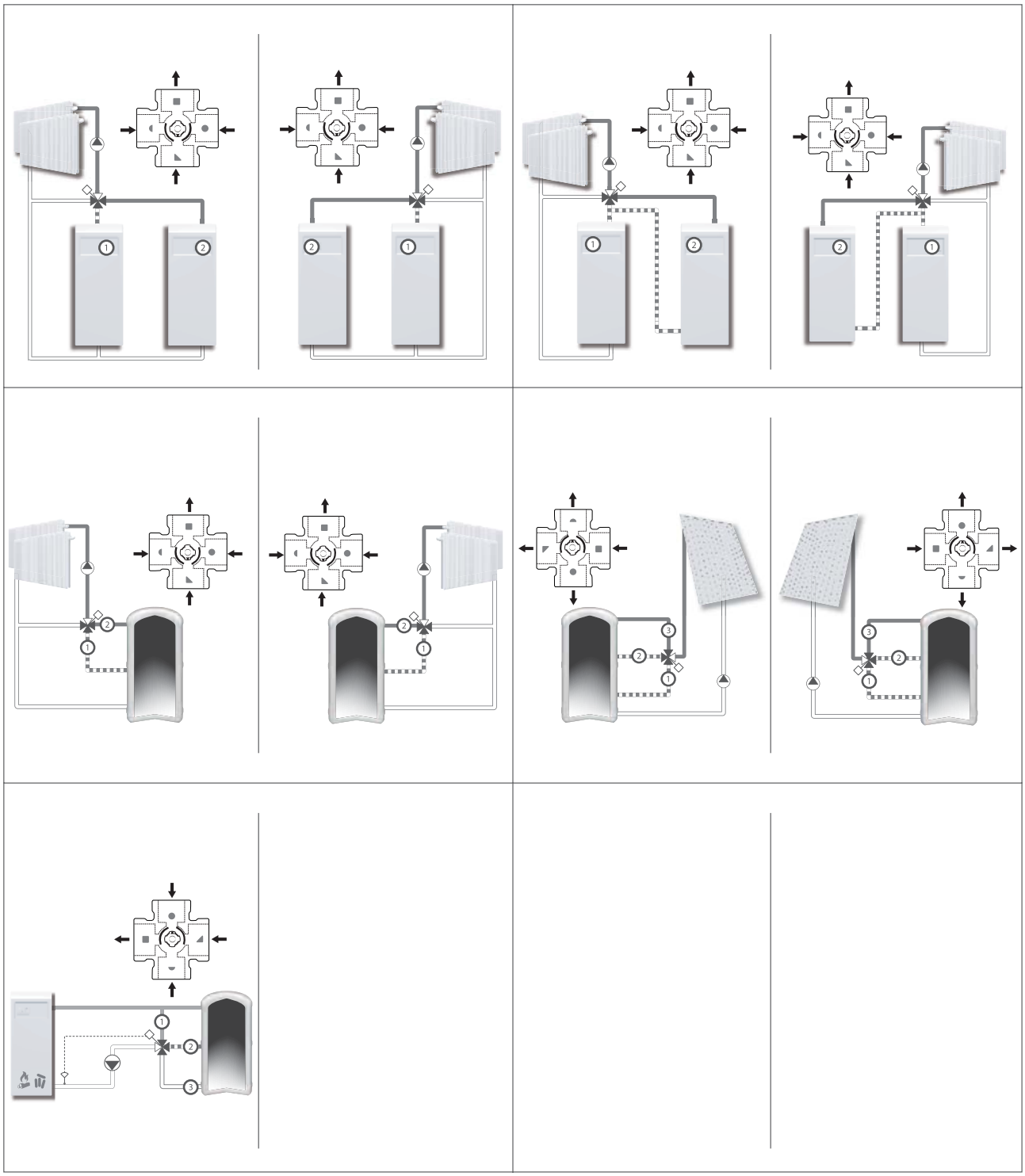
○ VRG130 ○ VRG140 ○ VRG230 ● VRG330 ○ VRB140 ● 5MG ○ 3F ○ 4F



ESBE GUIDE
SELECT THE MOST SUITABLE MIXING VALVE

APPLICATION EXAMPLES ARE VALID FOR

○ VRG130 ○ VRG140 ○ VRG230 ○ VRG330 ● VRB140 ○ 5MG ○ 3F ○ 4F

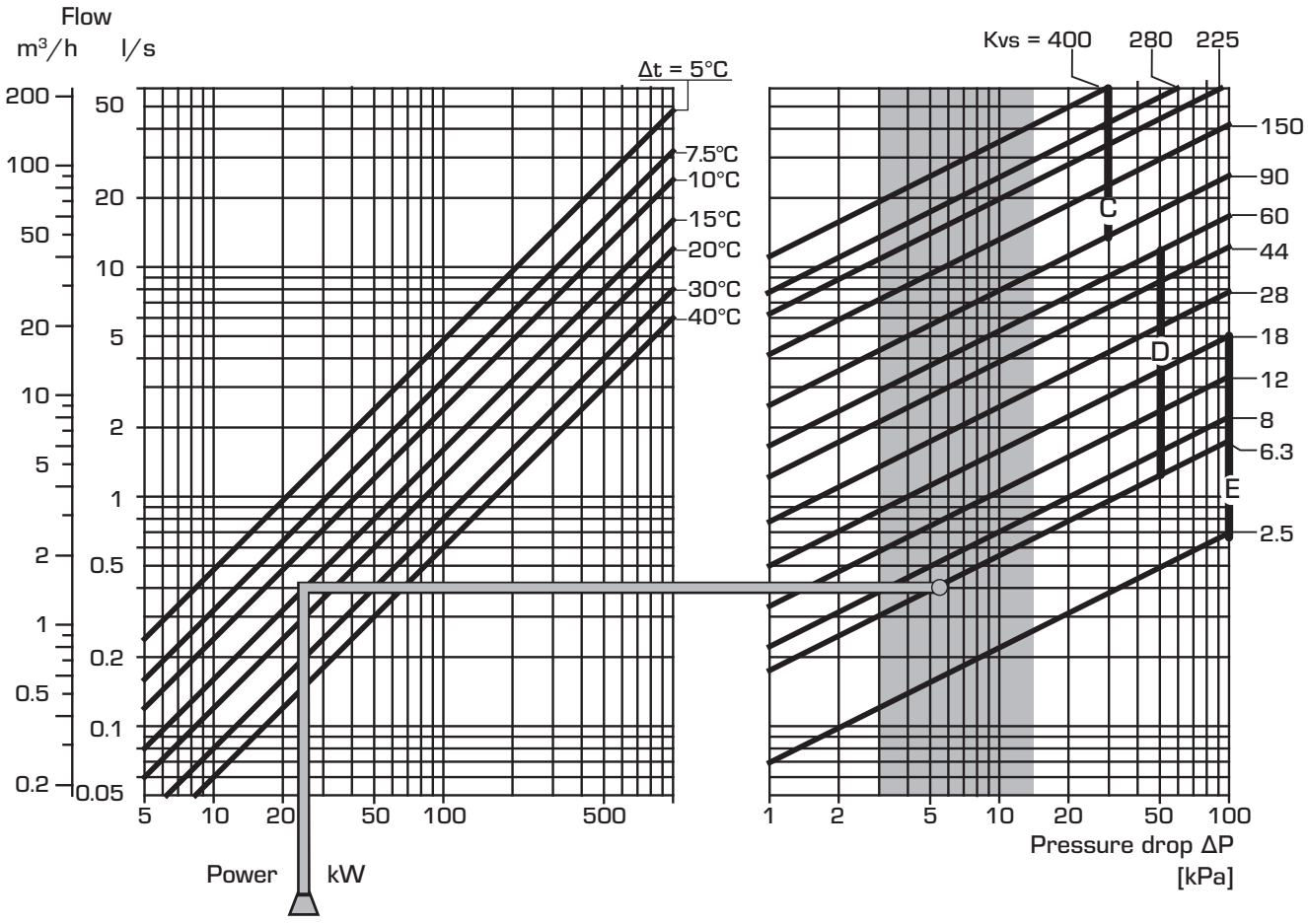


ESBE GUIDE
SELECT VALVE SIZE, SERIES MG, F, T/TM AND H/HG

HEATING SYSTEMS (RADIATOR OR UNDERFLOOR HEATING SYSTEMS)
Start with the heat demand in kW (ex. 25 kW) and move vertically to the chosen Δt (ex. 15°C).

Move horizontally to the shaded field (pressure drop of 3-15 kPa) and select the smaller Kvs-value (e.g. 6.3). A mixing valve with suitable Kvs-value will be found in respective product description.

OTHER APPLICATIONS
Make sure maximum ΔP is not exceeded.



C max ΔP Series F, DN 65 – 150

D max ΔP Series F, DN 20 – 50, T/TM, H/HG

E max ΔP Series MG

100 kPa = 1 bar ≈ 10 mWC

ESBE GUIDE
SELECT VALVE SIZE, SERIES VRG AND VRB

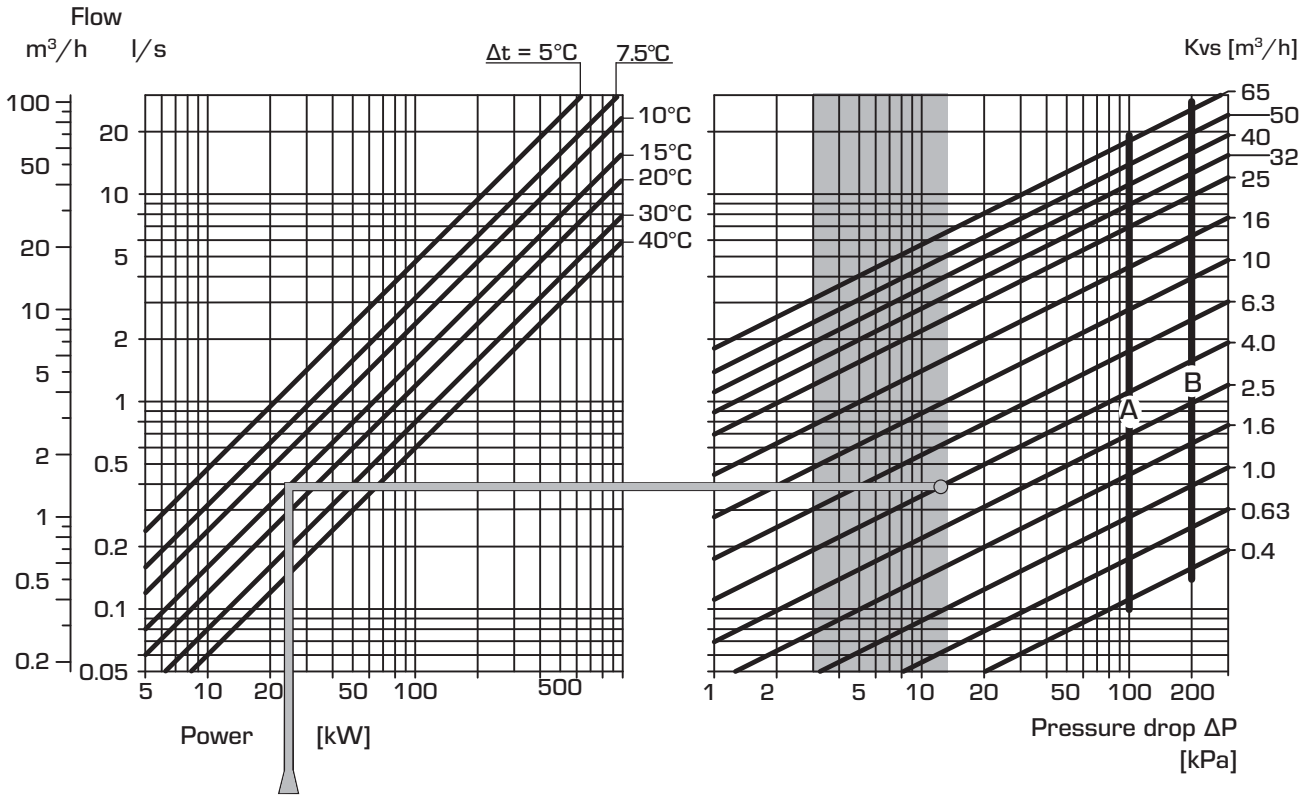
HEATING SYSTEMS (RADIATOR OR UNDERFLOOR HEATING SYSTEMS)

Start with the heat demand in kW (e.g. 25 kW) and move vertically to the chosen Δt (e.g. 15°C).

Move horizontally to the shaded field (pressure drop of 3-15 kPa) and select the smaller Kvs-value (e.g. 4.0). A mixing valve with suitable Kvs-value will be found in respective product description.

OTHER APPLICATIONS

Make sure maximum ΔP is not exceeded (see lines A and B in the graph below).



A max ΔP Mixing

B max ΔP Diverting

100 kPa = 1 bar ≈ 10 mWC

ROTARY MOTORIZED VALVES

MIXING VALVE
SERIES VRG130

The compact rotary 3-way mixing valve series VRG130 is available in DN 15–50, and is made of DZR brass, PN10. Four types of connections are available; internal thread, external thread, compression fitting and rotating nut. Patented + Registered design.


Internal thread


External thread


Compression fitting


Rotating nut


Rotating nut/
External thread

OPERATION

The ESBE series VRG130 is a range of compact low leakage mixing valves made of a special brass alloy (DZR) allowing use in both heating, cooling and tap water installations.

For easy manual operation the valves are equipped with non-slip knobs and end stops for an operation angle of 90°. The valve position scale can be turned over and rotated, allowing a wide choice of mounting positions. Together with actuator series ESBE ARA600 the VRG130 valves are also easily automated and have extraordinary regulating accuracy thanks to the unique valve-to-actuator interface. For more advanced control functions, the ESBE controllers allows even more applications.

ESBE VRG130 valves are available in dimensions DN 15 – 50 with internal or external thread, with rotating nut in DN20 or with compression fittings for pipe O.D. 22 and 28 mm.

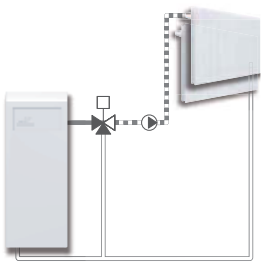
SERVICE AND MAINTENANCE

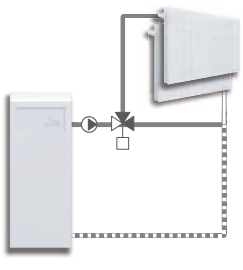
The slender and compact design of the valve allows for easy tool access when assembling and disassembling the valve.

Repair kits are available for key components.

INSTALLATION EXAMPLES

All the examples of installations can be mirrored. The valve position scale can be turned over and rotated to fit a number of installation layouts and should at the installation be fitted in the correct position as shown in the instruction for installation. The symbol markings of the valve ports (■●▲) minimize the risk of incorrect installation.


Mixing


Diverting

VALVE VRG130 DESIGNED FOR

- ● Heating
- ● Comfort cooling
- ● Potable water
- ● Floor heating
- ● Solar heating
- ● Ventilation
- ● Zone
- ○ District hot water
- ○ District heating
- ○ District cooling

SUITABLE ACTUATORS

The valve series VRG130 may most easily be fitted with ESBE actuators:

- ● Series ARA600
- ● Series 90*
- ● Series 90C
- ● Series CRB100
- ● Series CRA110

*Adaptor kit necessary, see product page

TECHNICAL DATA

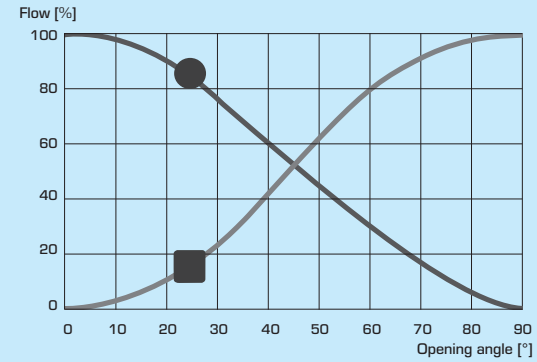
Pressure class: PN 10
Media temperature: max. (continuously) +110°C
max. (temporarily) +130°C
min. -10°C
Torque (at nominal pressure) DN15-32: < 3 Nm
DN40-50: < 5 Nm
Leakrate in % of flow*: Mixing < 0.05%
Diverting < 0.02%
Working pressure: 1 MPa (10 bar)
Max. differential pressure drop: Mixing, 100 kPa (1 bar)
Diverting, 200 kPa (2 bar)
Close off pressure: 200 kPa (2 bar)
Rangeability Kv/Kv^{min}, A-AB: 100
Connections: Internal thread, EN 10226-1
External thread, ISO 228/1
Compression fitting, EN 1254-2

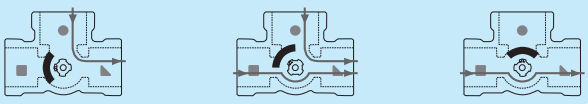
* Differential pressure 100kPa (1 bar)

Material
Valve body and slide: Brass DZR, CW 602N
Shaft and bushing: PPS composite
O-rings: EPDM

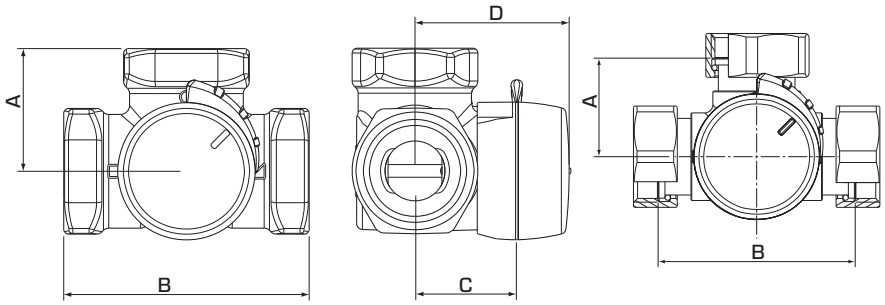
PED 97/23/EC, article 3.3

VALVE CHARACTERISTICS



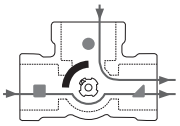


MIXING VALVE
SERIES VRG130

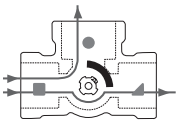


VRG131, VRG132, VRG133

VRG138



Mixing



Diverting

The flat-sided spindle top points towards the sleeve position.

SERIES VRG131, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1160 01 00	VRG131	15	0.4	Rp ½"	36	72	32	50	0.40	
1160 02 00			0.63							
1160 03 00			1							
1160 04 00			1.6							
1160 05 00			2.5							
1160 06 00			4							
1160 07 00	VRG131	20	2.5	Rp ¾"	36	72	32	50	0.43	
1160 08 00			4							
1160 09 00			6.3							
1160 10 00	VRG131	25	6.3	Rp 1"	41	82	34	52	0.70	
1160 11 00			10							
1160 12 00	VRG131	32	16	Rp 1¼"	47	94	37	55	0.95	
1160 34 00	VRG131	40	25	Rp 1½"	53	106	44	60	1.68	
1160 36 00	VRG131	50	40	Rp 2"	60	120	46	64	2.30	

SERIES VRG132, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1160 15 00	VRG132	15	0.4	G ¾"	36	72	32	50	0.40	
1160 16 00			0.63							
1160 17 00			1							
1160 18 00			1.6							
1160 19 00			2.5							
1160 20 00			4							
1160 21 00	VRG132	20	2.5	G 1"	36	72	32	50	0.43	
1160 22 00			4							
1160 23 00			6.3							
1160 24 00	VRG132	25	6.3	G 1¼"	41	82	34	52	0.70	
1160 25 00			10							
1160 26 00	VRG132	32	16	G 1½"	47	94	37	55	0.95	
1160 35 00	VRG132	40	25	G 2"	53	106	44	60	1.69	
1160 37 00	VRG132	50	40	G 2¼"	60	120	46	64	2.30	

SERIES VRG133, COMPRESSION FITTING

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1160 29 00	VRG133	20	4	CPF 22 mm	36	72	32	50	0.40	
1160 30 00			6.3							
1160 31 00	VRG133	25	10	CPF 28 mm	41	82	34	52	0.45	

SERIES VRG138, ROTATING NUT AND EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1160 38 00	VRG138	20	4	2x RN 1" + G 1"	36	72	32	50	0.56	
1160 39 00			4	3x RN 1"					0.59	
1160 40 00			6.3	2x RN 1" + G 1"					0.56	
1160 41 00			6.3	3x RN 1"					0.59	

* Kvs-value in m^3/h at a pressure drop of 1 bar. See also flow chart on page 33. CPF = compression fitting RN = Rotating Nut

ROTARY MOTORIZED VALVES

MIXING VALVE
SERIES VRG140

The compact rotary 4-way mixing valve series VRG140 is available in DN 15–50, and is made of DZR brass, PN10. Two types of connections are available; internal thread and external thread. Registered design.

Internal thread

External thread

OPERATION

The ESBE series VRG140 is a range of compact low leakage mixing valves made of a special brass alloy (DZR) allowing use in heating, cooling and tap water installations.

For easy manual operation the valves are equipped with non-slip knobs and end stops for an operation angle of 90°. The valve position scale can be turned over and rotated, allowing many different mounting positions. Together with actuator series ESBE ARA600, the VRG140 valves are also easily automated and have good regulating accuracy thanks to the unique valve-to-actuator interface. For more advanced control functions, the ESBE controllers allow even more applications.

ESBE VRG140 valves are available in dimensions DN 15 – 50 with internal thread and in dimensions DN15 – 50 with external thread.

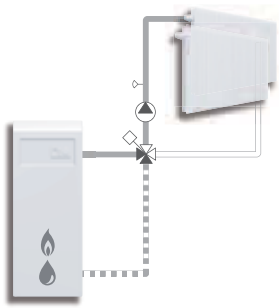
SERVICE AND MAINTENANCE

The slender and compact design of the valve allows for easy tool access when assembling and disassembling the valve.

Repair kits are available for key components.

INSTALLATION EXAMPLES

All the examples of installation can be mirrored. The valve position scale can be turned over and rotated to fit a number of installation layouts and should at the installation be fitted in the correct position as shown in the instruction for installation. The symbol markings of the valve ports (■●▲◗) minimize the risk of incorrect installation.



VALVE VRG140 DESIGNED FOR

- ● Heating
- ○ Comfort cooling
- ○ Potable water
- ○ Floor heating
- ● Solar heating
- ○ Ventilation
- ○ Zone
- ○ District hot water
- ○ District heating
- ○ District cooling

SUITABLE ACTUATORS

The valve series VRG140 may most easily be fitted with ESBE actuators:

- ● Series ARA600
- ● Series 90*
- ● Series 90C
- ● Series CRB100
- ● Series CRA110

*Adaptor kit necessary, see product page

TECHNICAL DATA

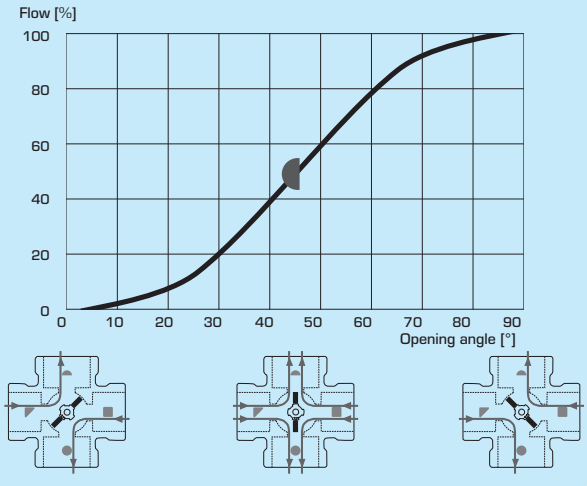
Pressure class: PN 10
Media temperature: max. (continuously) +110°C
max. (temporarily) +130°C
min. -10°C
Torque (at nominal pressure) DN15-32: < 3 Nm
DN40-50: < 5 Nm
Leakrate in % of flow*: < 1.0%
Working pressure: 1 MPa (10 bar)
Max. differential pressure drop: 100 kPa (1 bar)
Close off pressure: 100 kPa (1 bar)
Rangeability Kv/Kv^{min}, A-AB: 100
Connections: Internal thread, EN 10226-1
External thread, ISO 228/1

* Differential pressure 100kPa (1 bar)

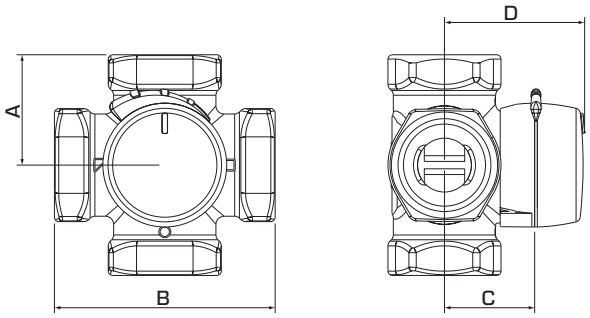
Material
Valve body and slide: Brass DZR, CW 602N
Shaft and bushing: PPS composite
O-rings: EPDM

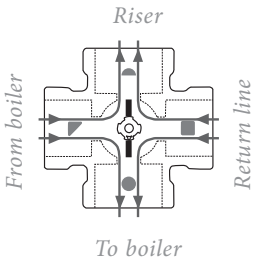
PED 97/23/EC, article 3.3

VALVE CHARACTERISTICS



MIXING VALVE
SERIES VRG140





The flat-sided spindle top points towards the sleeve position.

SERIES VRG141, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1164 01 00	VRG141	15	2.5	Rp ½"	36	72	32	50	0.40	
1164 02 00	VRG141	20	4	Rp ¾"	36	72	32	50	0.52	
1164 03 00			6.3							
1164 04 00	VRG141	25	10	Rp 1"	41	82	34	52	0.80	
1164 05 00	VRG141	32	16	Rp 1¼"	47	94	37	55	1.08	
1164 15 00	VRG141	40	25	Rp 1½"	53	106	44	60	1.89	
1164 17 00	VRG141	50	40	Rp 2"	60	120	46	64	2.55	

SERIES VRG142, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1164 08 00	VRG142	15	2.5	G ¾"	36	72	32	50	0.40	
1164 09 00	VRG142	20	4	G 1"	36	72	32	50	0.52	
1164 10 00			6.3							
1164 11 00	VRG142	25	10	G 1¼"	41	82	34	52	0.80	
1164 12 00	VRG142	32	16	G 1½"	47	94	37	55	1.08	
1164 16 00	VRG142	40	25	G 2"	53	106	44	60	1.90	
1164 18 00	VRG142	50	40	G 2¼"	60	120	46	64	2.55	

* Kvs-value in m^3/h at a pressure drop of 1 bar. See also flow chart on page 33.

CHANGE-OVER / DIVERTING VALVE SERIES VRG230

The compact rotary 3-way mid-port valve series VRG230 is available in DN 20–50, and is made of DZR brass, PN 10. Four types of connections are available; internal thread, external thread, compression fitting and rotating nut. Patented + Registered design.

Internal thread

External thread

Compression fitting

Rotating nut

OPERATION

The ESBE series VRG230 is a range of low leakage rotary valves made of a special brass alloy (DZR) suitable for mid-port change-over / diverting operation.

For easy manual operation, the valves are equipped with non-slip knobs and end stops. The valve position scale can be turned over and rotated, allowing a wide choice of mounting positions. Together with actuator series ESBE ARA600 or controllers ESBE series CRA110 and CRB100, the VRG230 valves are also easily automated thanks to the unique valve-to-actuator interface.

ESBE VRG230 valves are available in dimensions DN 20 – 50 with internal or external thread, with rotating nut in DN20 or with compression fittings for pipe O.D. 22 and 28 mm.

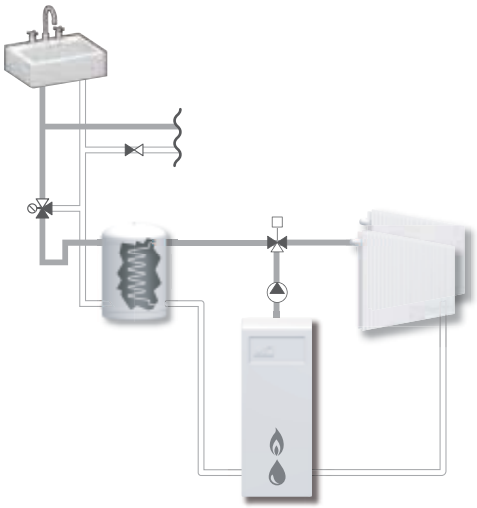
SERVICE AND MAINTENANCE

The slender and compact design of the valve allows for easy tool access when assembling and disassembling the valve.

Repair kits are available for key components.

INSTALLATION EXAMPLES

All the examples of installations can be mirrored. The valve position scale can be turned over and rotated to fit a number of installation layouts and should at the installation be fitted in the correct position as shown in the instruction for installation. The symbol markings of the valve ports (■●▲) minimize the risk of incorrect installation.



VALVE VRG230 DESIGNED FOR

- ● Heating
- ● Comfort cooling
- ● Potable water
- ○ Floor heating
- ● Solar heating
- ● Ventilation
- ● Zone
- ○ District hot water
- ○ District heating
- ○ District cooling

SUITABLE ACTUATORS

The valve series VRG230 may most easily be fitted with ESBE actuators:

- ● Series ARA600
- ● Series 90*
- ● Series 90C
- ● Series CRB100
- ● Series CRA110

*Adaptor kit necessary, see product page

TECHNICAL DATA

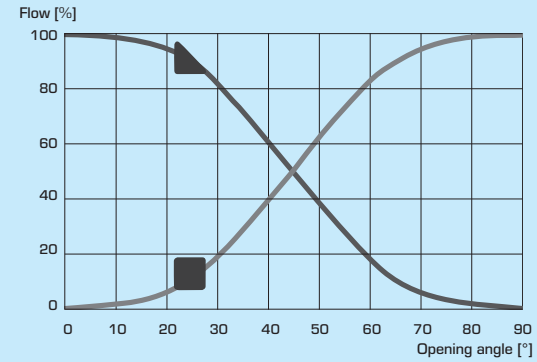
Pressure class: PN 10
Media temperature: max. (continuously) +110°C
max. (temporarily) +130°C
min. -10°C
Torque (at nominal pressure) DN15-32: < 3 Nm
DN40-50: < 5 Nm
Leakrate in % of flow*: < 0.5%
Working pressure: 1 MPa (10 bar)
Max. differential pressure drop: Diverting, 200 kPa (2 bar)
Mixing, 100 kPa (1 bar)
Close off pressure: 200 kPa (2 bar)
Rangeability Kv/Kv^{min}, A-AB: 100
Connections: Internal thread, EN 10226-1
External thread, ISO 228/1
Compression fitting, EN 1254-2

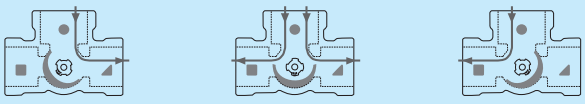
* Differential pressure 100kPa (1 bar)

Material
Valve body and slide: Brass DZR, CW 602N
Shaft and bushing: PPS composite
O-rings: EPDM

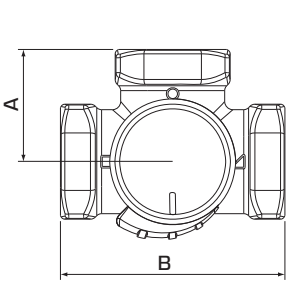
PED 97/23/EC, article 3.3

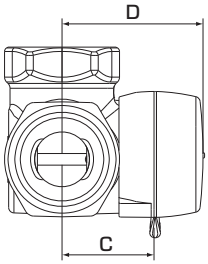
VALVE CHARACTERISTICS



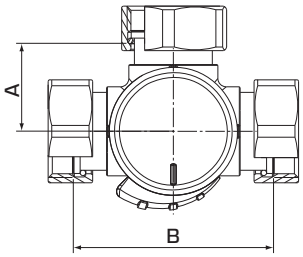


CHANGE-OVER / DIVERTING VALVE
SERIES VRG230

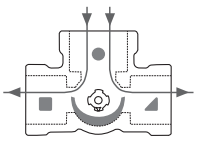




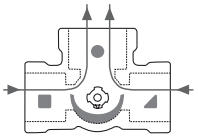
VRG231, VRG232, VRG233



VRG238



Diverting



Mixing

The flat-sided spindle top points towards the sleeve position.

SERIES VRG231, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1162 01 00	VRG231	20	6.3	Rp ¾"	36	72	32	50	0.43	
1162 02 00	VRG231	25	10	Rp 1"	41	82	34	52	0.70	
1162 03 00	VRG231	32	16	Rp 1¼"	47	94	37	55	0.95	
1162 14 00	VRG231	40	30	Rp 1½"	53	106	44	60	1.72	
1162 16 00	VRG231	50	40	Rp 2"	60	120	46	64	2.39	

SERIES VRG232, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1162 06 00	VRG232	20	6.3	G 1"	36	72	32	50	0.43	
1162 07 00	VRG232	25	10	G 1¼"	41	82	34	52	0.70	
1162 08 00	VRG232	32	16	G 1½"	47	94	37	55	0.95	
1162 15 00	VRG232	40	30	G 2"	53	106	44	60	1.73	
1162 17 00	VRG232	50	40	G 2¼"	60	120	46	64	2.39	

SERIES VRG233, COMPRESSION FITTING

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1162 11 00	VRG233	20	4	CPF 22 mm	36	72	32	50	0.40	
1162 12 00			6.3							
1162 13 00	VRG233	25	10	CPF 28 mm	41	82	34	52	0.45	

SERIES VRG238, ROTATING NUT

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1162 18 00	VRG238	20	4	3x RN 1"	36	72	32	50	0.59	
1162 19 00			6.3							

* Kvs-value in m^3/h at a pressure drop of 1 bar. See also flow chart on page 33. CPF = compression fitting RN = Rotating Nut

ROTARY MOTORIZED VALVES

MIXING VALVE
SERIES VRG330

Internal thread

External thread

Rotating nut

The compact rotary 3-way mixing and diverting valve series VRG330 is developed in particular for high flow applications and is available in DN 20–50, DZR brass, PN10. Three types of connections are available; internal thread, external thread and rotating nut. Patented + Registered design.

OPERATION

The ESBE series VRG330 is a range of compact low leakage mixing valves made of a special brass alloy (DZR) allowing use in both heating, cooling and tap water installations.

For easy manual operation the valves are equipped with non-slip knobs and end stops for an operation angle of 90°. Together with actuator series ESBE ARA600 or controllers ESBE series CRA110 and CRB100, the VRG330 valves are also easily automated thanks to the unique valve-to-actuator interface.

ESBE VRG330 valves are available in dimensions DN 20 – 50 with internal thread or external thread, or with rotating nut in DN20.

The VRG330 is designed for high flow applications with extra high Kvs-value between port ■ - ▲ .Kvs-value in bypass (●) is about 60% of specified Kvs (■ - ▲).

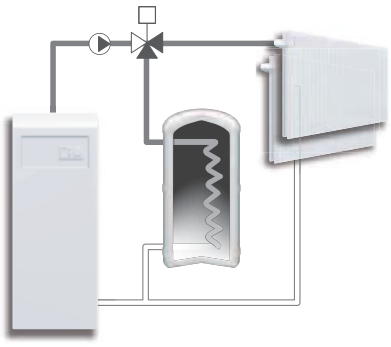
SERVICE AND MAINTENANCE

The slender and compact design of the valve allows for easy tool access when assembling and disassembling the valve.

Repair kits are available for key components.

INSTALLATION EXAMPLES

All the examples of installations can be mirrored. The valve position scale can be turned over and rotated to fit a number of installation layouts and should at the installation be fitted in the correct position as shown in the instruction for installation. The symbol markings of the valve ports (■●▲) minimize the risk of incorrect installation.



VALVE VRG330 DESIGNED FOR

- ● Heating
- ● Comfort cooling
- ● Potable water
- ○ Floor heating
- ● Solar heating
- ○ Ventilation
- ● Zone
- ○ District hot water
- ○ District heating
- ○ District cooling

SUITABLE ACTUATORS

The valve series VRG330 may most easily be fitted with ESBE actuators:

- ● Series ARA600
- ● Series 90*
- ● Series 90C
- ● Series CRB100
- ● Series CRA110

*Adaptor kit necessary, see product page

TECHNICAL DATA

Pressure class:	PN 10
Media temperature:	max. (continuously) +110°C
	max. (temporarily) +130°C
	min. -10°C
Torque (at nominal pressure) DN15-32:	< 3 Nm
DN40-50:	< 5 Nm
Leakrate in % of flow*:	< 0.05
Working pressure:	1 MPa (10 bar)
Max. differential pressure drop:	Mixing, 100 kPa (1 bar)
	Diverting, 200 kPa (2 bar)
Close off pressure:	200 kPa (2 bar)
Rangeability Kv/Kv^{min}, A-AB:	100
Connections:	Internal thread, EN 10226-1
	External thread, ISO 228/1

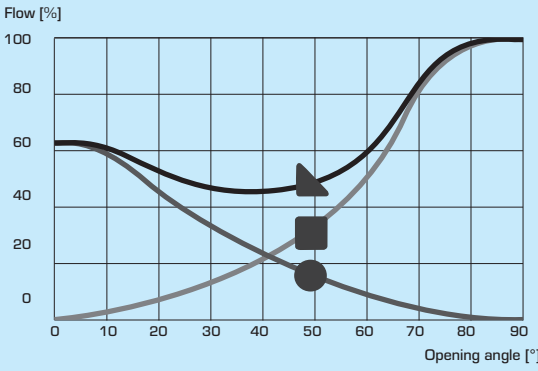
* Differential pressure 100kPa (1 bar)

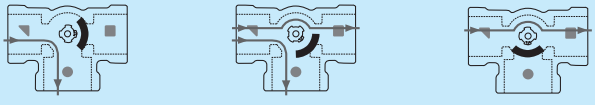
Material

Valve body and slide:	Brass DZR, CW 602N
Shaft and bushing:	PPS composite
O-rings:	EPDM

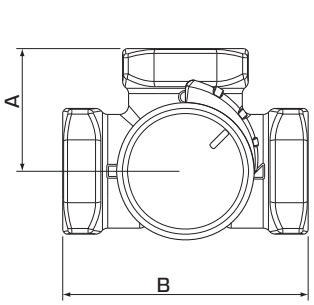
PED 97/23/EC, article 3.3

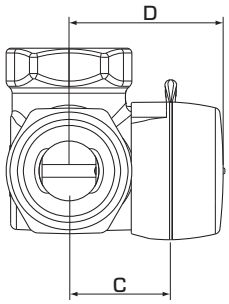
VALVE CHARACTERISTICS



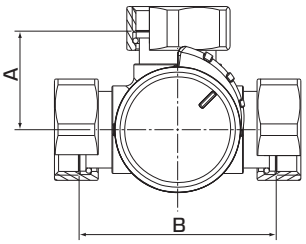


MIXING VALVE
SERIES VRG330

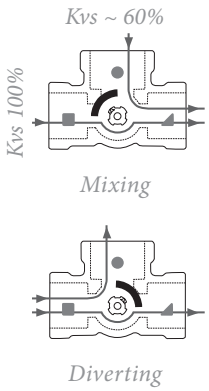




VRG331, VRG332



VRG338



The flat-sided spindle top points towards the sleeve position.

SERIES VRG331, INTERNAL THREAD

Art. No.	Reference	DN	Kvs* ■ - ▲	Kvs* ■ - ●	Connection	A	B	C	D	Weight [kg]	Note
1170 01 00	VRG331	20	13	8	Rp ¾"	36	72	32	50	0.43	
1170 02 00	VRG331	25	17	10	Rp 1"	41	82	34	52	0.70	
1170 03 00	VRG331	32	32	20	Rp 1¼"	47	94	37	55	0.95	
1170 11 00	VRG331	40	45	30	Rp 1½"	53	106	44	60	1.65	
1170 13 00	VRG331	50	65	40	Rp 2"	60	120	46	64	2.28	

SERIES VRG332, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs* ■ - ▲	Kvs* ■ - ●	Connection	A	B	C	D	Weight [kg]	Note
1170 06 00	VRG332	20	13	8	G 1"	36	72	32	50	0.43	
1170 07 00	VRG332	25	17	10	G 1¼"	41	82	34	52	0.70	
1170 08 00	VRG332	32	32	20	G 1½"	47	94	37	55	0.95	
1170 12 00	VRG332	40	45	30	G 2"	53	106	44	60	1.66	
1170 14 00	VRG332	50	65	40	G 2¼"	60	120	46	64	2.28	

SERIES VRG338, ROTATING NUT

Art. No.	Reference	DN	Kvs* ■ - ▲	Kvs* ■ - ●	Connection	A	B	C	D	Weight [kg]	Note
1170 15 00	VRG338	20	13	8	3x RN 1"	36	72	32	50	0.57	

* Kvs-value in m^3/h at a pressure drop of 1 bar. See also flow chart on page 33. RN = Rotating Nut

ROTARY MOTORIZED VALVES

MIXING VALVE
SERIES VRB140


Internal thread


External thread


Compression fitting

The compact rotary mixing valve series VRB140 for bivalent heating systems is available in DN 15–50, and is made of DZR brass. Three types of connections are available; internal thread, external thread and compression fittings. PN 10. Patented + Registered design.

OPERATION

ESBE series VRB140 is a range of compact rotary mixing valve developed for bivalent systems, i.e. where two heat sources are connected in series or parallel. With an actuator and a control device, the ESBE VRB140 can be used to prioritize between heat sources.

For easy manual operation the valves are equipped with non-slip knobs and end stops for an operation angle of 90°. The valve position scale can be turned over and rotated, allowing a wide choice of mounting positions. Together with actuator series ESBE ARA600, the VRB140 valves are also easily automated and have extraordinary regulating accuracy thanks to the unique valve-to-actuator interface. For more advanced control functions, the ESBE controllers allows even more applications.

ESBE VRB140 valves are available in dimensions DN 15 – 50 with internal thread, in DN 15 – 50 with external thread and with compression fittings for pipe O.D. 22 and 28 mm.

FUNCTION

The BIV valve has two inlets to which the heat sources can be connected either in parallel or in series. The primary, i.e. the low grade heat source should be connected to port 1 and the secondary to port 2. When no heat is needed, both ports 1 and 2 are closed. When heat is needed, the supply from port 1 is used as long as the required temperature can be maintained. When this is no longer the case the valve provides initially a mixed flow from ports 1 and 2. Finally port 2 is fully open and port 1 closed. (The function is like a 3-way valve but with two inlets instead of one.)

The BIV valve may also be used on water storage tanks where two outlets from the tank are required. One outlet at the top of the tank and one half way down the tank serve the valve and the return line from the heating system is connected to the bottom of the tank. With this arrangement the hot water from the top of the tank will be used in conjunction with the cooler water drawn from the mid position.

SERVICE AND MAINTENANCE

The slender and compact design of the valve allows for easy tool access when assembling and disassembling the valve.

Repair kits are available for key components.

VALVE VRB140 DESIGNED FOR

- ● Heating
- ● Comfort cooling
- ○ Potable water
- ● Floor heating
- ● Solar heating
- ○ Ventilation
- ○ Zone
- ○ District hot water
- ○ District heating
- ○ District cooling

SUITABLE ACTUATORS

The valve series VRB140 may most easily be fitted with ESBE actuators:

- ● Series ARA600
- ● Series 90*
- ● Series 90C
- ● Series CRB100
- ● Series CRA110

*Adaptor kit necessary, see product page

TECHNICAL DATA

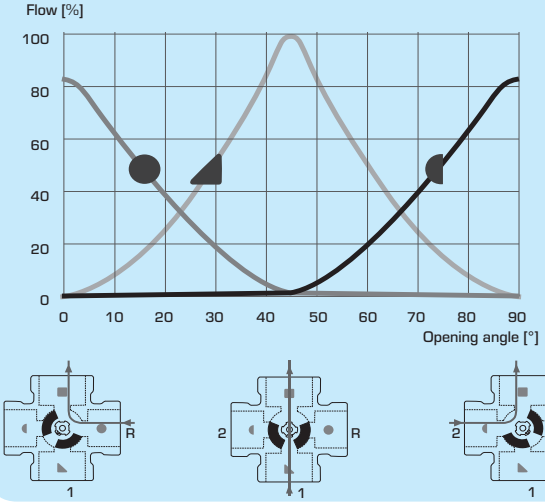
Pressure class: PN 10
Media temperature: max. (continuously) +110°C
max. (temporarily) +130°C
min. -10°C
Torque (at nominal pressure) DN15-32: < 3 Nm
DN40-50: < 5 Nm
Leakrate in % of flow*: < 0.5%
Working pressure: 1 MPa (10 bar)
Max. differential pressure drop: Mixing, 100 kPa (1 bar)
Diverting, 200 kPa (2 bar)
Close off pressure: 200 kPa
Rangeability Kv/Kv^{min}, A-AB: 100
Connections: Internal thread, EN 10226-1
External thread, ISO 228/1
Compression fitting, EN 1254-2

* Differential pressure 100kPa (1 bar)

Material
Valve body and slide: Brass DZR, CW 602N
Shaft and bushing: PPS composite
O-rings: EPDM

PED 97/23/EC, article 3.3

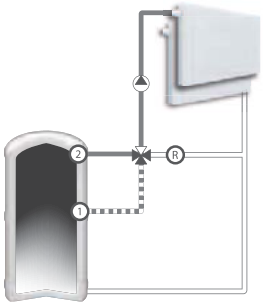
VALVE CHARACTERISTICS



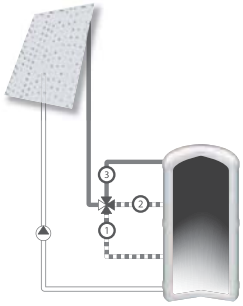
MIXING VALVE
SERIES VRB140

INSTALLATION EXAMPLES

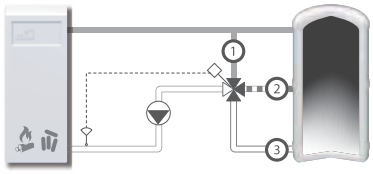
All the examples of installation can be mirrored. The valve position scale can be turned over and rotated to fit a number of installation layouts and shall at the installation be fitted in the correct position as shown in the instruction for installation. The symbol markings of the valve ports (■●▲◗) minimize the risk of incorrect installation.



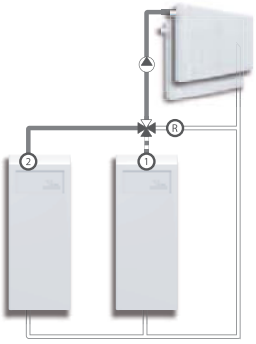
Storage tank mixing



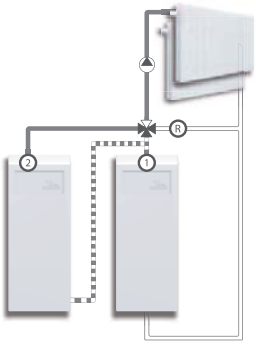
Storage tank loading



Storage tank loading



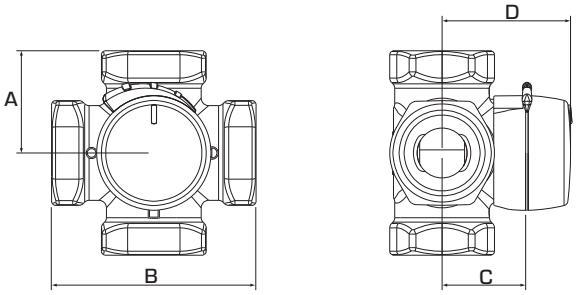
Parallel heat sources

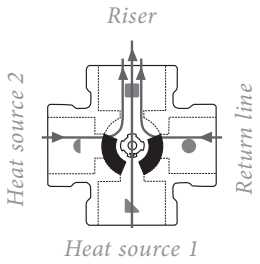


Serial heat sources

We would like to pinpoint to the existence of a German patent DE 19821256C5 affecting the usage of bivalent 4-way valves in liquid circulation heating systems. In this patent the usage of a 4-way bivalent valve in a type of heating system protected, in which 2 different heating circuits are operated in parallel, where the return of the first circuit is utilized as heatsource for the parallel second heat circuit. A typical application would be a primar heat circuit with a heatsource and a parallel floor heating, where the floorheating in a regulated manner is heated through its heatsource and the return from the primary circuit the return of the first heat circuit is utilized as alternative secondary heatsource for the floor heating. Such a utilization of our bivalent 4-way valve is without approval of the patent holder forbidden. All other applications our product group VRB are without restrictions possible.

MIXING VALVE
SERIES VRB140





The flat-sided spindle top points towards the sleeve input.

SERIES VRB141, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1166 01 00	VRB141	15	2.5	Rp ½"	36	72	32	50	0.40	
1166 02 00	VRB141	20	4	Rp ¾"	36	72	32	50	0.52	
1166 03 00			6.3							
1166 04 00	VRB141	25	10	Rp 1"	41	82	34	52	0.80	
1166 05 00	VRB141	32	16	Rp 1¼"	47	94	37	55	1.08	
1166 20 00	VRB141	40	25	Rp 1½"	53	106	44	60	1.98	
1166 22 00	VRB141	50	35	Rp 2"	60	120	46	64	2.65	

SERIES VRB142, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1166 08 00	VRB142	15	2.5	G ¾"	36	72	32	50	0.40	
1166 24 00			4							
1166 09 00	VRB142	20	4	G 1"	36	72	32	50	0.52	
1166 10 00			6.3							
1166 11 00	VRB142	25	10	G 1¼"	41	82	34	52	0.80	
1166 12 00	VRB142	32	16	G 1½"	47	94	37	55	1.08	
1166 21 00	VRB142	40	25	G 2"	53	106	44	60	1.99	
1166 23 00	VRB142	50	35	G 2¼"	60	120	46	64	2.65	

SERIES VRB143, COMPRESSION FITTING

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Note
1166 15 00	VRB143	20	4	CPF 22 mm	36	72	32	50	0.40	
1166 16 00			6.3							
1166 17 00	VRB143	25	6.3	CPF 28 mm	36	72	32	52	0.45	

* Kvs-value in m^3/h at a pressure drop of 1 bar. See also flow chart on page 33. CPF = compression fitting.

ESBE GUIDE
DESIGNATION CODE SYSTEM FOR NEW PRODUCTS

Type designations consists of 6 characters in a combination of 3 letters and 3 digits as illustrated below.

ABC123

[C] Subseries

[B] Product area
L = Linear
R = Rotary
T = Thermic or Thermostatic
Z = Diverting

[A] Type of product
A = Actuator
L = Load unit
V = Valve

DESIGNATION CODE SYSTEM FOR ROTARY MOTORIZED VALVES

ROTARY VALVES [VR_]
Rotary valves are available as series VRG which replaces series G and MG, and series VRB which replaces series BIV.

VRG123

[3] Type of Connection
1 = female
2 = male
3 = compression fitting
8 = rotating nut

[2] Flow
2 = 2-way
3 = 3-way
4 = 4-way

[1] Version
1 = regulating characteristic
2 = non-regulating characteristic
3 = high flow

ROTARY ACTUATORS [AR_]
Rotary Actuators are available as series ARA which replaces series 60.

ARA123

[3] Control signal /Voltage
1 = 3-point, 230 VAC
2 = 3-point, 230 VAC, Auxiliary switch
3 = 3-point, 24 VAC
4 = 3-point, 24 VAC, Auxiliary switch
5 = 2-point, 230 VAC
6 = 2-point, 230 VAC, Auxiliary switch
7 = 2-point, 24 VAC
8 = 2-point, 24 VAC, Auxiliary switch
9 = Proportional control signal

[2] Running time
1 = 3 seconds
2 = 7 seconds
3 = 15 seconds
4 = 30 seconds
5 = 60 seconds
6 = 120 seconds
7 = 240 seconds
8 = 480 seconds
9 = variable running time

[1] Version
6 = version

ROTARY MOTORIZED VALVES

MIXING VALVE
SERIES 3MG

3MG, DN 15–32, DZR brass. PN 10. Pump flange connection in combination with external thread.

External thread/
Pump flange

OPERATION

The ESBE series MG is a compact mixing valve made of brass for use in heating and cooling installations.

The MG is normally equipped with a knob for manual operation and is also suitable for automatic control. This is a simple operation when using the ESBE actuator series ARA600 and series 90, or controllers series CRA110, CRB100 and 90C.

The scale is graded on both sides and can be turned, allowing a choice of mounting positions. Operation angle = 90°.

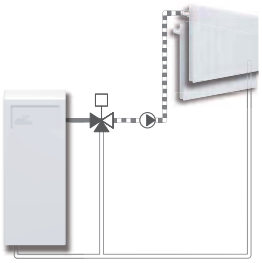
Valves series 3MG are made of a special brass alloy (DZR) and are therefore also suitable for domestic water installations.

SERVICE AND MAINTENANCE

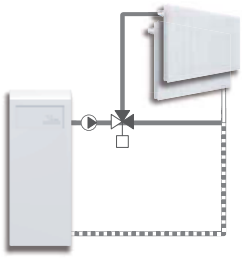
All major parts are replaceable. The shaft seal consist of two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. However, before doing so, the system must be depressurized.

INSTALLATION EXAMPLES

All the examples of installations can be reversed. The valve position plate is graded on both sides and should at the installation be fitted in the correct position as shown in the instruction for installation.



3MG, Mixing



3MG, Diverting

VALVE 3MG DESIGNED FOR

- ● Heating
- ● Comfort cooling
- ● Potable water
- ● Floor heating
- ● Solar heating
- ● Ventilation
- ● Zone
- ○ District hot water
- ○ District heating
- ○ District cooling

SUITABLE ACTUATORS

The valve series 3MG may most easily be fitted with ESBE actuators:

- ● Series ARA600
- ● Series 90
- ● Series 90C
- ● Series CRB100
- ● Series CRA110

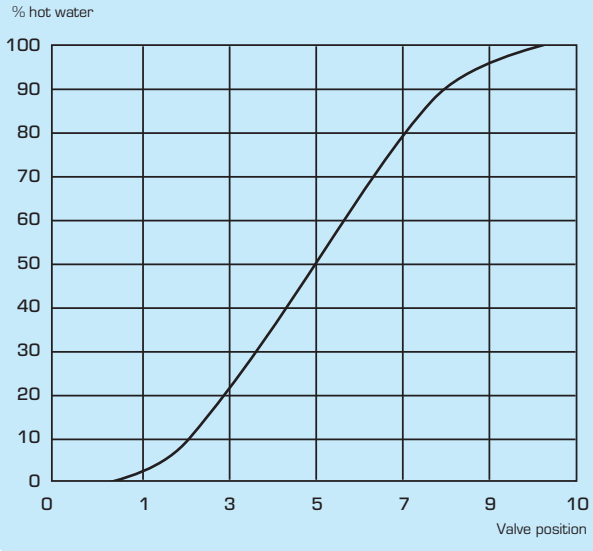
TECHNICAL DATA

Pressure class:	PN 10
Media temperature:	max. +130°C
	min. –10°C
Differential pressure drop:	max. 100 kPa
Torque:	max. 3Nm
Leakrate in % of flow:	see table
Rangeability Kv/Kv^{min}:	100
Connections:	External thread, ISO 228/1

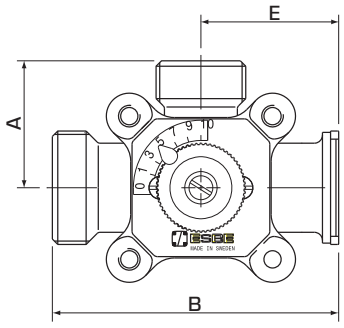
Material

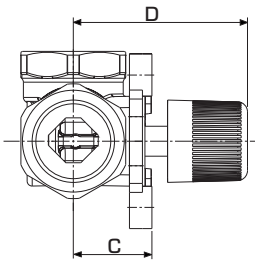
Valve body, spindle and slide:	Brass DZR, CW 602N
Bushing:	Plastic
Cover plate:	Zinc
O-rings:	EPDM

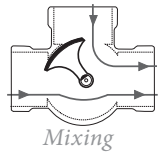
VALVE CHARACTERISTICS

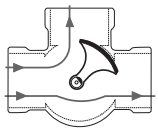


MIXING VALVE
SERIES 3MG









The flat-sided spindle top
(as well as the indicator of the knob)
points towards the sleeve position.

SERIES 3MGP, PUMP FLANGE AND EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	E	Weight [kg]	Leakrate in % of flow** mixing	diverting
1100 55 00	3MGP 15	15	2.5	G 1" / G 1½" / PF 1½"	48	112	32	70	51	1.0	0.1	0.05
1100 56 00	3MGP 20	20	6.3									
1100 20 00	3MGP 25	25	8									
1100 57 00	3MGP 32	32	18	G 1¼" / G 1½" / PF 2"	48	105	38	76	50	1.1	0.1	0.05

* Kvs-value in m^3/h at a pressure drop of 1 bar. See also flow chart on page 33. ** Differential pressure 50 kPa. PF = Pump Flange

ROTARY MOTORIZED VALVES

MIXING VALVE
SERIES 5MG

5MG, DN 25–32, brass, PN 10. Internal thread connection.

Internal thread

OPERATION

The ESBE series 5MG is a compact mixing valve with five ports. It is made of brass for use in heating installations.

Series 5MG is normally equipped with a knob for manual operation and is also suitable for automatic control. This is a simple operation when using the ESBE actuator 92P4 or 95-270M (article number 1255 04 00, 1205 33 00), or controllers series 90C.

Series 5MG is available in dimensions DN 25–32 with internal thread.

The scale is graded on both sides and can be turned, allowing a choice of mounting positions. Operation angle = 270°.

FUNCTION

When used as mixing valve it has four inlets to be connected so that they draw heat from different layers in a storage tank or from different heat sources.

When used as a diverting valve it has four outlets to be connected so that they feed different layers in a storage tank.

SERVICE AND MAINTENANCE

All major parts are replaceable. The shaft seal consist of two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. However, before doing so, the system must be depressurized.

INSTALLATION EXAMPLES

All the examples of installations can be reversed. The valve position plate is graded on both sides and should at the installation be fitted in the correct position as shown in the instruction for installation.

VALVE 5MG DESIGNED FOR

- ● Heating
- ○ Comfort cooling
- ○ Potable water
- ○ Floor heating
- ● Solar heating
- ○ Ventilation
- ○ Zone
- ○ District hot water
- ○ District heating
- ○ District cooling

SUITABLE ACTUATORS

The valve series 5MG may most easily be fitted with ESBE actuators:

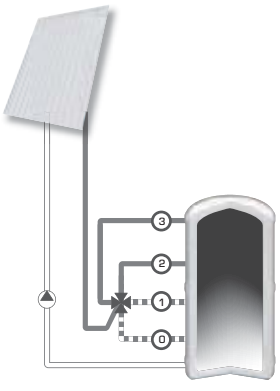
- ● Series 90, type 92P4 and 95-270M
- ● Series 90C

TECHNICAL DATA

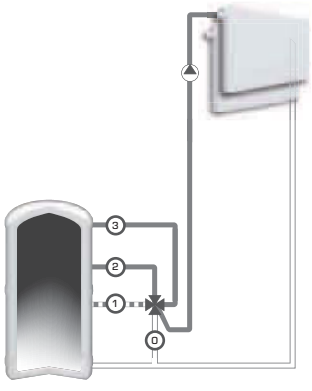
Pressure class:	PN 10
Media temperature:	max. +130°C
	min. –10°C
Differential pressure drop:	max. 100 kPa
Torque:	max. 3Nm
Leakrate in % of flow:	see table
Rangeability Kv/Kv^{min}:	100
Connections:	Internal thread, EN 10226-1

Material

Valve body, spindle and slide:	Brass CW 614N
Bushing:	Plastic
Cover plate:	Zinc
O-rings:	EPDM

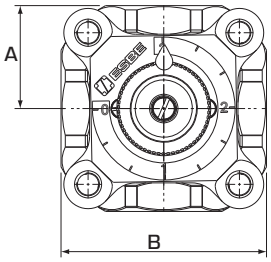


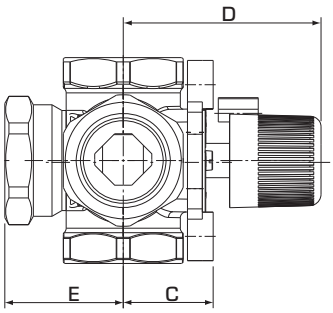
Diverting

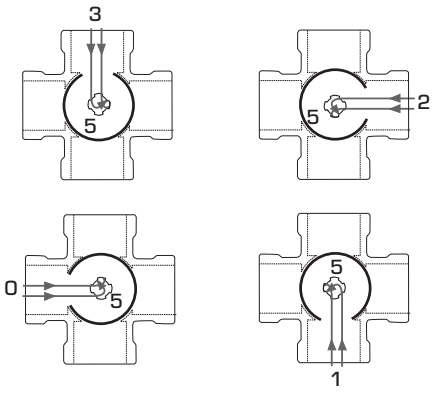


Mixing

MIXING VALVE
SERIES 5MG







The flat-sided spindle top
(as well as the indicator of the knob)
points towards the opening in the sleeve.

SERIES 5MG, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	E	Weight [kg]	Leakrate in % of flow**
1100 52 00	5MG 25	25	8	Rp 1"	36	72	32	70	41	0.9	0.3
1100 53 00	5MG 32	32	18	Rp 1¼"	44	88	38	77	47	1.2	0.2

* Kvs-value in m^3/h at a pressure drop of 1 bar. See also flow chart on page 32. ** Differential pressure 50 kPa

ROTARY MOTORIZED VALVES

MIXING VALVE
SERIES 3F

3F, DN 20–150, cast iron, PN 6. Flange.

Flange

OPERATION

The ESBE series F is a valve made of cast iron for use in heating and cooling installations.

The mixing proportions are adjusted manually with a handle or, in automatically controlled systems, by means of an actuator. Suitable actuators are ESBE series ARA600 for DN ≤40 or series 90. The valve can alco be equipped with ESBE controllers series 90C, CRA120 or CRA110 and CRB ≤DN40.

Valve series 3F is available in dimensions DN 20-150 with flanged connections.

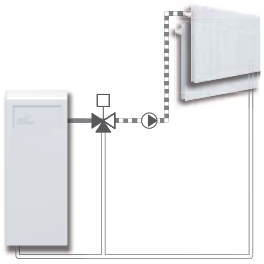
The scale is graded on both sides and can be turned, allowing a choice of mounting positions. Operation angle = 90°.

SERVICE AND MAINTENANCE

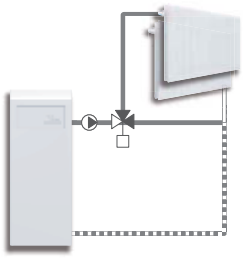
All major parts are replaceable. The shaft seal consist two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. However, before doing so, the system must be depressurized.

INSTALLATION EXAMPLES

All the examples of installations can be reversed. The valve position plate is graded on both sides and should at the installation be fitted in the correct position as shown in the instruction for installation.



Mixing



Diverting

VALVE 3F DESIGNED FOR

- ● Heating
- ● Comfort cooling
- ○ Potable water
- ○ Floor heating
- ○ Solar heating
- ○ Ventilation
- ○ Zone
- ○ District hot water
- ○ District heating
- ○ District cooling

SUITABLE ACTUATORS

The valve series 3F may most easily be fitted with ESBE actuators:

- ● Series ARA600 ≤DN40
- ● Series 90
- ● Series 90C
- ● Series CRB100 ≤DN40
- ● Series CRA110 ≤DN40
- ● Series CRA120

TECHNICAL DATA

Pressure class: PN 6
Media temperature: max. 110°C, min. -10°C
Differential pressure drop: DN 20–50, max. 50 kPa
DN 65–150, max. 30 kPa
Leakrate in % of flow: max. 1.5%
Rangeability Kv/Kv^{min}: 100
Connection: Flange according to EN 1092-2

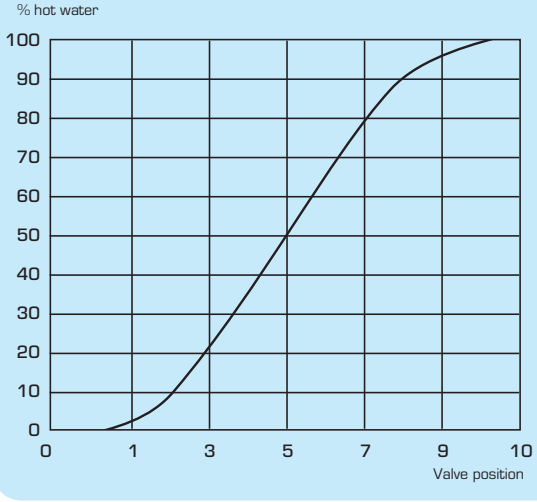
Material	DN 20–25	DN 32-150
Valve body:	Cast iron EN-JL 1030	
Slide:	brass CW 614N	brass CW 614N and stainless steel
Bushing:	plastic	brass CW 602N
Cover plate:	zinc	cast iron
O-rings:	EPDM	

REQUIRED ACTUATOR TORQUE

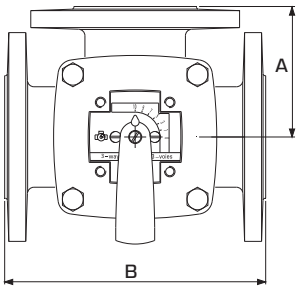
The figures below are intended only as a recommendation for ordinary installations. In some applications the valve may require even more actuator torque.

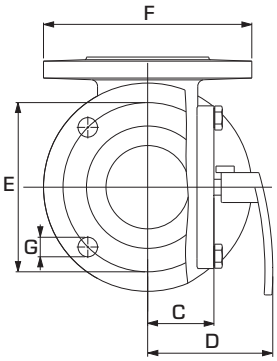
Valve size up to	actuator torque
DN 25	3 Nm
DN 50	5 Nm
DN 80	10 Nm
DN 150	15 Nm

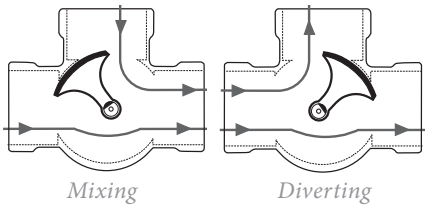
VALVE CHARACTERISTICS



MIXING VALVE
SERIES 3F







Flanged connection PN6,
standard EN 1092-2

The flat-sided spindle top
(as well as the indicator of the knob)
points towards the sleeve position.

SERIES 3F

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	Weight [kg]
1110 01 00	3F 20	20	12	70	140	40	82	65	90	4x11.5	3.5
1110 02 00	3F 25	25	18	75	150	40	82	75	100	4x11.5	4.0
1110 03 00	3F 32	32	28	80	160	40	82	90	120	4x15	5.9
1110 04 00	3F 40	40	44	88	175	40	82	100	130	4x15	6.8
1110 06 00	3F 50	50	60	98	195	50	92	110	140	4x15	9.1
1110 08 00	3F 65	65	90	100	200	52	95	130	160	4x15	10.0
1110 10 00	3F 80	80	150	120	240	63	106	150	190	4x18	16.2
1110 12 00	3F 100	100	225	132	265	73	116	170	210	4x18	21.0
1110 14 00	3F 125	125	280	150	300	80	123	200	240	8x18	27.0
1110 16 00	3F 150	150	400	175	350	88	130	225	265	8x18	37.0

* Kvs-value in m^3/h at a pressure drop of 1 bar. See flow chart on page 32.

ROTARY MOTORIZED VALVES

MIXING VALVE
SERIES 4F

4F, DN 32–150, cast iron, PN 6. Flange.

Flange

OPERATION

The ESBE series F is a valve made of cast iron for use in heating and cooling installations.

The mixing proportions are adjusted manually with a handle or, in automatically controlled systems, by means of an actuator. Suitable actuators are ESBE series ARA600 for DN ≤40 or series 90. The valve can alco be equipped with ESBE controllers series 90C, CRA120 or CRA110 and CRB ≤DN40.

Valve series 4F is available in dimensions DN 32-150 with flanged connections.

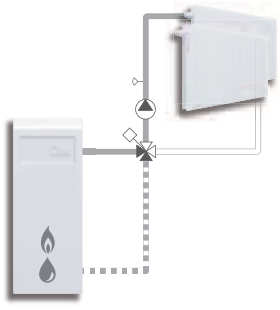
The scale is graded on both sides and can be turned, allowing a choice of mounting positions. Operation angle = 90°.

SERVICE AND MAINTENANCE

All major parts are replaceable. The shaft seal consist two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. However, before doing so, the system must be depressurized.

INSTALLATION EXAMPLES

All the examples of installations can be reversed. The valve position plate is graded on both sides and should at the installation be fitted in the correct position as shown in the instruction for installation.



VALVE 4F DESIGNED FOR

- ● Heating
- ● Comfort cooling
- ○ Potable water
- ○ Floor heating
- ○ Solar heating
- ○ Ventilation
- ○ Zone
- ○ District hot water
- ○ District heating
- ○ District cooling

SUITABLE ACTUATORS

The valve series 4F may most easily be fitted with ESBE actuators:

- ● Series ARA600 ≤DN40
- ● Series 90
- ● Series CRB100 ≤DN40
- ● Series CRA110 ≤DN40
- ● Series CRA120

TECHNICAL DATA

Pressure class: PN 6
Media temperature: max. 110°C, min. -10°C
Differential pressure drop: DN 20–50, max. 50 kPa
DN 65–150, max. 30 kPa
Leakrate in % of flow: max. 1.5%
Rangeability Kv/Kv^{min}: 100
Connection: Flange according to DIN 2531

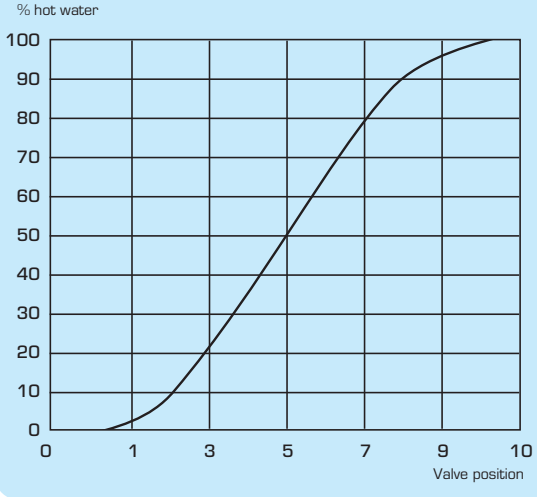
Material	DN 20–25	DN 32-150
Valve body:	Cast iron EN-JL 1030	
Slide:	brass CW 614N	brass CW 614N and stainless steel
Bushing:	plastic	brass CW 602N
Cover plate:	zinc	cast iron
O-rings:	EPDM	

REQUIRED ACTUATOR TORQUE

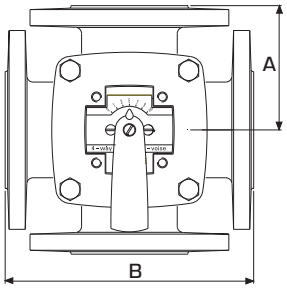
The figures below are intended only as a recommendation for ordinary installations. In some applications the valve may require even more actuator torque.

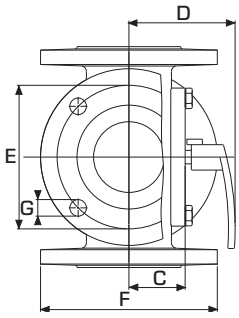
Valve size up to	actuator torque
DN 25	3 Nm
DN 50	5 Nm
DN 80	10 Nm
DN 150	15 Nm

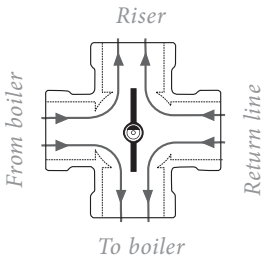
VALVE CHARACTERISTICS



MIXING VALVE
SERIES 4F







Flanged connection PN6, standard DIN 2531

The flat-sided spindle top (as well as the indicator of the knob) points towards the sleeve position.

SERIES 4F

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	Weight [kg]
1110 17 00	4F 32	32	28	80	160	40	82	90	120	4x15	7.0
1110 18 00	4F 40	40	44	88	175	40	82	100	130	4x15	8.2
1110 19 00	4F 50	50	60	98	195	50	92	110	140	4x15	11.0
1110 20 00	4F 65	65	90	100	200	50	92	130	160	4x15	12.2
1110 21 00	4F 80	80	150	120	240	65	108	150	190	4x18	20.0
1110 22 00	4F 100	100	225	132	265	81	124	170	210	4x18	25.0
1110 23 00	4F 125	125	280	150	300	81	124	200	240	8x18	35.0
1110 24 00	4F 150	150	400	175	350	89	131	225	265	8x18	45.0

* Kvs-value in m^3/h at a pressure drop of 1 bar. See flow chart on page 32.

MIXING VALVE
SERIES T AND TM

ESBE 4-way valves Series T and TM are specially designed for factory fitting to boilers. 4T, DN 20–25, cast iron, PN 6. Internal thread. 4 TM, DN 20, brass, PN 10. External thread or with compression fittings.

TM
External thread

Compression fitting

Rotating nut

T
Internal thread

OPERATION

The T/TM valves have the two ports for the boiler side in a single flange. The riser and return from the radiator system have internal threaded connections. Suitable flanges for welding to the boiler are also available.

The T/TM valves have a double mixing function, i.e. a proportion of the hot water supplied from the boiler is mixed with the return water. This results in a higher return water temperature reducing the risk of corrosion and assuring a longer life for the boiler. They are designed to provide good control characteristics and reliability in operation.

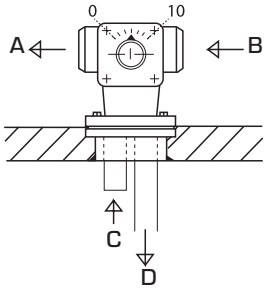
The valves can be equipped with ESBE actuators series ARA600 and series 90. The valves may also be equipped with ESBE controllers series CRA110 and CRB100. Valves series TM may also be equipped with controllers series 90C.

SERVICE AND MAINTENANCE

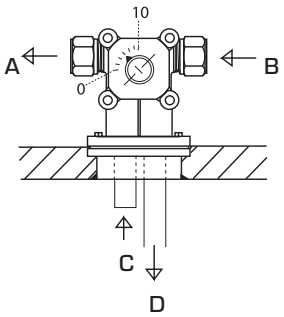
All major parts are replaceable. The shaft seal consist of two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. However, before doing so, the system must be depressurized.

TYPICAL INSTALLATION

A = riser B = return
C = riser, boiler D = return to boiler
The scale plate is printed on both sides allowing inverted installation.



Series T



Series TM

VALVE T/TM DESIGNED FOR

- ● Heating
- ○ Comfort cooling
- ○ Potable water
- ○ Floor heating
- ○ Solar heating
- ○ Ventilation
- ○ Zone
- ○ District hot water
- ○ District heating
- ○ District cooling

SUITABLE ACTUATORS

The valve series T and TM may most easily be fitted with ESBE actuators:

- ● Series ARA600
- ● Series 90
- ● Series 90C*
- ● Series CRB100
- ● Series CRA110

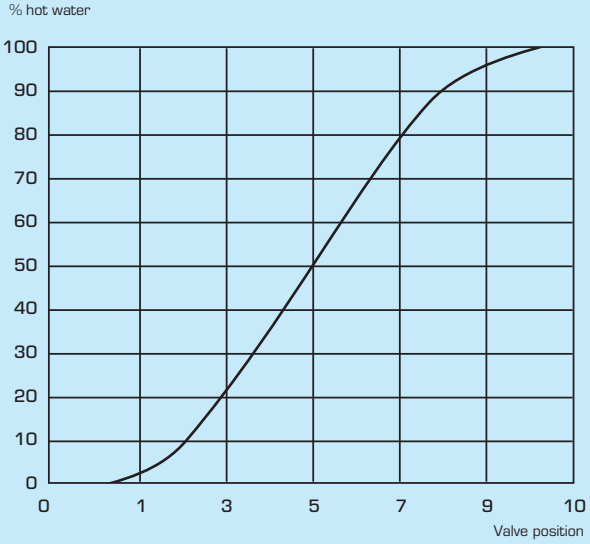
* Not series T

TECHNICAL DATA

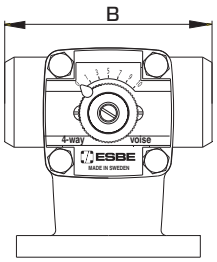
Pressure class: Series T, PN 6
Series TM, PN 10
Temperature: max. 110°C
min. –10°C
Operation angle: 90°
Torque: Series T, 5 Nm
Series TM, 3 Nm
Leakrate in % of flow: max. 1.5%
Connections: Internal thread, EN 10226-1
External thread, ISO 228/1
Compression fitting, EN 1254-2

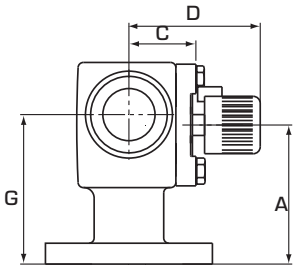
Material
Body: Series T Cast iron EN-JL 1030
Series TM Brass CW 614N
Slide/Spindle: Brass CW 614N
Bushing: Plastic
Cover plate: Zinc
O-rings: EPDM

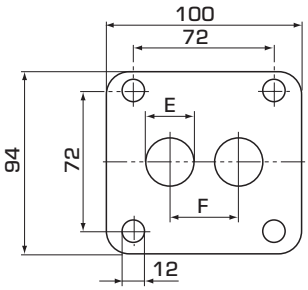
VALVE CHARACTERISTICS



MIXING VALVE
SERIES T AND TM



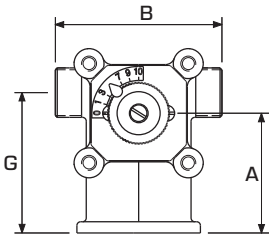




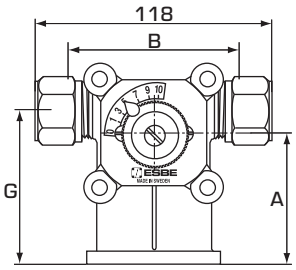
SERIES T, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	E	F	G	Weight [kg]
1130 09 00	T 20	20	8	Rp ¾“	80	115	39	76	20	35	86	2.7
1130 10 00	T 25	25	10	Rp 1“	80	115	39	76	25	35	86	2.7

* Kvs-value in m^3/h at a pressure drop of 1 bar. See flow chart on page 32.



Art. No. 1130 04 00



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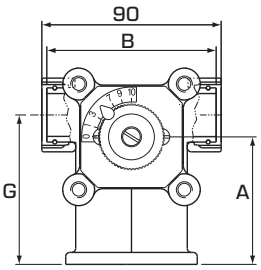

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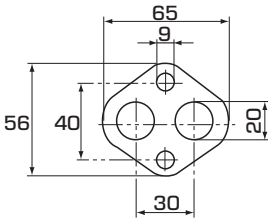


Flange

SERIES TM, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	G	Note	Weight [kg]
1130 04 00	TM 20	20	5.5	G ¾“	64	85	39	76	75		0.90

SERIES TM, COMPRESSION FITTING

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	G	Note	Weight [kg]
1130 07 00	TM 20	20	5.5	CPF 22 mm	64	85	39	76	75		1.14
1130 15 00										with leakflow	
1130 06 00										G ½” in base connection	
1130 08 00										G ½” + O-ring groove in base connection	

SERIES TM, ROTATING NUT

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	G	Note	Weight [kg]
1130 05 00	TM 20	20	5.5	RN 1“	64	87	39	76	75		0.95

* Kvs-value in m^3/h at a pressure drop of 1 bar. Flow chart, see page 32. CPF = compression fitting RN = Rotating Nut

ROTARY MOTORIZED VALVES

MIXING VALVE
SERIES H AND HG

ESBE mixing valves Series H/HG are designed for installations where space is limited. 3H, DN 25–40, cast iron, PN 10. Internal thread. 4H, DN 20–50, cast iron, PN 10. Internal thread. 3HG/4HG, DN25, cast iron, PN10. Union connections.

3HG
External thread/Union connections

4HG
External thread/Union connections

3H
Internal thread

4H
Internal thread

OPERATION

ESBE mixing valve series H/HG have connections in an H configuration. The upward connections are for radiator circuits and the downward connections are for boiler connection.

The H series valves are equipped with female screw connections and the HG series have union connections. The integrated bypass has an adjustable flow with a maximum 50% total capacity of the valve.

The valves can be equipped with ESBE actuators series ARA600 and series 90. The valves may also be equipped with ESBE controllers series CRA110 and CRB100. All valves, except for series 4H, can also be equipped with ESBE controller series 90C.

SERVICE AND MAINTENANCE

All major parts are replaceable. The shaft seal consist of two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. However, before doing so, the system must be depressurized.

VALVE H/HG DESIGNED FOR

- ● Heating
- ○ Comfort cooling
- ○ Potable water
- ○ Floor heating
- ○ Solar heating
- ○ Ventilation
- ○ Zone
- ○ District hot water
- ○ District heating
- ○ District cooling

SUITABLE ACTUATORS

The valve series H and HG may most easily be fitted with ESBE actuators:

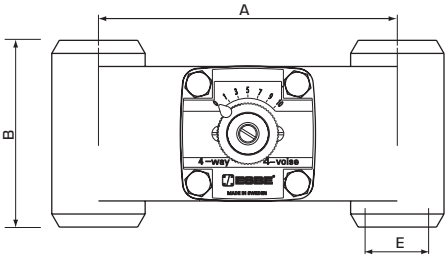
- ● Series ARA600
- ● Series 90
- ● Series 90C*
- ● Series CRB100
- ● Series CRA110

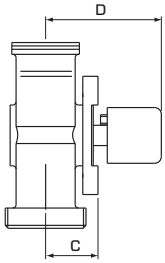
*Only 3H, 3HG, 4HG

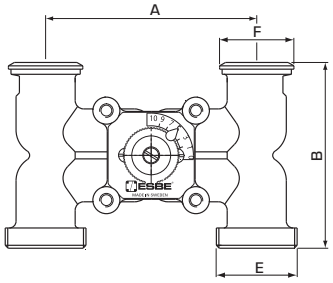
TECHNICAL DATA

Pressure class:		PN 10
Temperature:		max. 110°C
		min. –10°C
Differential pressure drop:		max. 50 kPa
Torque:		5 Nm
Leakrate in % of flow:		Series H, max. 1.5%
		Series HG, max. 1%
Connections:		Internal thread, EN 10226-1
		External thread, ISO 228/1
Material		
Body:		Cast iron EN-JL 1030
Slide/Spindle:	Series H, DN 20-25	Brass CW 614N
	Series H, DN 32-50	Brass CW 614N & Stainless steel
	Series HG	Brass CW 614N
Bushing:	Series H, DN 20-25	Plastic
	Series H, DN 32-50	Brass CW 602N
	Series HG	Plastic
Cover plate:	Series H, DN 20-25	Zinc
	Series H, DN 32-50	Cast iron EN-JL 1030
	Series HG	Zinc
O-rings:		EPDM

MIXING VALVE
SERIES H AND HG







SERIES 3H, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection E	A	B	C	D	Note	Weight [kg]
1135 15 00	3H25	25	12	Rp 1“	160	100	39	76		3.0
1135 17 00	3H32	32	22	Rp 1¼“	160	140	41	83		5.3
1135 19 00	3H40	40	30	Rp 1½“	160	140	41	83		5.6

SERIES 4H, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection E	A	B	C	D	Note	Weight [kg]
1135 13 00	4H20	20	10	Rp ¾“	160	100	39	76		3.0
1135 14 00	4H25	25	12	Rp 1“	160	100	39	76		3.0
1135 18 00	4H32	32	22	Rp 1¼“	160	140	41	83		5.6
1135 20 00	4H40	40	30	Rp 1½“	160	140	41	83		6.3
1135 16 00	4H50	50	35	Rp 2“	200	140	41	83		6.8

SERIES 3HG, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection E	Connection F	A	B	C	D	Note	Weight [kg]
1135 05 00	3HG25-125	25	10	G 1½“	PF 1½“	125	110	38	76	1)	2.0
1135 12 00										1), 2)	2.2

SERIES 4HG, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection E	Connection F	A	B	C	D	Note	Weight [kg]
1135 01 00	4HG25-90	25	8	G 1½“	PF 1½“	90	110	38	76	1)	1.5
1135 02 00	4HG25-125	25	6.3	G 1½“	PF 1½“	125	110	38	76	1)	1.8
1135 08 00			10							1)	2.0
1135 11 00										1), 2)	2.2

*Kvs-value in m^3/h at a pressure drop of 1 bar. Flow chart, see page 32.
Note 1) Male thread for union connections 2) With By-pass

ROTARY MOTORIZED VALVES

ACTUATOR
SERIES ARA600 3-POINT

ESBE Actuator Series ARA600 for operating ESBE mixing valves DN 15–50. The actuators have an operating range of 90° and can easily be manually operated. Patented + Registered design.

3-point

3-point, auxiliary switch

OPERATION
The ESBE series ARA600 is a compact actuator designed for operating rotary mixing valves DN 15-50. The actuators ARA6X1, ARA6X2, ARA6X3 and ARA6X4 are controlled by 3-point signal, and are recommended for mixing applications. The actuator has an operating range of 90° and the valve can easily be manually operated by the pull-and-turn knob on the front of the actuator.

VERSIONS
The ESBE actuators with 3-point signal control are available for 24 or 230 VAC, 50 Hz and it is supplied with an attached 1.5 m connection cable. A wide range of different running times is also available, from 30 to 1200 seconds.

An auxiliary switch, which can be set in any position, is available either as a pre-mounted component fitted to the actuator (ARA6X2 and ARA6X4) or as an optional kit to be ordered separately. The auxiliary switch is easily set by a unique solution, by just lifting off the turning knob the switch cam is accessible, no tools or disassembly required.

SUITABLE MIXING VALVES
Thanks to the special interface between the actuator series ARA600 and the ESBE valve series VRG and VRB, the unit as a whole has a unique stability and precision when regulating. The actuator series ARA600 is also easily mounted on the ESBE valve series MG, G, F, BIV, T, TM, H and HG.

- Series VRG100
- Series VRG200
- Series VRG300
- Series VRB100
- Series MG
- Series G
- Series F ≤ DN40
- Series BIV
- Series T and TM
- Series H and HG

LINKAGE KITS
The actuator is supplied complete with an adaptor kit for easily fitting onto an ESBE rotary mixing valve. Adaptor kits can also be ordered separately.

Art. No.

1600 04 00 ___ ESBE valve series G, MG, F, BIV, T, TM, H, HG

1600 05 00 (= supplied with actuator)

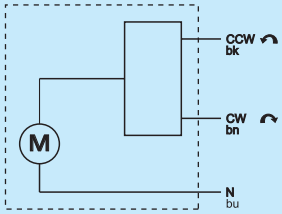
___ESBE valve series VRG, VRB, G, MG, F, BIV, T, TM, H, HG

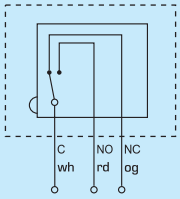
TECHNICAL DATA

Ambient temperature:	max. +55°C
	min. -5°C
Power supply:	24 ± 10% VAC, 50 Hz
	230 ± 10% VAC, 50 Hz
Power consumption: 24 V	2 VA
230 V	5 VA
Enclosure rating:	IP41
Protection class:	II
Torque:	See table
Rating auxiliary switch:	6(3)A 250 VAC
Weight:	0.4 kg

CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

WIRING
The actuator should be preceded by a multi-pole contact breaker in the fixed installation.



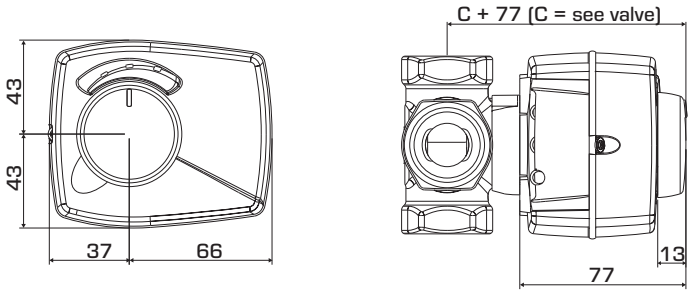


Actuator, series:
ARA641 — ARA644,
ARA651 — ARA654,
ARA661 — ARA664,
ARA671 — ARA674

Actuator with premounted auxiliary switch, series:
ARA642, ARA644, ARA652, ARA654, ARA662, ARA664, ARA672, ARA674, ARA692, ARA694
The actuators are fitted with two separate cables, one cable for actuator regulation and one for the auxiliary switch.

To set the switch position, remove the actuator knob and turn the green cam sleeve to the desired position.

ACTUATOR
SERIES ARA600 3-POINT



Installation dimensions for Actuator Series ARA600 with ESBE VRG100, VRG200, VRG300 and VRB100 mixing valves

SERIES ARA600, 3-POINT 24 V AC

Art. No.	Reference	Voltage [V AC]	Running time 90° [s]	Control signal*	Torque [Nm]	Note
1210 01 00	ARA643	24	30	3-point SPDT	6	
1210 06 00	ARA644					1)
1210 02 00	ARA653	24	60	3-point SPDT	6	
1210 07 00	ARA654					1)
1210 03 00	ARA663	24	120	3-point SPDT	6	
1210 08 00	ARA664					1)
1210 04 00	ARA673	24	240	3-point SPDT	6	
1210 09 00	ARA674					1)
1210 05 00	ARA693	24	120/240/480/1200	3-point SPDT	6	
1210 10 00	ARA694					1)

SERIES ARA600, 3-POINT 230 V AC

Art. No.	Reference	Voltage [V AC]	Running time 90° [s]	Control signal*	Torque [Nm]	Note
1210 11 00	ARA641	230	30	3-point SPDT	6	
1210 16 00	ARA642					1)
1210 12 00	ARA651	230	60	3-point SPDT	6	
1210 17 00	ARA652					1)
1210 13 00	ARA661	230	120	3-point SPDT	6	
1210 18 00	ARA662					1)
1210 14 00	ARA671	230	240	3-point SPDT	6	
1210 19 00	ARA672					1)
1210 15 00	ARA691	230	120/240/480/1200	3-point SPDT	6	
1210 20 00	ARA692					1)

* 3-point SPDT = Single Pole Double Throw Note 1) With premounted auxiliary switch

Adaptor kits for other mixing valves are available as follows:

Art. No.
1600 06 00 _____ Meibes
1600 07 00 _____ Watts
1600 08 00 _____ Honeywell Corona
1600 09 00 _____ Lovato

OPTION

Auxiliary switch kit _____ Art. No. 1620 07 00
Cable hatch _____ Art. No. 1620 08 00

ACTUATOR
SERIES ARA600 2-POINT

ESBE Actuator Series ARA600 for operating ESBE mixing valves DN 15–50. The actuators have an operating range of 90° and can easily be manually operated. Patented + Registered design.

2-point

2-point, auxiliary switch

OPERATION
The ESBE series ARA600 is a compact actuator designed for operating rotary mixing valves DN 15-50. The actuators ARA6X5, ARA6X6, ARA6X7 and ARA6X8 are controlled by 2-point (on/off) signal, and are recommended for diverting applications. The actuator has an operating range of 90° and the valve can easily be manually operated by the pull-and-turn knob on the front of the actuator.

In addition to the 2-point signal control, all the actuators can also be used for 3-point signal control.

VERSIONS
The ESBE actuators with 2-point signal control are available for 24 or 230 VAC, 50 Hz and are supplied with a 1.5 m connection cable attached. Different running times are available, from 15 to 60 seconds.

An auxiliary switch, which can be set in any position, is available either as a pre-installed component fitted to the actuator (ARA6X6 and ARA6X8) or as an optional kit to be ordered separately. The auxiliary switch is easily set by a unique solution, by just lifting off the turning knob the switch cam is accessible, no tools or disassembly required.

SUITABLE MIXING VALVES
Thanks to the special interface between the actuator series ARA600 and the ESBE valve series VRG and VRB, the unit as a whole has a unique stability and precision when regulating. The actuator series ARA600 is also easily mounted on the ESBE valve series MG, G, F, BIV, T, TM, H and HG.

- Series VRG100
- Series VRG200
- Series VRG300
- Series VRB100
- Series MG
- Series G
- Series F ≤ DN40
- Series BIV
- Series T and TM
- Series H and HG

LINKAGE KITS
The actuator is supplied complete with an adaptor kit for easily fitting onto an ESBE rotary mixing valve. Adaptor kits can also be ordered separately.

Art. No.
1600 04 00 ___ ESBE valve series G, MG, F, BIV, T, TM, H, HG
1600 05 00 (= supplied with actuator)
___ESBE valve series VRG, VRB, G, MG, F, BIV, T, TM, H, HG

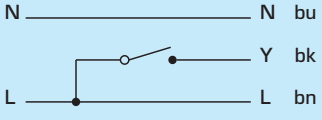
TECHNICAL DATA

Ambient temperature:	max. +55°C
	min. -5°C
Power supply:	24 ± 10% VAC, 50 Hz
	230 ± 10% VAC, 50 Hz
Power consumption: 24 V	2 VA
230 V	5 VA
Enclosure rating:	IP41
Protection class:	II
Torque:	See table
Rating auxiliary switch:	6(3)A 250 VAC
Weight:	0.4 kg

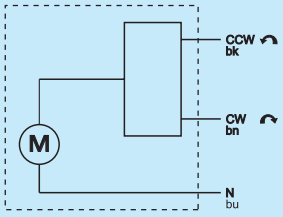
CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

WIRING
The actuator should be preceded by a multi-pole contact breaker in the fixed installation.

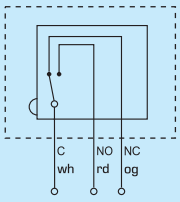
2-point control signal
*The direction of rotation is selected by jumper setting.



3-point control signal



Auxiliary switch

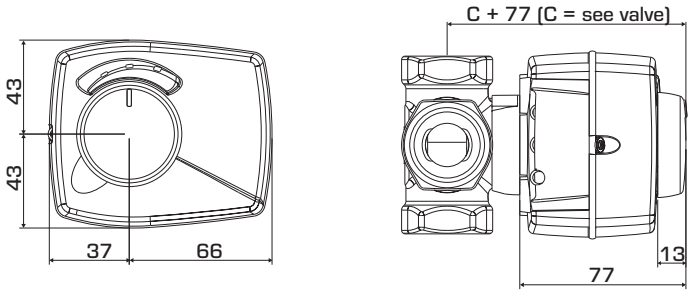


Actuator, series:
ARA635 — ARA638, ARA645 — ARA648, ARA655 — ARA658

Actuator with auxiliary switch, series:
ARA636, ARA638, ARA646, ARA648, ARA656, ARA658
The actuators are fitted with two separate cables, one cable for actuator regulation and one for the auxiliary switch.

To set the switch position, remove the actuator knob and turn the green cam sleeve to the desired position.

ACTUATOR
SERIES ARA600 2-POINT



Installation dimensions for Actuator Series ARA600 with ESBE VRG100, VRG200, VRG300 and VRB100 mixing valves

SERIES ARA600, 2-POINT 24 V AC

Art. No.	Reference	Voltage [V AC]	Running time 90° [s]	Control signal*	Torque [Nm]	Note
1212 01 00	ARA637	24	15	2-point SPST	3	2)
1212 04 00	ARA638					1), 2)
1212 02 00	ARA647	24	30	2-point SPST	6	
1212 05 00	ARA648					1)
1212 03 00	ARA657	24	60	2-point SPST	6	
1212 06 00	ARA658					1)

SERIES ARA600, 2-POINT 230 V AC

Art. No.	Reference	Voltage [V AC]	Running time 90° [s]	Control signal*	Torque [Nm]	Note
1212 07 00	ARA635	230	15	2-point SPST	3	2)
1212 10 00	ARA636					1), 2)
1212 08 00	ARA645	230	30	2-point SPST	6	
1212 11 00	ARA646					1)
1212 09 00	ARA655	230	60	2-point SPST	6	
1212 12 00	ARA656					1)

* 2-point SPST = Single Pole Single Throw Note 1) With premounted auxiliary switch 2) Recommended only for valves DN 15-32.

Adaptor kits for other mixing valves are available as follows:

Art. No.
1600 06 00 _____ Meibes
1600 07 00 _____ Watts
1600 08 00 _____ Honeywell Corona
1600 09 00 _____ Lovato

OPTION

Auxiliary switch kit _____ Art. No. 1620 07 00
Cable hatch _____ Art. No. 1620 08 00

ROTARY MOTORIZED VALVES

ACTUATOR
SERIES ARA600 PROPORTIONAL

Proportional

ESBE Actuator Series ARA600 for operating ESBE mixing valves DN 15–50. The actuators have an operating range of 90° and can easily be manually operated. Patented + Registered design.

OPERATION

The ESBE series ARA600 is a compact actuator designed for operating rotary mixing valves DN 15-50. The actuators ARA6X9 are controlled by proportional signal, and are recommended for mixing applications. The actuator has an operating range of 90° and the valve can easily be manually operated by the pull-and-turn knob on the front of the actuator.

In addition to the proportional signal control, actuators series ARA639 can also be used for 3- and 2-point signal control.

VERSIONS

The actuators ARA6X9 are available for 24 V AC/DC, 50/60 Hz power supply. An auxiliary switch, which can be set in any position, is available as an optional kit to be ordered separately. The auxiliary switch is easily set by a unique solution, by just lifting off the turning knob the switch cam is accessible, no tools or disassembly required.

The ARA659 can be set to running times of 45 and 120 seconds and is supplied with a 1.5 m cable attached.

The ARA639 can be set to running times of 15, 30, 60 and 120 seconds. The ARA639 also have the additional features of proportional analogue output signal for monitoring devices etc, optional advanced noise reduction of the input signal and positioning memory for fast startup after power failure.

SUITABLE MIXING VALVES

Thanks to the special interface between the actuator series ARA600 and the ESBE valve series VRG and VRB, the unit as a whole has a unique stability and precision when regulating. The actuator series ARA600 is also easily mounted on the ESBE valve series MG, G, F, BIV, T, TM, H and HG.

- Series VRG100
- Series VRG200
- Series VRG300
- Series VRB100
- Series MG
- Series G
- Series F ≤ DN40
- Series BIV
- Series T and TM
- Series H and HG

LINKAGE KITS

The actuator is supplied complete with an adaptor kit for easily fitting onto an ESBE rotary mixing valve. Adaptor kits can also be ordered separately.

Art. No.

1600 04 00 ___ ESBE valve series G, MG, F, BIV, T, TM, H, HG

1600 05 00 (= supplied with actuator)

___ESBE valve series VRG, VRB, G, MG, F, BIV, T, TM, H, HG

TECHNICAL DATA

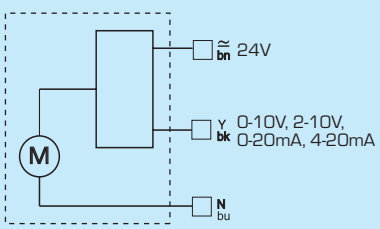
Ambient temperature: _____ max. +55°C
_____ min. -5°C
Power supply: _____ 24 ± 10% VAC/DC, 50/60 Hz
Enclosure rating: _____ IP41
Protection class: _____ II
Torque: _____ See table

Power consumption - Operation, AC: _____ 5 W
DC: _____ 2.5 W
Power consumption - Dimensioning, AC: _____ ARA639, 11 VA
_____ ARA659, 8 VA
DC: _____ ARA639, 6 VA
_____ ARA659, 4 VA
Rating auxiliary switch: _____ 6(3)A 250 VAC
Weight: _____ 0.4 kg

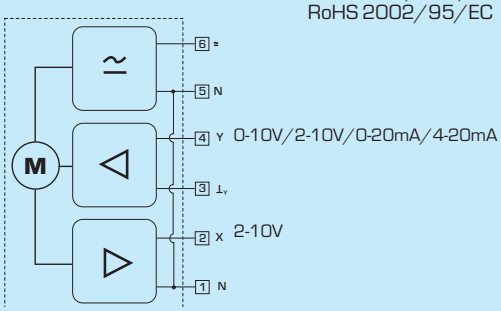
CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

WIRING

The actuator should be preceded by a multi-pole contact breaker in the fixed installation.

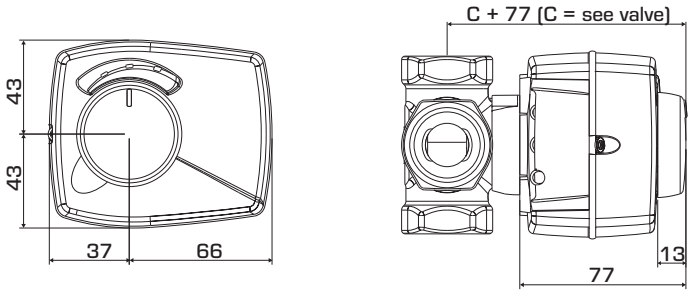


Actuator series ARA659



Actuator series ARA639

ACTUATOR
SERIES ARA600 PROPORTIONAL



Installation dimensions for Actuator Series ARA600 with ESBE VRG100, VRG200, VRG300 and VRB100 mixing valves

SERIES ARA600, PROPORTIONAL 24 V AC/DC

Art. No.	Reference	Voltage [V]	Running time 90° [s]	Control signal	Torque [Nm]	Note
1252 01 00	ARA639	24	15/30/60/120	0..10 V, 2..10 V, 0..20mA, 4..20mA	6	
1252 02 00	ARA659	24	45/120	0..10 V, 2..10 V, 0..20mA, 4..20mA	6	

Adaptor kits for other mixing valves are available as follows:

Art. No.
1600 06 00 _____ Meibes
1600 07 00 _____ Watts
1600 08 00 _____ Honeywell Corona
1600 09 00 _____ Lovato

OPTION

Auxiliary switch kit _____ Art. No. 1620 07 00
Cable hatch _____ Art. No. 1620 08 00

ACTUATOR
SERIES 90 3-POINT

3-point

ESBE actuator Series 90 for operating ESBE mixing valves DN 15–150. This series is provided with adjustable cam discs to obtain an operating range 30°–180° or even 270°, depending on version, which makes the series very flexible.

OPERATION

The ESBE series 90 actuator is a compact actuator for operating rotary mixing valves. The actuator is reversible and is provided with limit switches which are actuated by cam discs. By adjusting the cam discs an operating range from 30° to 180° can be obtained except for 1205 33 00 which has an operating range of 270°. The actuator is provided with a disconnection for manual operation and has an indication on the front showing valve position.

The 3-point signal control actuator is available for 24 VAC, 50/60 Hz, or 230V, 50 Hz with different running times as shown in the table.

OPTIONS

Separate auxiliary switch, see table next page marked **
_____ Art. No. 9810 06 90

1

To operate the valve manually, push the button and use the lever. The electric current is automatically disconnected as long as the button is in the lower position.

2

Turn the valve to the desired position.

3

To return to automatic operation, bring the lever to the position where it locks, and the button returns to the upper position. The current supply is now connected.

SUITABLE MIXING VALVES

The actuator is supplied complete with an adaptor kit for easily fitting onto an ESBE rotary mixing valve.

- Series VRG100*
- Series VRG200*
- Series VRG300*
- Series VRB100*
- Series MG
- Series G
- Series F
- Series BIV
- Series T, TM
- Series H and HG

*Separate adaptor kit is required, see below

LINKAGE KITS

Required adaptor kits for easily fitting onto an ESBE rotary mixing valve is available in two different styles. Adaptor kit designed for ESBE mixing valve series MG, G, F, BIV, H, HG is supplied with each actuator. Adaptor kits for ESBE mixing valve series VRG and VRB can be ordered separetely.

Art. No.
1605 13 00 (= supplied with actuator)
_____ ESBE valve series MG, G, F, BIV, T, TM, H, HG
1605 34 00 (= supplied with Art. No. 1205 33 00)
_____ ESBE valve series MG, G, F, BIV, T, TM, H, HG
1605 33 00 _____ ESBE valve series VRG, VRB

Adaptor kits for other mixing valves and valves built-into boilers are available as follows:

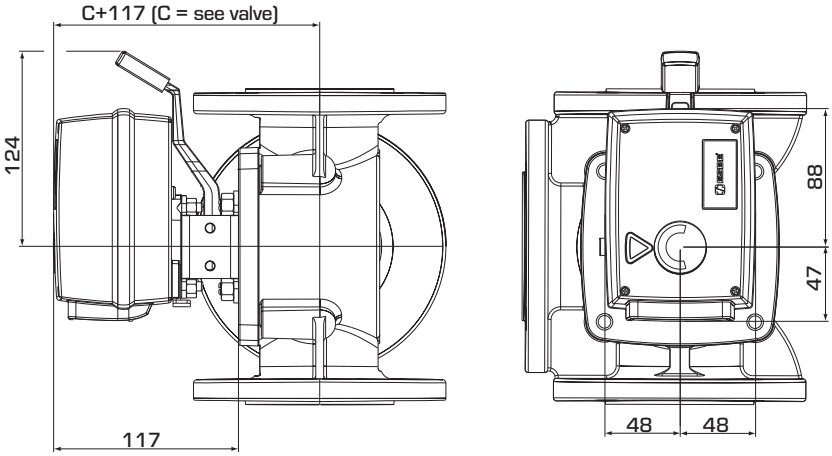
Art. No.
1605 35 00 _____ BRV
1605 16 00 _____ Centra ZR, DR, DRG, DRU (≤DN50)
1605 17 00 _____ Centra Kompakt DRK/ZRK
1605 19 00 _____ CTC, linear movement
1605 36 00 _____ BRV, Meibes, Oventrop, Watts
1605 13 00 _____ Sauter MH32…H42…
1605 25 00 _____ Siemens VBG31, VBI31, VBF21, VCI31
1605 14 00 _____ TA–VTR, TA–STM
1605 26 00 _____ Schneider Electric/TAC-TRV
1605 15 00 _____ Viessmann (all nominal diameters)
1605 18 00 _____ WITA
1605 20–24 00 _ Various adaptor kits for built-in mixing valves

TECHNICAL DATA

Ambient temperature: _____ max. +55°C
_____ min. –15°C
Power supply: _____ 24 ± 10% VAC, 50 Hz
_____ 230 ± 10% VAC, 50 Hz
Power consumption: _____ Actuator 24 VAC, 2 VA
_____ Actuator 230 VAC, 5 VA
Enclosure rating: _____ IP 54
Protection class: _____ II
Torque: _____ See table
Rating auxiliary switch: _____ 6(3)A 250 VAC
Weight: _____ 0.8 kg

CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

ACTUATOR
SERIES 90 3-POINT



Installation dimensions for Actuator Series 90 with ESBE series MG, G, F, T/TM, H/HG and BIV mixing valves

SERIES 90, 3-POINT 24 V AC

Art. No.	Reference	Voltage [V AC]	Running time 90° [s]	Torque [Nm]	Control signal*	Remark
1205 02 00	91	24	15	5	3-point SPDT	Separate auxiliary switch as option**
1205 04 00	91M					With premounted auxiliary switch
1205 06 00	92	24	60	15	3-point SPDT	Separate auxiliary switch as option**
1205 11 00	92M					With premounted auxiliary switch
1205 07 00	92-2	24	120	15	3-point SPDT	Separate auxiliary switch as option**
1205 09 00	92-2M					With premounted auxiliary switch
1205 13 00	93	24	240	15	3-point SPDT	Separate auxiliary switch as option**
1205 15 00	93M					With premounted auxiliary switch

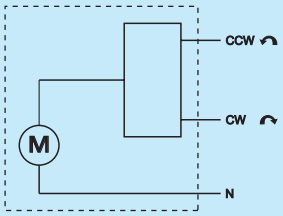
SERIES 90, 3-POINT 230 V AC

Art. No.	Reference	Voltage [V AC]	Running time 90° [s]	Torque [Nm]	Control signal*	Remark
1205 17 00	94	230	15	5	3-point SPDT	Separate auxiliary switch as option**
1205 18 00	94M					With premounted auxiliary switch
1205 19 00	95	230	60	15	3-point SPDT	Separate auxiliary switch as option**
1205 22 00	95M					With premounted auxiliary switch
1205 20 00	95-2	230	120	15	3-point SPDT	Separate auxiliary switch as option**
1205 21 00	95-2M					With premounted auxiliary switch
1205 33 00	95-270M	230	50***	5	3-point SPDT	With premounted auxiliary switch Operating range 270°
1205 23 00	96	230	240	15	3-point SPDT	Separate auxiliary switch as option**
1205 24 00	96M					With premounted auxiliary switch

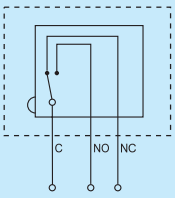
* 3-point SPDT = Single Pole Double Throw *** Running time 270° - 150s (preset)

WIRING

The actuator should be preceded by a multi-pole contact breaker in the fixed installation.



Actuator, Art. No.
1205 02 00, 1205 06 00, 1205 07 00, 1205 13 00, 1205 17 00, 1205 19 00, 1205 20 00, 1205 23 00



Auxiliary switch

Actuator with premounted auxiliary switch, Art. No.
1205 [04] 00, [09], [11], [15], [18], [21], [22], [24], [33]
These actuators are supplied with one auxiliary switch. To set the switch position, remove the actuator cover and turn the cam sleeve to the desired position.

ACTUATOR
SERIES 90 2-POINT

ESBE actuator Series 90 for operating ESBE mixing valves DN 15–150. This series is provided with adjustable cam discs to obtain an operating range 30°–180° which make the series very flexible.

2-point

OPERATION

The ESBE series 90 actuator is a compact actuator for operating rotary mixing valves. The actuator is reversible and is provided with limit switches which are actuated by cam discs. By adjusting the cam discs an operating range from 30° to 180° can be obtained. The actuator is provided with a disconnection for manual operation and has an indication on the front showing valve position.

The 2-point signal control actuator is available for 230 V, 50 Hz with different running times as shown in the table.

An 2-point signal control actuator with built-in relay should be selected when the actuator is to be controlled by an on/off–thermostat.

1

To operate the valve manually, push the button and use the lever. The electric current is automatically disconnected as long as the button is in the lower position.

2

Turn the valve to the desired position.

3

To return to automatic operation, bring the lever to the position where it locks, and the button returns to the upper position. The current supply is now connected.

SUITABLE MIXING VALVES

The actuator is supplied complete with an adaptor kit for easily fitting onto an ESBE rotary mixing valve.

- Series VRG100*
- Series VRG200*
- Series VRG300*
- Series VRB100*
- Series MG
- Series G
- Series F
- Series BIV
- Series T, TM
- Series H and HG

*Separate adaptor kit is required, see below

LINKAGE KITS

Required adaptor kits for easily fitting onto an ESBE rotary mixing valve is available in two different styles. Adaptor kit designed for ESBE mixing valve series MG, G, F, BIV, H, HG is supplied with each actuator. Adaptor kits for ESBE mixing valve series VRG and VRB can be ordered separetely.

Art. No.

1605 13 00 (= supplied with actuator)
_____ ESBE valve series MG, G, F, BIV, T, TM, H, HG
1605 33 00 _____ ESBE valve series VRG, VRB

Adaptor kits for other mixing valves and valves built-into boilers are available as follows:

Art. No.

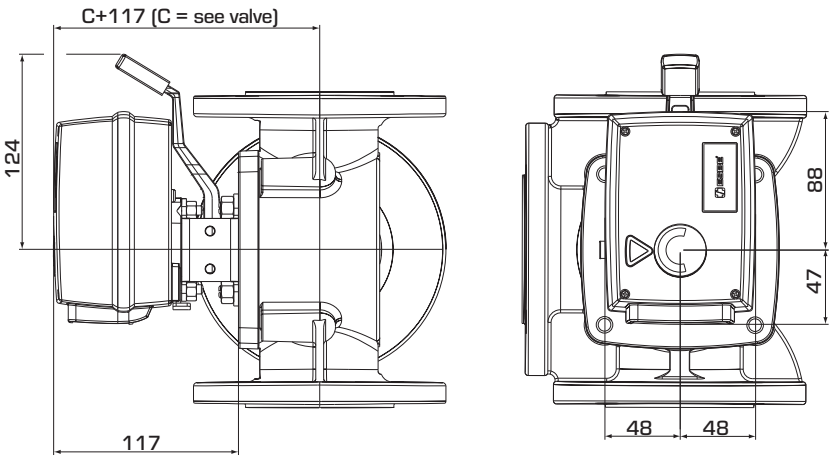
1605 35 00 _____ BRV
1605 16 00 _____ Centra ZR, DR, DRG, DRU (≤DN50)
1605 17 00 _____ Centra Kompakt DRK/ZRK
1605 19 00 _____ CTC, linear movement
1605 36 00 _____ BRV, Meibes, Oventrop, Watts
1605 13 00 _____ Sauter MH32…H42…
1605 25 00 _____ Siemens VBG31, VBI31, VBF21, VCI31
1605 14 00 _____ TA–VTR, TA–STM
1605 26 00 _____ Schneider Electric/TAC-TRV
1605 15 00 _____ Viessmann (all nominal diameters)
1605 18 00 _____ WITA
1605 20–24 00 _ Various adaptor kits for built-in mixing valves

TECHNICAL DATA

Ambient temperature: _____ max. +55°C
_____ min. –15°C
Power supply: _____ 230 ± 10% VAC, 50 Hz
Power consumption: _____ 5 VA
Enclosure rating: _____ IP 54
Protection class: _____ II
Torque: _____ See table
Rating auxiliary switch: _____ 6(3)A 250 VAC
Weight: _____ 0.8 kg

CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

ACTUATOR
SERIES 90 2-POINT



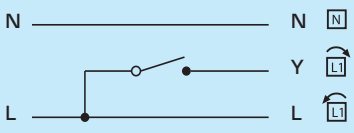
Installation dimensions for Actuator Series 90 with ESBE series MG, G, F, T/TM, H/HG and BIV mixing valves

SERIES 90, 2-POINT 230 V AC

Art. No.	Reference	Voltage [V AC]	Running time 90° [s]	Torque [Nm]	Control signal*	Remark
1205 25 00	97	230	15	5	2-point SPST	With built-in relay
1205 26 00	98		60	15		

*2-point SPST = Single Pole Single Throw

WIRING
The actuator should be preceded by a multi-pole contact breaker in the fixed installation.



Actuator with built-in relay, Art. No.
1205 25 00, 1205 26 00
The direction of rotation is changed by a contact located under the cover.

ACTUATOR
SERIES 90 PROPORTIONAL

Proportional

ESBE actuator Series 90 for operating ESBE mixing valves DN 15–150. This series is provided with adjustable cam discs to obtain an operating range 30°–355° which make the series very flexible.

OPERATION

The ESBE series 90 actuator is a compact actuator for operating rotary mixing valves. The actuator is reversible and is provided with limit switches which are actuated by cam discs. For 1255 01 00 to 1255 03 00 the operating range is 90° alt. 180°, and for 1255 04 00 the operating range is 355°. The actuator is provided with a disconnection for manual operation and has an indication on the front showing valve position.

The actuator is also available in step motor driven versions for regulation with different proportional signals and running times. Supply voltage 24 V AC/DC. The actuators are factory set at 0–10 V and 15 s for 1255 03 00, 60 s for 1255 01 00 resp. 120 s for 1255 02 00. Any adjustments are made by removal of front cover.

1

To operate the valve manually, push the button and use the lever. The electric current is automatically disconnected as long as the button is in the lower position.

2

Turn the valve to the desired position.

3

To return to automatic operation, bring the lever to the position where it locks, and the button returns to the upper position. The current supply is now connected.

SUITABLE MIXING VALVES

The actuator is supplied complete with an adaptor kit for easily fitting onto an ESBE rotary mixing valve.

- Series VRG100*
- Series VRG200*
- Series VRG300*
- Series VRB100*
- Series MG
- Series G
- Series F
- Series BIV
- Series T, TM
- Series H and HG

*Separate adaptor kit is required, see below

LINKAGE KITS

Required adaptor kits for easily fitting onto an ESBE rotary mixing valve is available in two different styles. Adaptor kit designed for ESBE mixing valve series MG, G, F, BIV, H, HG is supplied with each actuator. Adaptor kits for ESBE mixing valve series VRG and VRB can be ordered separetely.

Art. No.

1605 13 00 (= supplied with actuator)
1605 33 00 ESBE valve series MG, G, F, BIV, T, TM, H, HG
ESBE valve series VRG, VRB

Adaptor kits for other mixing valves and valves built-into boilers are available as follows:

Art. No.

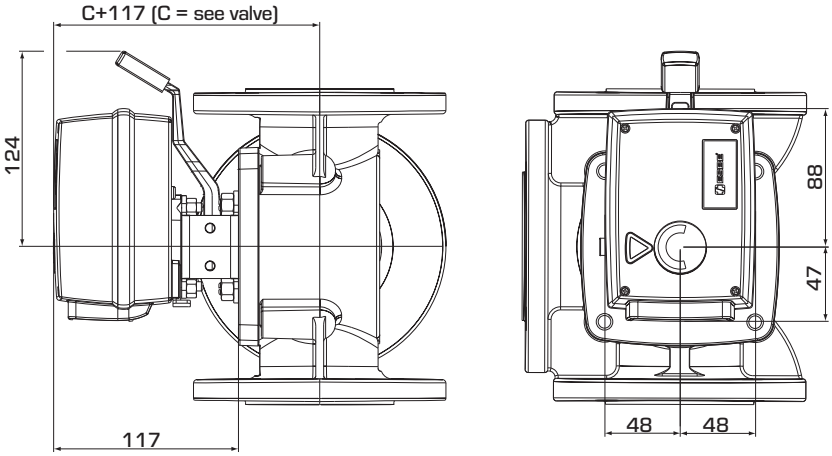
1605 35 00 BRV
1605 16 00 Centra ZR, DR, DRG, DRU (≤DN50)
1605 17 00 Centra Kompakt DRK/ZRK
1605 19 00 CTC, linear movement
1605 36 00 BRV, Meibes, Oventrop, Watts
1605 13 00 Sauter MH32…H42…
1605 25 00 Siemens VBG31, VBI31, VBF21, VCI31
1605 14 00 TA–VTR, TA–STM
1605 26 00 Schneider Electric/TAC-TRV
1605 15 00 Viessmann (all nominal diameters)
1605 18 00 WITA
1605 20–24 00 Various adaptor kits for built-in mixing valves

TECHNICAL DATA

Ambient temperature:	max. +55°C
	min. –15°C
Power supply:	24 ± 10% V AC/DC, 50/60 Hz
Power consumption:	5 VA
Enclosure rating:	IP 54
Protection class:	II
Torque:	See table
Rating auxiliary switch:	6(3)A 250 VAC
Weight:	0.8 kg

CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

ACTUATOR
SERIES 90 PROPORTIONAL



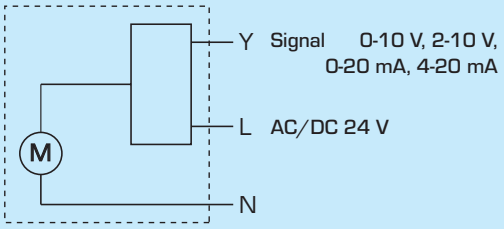
Installation dimensions for Actuator Series 90 with ESBE series MG, G, F, T/TM, H/HG and BIV mixing valves

SERIES 90, PROPORTIONAL 24 V AC/DC

Art. No.	Reference	Voltage [V]	Running time [s]	Torque [Nm]	Control signal	Remark
1255 03 00	91P	24	15/30/45	4	0–10 V, 2–10 V, 0–20 mA, 4–20 mA	Operating range 90°
1255 01 00	92P		60/90/120	15		Operating range 90°
1255 02 00	92P2		120/180/240	15		Operating range 180°
1255 04 00	92P4		120/240/360	15		Operating range 355°

WIRING

The actuator should be preceded by a multi-pole contact breaker in the fixed installation.



Actuator, Art. No.
1255 01 00, 1255 02 00,
1255 03 00, 1255 04 00

NEW

CONNECTION KIT
SERIES KTD100

Connection kit with external thread for use on externaly threaded valves.

KTD100
External thread

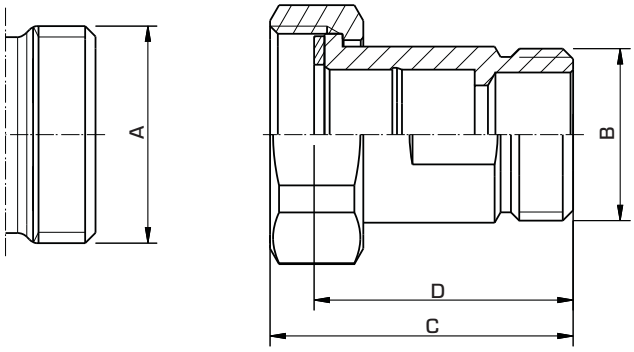
VERSIONS

Each package contains three of each of connection pieces, nuts and gaskets.

SUITABLE VALVES

The connection kit series KTD100 may most easily be fitted with ESBE mixing valves:

- Series VRG132
- Series VRG142
- Series VRG232
- Series VRG332
- Series VRB142



TECHNICAL DATA

Pressure class: PN10
Media temperature: max. +180°C
min. -20°C
Connection - nipple design: acc. to EN 1254-4
External thread, ISO 228/1
Internal thread, EN 10226-1

Material
Nut: Brass CW 614N
Connection piece: Brass DZR, CW 602N
Gasket: Klingersil C-4400

SERIES KTD112 EXTERNAL THREAD (3 CONNECTIONS/PACKAGE)

Art. No.	Reference	Valve thread A	Connection thread B	Dimension C	Dimension D	Note	Weight [kg]
3655 17 00	KTD112	G 1"	G ¾"	48	40		0.44
3655 18 00	KTD112	G 1¼"	G 1"	58.5	50		0.77
3655 19 00	KTD112	G 1½"	G 1¼"	52.5	42		0.93
3655 20 00	KTD112	G 2"	G 1½"	60	48		1.41
3655 21 00	KTD112	G 2¼"	G 2"	65	52		2.05


MADE IN SWEDEN SINCE 1906
06
ESBE NO. 1 IN HYDRONIC SYSTEM CONTROL

ENERGY SAVING.
NICE LOOKING.
QUICKLY UP-AND-RUNNING.

Nowadays everybody knows that energy savings equals money savings, especially since energy prices tend to get higher and higher. When you offer ESBE controllers to your customer you can talk about energy savings of 17–24%* in comparison to a manually operated valve. For the houseowner this often means a pay-back-time of about 1 year.

For you as an installer, ESBE controllers mean quick mounting and set-up since they have sensor cables and plug contact pre-wired for easy connection.

For your customer – the house-owner – the indoor climate will became as comfortable as possible. And if it should need adjustment, it is easy for anyone to access the menues.

A multitude of small details in a compact shell – and together with ESBE valves an unbeatable combination. So we will continue to talk about two winners – you as installer and your customer. Don't you agree?

* Saving capacity: 17% with outdoor sensor control. 21% with indoor sensor control. 24% with outdoor + indoor sensor control.
[Source: Swedish Consumers' Association Magazine Råd&Rön no. 2/2001]

CONTENTS CONTROLLERS

FEATURES AND BENEFITS

CONTROLLER
SERIES CRB

HERE ARE NINE GOOD REASONS FOR CHOOSING THE CRB121.

We've said it before and we'll say it again. The CRB121 is truly a win-win machine. You win. The customers win. And when they win, you win. Enough babble, here are nine good reasons to chose the CRB121. The first four concern the installation. Consider the next five aces up your sleeve.

ONE

LESS WORK. OR MORE. Reliable products + short installation time : get more work done or finish quicker. Or if you´re of a certain kind, get more work done AND finish quicker.

TWO

WIRELESS COMFORT. Wireless technology gives you the wonderful option of placing the unit at your leisure. Didn't get it right the first time? No problem. No cable : no fuss.

THREE

INTELLIGENT DESIGN. FOR REAL. The CRB121 comes ready to go pre-set to a flow temperature of Max 50°C/Min 5°C and an indoor temperature of 21°C. If you need to make changes they are done in seconds.

FOUR

HOW TO MAKE A SYSTEM UPGRADE. The CRB121 makes any system more efficient. But if you're doing an system upgrade don't stop at the CRB. Switch the old valve to a series VRG or VRB mixing valve and a new world of efficiency and comfort is what you get. Because only perfect makes perfect.

FIVE

SAFE AND SOUND. ALL YEAR AROUND. With the CRB121 the customer benefits from an indoor climate that adapts to the building conditions. It doesn't get any more comfortable than that.

SIX

SAVE YOUR ENERGY FOR THE SUNDAY CROSSWORD. The CRB121 does all the thinking you need. And in the event that the battery runs out the last setting is memorized by the unit.

SEVEN

REALLY GOOD DESIGN DOESN'T STAND OUT. The CRB121 is uniquely placeable because of its design. Once you place it on the wall it feels like it's been there forever.

The actuator unit for the CRB is easy and quick to mount into the system.

The CRB has pre-set temperatures for quick start-up but at the same time it is easy to adjust if needed.

It is also easy for the customer to use and at the same time aestheically pleasing design.

EIGHT

CLIMATE CONTROL AT YOUR FINGERTIPS. Changing the indoor climate is dead easy with the CRB121. Just point your index finger and use it to turn and push the button. Done!

NINE

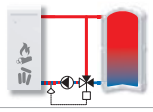
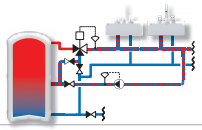
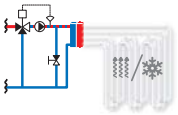
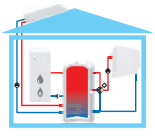
GUESS WHAT? WE SAVED THE BEST FOR LAST. By choosing the CRB121 the customer gets comfort previously only dreamt of and start saving money from the get go. A 20% reduction of the energy consumption compared to a manually operated valve is actually best described this way: wow!

ESBE GUIDE
SELECT THE MOST SUITABLE CONTROLLER

DIFFERENT JOBS. DIFFERENT NEEDS.

Odd as it may seem not all jobs call for the indoor sensor controller CRB121. Not to worry. If an outdoor sensor controller is needed - choose the 90C. And if the job only calls for constant temperature control functionality choose the CRA100.



	CRA100	CRB100	90C
• Return temperature control 	●		
• Hot water circulation 	●		
• Underfloor heating • Cooling 	●	●	●
• Extension of building or system 	●	●	●
• One family house 		●	●
• Semi-detached house Recommendation: 1 controller per household. 		●	●
• Multiple dwelling • Large building Recommendation: 1 controller per household. 		●	●
• Multiple heatsources • Multiple heat circuits • Weather compensated control • Timer settings 			●

N.B. These examples are overall idea sketches. Always also take local laws and regulations into consideration.

CONTROLLER
SERIES 90C

IT'S EASIER THAN YOU THINK.

QUICK AND EASY MOUNTING.

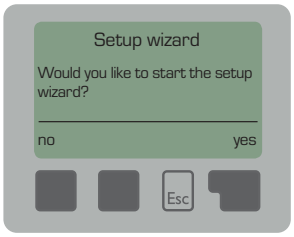
Time is money. Therefore the mounting of the series 90C onto the valve is easy and quick – as assembling always is for ESBE valves and actuators. Each controller is supplied with smart adaptor kits for easy fitting onto both new and old ESBE rotary mixing valves. Adaptor kits are also available for mixing valves from other brands or for valves built into boilers.

The result is that you easily can offer your energy savings services to new as well as old installations.

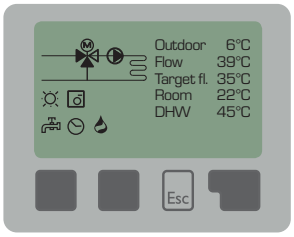
JUST PLUG AND PLAY.

The controller is delivered with the sensor cables and plug contact pre-wired for easy connection and instant setup.

If additional sensor or power cables are to be connected this is easily done in the special connection boxes.



The setup wizard will rapidly guide you through the required settings in a logical sequence.



The display of the currently measured values and the operating conditions is performed in a graphic mode with animations. Important functions are indicated as icons.

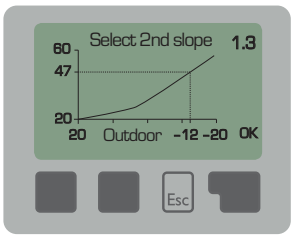
LARGE ENERGY SAVINGS ARE POSSIBLE.

USEFUL FIGURES IN FRONT OF YOUR CUSTOMER – THE HOUSE-OWNER.

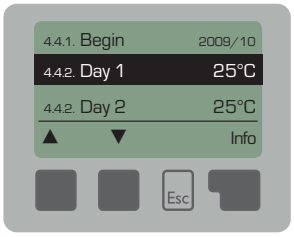
With the controller series 90C you can talk to your customer about energy savings of 17% (outdoor sensor) or 24% (outdoor + indoor sensor). This in comparison to a manually operated valve. For the house-owner this often means a pay-back time of just about 1 year. Calculation examples as below;

A) in a normal-sized villa with oil heating and an annual consumption of around 3 m^3. With an oil cost of 1000 euro per cubic metre. → a saving of 17% corresponds to around 510 euro annually. By adding an indoor sensor, the savings increases to around 720 euro annually.

B) in a normal-sized villa with pellets heating and an annual consumption of around 7 tonnes per year. With a pellets cost of 280 euro per tonne. → a saving of 17% corresponds to around 330 euro annually. By adding an indoor sensor, the savings increases to around 510 euro annually.



The split heating curve is used to produce the most comfortable temperature under different building conditions.

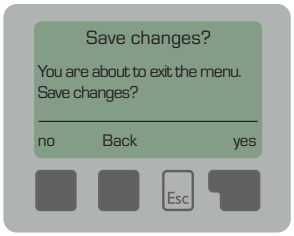


Specific fixed flow temperatures can be set for the next 14 days. This is for example a nice feature when starting up a new underfloor heating system.

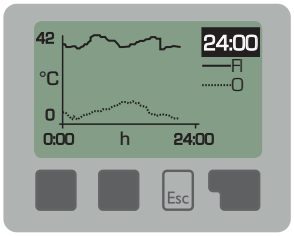
A LOT OF OPTIONS BUT STILL EASY-TO-USE.

THE LARGE DISPLAY WILL SUPPORT YOU – BOTH DURING AND AFTER INSTALLATION.

The controller series 90C include so many possibilities that you might think it is difficult to manage. The answer is no. You will find that this controller is most impressive because of its functionality and its simple, mostly self-explanatory, operation. For each step in the input process the individual entry keys are assigned to appropriate functions and explained. The controller menu contains keywords for the measured values and settings, as well as help texts or clearly structured graphics.



Confirmation dialogues and menu block functions prevent unwanted misadjustments.



The function control and the long term monitoring of the installation is provided by recording and display of the data. These statistics can be used as the basis for a building energy declaration.

CONTROLLER
SERIES 90C

NUMEROUS APPLICATION POSSIBILITIES.

MAKE UP YOUR MIND ABOUT WHICH VERSION TO CHOOSE FOR THE ACTUAL APPLICATION.

At the same time as the 90C controls a mixing valve, it can also handle up to 7 different sources of data input and has 3 possibilities of output control. This makes the 90C versatile and able to control a number of heat circuits and system components with high accuracy.

The version 90C-1 is very well suited for basic applications, but there are lots of additional application possibilities. For this reason the ESBE Controller series 90C is available in three different versions to suit the demands of a wide variety of systems.

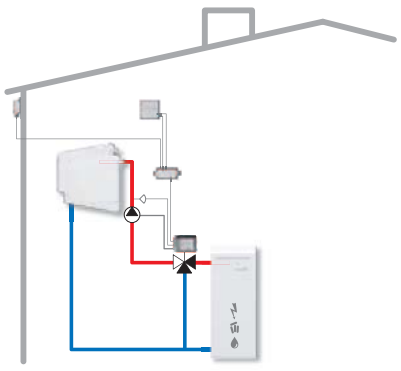
CONTINUOUS IMPROVEMENTS

The technical evolution always moves on, and so the 90C evolves with it. Additional features and improvements have been added during the development of the series 90C. For instance the 90C-2 can now handle many more applications than we have expressed in our application examples earlier. The added possibilities goes also for the 90C-3 which now will be able to handle applications such as culvert controlling/secondary tank energy transfer and solar loading.

Recommended controller | Secondary alternative | Not applicable

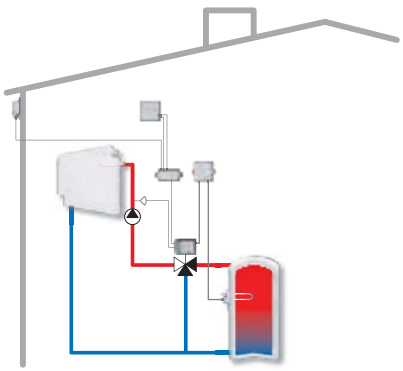
For more variants, please see next page

1



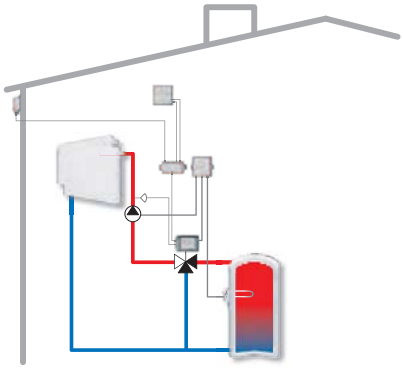
90C-1	90C-2	90C-3

2



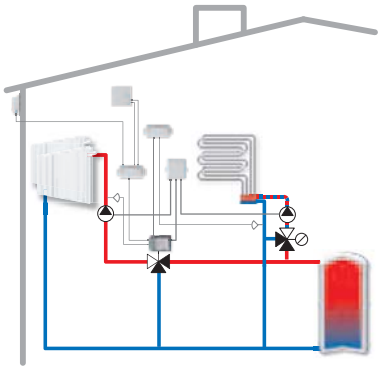
90C-1	90C-2	90C-3

3



90C-1	90C-2	90C-3

4

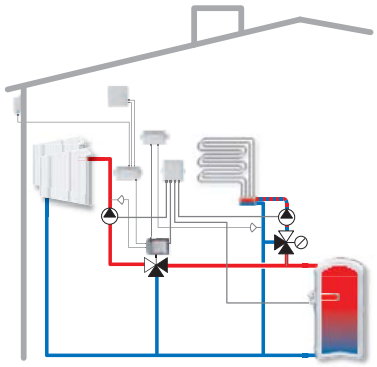


90C-1	90C-2	90C-3

CONTROLLER
SERIES 90C

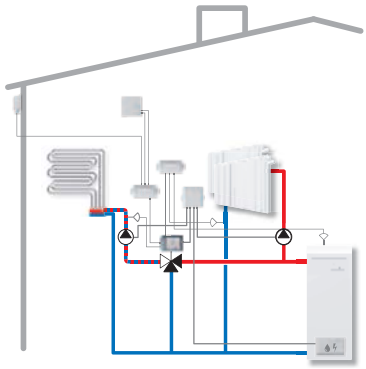
Recommended controller | Secondary alternative | Not applicable

5



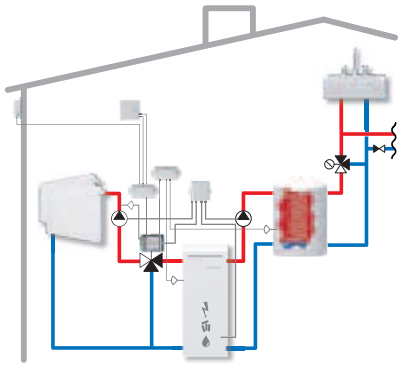
90C-1	90C-2	90C-3

6



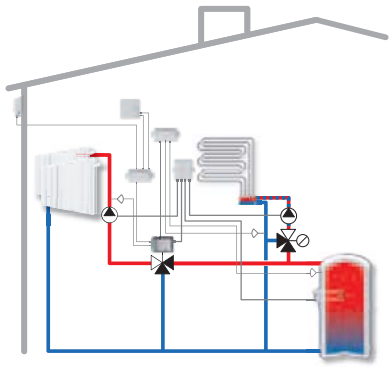
90C-1	90C-2	90C-3

7



90C-1	90C-2	90C-3

8



90C-1	90C-2	90C-3

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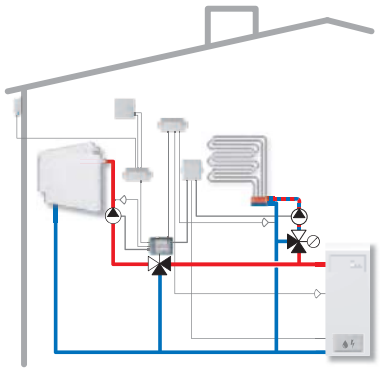
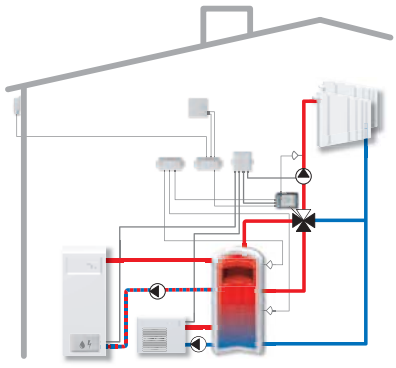


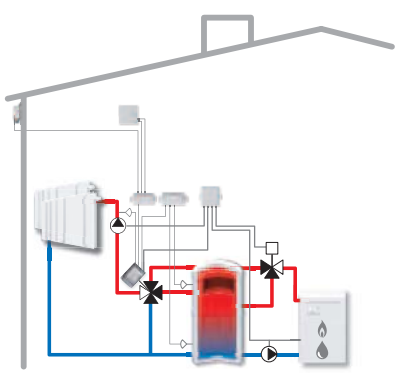
90C-1	90C-2	90C-3

10



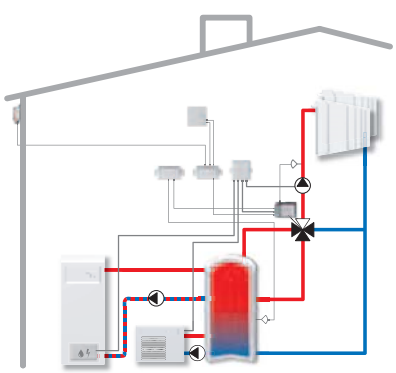
90C-1	90C-2	90C-3

11



90C-1	90C-2	90C-3

12

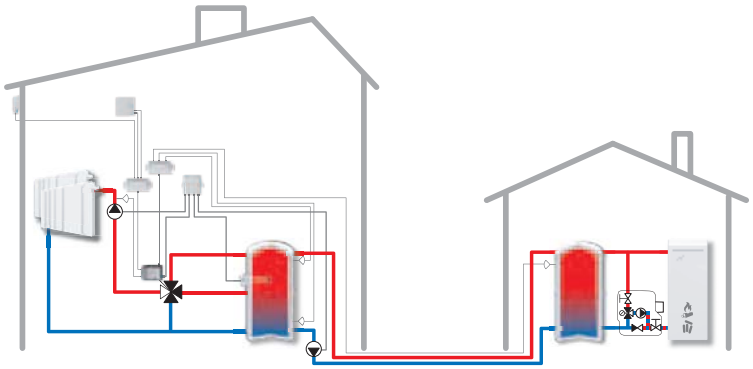


90C-1	90C-2	90C-3

CONTROLLER
SERIES 90C

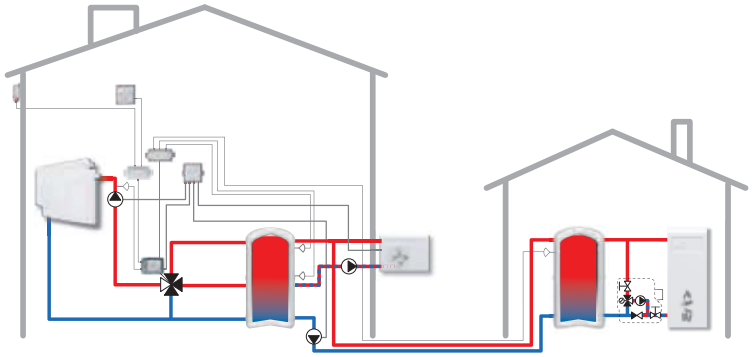
Recommended controller | Secondary alternative | Not applicable

13



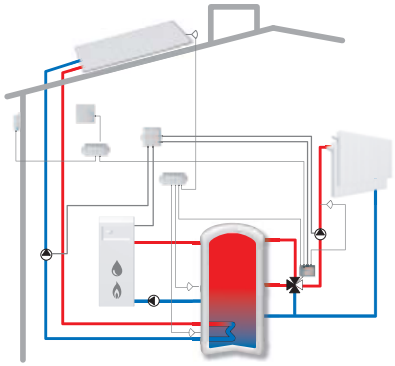
90C-1 | 90C-2 | **90C-3**

14



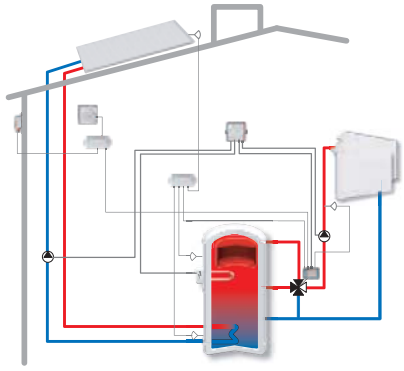
90C-1 | 90C-2 | **90C-3**

15



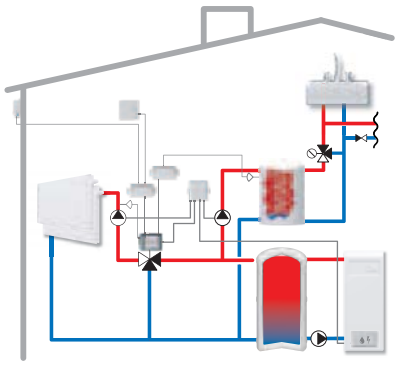
90C-1 | 90C-2 | **90C-3**

16



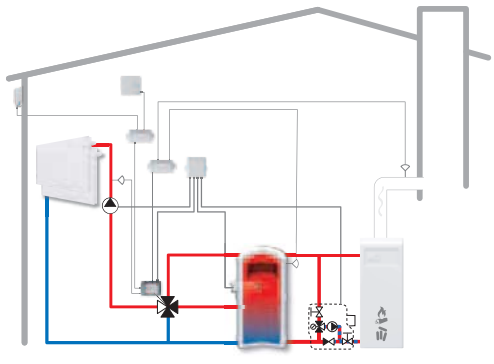
90C-1 | 90C-2 | **90C-3**

17



90C-1 | 90C-2 | **90C-3**

18



Addition of High temperature sensor CRS215 necessary.

90C-1 | 90C-2 | **90C-3**

CONTROLLER
SERIES 90C

The ESBE series 90C is a complete weather-compensating control unit. Simply mount it on an ESBE 3-way valve for excellent regulating performance, or mount it on a VRB140 for even more advanced functionality. Available in different versions to suit the demands of a wide variety of system layouts.

OPERATION

The series 90C comes in three different versions, all equipped with full graphic displays for easy handling and 1.5 m power supply cables for instant setup.

The tables below show the many different systems for which the 90C is suitable as a control unit. At the same time as the 90C controls a mixing valve, it can also handle up to 7 different sources of data input and has 3 possibilities of output control, which makes the 90C versatile and able to control a number of heat circuits and system components with high accuracy. The 90C is preset to control a normal household heating system, but the options for further fine tuning of the system are many and the settings easy to alter. This of course means taking the high level of comfort even higher.

FUNCTIONS

● = included, ○ = option

Functions	Version		
	90C-1	90C-2	90C-3
Daily / Weekly program	●	●	●
Heating curve limitation, max./min.	●	●	●
Valve exercising	●	●	●
Pump control, on/off	●	●	●
Pump control, secondary circuit		●	●
Boiler control			●
Auxiliary heat source - valve position control	●	●	●
Auxiliary heat source - temperature sensor control		●	●
PID control	●	●	●
Manual operation override	●	●	●
Working angle 90°/180°/270° (preset 90°)	●	●	●
Working angle offset/limitation	●	●	●
Frost protection	●	●	●
CRS231 Economy mode, 10°C indoor temperature	○	○	○
Constant flow temperature control	●	●	●
Constant flow temperature sequence control, 14 days	●	●	●
Domestic hot water control		○	●
Temperature difference control			●
Set-up wizard	●	●	●
Operation statistics	●	●	●

HARDWARE

● = included, ○ = option

Hardware	Version		
	90C-1	90C-2	90C-3
Power supply cable (230V), 1.5 m	●	●	●
Pump / Heat source power supply cable (230V), 1.5 m	●		
Sensor box	1	2	2
max. no. of input sources	5	6	7
max. no. of output sources	1	3	3
Flow pipe sensor, 1.5 m cable	●	●	●
Universal sensor, 1.0 m cable (pcs)		2	3
Outdoor sensor (without cable)	●	●	●
Room sensor (without cable)	○	○	○
Sensor cable, 20m	○	○	○

SUITABLE MIXING VALVES

The series 90C is supplied with adaptor kits for easy mounting on all ESBE rotary mixing valves.

- Series VRG100
- Series VRG200
- Series VRG300
- Series VRB100
- Series MG
- Series G
- Series 3F
- Series BIV
- Series TM
- Series 3H, 3HG and 4HG

LINKAGE KITS

Adaptor kits for easily fitting onto an ESBE rotary mixing valve is supplied with each actuator.

If required, separate adaptor kits can be ordered as follows.

Art. No.

1605 37 00 _____ ESBE valve series VRG, VRB

1605 32 00 _____ ESBE valve series MG, G, F, BIV, TM, H, HG

Adaptor kits for other mixing valves and valves built-into boilers are available as follows:

Art. No.

1605 35 00 _____ BRV

1605 16 00 _____ Centra ZR, DR, DRG, DRU(≤DN50)

1605 17 00 _____ Centra Kompakt DRK/ZRK

1605 36 00 _____ BRV, Meibes, Oventrop, Watts

1605 13 00 _____ Sauter MH32…H42…

1605 25 00 _____ Siemens VBG31, VBI31, VBF21, VCI31

1605 14 00 _____ TA–VTR, TA–STM

1605 15 00 _____ Viessmann (all nominal diameters)

1605 18 00 _____ WITA

OPTIONAL EQUIPMENT

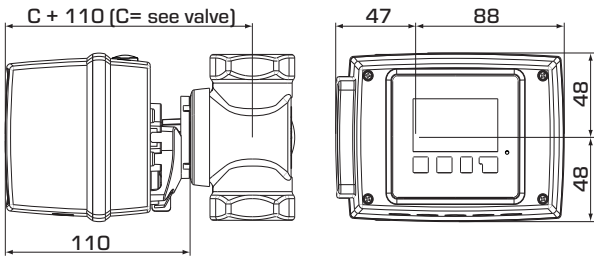
Room sensor CRS231 _____ Art. No. 1705 07 00

Flow pipe sensor CRS211 _____ Art. No. 1705 08 00

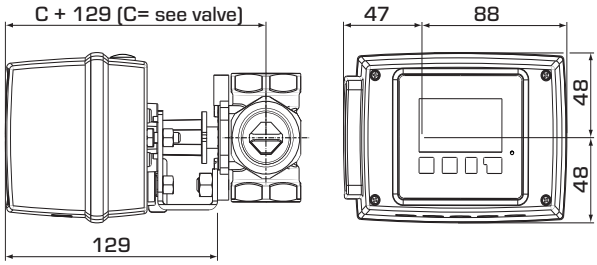
Universal sensor CRS213 _____ Art. No. 1705 09 00

High temperature sensor CRS215 _____ Art. No. 1705 11 00

CONTROLLER
SERIES 90C



Installation dimensions for Controller Series 90C with ESBE VRG100, VRG200, VRG300 and VRB100 mixing valves



Installation dimensions for Controller Series 90C with ESBE series MG, G, F, T/TM, H/HG and BIV mixing valves

SERIES 90C-1

Art. No.	Reference	No. of input sources	No. of output sources	Sensor cable enclosed	Room sensor enclosed	Universal sensor	Note
1260 11 00	90C-1A	5	1	●			1)
1260 12 00	90C-1B						1)
1260 13 00	90C-1C			●	●		1)

SERIES 90C-2

Art. No.	Reference	No. of input sources	No. of output sources	Sensor cable enclosed	Room sensor enclosed	Universal sensor	Note
1260 21 00	90C-2A	6	3	●		2	
1260 22 00	90C-2B						
1260 23 00	90C-2C			●	●		

SERIES 90C-3

Art. No.	Reference	No. of input sources	No. of output sources	Sensor cable enclosed	Room sensor enclosed	Universal sensor	Note
1260 31 00	90C-3A	7	3	●		3	
1260 32 00	90C-3B						
1260 33 00	90C-3C			●	●		

Note 1) Replaces 1260 01 00 (95C)

TECHNICAL DATA

Basic unit: Actuator controller with plastic housing, prewired for supply and sensors
Dimensions (HxWxT): approx. 95x135x85 mm
Display: fully graphical display 128x64 dots
Light emitting diode: polychrome / multicolour
Operation: input keys

Power supply: 230 ±10% VAC, 50/60 Hz
Power consumption: ca 5.0 VA
Total switching capacity of the relay output 1-3: 2(0.8)A 250 VAC (circulation pump 185W)
Enclosure rating: IP 54 as per DIN 40050 CE
Protection class: II

Ambient temperature: 0° to 40°C max.
Ambient atmospheric humidity: max. 85% RH at 25°C

Actuator: Running time 120 s/90°
Torque: 15 Nm

Sensors: Temperature sensor type PT1000
Sensor cable: 4x0.38mm², max. length 30m
Temperature range:
- Flow pipe sensor CRS211, 1.5m: 0 to +105°C
- Outdoor sensor CRS214: -50 to +70°C
- Universal sensor CRS213 ø5mm, 1.5m: 0 to +105°C
- Room sensor CRS231: +10 to +30°C
- High temperature sensor CRS215: -50 to +550°C

Weight: 0.9 kg

CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

CONTROLLER
SERIES CRB100

ESBE series CRB100 is an indoor sensor based controller with integrated actuator, highly user friendly interface and quick and simple installation. Settings are done via a room display unit with integrated indoor sensor, which can either be connected to the actuator unit through cable (CRB110) or through wireless radio connection (CRB120).


CRB111


CRB113


CRB121

OPERATION

The series CRB100 controller is designed to provide a high level of comfort and at the same time provide energy savings for the house owner.

The controller consists of two main parts:
- actuator unit, to be mounted to the mixing valve controlling the heat supply, equipped with a flow pipe sensor with 1.5 m cable. Available with power supply for 230 VAC (ready to use, 1.5 m cable with wall socket plug included).
- room display unit in modern design, which contains the indoor temperature sensor and in which the day-to-day climate adjustments are set. The actuator unit can be connected to the room display unit either by cable (CRB110) or by wireless radio connection (CRB120).

The regulation is based on indoor sensor feedback and is easily changed by altering the target temperature in the room display unit. An alternative target temperature may be activated by an external signal.

CRB113 is available with auxiliary switch pump control as an option, including an external connection box for easy installation.

MOUNTING

To provide the best comfort, the room display unit should be placed in a central open area in the house, out of direct sunlight. The wireless room display unit provides a flexible solution which makes the installation even quicker and easier.

The CRB100 is easily mounted to the ESBE 3- and 4-way valves series G, MG, F, BIV, T, TM, H and HG, and with the valves of series VRG and VRB offer even more outstanding regulation accuracy and even simpler mounting.

OPTIONAL EQUIPMENT

Flow pipe sensor, 5m cable _____ Art. No. 1705 31 00

LINKAGE KITS

Required adaptor kits for easily fitting onto an ESBE rotary mixing valve is supplied with each actuator. Adaptor kits can also be ordered separately.

Art. No.
1600 05 00 (= supplied with actuator)
___ESBE valve series VRG, VRB, G, MG, F, BIV, T, TM, H, HG

Adaptor kits for other mixing valves are available as follows:

Art. No.
1600 06 00 _____ Meibes
1600 07 00 _____ Watts
1600 08 00 _____ Honeywell Corona
1600 09 00 _____ Lovato

SUITABLE MIXING VALVES

The controller is supplied complete with a mounting kit for easy fitting onto an ESBE rotary mixing valve.

- Series VRG100
- Series VRG200
- Series VRG300
- Series VRB100
- Series MG*
- Series G
- Series F ≤ DN40
- Series BIV
- Series T and TM
- Series H and HG

* Not 5MG

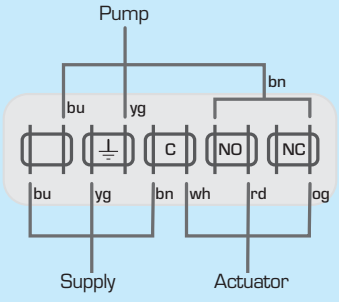
TECHNICAL DATA

Ambient temperature: _____ max. +55°C
_____ min. -5°C
Temperature range:
Flow pipe sensor _____ +5 to +95°C
Room sensor _____ +5 to +30°C
Enclosure rating - Actuator unit: _____ IP41
- Room display unit: _____ IP20
Protection class: _____ II
Power supply - Actuator unit: _____ 230 ± 10% VAC, 50 Hz
- Room display unit - wireless: ____ 2x 1.5 V LR6/AA
Power consumption - 230 VAC: _____ 10 VA
Battery endurance, wireless room display unit: _____ 1 year
Rating auxiliary switch: _____ 6(3)A 250 VAC
Torque: _____ 6 Nm
Running time at max. speed: _____ 30s
Weight: _____ 0.9 kg
Room display unit cable: _____ 20m
Radio frequency CRB120: _____ 868MHz
_____ ITU region 1 approved acc. to EN 300220-2

CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

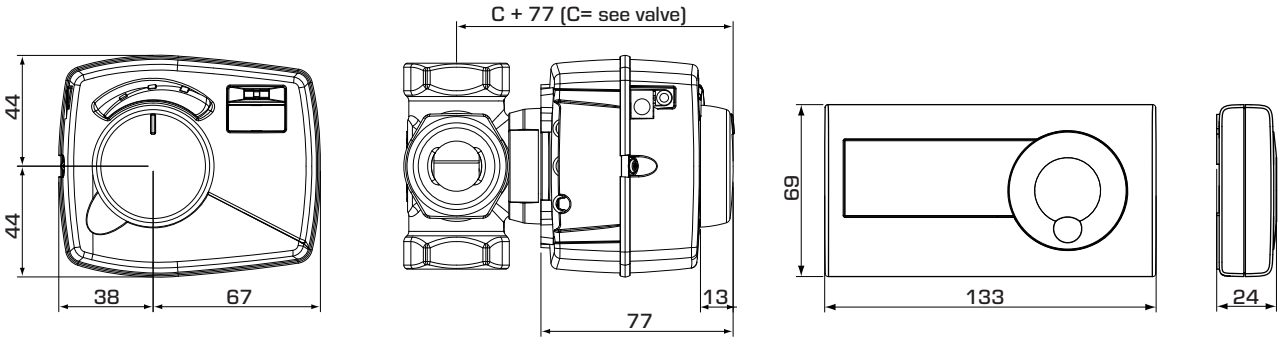
WIRING

The controller should be preceded by a multi-pole contact breaker in the fixed installation.



Controller with pump control wire box, series CRB113

CONTROLLER
SERIES CRB100



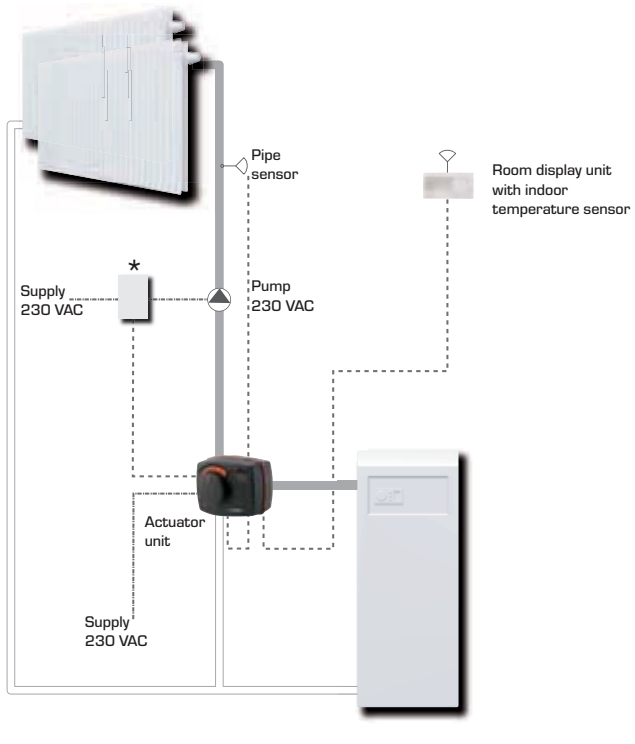
Installation dimensions for Controller Series CRB100 with ESBE VRG100, VRG200, VRG300 and VRB100 mixing valves

Installation dimensions for Room display units

SERIES CRB100

Art. No.	Reference	Voltage [V AC]	Torque [Nm]	Room display unit	Note
1266 01 00	CRB111	230	6	Cable	
1266 03 00	CRB113				With pump control wire box
1266 21 00	CRB121			Wireless	

INSTALLATION EXAMPLE



* Only for CRB113, Controller with pump control wire box

CONTROLLER
SERIES CUA110

ESBE series CUA110 is a dual function controller, capable of both constant flow temperature control and indoor sensor based regulation. It may be used with most 3-point, 24 VAC actuator, such as an ESBE series ARA600 or series 90. Settings are done via a room display unit with integrated indoor sensor.

OPERATION

The ESBE series CUA110 may be used both for constant flow temperature control and indoor sensor based regulation. The controller consists of two main parts:
- room display unit in modern design, which contains the indoor temperature sensor and in which the day-to-day climate adjustments are set
- control unit, equipped with a flow pipe sensor with 1.5m cable.

For maximum flexibility the controller may be used with most 24 VAC actuators with 3-point control (actuator not included in product). For electrical connection and load restrictions, please see Technical Data section. Temperature setting is done by an easy-to-use display unit. As constant flow temperature control it can be set within the range of 5 – 95 °C.

MOUNTING

Power supply by 230 VAC adapter (complete with transformer and cable).

Control unit for easy mounting on wall etc near the actuator, well suited for applications where the actual valve and actuator is located in a hard-to-reach position.

Flow pipe sensor with 1.5m cable included (longer cable available as accessory). The sensor must be carefully insulated from the ambient temperature.

OPTIONAL EQUIPMENT

Flow pipe sensor, 5m cable _____ Art. No. 1705 31 00

SUITABLE ACTUATORS

The controller may most easily be fitted with ESBE actuators:

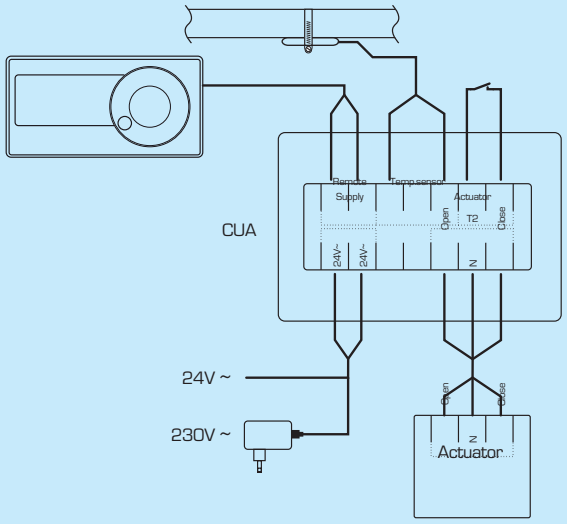
- Series ARA600
- Series 90
- Series ALA222
- Series ALD124, 144, 224, 244

TECHNICAL DATA

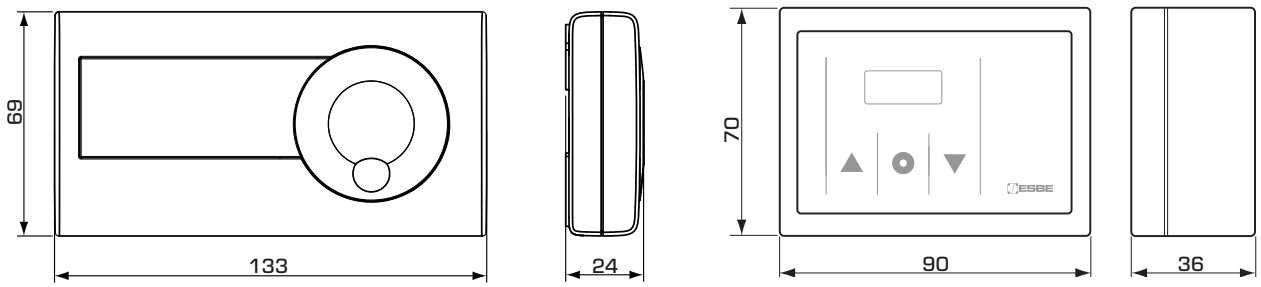
Ambient temperature:	max. +55°C
	min. -5°C
Temperature range:	
Flow pipe sensor	+5 to +95°C
Room sensor	+5 to +30°C
Enclosure rating - Control box:	IP54
- Room display unit:	IP20
Protection class:	II
Power supply:	230 ± 10% VAC, 50 Hz
Power consumption, 230 VAC:	10 VA
Running time, recommended:	120s (15 - 240s)
Weight:	0.8 kg
Max. allowed power consumption of actuator with 230 VAC adapter:	4 VA
Output voltage:	3-point, 24 VAC

CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

WIRING



CONTROLLER
SERIES CUA110



Installation dimensions for Room display unit

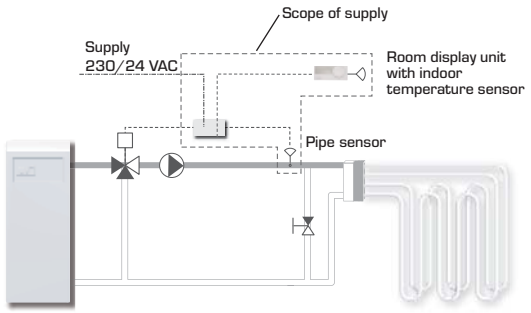
Installation dimensions for Control box

SERIES CUA110

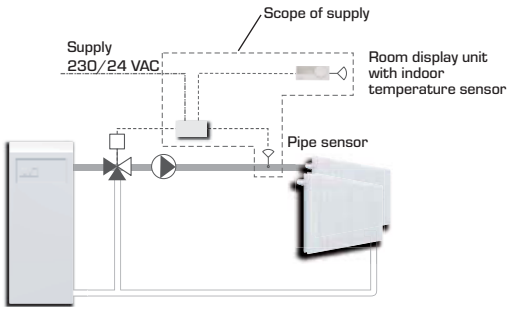
Art. No.	Reference	Voltage [VAC]	Temp. range	Note
1264 01 00	CUA111	230	5–95°C	

INSTALLATION EXAMPLES

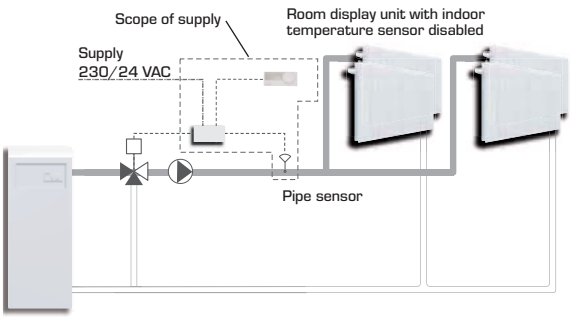
1 ROOM TEMPERATURE CONTROL



3 ROOM TEMPERATURE CONTROL



2 CONSTANT TEMPERATURE CONTROL



CONTROLLER
SERIES CRA110

CRA111
230 VAC

CRA112
24 VAC

ESBE series CRA110 is a combined actuator and constant flow temperature controller with adjustable temperature setting within the range of 5 – 95 °C. For valves up to DN50, especially suited for ESBE 3-way valves series VRG or 4-way valves of series VRB.

OPERATION

The ESBE series CRA110 is an integrated actuator and controller, for use with mixing valves. Temperature setting is done by an easy-to-use joystick and display interface.

An alternative target temperature may be activated by an external signal.

MOUNTING

Power supply by 230 VAC adapter (complete with transformer, cable and plug) or 24 VAC (cable and plug).

Flow pipe sensor with 1.5m cable included (longer cable available as accessory). The sensor must be carefully insulated from the ambient temperature.

The CRA110 is easily mounted to the ESBE 3- and 4-way valves series G, MG, F, BIV, T, TM, H and HG, and with the valves of series VRG and VRB offer even more outstanding regulation accuracy and even simpler mounting.

OPTIONAL EQUIPMENT

Flow pipe sensor, 5m cable _____ Art. No. 1705 31 00

LINKAGE KITS

Required adaptor kits for easily fitting onto an ESBE rotary mixing valve is supplied with each actuator. Adaptor kits can also be ordered separately.

Art. No.
1600 05 00 (= supplied with actuator)
ESBE valve series VRG, VRB, G, MG, F, BIV, T, TM, H, HG

Adaptor kits for other mixing valves are available as follows:

Art. No.
1600 06 00 _____ Meibes
1600 07 00 _____ Watts
1600 08 00 _____ Honeywell Corona
1600 09 00 _____ Lovato

SUITABLE MIXING VALVES

The controller is supplied complete with a mounting kit for easy fitting onto an ESBE rotary mixing valve.

- Series VRG100
- Series VRG200
- Series VRG300
- Series VRB100
- Series MG*
- Series G
- Series F ≤ DN40
- Series BIV
- Series T and TM
- Series H and HG

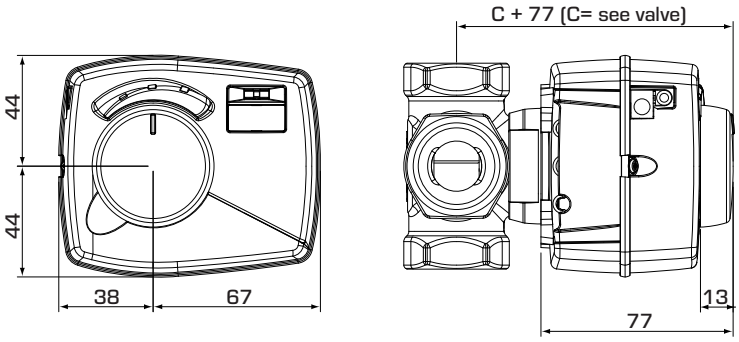
* Not 5MG

TECHNICAL DATA

Ambient temperature: _____ max. +55°C
_____ min. -5°C
Temperature range:
Flow pipe sensor _____ +5 to +95°C
Enclosure rating: _____ IP41
Protection class: _____ II
Power supply: _____ 24 ± 10% VAC, 50/60 Hz
_____ 230 ± 10% VAC, 50 Hz
Power consumption - 24 VAC: _____ 3 VA
- 230 VAC: _____ 10 VA
Torque: _____ 6 Nm
Running time at max. speed: _____ 30s
Weight: _____ 0.4 kg

CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

CONTROLLER
SERIES CRA110



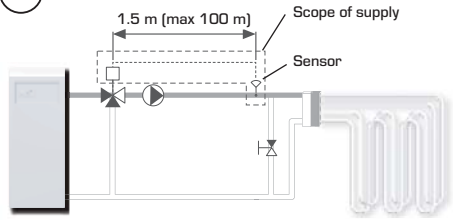
Installation dimensions for Controller Series CRA110 with ESBE VRG100, VRG200, VRG300 and VRB100 mixing valves

SERIES CRA110

Art. No.	Reference	Voltage [VAC]	Temp. range	Torque [Nm]	Note
1272 01 00	CRA111	230	5–95°C	6	
1272 02 00	CRA112	24			

INSTALLATION EXAMPLES

1



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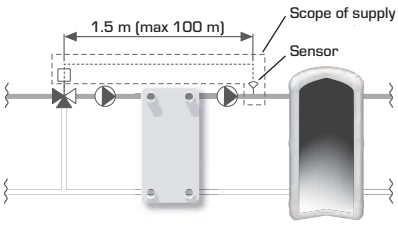

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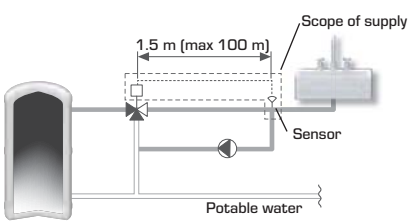

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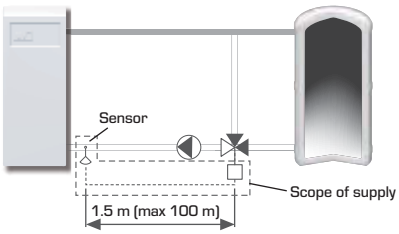

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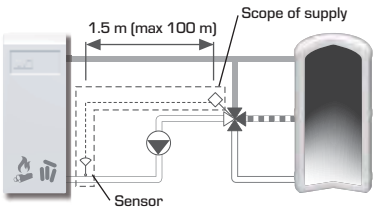


CONTROLLER
SERIES CRA120

ESBE series CRA120 is a combined actuator and constant flow temperature controller with adjustable temperature setting within the range of 5 – 95 °C. Recommended for valves of DN65 up to DN150, especially suited for ESBE 3-way valves series F.

OPERATION

The ESBE series CRA120 is an actuator and controller solution, for use with mixing or diverting valves. Temperature setting is done by an easy-to-use display unit.

MOUNTING

Power supply by 230 VAC adapter (complete with transformer and cable) or 24 VAC (cable only).

Controller unit with display included for easy mounting on wall etc, well suited for applications where the actual valve and actuator is located in a hard-to-reach position. 1.5m cable for connection to actuator included.

Flow pipe sensor with 1.5m cable included (longer cable available as accessory). The sensor must be carefully insulated from the ambient temperature.

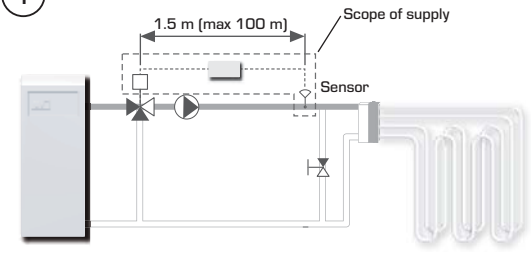
The CRA120 is recommended for mounting on ESBE valves series F.

OPTIONAL EQUIPMENT

Flow pipe sensor, 5m cable _____ Art. No. 1705 31 00

INSTALLATION EXAMPLES

1



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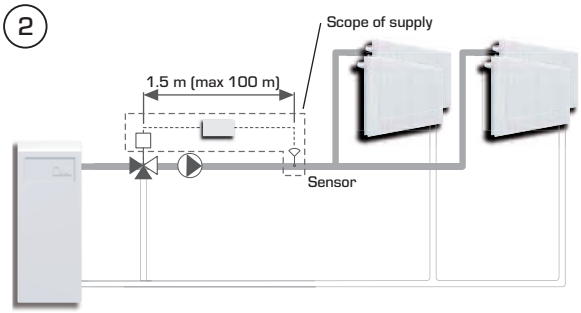


SUITABLE MIXING VALVES

The controller is supplied complete with a mounting kit for easy fitting onto an ESBE rotary mixing valve.

● Series F

LINKAGE KITS

Required adaptor kits for easily fitting onto an ESBE rotary mixing valve is supplied with each actuator. If required, separate adaptor kits can be ordered as follows.

Art. No.

1605 33 00 _____ ESBE valve series VRG, VRB
1605 13 00 ___ ESBE valve series MG, G, F, BIV, T, TM, H, HG

Adaptor kits for other mixing valves and valves built-into boilers are available as follows:

Art. No.

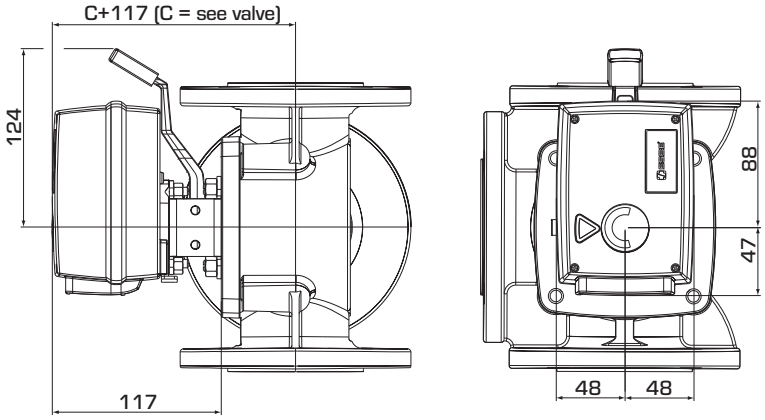
1605 35 00 _____ BRV
1605 16 00 _____ Centra ZR, DR, DRG, DRU(≤DN50)
1605 17 00 _____ Centra Kompakt DRK/ZRK
1605 36 00 _____ BRV, Meibes, Oventrop, Watts
1605 13 00 _____ Sauter MH32…H42…
1605 25 00 _____ Siemens VBG31, VBI31, VBF21, VCI31
1605 14 00 _____ TA–VTR, TA–STM
1605 15 00 _____ Viessmann (all nominal diameters)
1605 18 00 _____ WITA

TECHNICAL DATA

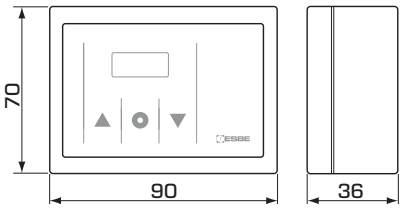
Ambient temperature: _____ max. +55°C
_____ min. -5°C
Temperature range:
Flow pipe sensor _____ +5 to +95°C
Enclosure rating - Actuator unit: _____ IP54
- Control box: _____ IP54
Protection class: _____ II
Power supply: _____ 24 ± 10% VAC, 50/60 Hz
_____ 230 ± 10% VAC, 50 Hz
Power consumption - 24 VAC: _____ 3 VA
- 230 VAC: _____ 10 VA
Torque: _____ 15 Nm
Running time at max. speed: _____ 120s
Weight: _____ 0.9 kg

CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

CONTROLLER
SERIES CRA120



Installation dimensions for Actuator Series CRA120 with ESBE series MG, G, F, T/TM, H/HG and BIV mixing valves

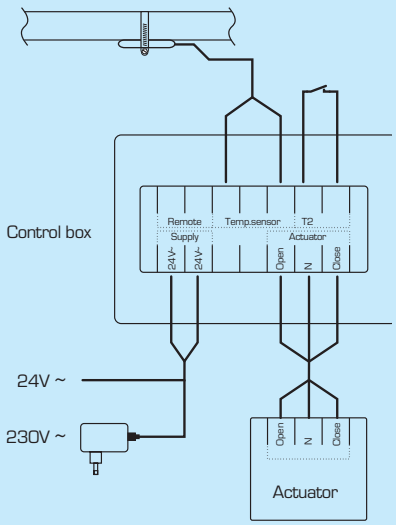


Installation dimensions for Control box

SERIES CRA120

Art. No.	Reference	Voltage [VAC]	Temp. range	Torque [Nm]	Note
1274 21 00	CRA121	230	5–95°C	15	
1274 22 00	CRA122	24			

WIRING



EFFICIENT LOADING. EXTENDS THE BOILER'S LIFETIME. COMPACT, HANDY DESIGN.

Firing with solid fuel can be a challenge. Especially if you have to make your solution energy efficient and environmentally friendly as well.

Solid fuel boilers should be fired at a high temperature to ensure efficient combustion, with less pollution and soot. At the same time too low return temperature leads to internal corrosion damage and a shorter boiler service life.

In addition, a modern boiler often loads one or more storage tanks, with demands for energy efficient loading and good stratification. It is also becoming more and more common to connect other heat sources, for example solar heating, to the system.

So to create a reliable and efficient system, there are a lot of challenges to face. This is the background to our range of solid fuel products.

CONTENTS SOLID FUEL PRODUCTS

FEATURES AND BENEFITS

LOAD VALVES AND LOAD UNITS
SERIES VTC AND SERIES LTC

THE SECRET OF LOWER ENERGY CONSUMPTION.

We have come up with a completely new valve design (patent pending). This is the secret behind control performance considerably better than anything else on the market up to now.

And the result? More efficient storage loading and better stratification in the storage tank. Homeowners end up with a heating system that requires less maintenance and outputs more energy from each pellet or piece of wood.

FEATURES FOR A SAFER SYSTEM.

ESBE load valves and load units make sure that the boiler gets up to a high combustion temperature so as to ensure the lowest possible emissions. Above all, the valves make sure that the return temperature to the boiler is kept high and guaranteed over the entire combustion cycle.

This enhances efficiency, decreases emissions of substances that are harmful to the environment and reduces tar formation. Service life of the boiler is also increased.

An integrated self-circulation function is another feature of the load unit. This means that tank loading continues even in the event of a power failure, or if the circulation pump stops working. This self-circulation function is blocked at the time of delivery, but it is easy to enable or disable it yourself.

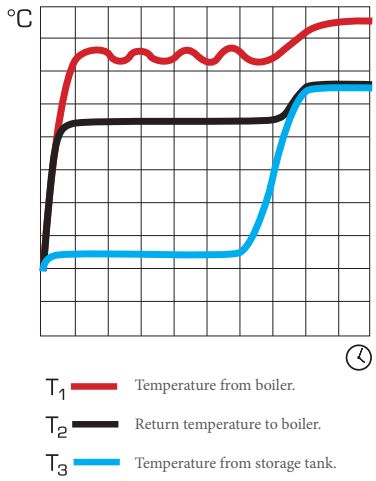
AS USUAL, THE INSTALLER'S WORK ENVIRONMENT HAS BEEN IN OUR THOUGHTS.

Homeowners love large kitchens and bathrooms. Boiler rooms, on the other hand, should be as small as it is possible to make them. As for the space between the boiler and the storage tank – best not to mention that. This is why we have made sure to use compact dimensions for our new load unit – despite its many integral functions.

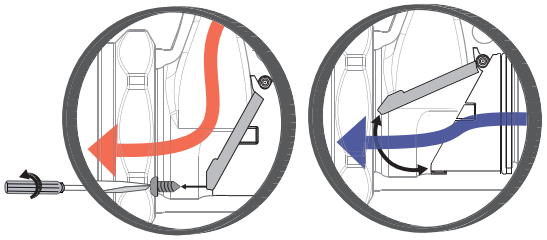
Faster, simpler installation for many reasons. Count on it.

With our system, a balancing valve on the bypass pipe is simply not required. Because our load valves regulate two connections. This also reduces installation time, since no system tuning is required.

A shut-off function for the load unit is integrated into the adapters. This makes any servicing of the pump or load valve, for example, easy without having to drain the entire system.



OPTIMUM REGULATION
The load units and load valves from ESBE provide optimum regulation throughout the entire firing process – not just at the start or end.



INTEGRATED SELF-CIRCULATION
The self-circulation function in ESBE load unit series LTC100 is easy for the installer or user to enable or disable.

COMPACT DIMENSIONS
The ESBE load unit is of compact dimensions, thereby facilitating installation.

SOME THINGS NEVER CHANGE – LIKE OUR BROAD RANGE OF PRODUCTS.

If you are used to working with ESBE products, you know we have a broad range of products to choose from in all kinds of fields. And our load units and load valves are no exception. This is why there are as many as 95 different standard variants to choose from.

Start off by choosing your pipe connection option: internal thread, external thread, compression fitting or pump flange.

Then all you have to do is select the right system temperature. Our load valves contain a thermostat that opens connection "A" at a defined temperature, depending on product version. But no need to worry if you assess the temperature wrongly. Changing the thermostat afterwards is easy even once the valve has been installed.

LOTS OF POSSIBILITIES
ESBE series VTC300 load valves are available with several pipe connection possibilities.

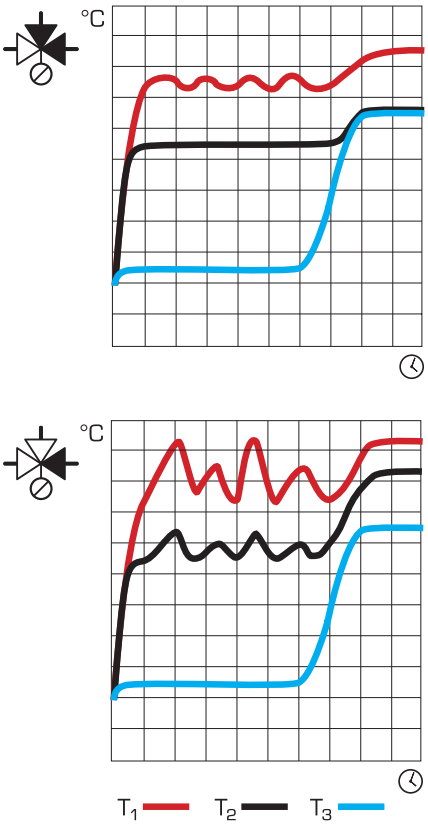
MORE EFFICIENT LOADING PROCESS RESULTS IN SEVERAL BENEFITS.

The valves regulating on two ports results in energyefficient solid fuel firing with high regulating accuracy.

The valves have the same Kvs value in the comparative diagrams, on your right hand, but the valve in the lower diagram only regulate on one port. The comparison shows that the valves regulating on two ports have important advantages:

– the return temperature T_2 to the boiler is kept on an even and stable level.

– the boiler temperature T_1 is more balanced and does not peak. Otherwise there is a risk of the boiler heating to above boiling point at every peak, and at every low point the good stratification in the storage tank might be compromised.



REGULATING ON TWO PORTS
ESBE load unit and load valves regulating on two ports results in energyefficient solid fuel firing with high regulating accuracy.

FEATURES AND BENEFITS

Firing with wood and pellets goes in cycles, involving several phases day after day. The challenge is to fire efficiently throughout the entire combustion cycle: when firing commences, the storage tanks are loaded, etc.

The load valves from ESBE help to provide regulation for all combustion cycle phases. Below is an outline of what happens over the various phases.

By way of example, we have selected a simple storage system with a load unit installed. The same principle also applies to load valves.

Phase 1: Firing commences.

The load unit gives priority to bringing the boiler up to temperature quickly, and this is why the water initially only circulates in the boiler circuit.

Phase 2: Storage tank loading begins.

A thermostat starts to open the connection from the storage tank at a defined temperature, which depends on product version. A high, guaranteed return temperature to the boiler is maintained throughout the entire combustion cycle.

Phase 3: Storage tank during loading.

The good control performance ensures efficient storage loading and good stratification in the storage tank.

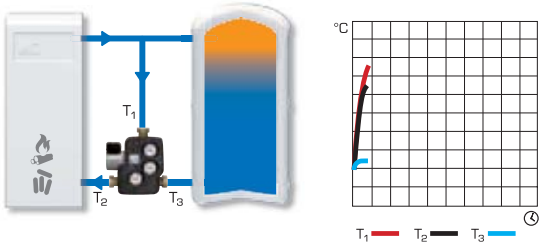
Phase 4: Storage tank is fully loaded.

Even in the final stage of the combustion cycle the excellent regulating performance makes sure that the return temperature to the boiler is well-controlled, at the same time as the storage tank is loaded from top to bottom.

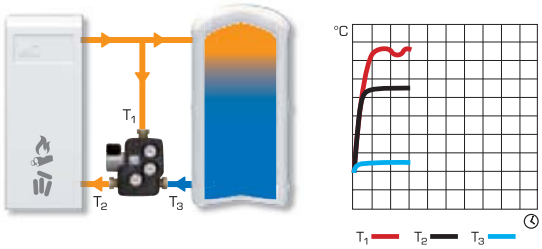
Phase 5: Firing ends.

By closing the upper port completely, the flow is led straight to the storage tank, taking care of all the heat in the boiler.

1.



2.



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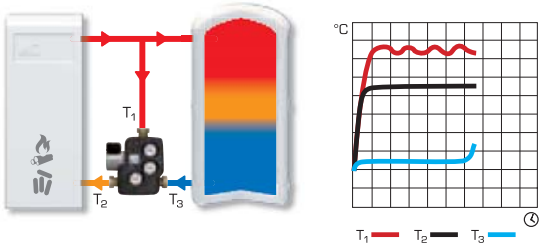

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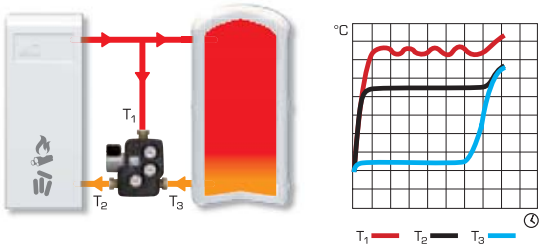

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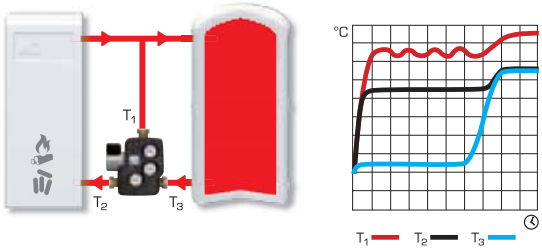


T_1 Temperature from boiler.

T_2 Return temperature to boiler.

T_3 Temperature from storage tank.

NEW PRODUCTS

DRAUGHT REGULATOR
SERIES ATA200

A brand new design of the draught regulator to replace the faithful old servant series ATA100. The new series improvements are, for example, a shorter immersion pocket, improved knob function as well as a more clearly visible temperature setting scale. All this together meet the requirements of the wood boiler manufacturers of today.

The ESBE draught regulator is an independent thermostatic expansion control device intended to regulate the temperature of solid fuel fired boilers by adjusting the air supply. No electrical wiring or complicated fitting is required. The thermostatic control head senses the boiler temperature and through a lever and chain adjusts the position of the air vent, thereby regulating the combustion air supply to the boiler.

FLUE GAS THERMOSTAT
SERIES CTF150

The flue gas thermostat series CTF150 is an extension of our assortment and is typically used for on/off control of circulation pumps and load units in solid fuel systems.

The ESBE Flue Gas Thermostat, consists of a temperature probe connected to the switch unit. The switch is used to control the electricity supply to a circulation pump or load unit with an integrated circulation pump. The thermostat can easily be set to any target temperature between 20°C and 240°C by turning the setting knob. The temperature probe can be mounted either directly on the outside of the flue gas pipe, or inside the pipe using the immersion pocket series CTF851. The switch unit is prepared for easy wall mounting.

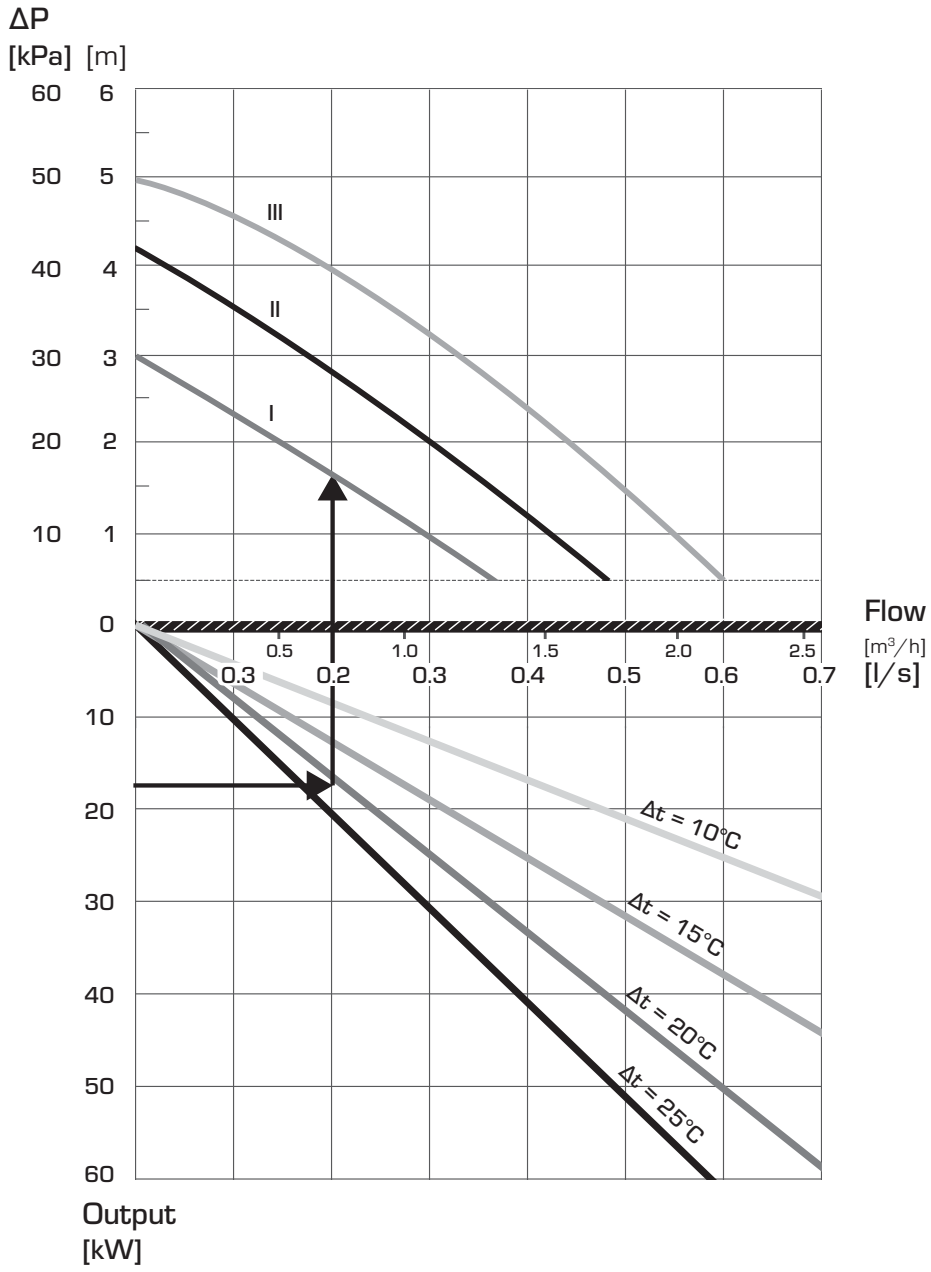
ESBE GUIDE
DIMENSIONING, LOAD UNIT SERIES LTC100

DIMENSIONING OF LOAD UNIT SERIES LTC140

Start with the heat output of the boiler (e.g. 18 kW) and move horizontally to the right in the diagram to the chosen Δt (recommended by boiler supplier), which is the temperature difference between the riser from the boiler and the return to the boiler (e.g. 85°C -65°C = 20°C).

Move vertically up to the curves representing unit performance. Select the pump speed which overcomes the additional pressure drops in system components such as pipes, boiler and storage tank. Different options for the choice of load unit pump speed (e.g. mark I) appear where the vertical line crosses the curves. For best performance we recommend choosing the pump speed represented by the first (lowest) curve that is crossed.

CAPACITY DIAGRAM, SERIES LTC140, 55KW



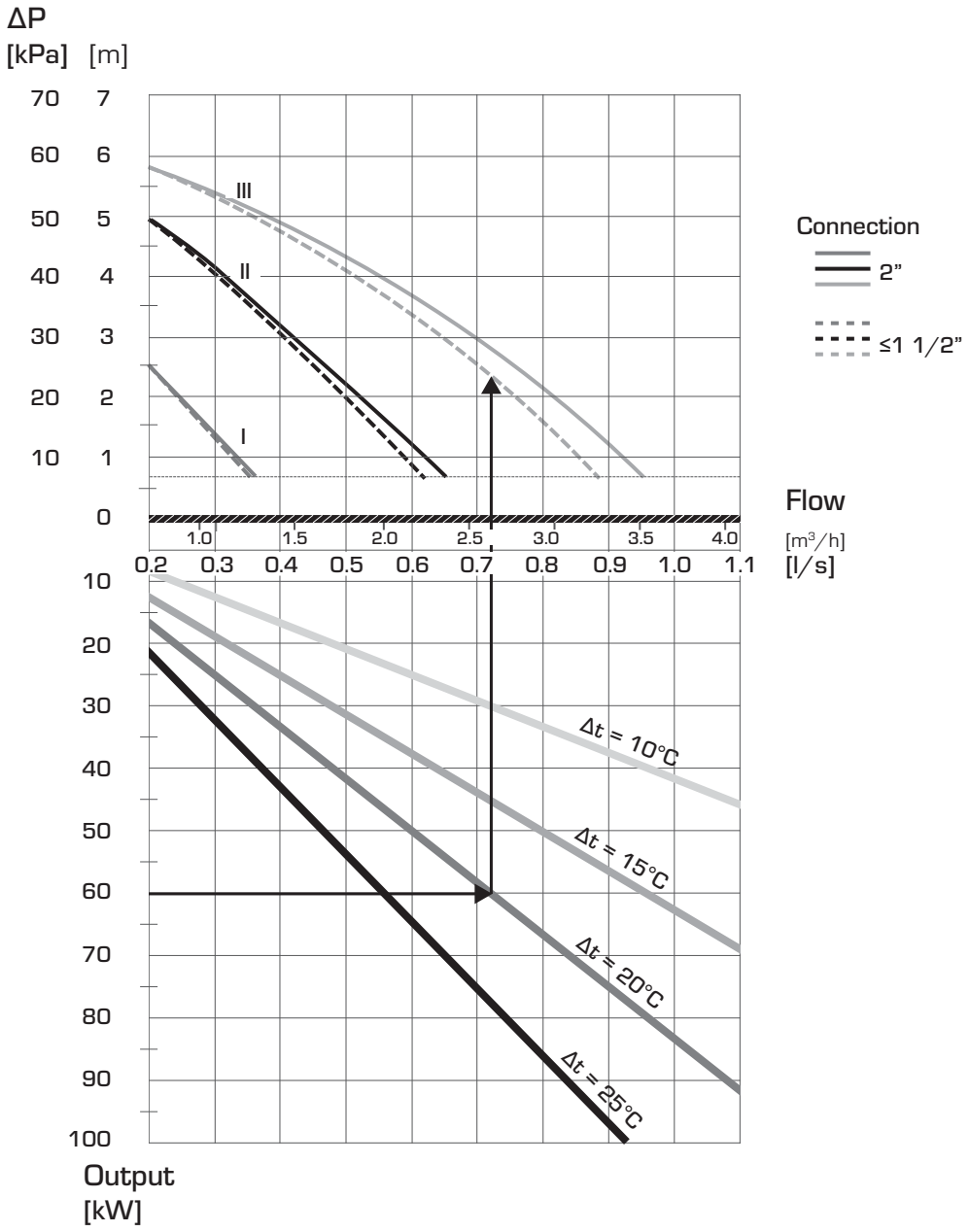
ESBE GUIDE
DIMENSIONING, LOAD UNIT SERIES LTC100

DIMENSIONING OF LOAD UNIT SERIES LTC170

Start with the heat output of the boiler (e.g. 60 kW) and move horizontally to the right in the diagram to the chosen Δt (recommended by boiler supplier), which is the temperature difference between the riser from the boiler and the return to the boiler (e.g. 90°C -70°C = 20°C).

Move vertically up to the curves representing unit performance. Select the pump speed which overcomes the additional pressure drops in system components such as pipes, boiler and storage tank. Different options for the choice of load unit connections (e.g. 1 1/2") and pump speed (e.g. mark III) appear where the vertical line crosses the curves. For best performance we recommend choosing the pump speed represented by the first (lowest) curve that is crossed for selected connection.

CAPACITY DIAGRAM, SERIES LTC170, 100KW



ESBE GUIDE
DIMENSIONING, LOAD VALVE SERIES VTC300

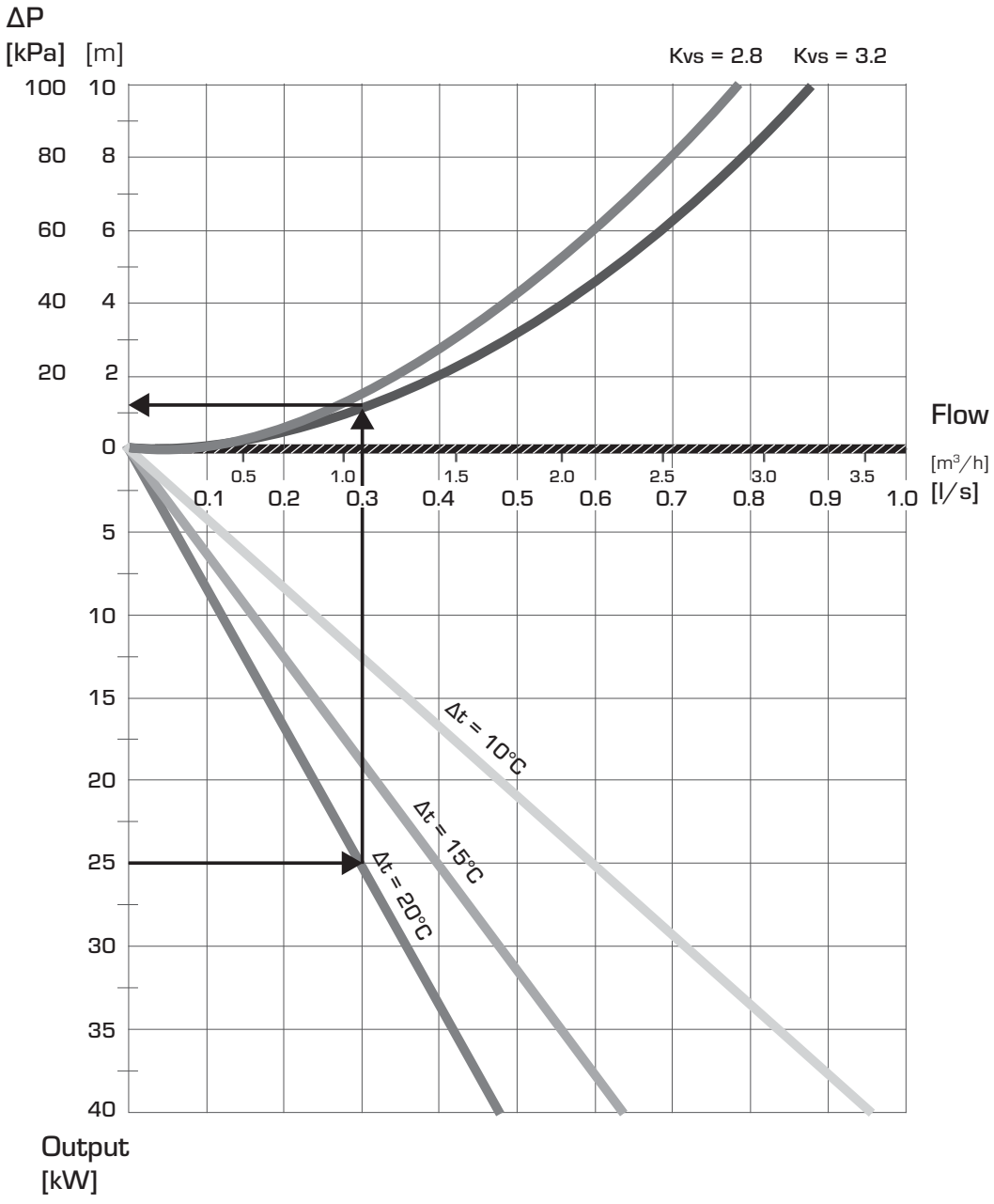
DIMENSIONING OF VALVE AND PUMP

Start with the heat output of the boiler (e.g. 25 kW) and move horizontally to the right in the diagram to the chosen Δt, which is the temperature difference between the riser from the boiler and the return to the boiler (e.g. 90°C -70°C = 20°C).

Move vertically up to the curves representing the different valve sizes (e.g. Kvs 3.2) and then move horizontally to the left to find the pressure drop over the valve (e.g. 12 kPa) which the pump will have to overcome. In addition to the pressure drop over the valve, remember that the pump will also have to be dimensioned to handle the pressure drop in the rest of the system (e.g. pipes, boiler and accumulation tank).

If the pressure drop and flow do not match the pump you have intended for the system, please try a different Kvs-value to receive a suitable pressure drop.

CAPACITY DIAGRAM, SERIES VTC300



ESBE GUIDE
DIMENSIONING, LOAD VALVE SERIES VTC500

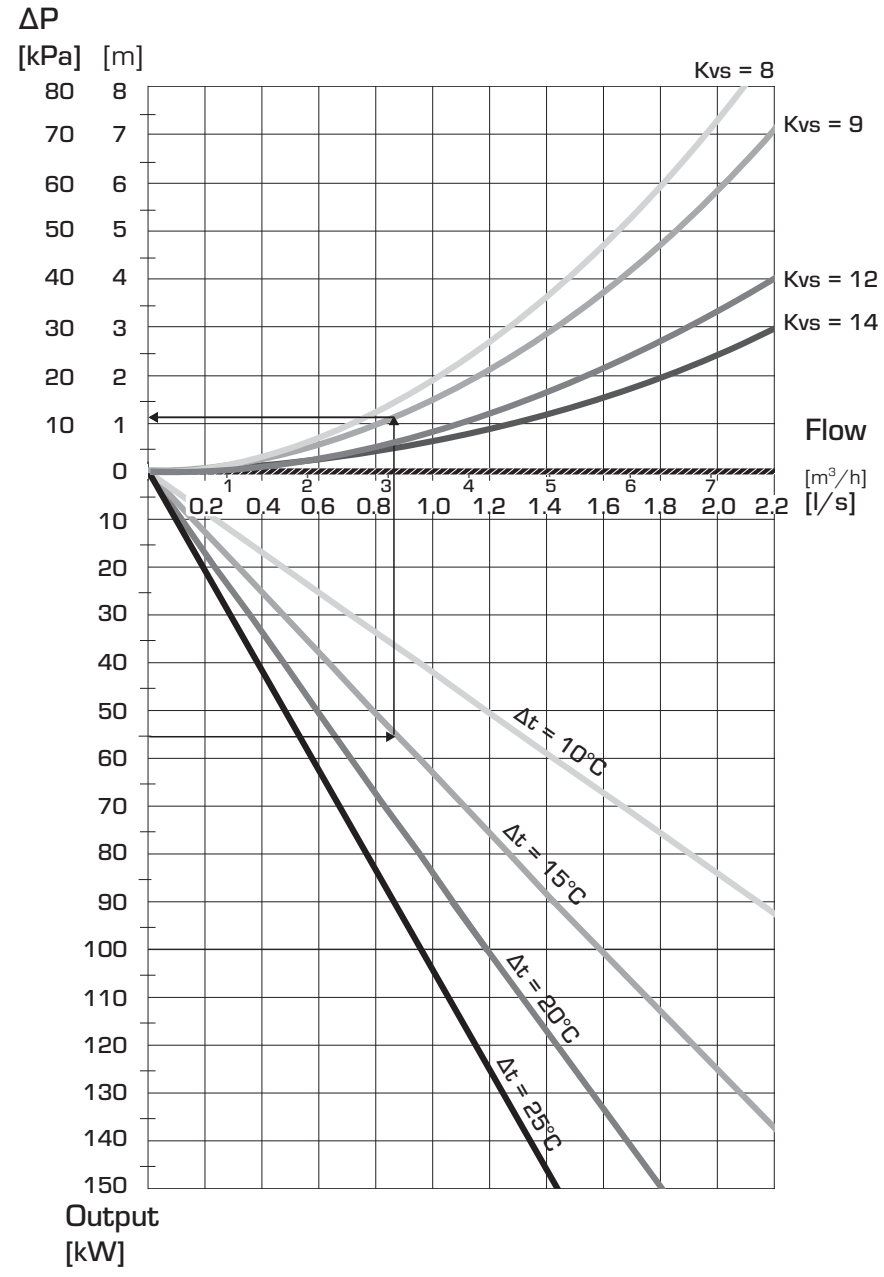
DIMENSIONING OF VALVE AND PUMP

Start with the heat output of the boiler (e.g. 55 kW) and move horizontally to the right in the diagram to the chosen Δt, which is the temperature difference between the riser from the boiler and the return to the boiler (e.g. 85°C -70°C = 15°C).

Move vertically up to the curves representing the different valve sizes (e.g. Kvs 9) and then move horizontally to the left to find the pressure drop over the valve (e.g. 12 kPa) which the pump will have to overcome. In addition to the pressure drop over the valve, remember that the pump will also have to be dimensioned to handle the pressure drop in the rest of the system (e.g. pipes, boiler and accumulation tank).

If the pressure drop and flow do not match the pump you have intended for the system, please try a different Kvs-value to receive a suitable pressure drop.

CAPACITY DIAGRAM, SERIES VTC500



LOAD UNIT
SERIES LTC100

The ESBE load unit series LTC100 is used to automatically and efficiently load accumulation tanks and protect solid fuel boilers from too low return temperatures, which otherwise could cause tarring, reduced output and shorter life span of the boiler. Patent pending.

Internal thread/
Compression fitting

OPERATION

The ESBE series LTC100 is a load unit designed to protect the boiler from return temperatures that are too low. Maintaining a high and stable return temperature enables a higher level of boiler efficiency, reduced tarring and increased life span of the boiler.

The LTC100 is used in heating applications where solid fuel boilers are used to feed storage tanks.

FUNCTION

The load unit consists of an integrated pump and thermic valve, designed to make both assembly and handling easy. The load unit is protected by an insulation shell and is fitted with easily readable thermometers.

The valve regulates on two ports, which makes it easy to install and does not require any adjustment valve in the bypass pipe.

The LTC100 has an integrated auto-circulation function which makes the unit operational even during power failure or pump failure. The circulation function is blocked at delivery, but can easily be activated if required.

The valve contains a thermostat which begins to open connection A at an outgoing mixed water temperature in connection AB of 50°C, 55°C, 60°C, 65°C, 70°C or 75°C. Connection B is fully closed when the temperature in connection A exceeds the nominal opening temperature with 10°C.

MEDIA

Maximum 50% glycol for freezing protection and oxygen absorbing compounds are allowed as additives. As both the viscosity and the thermal conduction are affected when glycol is added to the system water, this fact has to be considered when dimensioning the unit.

SERVICE AND MAINTENANCE

The load unit is equipped with shut-down ball valves to facilitate future service.

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

LOAD UNIT LTC100 DESIGNED FOR

- ● Heating
- ○ Comfort Cooling
- ○ Potable water
- ○ Floor heating
- ○ Solar heating
- ○ Ventilation
- ○ Zone
- ○ District Hot Water
- ○ District Heating
- ○ District Cooling

OPTIONS

Thermostat 50°C	Art. No. 5702 01 00
Thermostat 55°C	Art. No. 5702 02 00
Thermostat 60°C	Art. No. 5702 03 00
Thermostat 65°C	Art. No. 5702 08 00
Thermostat 70°C	Art. No. 5702 04 00
Thermostat 75°C	Art. No. 5702 05 00

TECHNICAL DATA

Pressure class:	PN 6
Temperature of medium:	max. 110°C
	min. 0°C
Ambient temperature:	max. 60°C
	min. 0°C
Leakrate A - AB:	max. 0,5% of max. flow (Q_{max})
Leakrate B - AB:	max. 3% of max. flow (Q_{max})
Rangeability Kv/Kv^{min}:	100
Supply voltage:	230 ± 10% VAC, 50 Hz
Power consumption:	LTC140, 65W
	LTC170, 132W
Energy classification:	C
Connections:	Internal thread, EN 10226-1
	Compression fitting, EN 1254-2

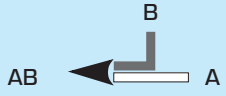
Material

Valve body and cover:	Nodular iron EN-JS 1050

CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC
PED 97/23/EC, article 3.3

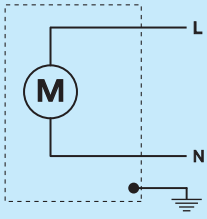
Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice). According to the directive the equipment shall not carry any CE-mark.

FLOW PATTERN

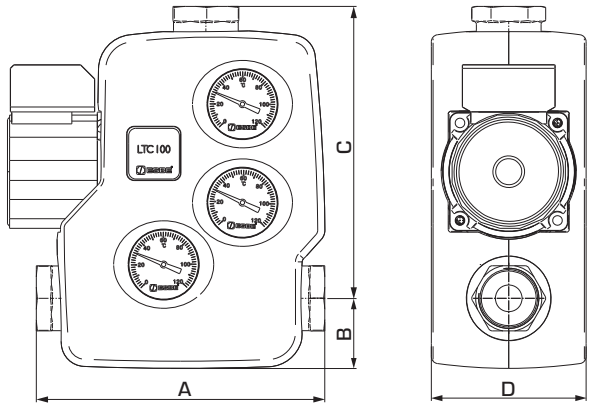


WIRING

The pump should be preceded by a multi-pole contact breaker in the fixed installation.



LOAD UNIT
SERIES LTC100



SERIES LTC141, INTERNAL THREAD

Art. No.	Reference	DN	Connection Adapter	Power [kW]	(max. Δt)	Temperature Opening	Mixed (AB)	A	B	C	D	Weight [kg]
5500 01 00	LTC141	25	Rp 1“	85	40	50°C	53°C ± 5°C	205	50	207	110	4.75
5500 02 00				75	35	55°C	58°C ± 5°C					
5500 03 00				65	30	60°C	63°C ± 5°C					
5500 11 00				55	25	65°C	68°C ± 5°C					
5500 04 00				45	20	70°C	73°C ± 5°C					
5500 05 00				35	15	75°C	78°C ± 5°C					
5500 06 00	LTC141	32	Rp 1¼“	85	40	50°C	53°C ± 5°C	235	50	222	110	4.90
5500 07 00				75	35	55°C	58°C ± 5°C					
5500 08 00				65	30	60°C	63°C ± 5°C					
5500 12 00				55	25	65°C	68°C ± 5°C					
5500 09 00				45	20	70°C	73°C ± 5°C					
5500 10 00				35	15	75°C	78°C ± 5°C					

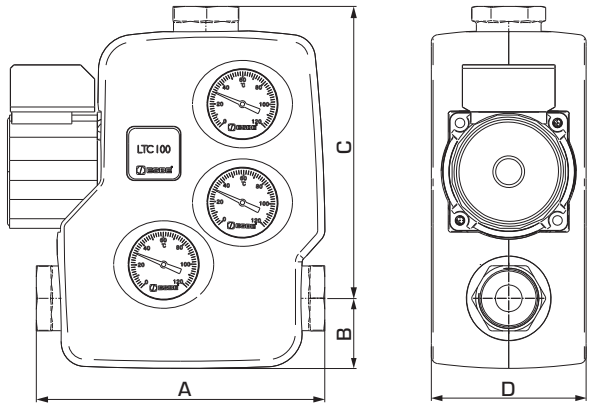
SERIES LTC143, COMPRESSION FITTING

Art. No.	Reference	DN	Connection Adapter	Power [kW]	(max. Δt)	Temperature Opening	Mixed (AB)	A	B	C	D	Weight [kg]
5500 13 00	LTC143	25	CPF 28 mm	85	40	50°C	53°C ± 5°C	220	50	215	110	5.0
5500 14 00				75	35	55°C	58°C ± 5°C					
5500 15 00				65	30	60°C	63°C ± 5°C					
5500 23 00				55	25	65°C	68°C ± 5°C					
5500 16 00				45	20	70°C	73°C ± 5°C					
5500 17 00				35	15	75°C	78°C ± 5°C					
5500 18 00	LTC143	32	CPF 35 mm	85	40	50°C	53°C ± 5°C	220	50	215	110	5.0
5500 19 00				75	35	55°C	58°C ± 5°C					
5500 20 00				65	30	60°C	63°C ± 5°C					
5500 24 00				55	25	65°C	68°C ± 5°C					
5500 21 00				45	20	70°C	73°C ± 5°C					
5500 22 00				35	15	75°C	78°C ± 5°C					

CPF = compression fitting

For more variants, please see next page

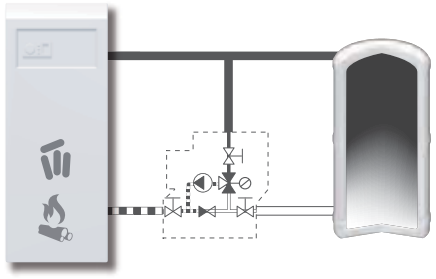
LOAD UNIT
SERIES LTC100



SERIES LTC171, INTERNAL THREAD

Art. No.	Reference	DN	Connection Adapter	Power [kW]	Power (max. Δt)	Temperature Opening	Temperature Mixed (AB)	A	B	C	D	Weight [kg]
5500 25 00	LTC171	40	Rp 1½"	120	40	50°C	53°C ± 5°C	246	50	228	110	5.7
5500 26 00				105	35	55°C	58°C ± 5°C					
5500 27 00				90	30	60°C	63°C ± 5°C					
5500 35 00				75	25	65°C	68°C ± 5°C					
5500 28 00				60	20	70°C	73°C ± 5°C					
5500 29 00				45	15	75°C	78°C ± 5°C					
5500 30 00	LTC171	50	Rp 2"	140	40	50°C	53°C ± 5°C	246	50	228	110	6.0
5500 31 00				120	35	55°C	58°C ± 5°C					
5500 32 00				100	30	60°C	63°C ± 5°C					
5500 36 00				80	25	65°C	68°C ± 5°C					
5500 33 00				65	20	70°C	73°C ± 5°C					
5500 34 00				50	15	75°C	78°C ± 5°C					

INSTALLATION EXAMPLE



LOAD VALVE
SERIES VTC500

The thermic valve series ESBE VTC500 is used to efficiently load accumulation tanks and protect solid fuel boilers up to 150 kW from too low return temperatures, which otherwise could cause tarring, reduced output and shorter life span of the boiler. Patent pending.

VTC531
Internal thread

VTC511
Internal thread

VTC512
External thread

OPERATION

The ESBE series VTC500 is a thermic 3-way valve designed to protect the boiler from return temperatures that are too low. Maintaining a high and stable return temperature means a higher level of boiler efficiency, reduced tarring and increased life span of the boiler.

The VTC500 valve is used in heating applications up to 150 kW where solid fuel boilers are used to feed storage tanks. The valve is installed either in the return pipe to the boiler (50°C, 55°C, 60°C, 65°C, 70°C or 75°C) or in the accumulation tank feeding pipe (70°C or 75°C). The first alternative is recommended as it offers a simpler pipe layout for expansion (see installation examples).

FUNCTION

The valve regulates on two ports, which makes it easy to install and does not require any adjustment valve in the bypass pipe.

The function of the valve is independent of its assembly position.

The valve contains a thermostat which begins to open connection A at an outgoing mixed water temperature in connection AB of 50°C, 55°C, 60°C, 65°C, 70°C or 75°C. Connection B is fully closed when the temperature in connection A exceeds the nominal opening temperature with 10°C.

VERSIONS

Series VTC511 and VTC512 are supplied with internal respective external threads. Series VTC531 is supplied with three shut down ball valves with internal thread (1”-2”), a pump adapter with internal thread (1½”), an insulation kit and three thermometers.

MEDIA

Maximum 50% glycol for freezing protection and oxygen absorbing compounds are allowed as additives. As both the viscosity and the thermal conduction are affected when glycol is added to the system water, this fact has to be considered when dimensioning the valve. When 30 - 50 % glycol is added, the maximum output effect of the valve is decreased by 30 - 40 %. A lower concentration of glycol may be disregarded.

SERVICE AND MAINTENANCE

We recommend equipping the valve connections with shut-down devices (included in Series VTC531). This to facilitate future service.

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

LOAD VALVE VTC500 DESIGNED FOR

- ● Heating
- ○ Comfort Cooling
- ○ Potable water
- ○ Floor heating
- ○ Solar heating
- ○ Ventilation
- ○ Zone
- ○ District Hot Water
- ○ District Heating
- ○ District Cooling

OPTIONS

Thermostat 50°C	Art. No. 5702 01 00
Thermostat 55°C	Art. No. 5702 02 00
Thermostat 60°C	Art. No. 5702 03 00
Thermostat 65°C	Art. No. 5702 08 00
Thermostat 70°C	Art. No. 5702 04 00
Thermostat 75°C	Art. No. 5702 05 00
Thermometer, 3pcs	Art. No. 5702 06 00
Insulation, ≥ DN32	Art. No. 5702 07 00

TECHNICAL DATA

Pressure class:	Series VTC510, PN 10
	Series VTC530, PN 6
Temperature of medium:	max 110°C
	min 0°C
Max. differential pressure:	100 kPa (1.0 bar)
Max. differential pressure A - B:	30 kPa (0.3 bar)
Leakrate A - AB:	max 1% of Kvs
Leakrate B - AB:	max 3% of Kvs
Rangeability Kv/Kv^{min}:	100
Connections:	Internal thread, EN 10226-1
	External thread, ISO 228/1

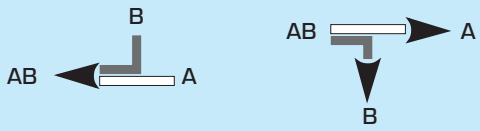
Material
Valve body and cover: Nodular iron EN-JS 1050

PED 97/23/EC, article 3.3

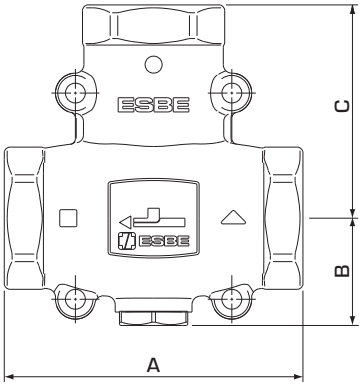
Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice).

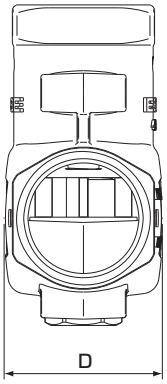
According to the directive the equipment shall not carry any CE-mark.

FLOW PATTERN



LOAD VALVE
SERIES VTC500





SERIES VTC511, INTERNAL THREAD

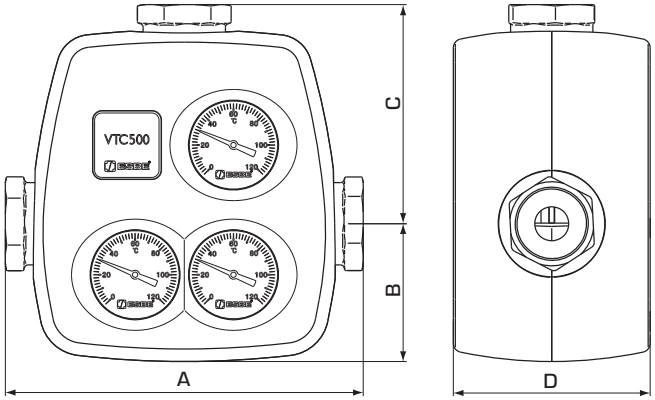
Art. No.	Reference	DN	Kvs*	Connection	Temperature		A	B	C	D	Weight [kg]
					Opening	Mixed (AB)					
5102 01 00	VTC511	25	9	Rp 1“	50°C	53°C ± 5°C	93	34	69	47	0.84
5102 02 00					55°C	58°C ± 5°C					
5102 03 00					60°C	63°C ± 5°C					
5102 11 00					65°C	68°C ± 5°C					
5102 04 00					70°C	73°C ± 5°C					
5102 05 00					75°C	78°C ± 5°C					
5102 06 00	VTC511	32	14	Rp 1¼“	50°C	53°C ± 4°C	105	38	75	55	1.38
5102 07 00					55°C	58°C ± 4°C					
5102 08 00					60°C	63°C ± 4°C					
5102 12 00					65°C	68°C ± 4°C					
5102 09 00					70°C	73°C ± 4°C					
5102 10 00					75°C	78°C ± 4°C					

SERIES VTC512, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	Temperature		A	B	C	D	Weight [kg]
					Opening	Mixed (AB)					
5102 15 00	VTC512	25	9	G 1¼“	50°C	53°C ± 5°C	93	34	69	47	0.80
5102 16 00					55°C	58°C ± 5°C					
5102 17 00					60°C	63°C ± 5°C					
5102 25 00					65°C	68°C ± 5°C					
5102 18 00					70°C	73°C ± 5°C					
5102 19 00					75°C	78°C ± 5°C					
5102 20 00	VTC512	32	14	G 1½“	50°C	53°C ± 4°C	105	38	75	55	1.31
5102 21 00					55°C	58°C ± 4°C					
5102 22 00					60°C	63°C ± 4°C					
5102 26 00					65°C	68°C ± 4°C					
5102 23 00					70°C	73°C ± 4°C					
5102 24 00					75°C	78°C ± 4°C					

* Kvs-value in m^3/h at a pressure drop of 1 bar.

LOAD VALVE
SERIES VTC500

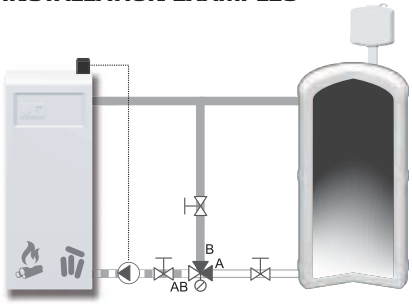


SERIES VTC531, INTERNAL THREAD

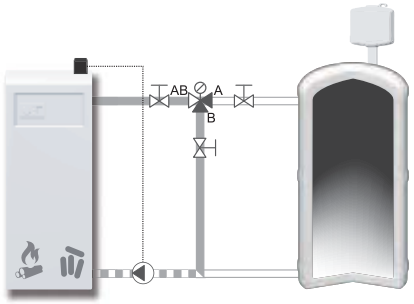
Art. No.	Reference	DN	Kvs*	Connection	Temperature		A	B	C	D	Weight [kg]
					Opening	Mixed (AB)					
5102 55 00	VTC531	25	8	Rp 1“	50°C	53°C ± 4°C	197	77	121	110	2.0
5102 56 00					55°C	58°C ± 4°C					
5102 57 00					60°C	63°C ± 4°C					
5102 75 00					65°C	68°C ± 4°C					
5102 58 00					70°C	73°C ± 4°C					
5102 59 00					75°C	78°C ± 4°C					
5102 60 00	VTC531	32	8	Rp 1¼“	50°C	53°C ± 4°C	230	77	138	110	2.2
5102 61 00					55°C	58°C ± 4°C					
5102 62 00					60°C	63°C ± 4°C					
5102 76 00					65°C	68°C ± 4°C					
5102 63 00					70°C	73°C ± 4°C					
5102 64 00					75°C	78°C ± 4°C					
5102 65 00	VTC531	40	8	Rp 1½“	50°C	53°C ± 4°C	242	77	143	110	2.3
5102 66 00					55°C	58°C ± 4°C					
5102 67 00					60°C	63°C ± 4°C					
5102 77 00					65°C	68°C ± 4°C					
5102 68 00					70°C	73°C ± 4°C					
5102 69 00					75°C	78°C ± 4°C					
5102 70 00	VTC531	50	12	Rp 2“	50°C	53°C ± 4°C	260	77	152	110	2.6
5102 71 00					55°C	58°C ± 4°C					
5102 72 00					60°C	63°C ± 4°C					
5102 78 00					65°C	68°C ± 4°C					
5102 73 00					70°C	73°C ± 4°C					
5102 74 00					75°C	78°C ± 4°C					

* Kvs-value in m^3/h at a pressure drop of 1 bar.

INSTALLATION EXAMPLES



Mixing



Diverting

LOAD VALVE
SERIES VTC300

The thermic valve series ESBE VTC300 is used to protect boilers up to 30 kW from too low return temperatures. ESBE series VTC300 also efficiently loads accumulation tanks.


Internal thread


External thread


Pump flange/
External thread


Rotating nut/
External thread

OPERATION

The ESBE series VTC300 is a thermic 3-way valve designed to protect the boiler from return temperatures that are too low. Maintaining a high and stable return temperature means a higher level of boiler efficiency, reduced tarring and increased life span of the boiler. The VTC300 valve is used in heating applications up to 30 kW where solid fuel boilers are used to feed storage tanks. The valve is installed either in the return pipe to the boiler (45°C, 55°C, 60°C, 70°C or 80°C) or in the accumulation tank feeding pipe (70°C or 80°C). The first option is recommended as it offers a simpler pipe layout for expansion (see installation examples).

FUNCTION

The valve regulates on two ports, which makes it easy to install and does not require any adjustment valve in the bypass pipe.

The function of the valve is independent of its assembly position.

The valve contains a thermostat which begins to open connection A at an outgoing mixed water temperature in connection AB of 45°C, 55°C, 60°C, 70°C or 80°C. Connection B is fully closed when the temperature in connection A exceeds the nominal opening temperature with 10°C.

MEDIA

Maximum 50% glycol for freezing protection and oxygen absorbing compounds are allowed as additives. As both the viscosity and the thermal conduction are affected when glycol is added to the system water, this fact has to be considered when dimensioning the valve. When 30 - 50 % glycol is added, the maximum output effect of the valve is decreased by 30 - 40 %. A lower concentration of glycol may be disregarded.

SERVICE AND MAINTENANCE

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

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

LOAD VALVE VTC300 DESIGNED FOR

- ● Heating
- ○ Comfort Cooling
- ○ Potable water
- ○ Floor heating
- ● Solar heating
- ○ Ventilation
- ○ Zone
- ○ District Hot Water
- ○ District Heating
- ○ District Cooling

OPTIONS

Thermostat 45°C	Art. No. 5700 01 00
Thermostat 55°C	Art. No. 5700 02 00
Thermostat 60°C	Art. No. 5700 03 00
Thermostat 70°C	Art. No. 5700 04 00
Thermostat 80°C	Art. No. 5700 05 00

TECHNICAL DATA

Pressure class:	PN 10
Temperature of medium:	max 100°C
	min 0°C
Max. differential pressure:	Mixing, 100 kPa (1.0 bar)
Max. differential pressure:	Diverting, 30 kPa (0.3 bar)
Leakrate A - AB:	Tight sealing
Leakrate B - AB:	max 3% of Kvs
Rangeability Kv/Kv^{min}:	100
Connections:	Internal thread, EN 10226-1
	External thread, ISO 228/1

Material

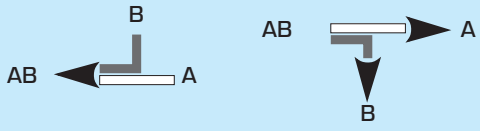
Valve housing and other metal parts with fluid contact:
Brass DZR, CW 602N, resistant to dezincification

PED 97/23/EC, article 3.3

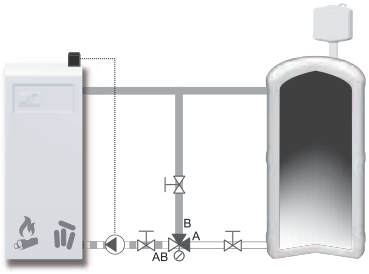
Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice).

According to the directive the equipment shall not carry any CE-mark.

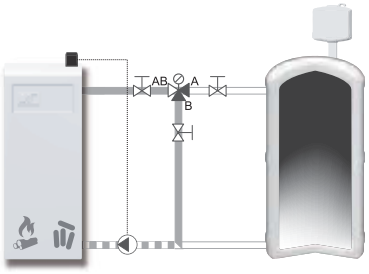
FLOW PATTERN



INSTALLATION EXAMPLES

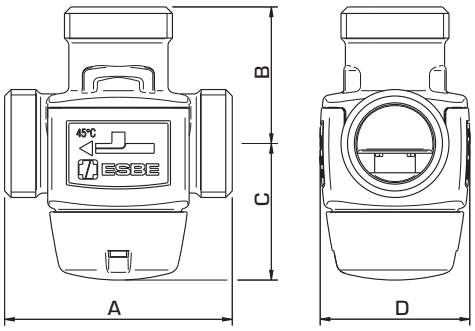


Mixing

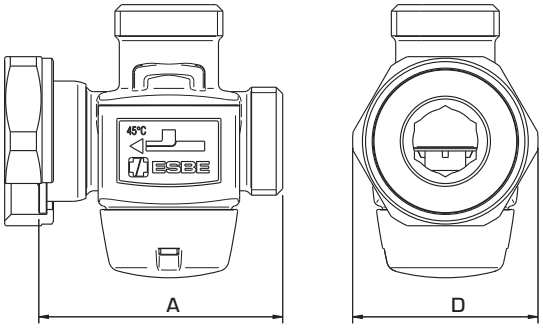


Diverting

LOAD VALVE
SERIES VTC300



VTC311, VTC312



VTC317, VTC318

SERIES VTC311, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	Temperature Opening	Temperature Mixed (AB)	A	B	C	D	Weight [kg]
5100 01 00	VTC311	20	3.2	Rp ¾“	45°C	47°C ± 2°C	70	42	42	46	0.53
5100 02 00					55°C	57°C ± 2°C					
5100 03 00					60°C	62°C ± 2°C					
5100 04 00					70°C	72°C ± 2°C					
5100 05 00					80°C	82°C ± 2°C					

SERIES VTC312, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	Temperature Opening	Temperature Mixed (AB)	A	B	C	D	Weight [kg]
5100 08 00	VTC312	15	2.8	G ¾“	45°C	47°C ± 2°C	70	42	42	46	0.48
5100 09 00					55°C	57°C ± 2°C					
5100 10 00					60°C	62°C ± 2°C					
5100 11 00					70°C	72°C ± 2°C					
5100 12 00					80°C	82°C ± 2°C					
5100 15 00	VTC312	20	3.2	G 1“	45°C	47°C ± 2°C	70	42	42	46	0.51
5100 16 00					55°C	57°C ± 2°C					
5100 17 00					60°C	62°C ± 2°C					
5100 18 00					70°C	72°C ± 2°C					
5100 19 00					80°C	82°C ± 2°C					

SERIES VTC317, PUMP FLANGE AND EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	Temperature Opening	Temperature Mixed (AB)	A	B	C	D	Weight [kg]
5100 22 00	VTC317	20	3.2	PF 1½“, G 1“	45°C	47°C ± 2°C	75	42	42	57	0.57
5100 23 00					55°C	57°C ± 2°C					
5100 24 00					60°C	62°C ± 2°C					
5100 25 00					70°C	72°C ± 2°C					
5100 26 00					80°C	82°C ± 2°C					

SERIES VTC318, ROTATING NUT AND EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	Temperature Opening	Temperature Mixed (AB)	A	B	C	D	Weight [kg]
5100 29 00	VTC318	20	3.2	RN 1“, G 1“	45°C	47°C ± 2°C	70	42	42	46	0.49
5100 30 00					55°C	57°C ± 2°C					
5100 31 00					60°C	62°C ± 2°C					
5100 32 00					70°C	72°C ± 2°C					
5100 33 00					80°C	82°C ± 2°C					

* Kvs-value in m^3/h at a pressure drop of 1 bar. PF = Pump Flange RN = Rotating Nut

NEW

DRAUGHT REGULATOR
SERIES ATA200

The ESBE draught regulator series ATA200 is a control device intended to regulate the temperature of solid fuel fired boilers by adjusting the air supply.

OPERATION
The ESBE draught regulator series ATA200 is an independent thermostatic expansion control device intended to regulate the temperature of solid fuel fired boilers by adjusting the air supply. No electrical wiring or complicated fitting is required. The thermostatic control head senses the boiler temperature and through a lever and chain adjusts the position of the air vent, thereby regulating the combustion air supply to the boiler. The ESBE draught regulator is fully adjustable within the ranges of 35-95°C and 60-95°C. The draught regulator is connected directly to the boiler waterway through a threaded immersion pocket.

MOUNTING
The draught regulator series ATA200 may be mounted either horizontally or vertically (knob upwards). The chain should be connected from the lever to the air vent so that it just closes as the required temperature has been reached.

SERVICE AND MAINTENANCE
The draught regulator series ATA200 does not normally require any maintenance. However, if needed, the thermostatic capsule may be replaced after first removing the regulator from the immersion pocket.

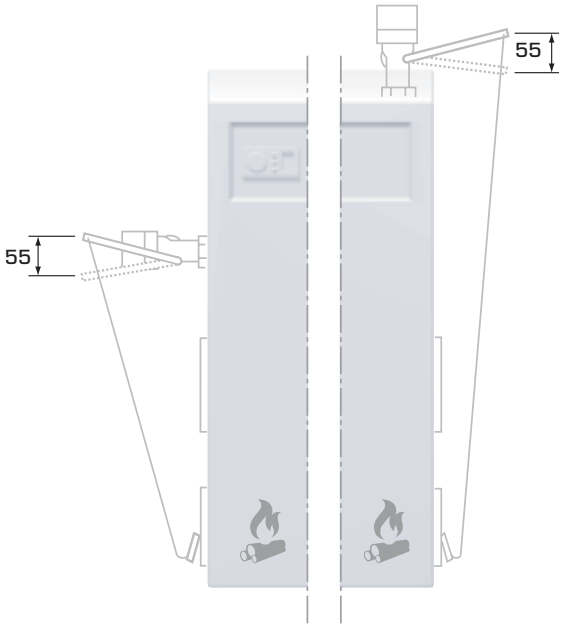
DRAUGHT REGULATOR ATA200 DESIGNED FOR

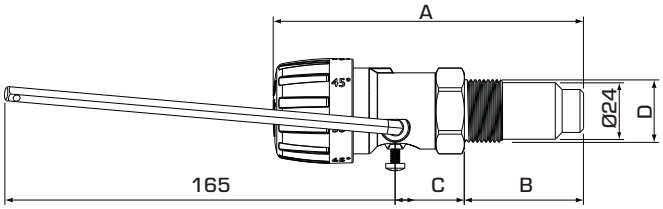
- ● Heating
- ○ Comfort Cooling
- ○ Potable water
- ○ Floor heating
- ○ Solar heating
- ○ Ventilation
- ○ Zone
- ○ District Hot Water
- ○ District Heating
- ○ District Cooling

TECHNICAL DATA

Max. working temperature:	100°C
Regulating range:	35–95°C alt. 60–95°C
Lifting force:	10 N
Lifting stroke:	55 mm
Chain length:	1.6 m
Connection:	External thread, ISO 228/1

INSTALLATION EXAMPLE





SERIES ATA200

Art. No.	Reference	Lifting force [N]	Temp. range	Connection D	Dimension A	Dimension B	Dimension C	Weight [kg]	Replaces
5600 11 00	ATA212	10	35–95°	G ¾"	130	50	29	0.38	3180 02 00
5600 12 00				G 1"				0.40	3180 03 00
5600 13 00	ATA222	10	60–95°	G ¾"				0.38	–
5600 14 00	ATA212	10	35–95°	NPT ¾"				0.38	–

FLUE GAS THERMOSTAT
SERIES CTF150

ESBE series CTF150 flue gas thermostat is intended for on/off control of circulation pumps and load units.

NEW

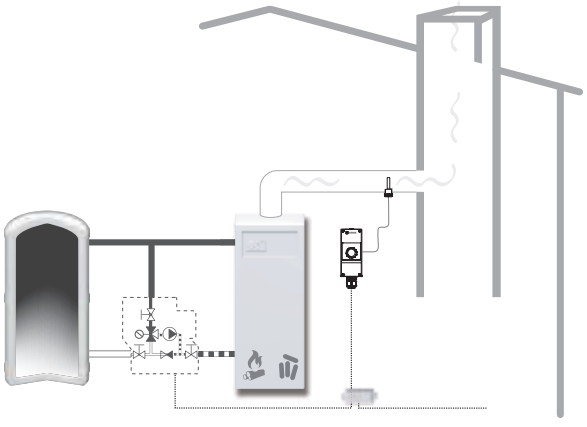
OPERATION
ESBE series CTF150 is a flue gas thermostat, consisting of a temperature probe connected to a switch unit. The switch unit can be used to control the electricity supply to a circulation pump or load unit with an integrated circulation pump.

FUNCTION
The thermostat switch can easily be set to any target temperature between 20°C and 240°C by turning the setting knob. If needed, the temperature range can be limited by changing the position of pegs inside the housing of the switch unit.

MOUNTING
The temperature probe can be mounted either directly on the outside of the flue gas pipe, or inside the pipe using the immersion pocket series CTF851. The switch unit is prepared for easy wall mounting. The temperature probe is connected to the switch unit by a 1500 mm line.

OPTIONAL EQUIPMENT
Immersion pocket CTF851 _____ Art. No. 5602 02 00

INSTALLATION EXAMPLE



FLUE GAS THERMOSTAT CTF150 DESIGNED FOR

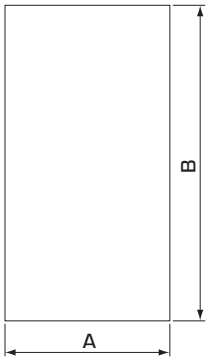
- ● Heating
- ○ Comfort Cooling
- ○ Potable water
- ○ Floor heating
- ○ Solar heating
- ○ Ventilation
- ○ Zone
- ○ District Hot Water
- ○ District Heating
- ○ District Cooling

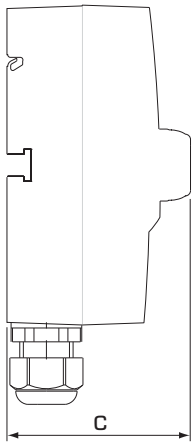
TECHNICAL DATA

Ambient temperature - storage:_____ -30°C to +50°C
- use: _____ 0°C to +50°C
Enclosure rating:_____ IP54 (EN 60529)
Contact rating - N/C contact:_____ max. 16(2.5)A, 230 VAC
- N/O contact:_____max. 6.3(2.5)A 230VAC
_____ min: 24V AC/DC, 100mA
Hysteresis: _____ 7% of the scale range
Temperature probe: _____ Ø6 mm x 96 mm
line: _____ Ø1.5 mm x 1500 mm
Immersion pocket: _____ Ø8 mm x 0.75 mm, length 100 mm
Weight: _____ 0.2 kg

Material
Case lid:_____ Plastic ABS
Housing: _____Plastic PA (inforced)
Temperature probe: _____Stainless steel (CrNi, 1.4301)
insulation: _____Plastic PVC hose
Immersion pocket: _____Stainless steel (CrNi, 1.4571)

CE EN 14597
LVD 2006/95/EC
EMC 2004/108/EC





SERIES CTF151

Art. No.	Reference	Switch temp. range	Max. temp. probe	Dimension			Note	Weight [kg]
				A	B	C		
5602 01 00	CTF151	20–240°C	500°C	53	120	70		0.2

QUICK SWITCHING. GREAT LONGEVITY. COMPACT DESIGN.

As is always the case when we develop products, we want to do the job properly and offer customers new features. To simply copy has never been our philosophy. The ESBE diverting valves series VZA and VZB are not any exception from this statement. Read more about their features and benefits on coming pages. You will then understand what we mean.

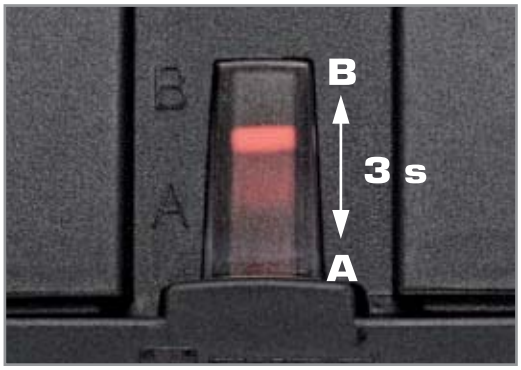
CONTENTS DIVERTING VALVES

FEATURES AND BENEFITS

IT'S ALL ABOUT CHANGING FAST.

We know that fast change-over in diverting applications reduces unnecessary energy consumption. That is why our compact diverting valves are extremely fast. Changing from A- to B-circuit takes only 3 seconds. In this way creaking stairs and cold feet are avoided.

The job of the diverting valve, in a heat pump for example, is to divert hot water between the radiator circuit and tap water production. It is the regulation electronics in the heat pump which determines when change-over between A- and B-circuit is made. Optimal heat production is achieved through well-functioning cooperation between the diverting valve and the heat pump.



FAST CHANGE-OVER
Change over from A- to B-circuit takes only 3 seconds. In the indication window the position of the valve is clearly visible.

LONGEVITY GUARANTEED.

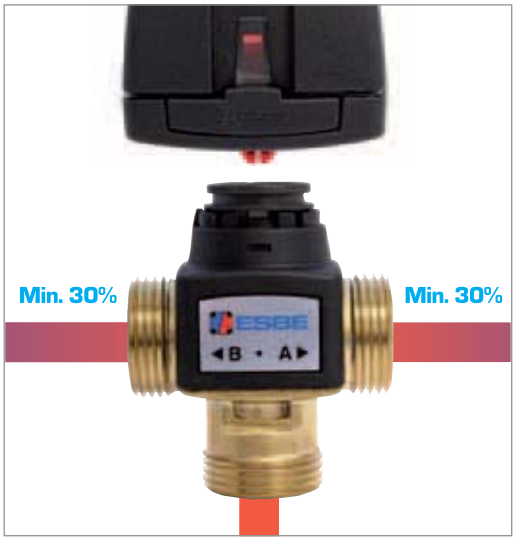
ESBE diverting valves have been developed to match special features desired.

In order to reduce friction the valve housing is made of brass and has a Teflon-blended composite regulating cone, sealing against specially prepared O-rings.

The actuator's basic design is uncomplicated with its integrated transmission, but there's a trump card hidden under the cover. A micro processor based circuit board! The micro processor among other things has an integrated anti-jamming program, which makes sure that at least every 7th day a complete change-over cycle is made to prevent the regulating cone from jamming.

We have also eliminated other life-shortening hazards by developing a secure lid solution, 0-percentage internal leakage and corrosion protection.

All taken into account, the series of diverting valves from ESBE constitutes a combination of smart design and wise choice of material. That is how we can guarantee a long service life.



CONTINUOUS FLOW
When the actuator is removed, the diverting valve automatically takes up a position which allows flow in both circuits simultaneously.

FACTORS BEHIND HIGH OPERATING SAFETY.

Easy to use, easy to control and easy to understand, that's how ESBE's series of diverting valves may best be described.

The actuator can easily be removed by just pushing the release button. Pushing the release-button once more allows it to be re-attached – let go of the button, and the actuator is mounted.

At occasions when the heat pump for some reason shuts off or is not fully operational, an even flow may still be maintained in both A- and B-circuit. How? By quite simply removing the actuator. The diverting valve will then automatically position itself so that flow is allowed in both circuits simultaneously.

FLEXIBLE CHOICE OF CABLE
Series VZA is delivered with or without detachable cable and is equipped with a Molex-type connector. Series VZB is equipped with a fixed factory-mounted cable.

DIVERTING VALVE
SERIES VZA, VZB

The ESBE VZA and VZB series 3-way diverting valve for heat pumps, under floor heating or HVAC applications. Three types of connections are available, internal thread, external thread or compression fittings.

VZA100

Internal thread, IP20 without/loose cable

External thread, IP20 without/loose cable

Compression fitting, IP20 without/loose cable

VZB100

Internal thread, IP40 fixed cable

External thread, IP40 fixed cable

Compression fitting, IP40 fixed cable

OPERATION

ESBE series VZA and VZB is a range of compact diverting valves in brass for use in heat pumps, under floor heating or HVAC applications. The main feature is the ability to rapidly change the flow direction between two circuits meaning a energy-efficient operation.

ESBE diverting valve series VZA and VZB has a built-in function for automatic valve motion after 7 days and nights of non-operation.

FUNCTION

Change-over from A- to B-circuit is performed by a signal from a control unit. The position indicator shows the flow path.

When the actuator is dismantled the valve will take up a mid position which allows flow in both circuits.

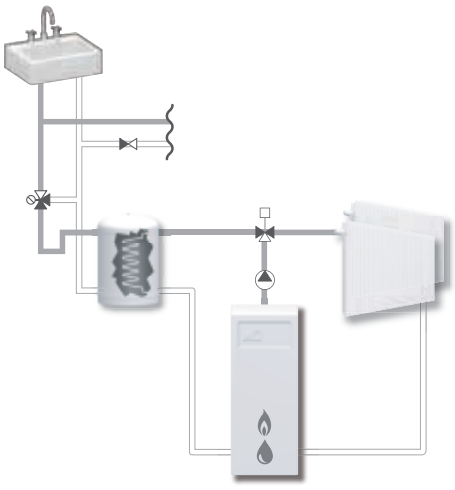
VERSIONS

ESBE VZA is available without cable or with loose cable and has an enclosure rating of IP20. Series VZA without cable is supplied with a connector type Molex for connection to a cable of own choice, with a maximum length of 100 m. ESBE VZB is delivered with fixed cable and has an enclosure rating of IP40. As an option the ESBE VZA and VZB series is available with auxialiary switch.

SERVICE AND MAINTENANCE

Vital parts like valve inserts and the entire actuator is easily replaceable. The entire actuator can be replaced without dismantling the valve, as long as the system is depressurized first.

INSTALLATION



DIVERTING VALVE VZA, VZB DESIGNED FOR

- ● Heating
- ● Comfort Cooling
- ○ Potable water
- ● Floor heating
- ○ Solar heating
- ● Ventilation
- ● Zone
- ○ District Hot Water
- ○ District Heating
- ○ District Cooling

OPTION

Cable ALZ801, fixed version IP40,
3-wire _____ Art. No. 4605 01 00*
6-wire for use with auxiliary switch ___ Art. No. 4605 02 00*

Cable ALZ801, loose version IP20,
3-wire _____ Art. No. 4605 03 00*
6-wire for use with auxiliary switch ___ Art. No. 4605 04 00*

* Compatible with article numbers 4302 XX XX and 4304 XX XX (not 4300 XX XX)

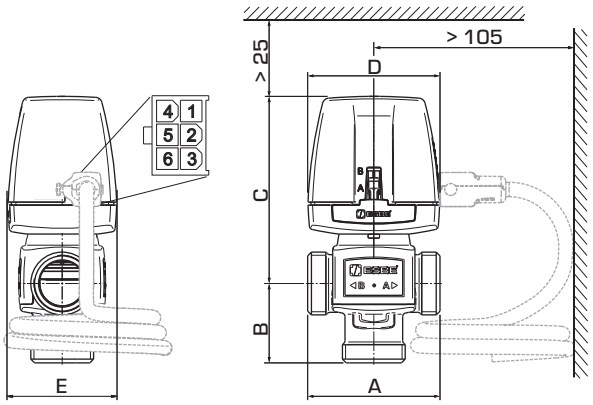
TECHNICAL DATA

Pressure class: _____ PN 6
Media temperature: _____ max. (continuosly) +95°C
_____ max. (temporarily) +110°C
_____ min. +5°C
Max. differential pressure drop: ___ Diverting, 80 kPa (0.8 bar)
_____ Mixing, 50 kPa (0.5 bar)
Leakrate in % of flow: _____ 0
Connections: _____ Female thread, EN 10226-1
_____ Male thread, ISO 228/1
_____ Compression fitting, EN 1254-2
Ambient temperature: _____ max. +60°C
_____ min. 0°C
Power supply: _____ 230 ± 10% VAC, 50 Hz
Power consumption: _____ 15 VA
Control signal: _____ 2-point SPST (Single Pole Single Throw)
Enclosure rating: _____ series VZA, IP20
_____ series VZB, IP40
Protection class: _____ II
Running time: _____ 3 s
Rating auxiliary switch: _____ 2(1)A 250 VAC
Cable length: _____ 1.6 m

Material
Valve body: _____ Brass DZR, CW 602N
Plug and cover plate: _____ PPS
Spindle: _____ Stainless steel, SS 2346
O-rings: _____ EPDM

CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

DIVERTING VALVE
SERIES VZA



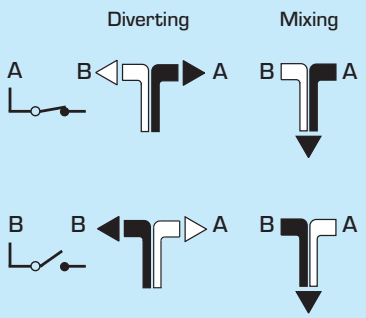
VZA151, VZA161

SERIES VZA151/VZA161, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	E	Cable version	Note	Weight [kg]
4302 01 00	VZA161	20	6.5	Rp ¾"	70	42	99	70	58	Without cable		0.5
4302 03 00	VZA151										1)	
4302 02 00	VZA161									Loose cable		0.5
4302 04 00	VZA151										1)	

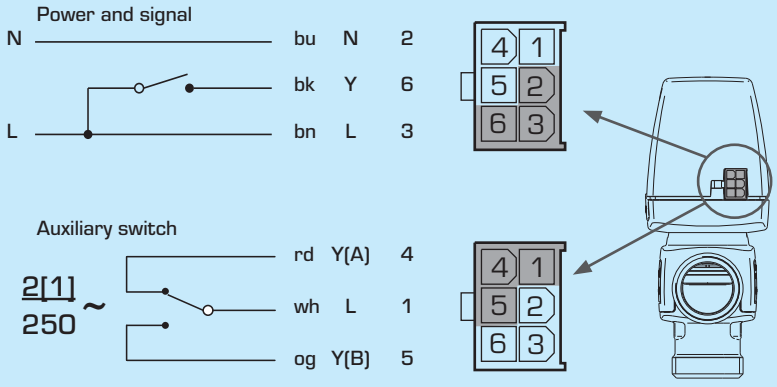
* Kvs-value in diverting mode measured as m^3/h at a pressure drop of 1 bar. Kvs-value in mixing mode 10% lower. CPF = compression fitting
Note 1) With auxiliary switch

FLOW CONNECTION - VALVE



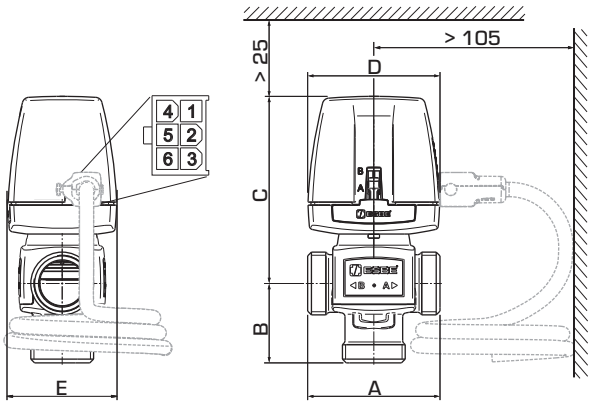
WIRING - ACTATOR

Connector type Molex.

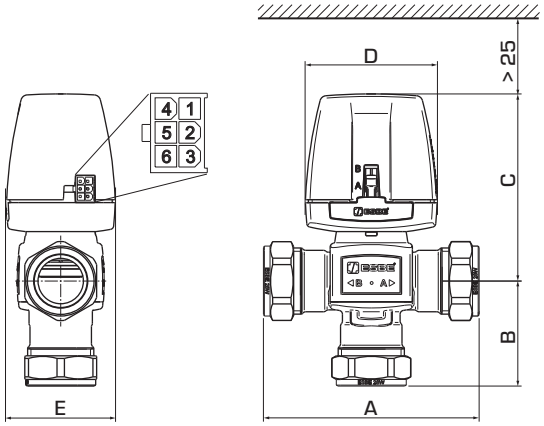


Diverting valve with Auxiliary switch, series:
VZA151, VZA152, VZA253, VZB151, VZB152, VZB253

DIVERTING VALVE
SERIES VZA



VZA152, VZA162



VZA253, VZA263

SERIES VZA152/VZA162, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	E	Cable version	Note	Weight [kg]
4302 05 00	VZA162	15	3.5	G ¾“	70	42	99	70	58	Without cable		0.5
4302 09 00	VZA152										1)	
4302 06 00	VZA162									Loose cable		0.5
4302 10 00	VZA152										1)	
4302 07 00	VZA162	20	6.5	G 1“	70	42	99	70	58	Without cable		0.5
4302 11 00	VZA152										1)	
4302 08 00	VZA162									Loose cable		0.5
4302 12 00	VZA152										1)	

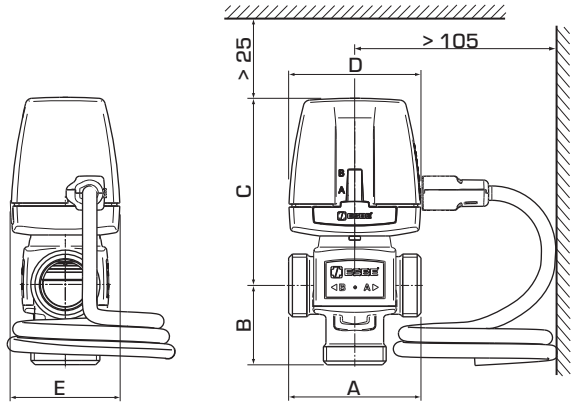
SERIES VZA253/VZA263, COMPRESSION FITTING

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	E	Cable version	Note	Weight [kg]
4302 13 00	VZA263	20	4.5	CPF 22 mm	111	49	99	70	58	Without cable		0.6
4302 17 00	VZA253										1)	
4302 14 00	VZA263									Loose cable		0.6
4302 18 00	VZA253										1)	
4302 15 00	VZA263	25	6.5	CPF 28 mm	114	56	99	70	58	Without cable		0.7
4302 19 00	VZA253										1)	
4302 16 00	VZA263									Loose cable		0.7
4302 20 00	VZA253										1)	

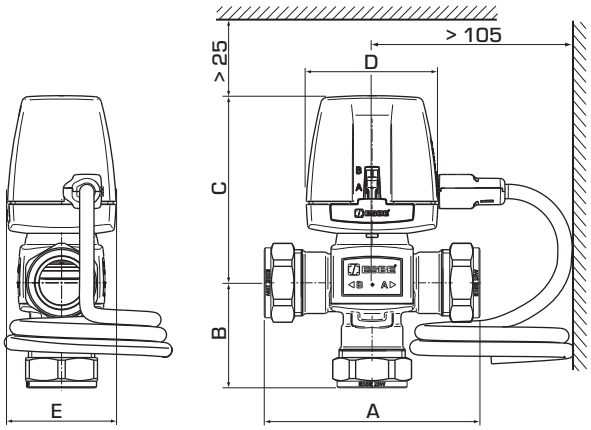
* Kvs-value in diverting mode measured as m^3/h at a pressure drop of 1 bar. Kvs-value in mixing mode 10% lower. CPF = compression fitting
Note 1) With auxiliary switch

For more variants, please see next page

DIVERTING VALVE
SERIES VZB



VZB151, VZB161, VZB152, VZB162



VZB253, VZB263

SERIES VZB151/VZB161, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	E	Cable version	Note	Weight [kg]
4304 01 00	VZB161	20	6.5	Rp ¾"	70	42	99	70	58	Fixed cable		0.5
4304 02 00	VZB151										1)	

SERIES VZB152/VZB162, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	E	Cable version	Note	Weight [kg]
4304 03 00	VZB162	15	3.5	G ¾"	70	42	99	70	58	Fixed cable		0.5
4304 05 00	VZB152										1)	
4304 04 00	VZB162	20	6.5	G 1"	70	42	99	70	58	Fixed cable		0.5
4304 06 00	VZB152										1)	

SERIES VZB253/VZB263, COMPRESSION FITTING

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	E	Cable version	Note	Weight [kg]
4304 07 00	VZB263	20	4.5	CPF 22 mm	111	49	99	70	58	Fixed cable		0.6
4304 09 00	VZB253										1)	
4304 08 00	VZB263	25	6.5	CPF 28 mm	114	56	99	70	58	Fixed cable		0.7
4304 10 00	VZB253										1)	

* Kvs-value in diverting mode measured as m^3/h at a pressure drop of 1 bar. Kvs-value in mixing mode 10% lower. CPF = compression fitting
Note 1) With auxiliary switch


MADE IN SWEDEN SINCE 1906
06
ESBE NO. 1 IN HYDRONIC SYSTEM CONTROL

PROVIDES SAFETY.
ARE RELIABLE AND ROBUST.
PLENTY OF POSSIBILITIES.

Our series of thermostatic mixing valves has made heroes of installation engineers throughout Europe. The basic requirement for ensuring a tap water system is safe to use involves the prevention of two significant factors: legionella bacteria and scalding.

Hot water needs to be heated to 60°C to prevent the proliferation of legionella bacteria. But a temperature this high will scald people. With an ESBE thermostatic mixing valve fitted after the water heater, the temperature is restricted to a maximum 55°C throughout the system. In this way the water can be heated up to legionella-safe temperatures without the risk of anyone getting scalded.

In addition to the aforementioned heroic efforts, we also have other application possibilities in mind for thermostatic mixing valves. Which benefits and features we are thinking about you will find on nextcoming pages.

CONTENTS THERMOSTATIC CONTROL UNITS

FEATURES AND BENEFITS

An already wide assortment of thermostatic mixing valves last year got even wider. The very well-known ESBE thermostatic mixing valves series VTA300 then got their long awaited big sisters – VTA500 and VTS500. With the introduction of these series and including the new Solar Kit series VMC300 and VMC500 the possibilities nowadays are practically endless. All have this in common: easily installed temperature regulation for solar heating, floor heating or tap water applications.

At ESBE we always try to be one step ahead in our product development. As new heating options emerge and energy usage patterns change we respond to that demand. That's why we proudly introduce several new series of thermostatic mixing valves. The new products radically improve and expand an already extensive range of valves for use in universal domestic hot water and under floor heating applications.

Higher flow capacity, more connections.
The new series are mainly characterized by generally higher flow capacity, more connection solutions and more temperature ranges to choose from. This means a greater freedom of choice for you – without making your job harder. There is no longer any need to mix products from different suppliers. We have it all. And at the right price.

The right valve, for the right job,
All in all, you get the right valve for the right job. The right temperature, pressure, material and connection. No compromises. In the end, your application will satisfy your customer with regards to comfort, safety and energy savings. And that's what makes you a hero.

- **VTS520/550**
- **VMC300/500**

OPTIMIZE THE HARVEST OF SOLAR ENERGY WITH GREAT RESILIENCE AGAINST HIGH TEMPERATURES.

The VTS500 series of thermostatic valves for solar applications are built to last. And they are built to last in tough conditions. For example, the max temperature could be as high as 110–120°C without causing damage to the valve. Even during longer periods of time.

Add exceptionally high flow capacity, great regulating accuracy and pressure variation capabilities and you have a high-performing thermostatic mixing valve perfect for solar applications.

Solar Kits

Our Solar Kit series offers dual functionality for tap water applications, such as a solar collector/gas boiler system combination.

If the incoming water from the solar collector is not hot enough, it is diverted to the gas boiler. And once it is heated it is mixed to a suitable, anti-scald safe temperature for domestic hot water use. If, on the other hand, the incoming water from the solar collector is already hot enough, it will be mixed directly for the domestic hot water use. The result is efficient utilisation of the solar energy.

- **VTA320 & VTA520/550**
- **VTA330/360 & VTA530/560**

ANTI-SCALD AND ANTI-LEGIONELLA SOLUTIONS IN TAP WATER SYSTEMS. WITH THE BEST POSSIBLE REGULATING CAPACITY.

Our VTA series for tap water makes any installation easier, faster and safer – in smaller as well as in larger systems. It strengthen ESBE's position as the natural choice for fast and accurate regulation, especially were working conditions are tough with varying flow and supply temperatures.

Anti-scald and anti-legionella.

The basic requirements for a safe tap water system involves the prevention of legionella bacteria and scalding. Hot water needs to be heated to 60°C to prevent the proliferation of legionella bacteria. But a temperature this high will scald people. With an ESBE valve fitted the temperature is restricted in the system. The water can be heated up to legionella-safe temperatures without the risk of anyone getting scalded.

The anti-scalding capabilities comes with the valve. It means: in the case of a cold water failure, the hot water supply shuts off automatically. Add crucial DZR, Dezincification resistant brass, for both valves and connections. The result is a wide product series of high performance which will make both you and your customer happy.

FEATURES AND BENEFITS

• **VTA370/570**

UNDER FLOOR HEATING AND COOLING REQUIRES HIGH FLOW CAPACITY. BUT STILL YOU WILL HAVE MANY VERSIONS TO CHOOSE FROM.

The VTA370 and 570 series have higher flow capacity in comparison with the normal VTA-series, which make them perfect for under floor systems.

In fact, a TMV solution for under floor heating applications offers a number of advantages: there's no need for electricity installation, capillary pipes, external thermostats or extra T-connections. All you need is in the valve which simplifies your installation a great deal.

Easy temperature adjustment

Instead of a scale, all new valves now have a temperature grading right on the valve. One quick turn and you'll be ready to fine-tune the system.

ESBE's broad assortment of under floor heating valves, with several different temperature ranges make them the perfect fit for any under floor application. Big or small. Simple or complicated. Again, no need to make compromises.

Cooling applications

Valve series VTA570 can in fact also be used in cooling applications. As an example: in several European countries there is an upgoing trend to use floor- or wallheating systems for cooling distribution during the warmer season.

ESBE GUIDE
THERMOSTATIC MIXING VALVES, OVERVIEW

SELECTION GUIDE
FIND THE RIGHT VALVE FOR YOU

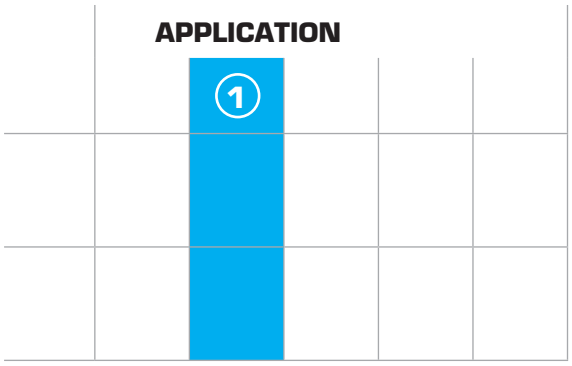
The table below and the following pages is a toolbox for finding the best valve for your system and application. You will also find smaller selection tables in the product pages.

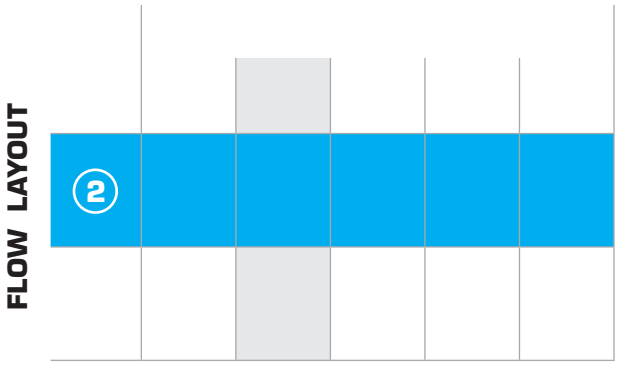
		APPLICATION									
		Potable water, in line		Potable water, point of use		Solar heating		Cooling		Floor heating	
Flow direction	Temp. range	Kvs <2	Kvs >2	Kvs <2	Kvs >2	Kvs <2	Kvs >2	Kvs <2	Kvs >2	Kvs <2	Kvs >2
	10 - 30°C								VTA570		
	20 - 43°C	VTA320	VTA520							VTA320	VTA570 VTA520
	30 - 70°C	VTA320 VTA310				VTA320				VTA320	
	32 - 49°C	VTA330		VTA330							
	35 - 50°C		VTA530				VTA530				
	35 - 60°C	VTA330 VTA320 VTA310		VTA330		VTA320				VTA320	VTA370
	45 - 65°C		VTS520 VTA530 VTA520 VTA570				VTS520 VTA530 VTA520				VTA570 VTS520 VTA520
	50 - 75°C		VTS520 VTA520				VTS520 VTA520				
	10 - 30°C										
	20 - 43°C		VTA550								VTA550
	30 - 70°C										
	32 - 49°C	VTA360		VTA360							
	35 - 50°C		VTA560				VTA560				
	35 - 60°C	VTA360		VTA360							
	45 - 65°C		VTS550 VTA560 VTA550				VTS550 VTA560 VTA550				VTS550 VTA550
	50 - 75°C		VTS550 VTA550				VTS550 VTA550				

Recommended alternative

Secondary alternative

ESBE GUIDE
SELECTING THE OPTIMAL THERMOSTATIC MIXING VALVE





STEP 1: APPLICATION
Thermostatic mixing valves are highly versatile and can be used in many different applications, the most common being:

POTABLE WATER, IN-LINE
Application requiring basic regulation of temperature for domestic hot water, providing scalding protection for the whole system or a part of it. Further temperature regulating equipment is installed at water taps, showers etc to increase safety and comfort.

POTABLE WATER, POINT-OF-USE
Application requiring high level of regulation accuracy for domestic hot water systems, providing scalding protection and a high level of comfort for showers, baths etc. If installed correctly, no further temperature regulating equipment is required at water taps, showers etc.

SOLAR HEATING
Application requiring basic regulation of temperature for domestic hot water in system connected to solar heating, where high temperatures might occur. Providing scalding protection for the whole system or a part of it. Further temperature regulating equipment is installed at water taps, showers etc to increase safety and comfort.

COOLING
Applications such as wall or floor cooling, where the mixed temperature needs to be set to temperatures under normal room temperature.

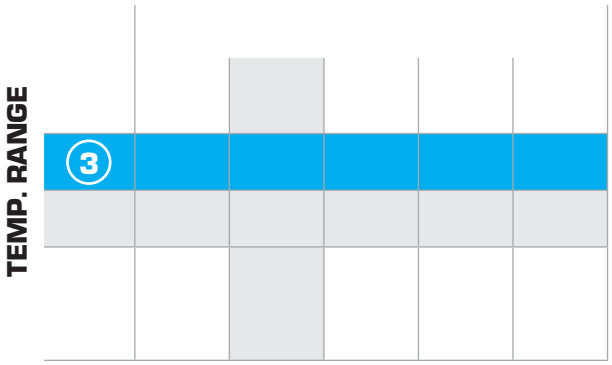
FLOOR HEATING
Applications such as under floor heating or wall heating, requiring high flow rates and scalding protection to prevent damaged floors and piping.

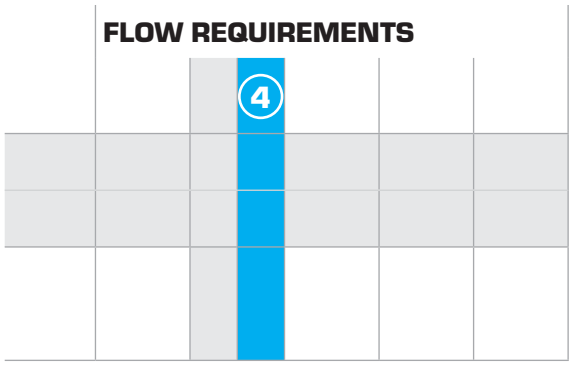
STEP 2: FLOW LAYOUT
Depending on the installation, different flow layouts can be suitable. Picking the right one makes the installation easier and may improve system efficiency.

SYMMETRICAL 
Hot and cold water connections located opposite of each other, mixed water connection in the middle. Most common solution on in many countries, providing more compact valve dimensions for some products versions.

ASYMMETRICAL 
Hot water connection located on the side of the valve, opposite the mixed water connection, cold water connection located in the bottom. Often provides the easiest installation, saving bends and T-pieces in the piping.

ESBE GUIDE
SELECTING THE OPTIMAL THERMOSTATIC MIXING VALVE





STEP 3: TEMPERATURE RANGE
Each thermostatic mixing valve has a range within which the outgoing mixed water temperature may be set. The choice of temperature range depends on the application:

POTABLE WATER, IN-LINE
Accuracy according to EN1111 and NF079 → 35-50°C
Accuracy according to EN15092 → 45-65°C
Low mixing temperature → 20-43°C
Mid-range mixing temperature → 35-60°C
High mixing temperature → 50-75°C
Wide temperature range → 30-70°C

POTABLE WATER, POINT-OF-USE
High accuracy → 35-60°C
Very high accuracy according to D08 → 32-49°C

SOLAR HEATING
High mixing temperature → 50-75°C
Accuracy according to EN15092 → 45-65°C

COOLING
Cooling or other special applications (e.g. potable water for cattle) → 10-30°C

UNDER FLOOR HEATING OR WALL HEATING
Low mixing temperature → 20-43°C
Mid-range mixing temperature → 35-60°C
High mixing temperature → 45-65°C

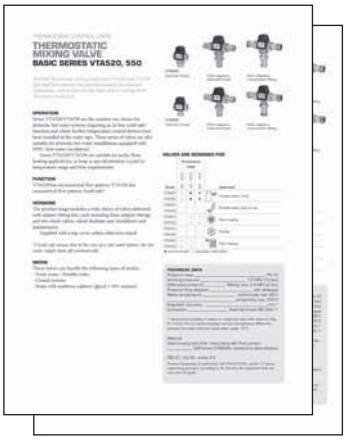
STEP 4: FLOW REQUIREMENTS
Depending on the intended application and its size, flow requirements for the valve will vary – will it be used for a sports center or an apartment? See the table and diagram on page 127 for more dimensioning assistance.

< Kvs 2
Valves for smaller applications, or subsystems of larger applications.

> Kvs 2
Larger applications.

STEP 5: PICK THE VALVE
Now that the correct valve series is chosen, go to the catalogue page describing the recommended valve series to pick out the valve you need. Choose among the different connections, with or without adapters and non-return valves, and then the journey from application to valve is complete!

5



ESBE GUIDE
ADVICE & DIRECTIONS FOR DOMESTIC WATER SYSTEMS

FACTS ABOUT THE RISK OF SCALD BURNS AND LEGIONELLA

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 a waiting time of 30 seconds can be accepted.

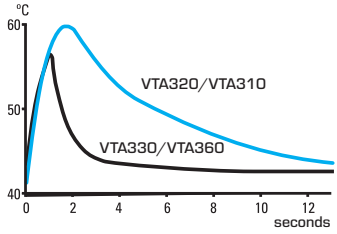
ESBE recommends that the hot-water temperature at taps shall not be below min. +50°C and not exceed max. +65°C. Considering a certain temperature reduction in the water system, the heater should give min. +60° C (owing the risk of Legionella).

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

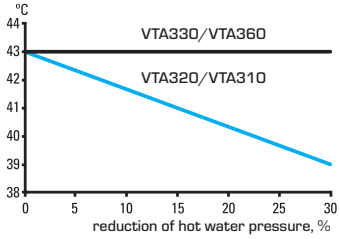
The Legionnaires' Disease is a pneumonia-like bacterial infection, caused by the Legionella germ. This germ has an optimal growth in water temperatures of 20–45°C.
It spreads disease by inhalation of small water drops containing Legionella and can be transferred to the lungs when you take a shower. At a temperature exceeding 50°C, the germ is destroyed; the higher the temperature the sooner the germs are destroyed. 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.

In the diagrams below, you can find the difference in technical performance between the different series of thermostatic mixing valves.

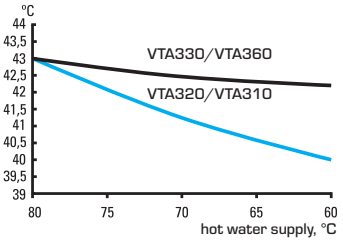
The valve is cold and "suddenly" hot water is needed – how fast will the valve reach the desired temperature? (In the diagram 43°C)



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



If the hot water supply is being reduced by 20°C – what temperature change will it be in the valve?



CE

VALVES, RE. PED 97/23/EC
Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice).
According to the directive the equipment shall not carry any CE-mark.

DISPOSAL
The products must not be disposed of together with domestic waste, but should be treated as metal scrap.
Local and currently valid legislation must be observed.

ESBE GUIDE
DIMENSIONING

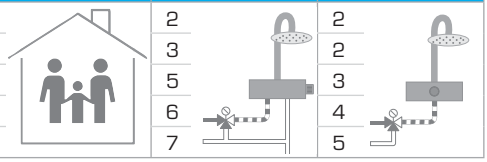
The ESBE thermostatic mixing valves are available with Kvs-values from 1.2 up to 4.8 and is to be dimensioned as below.

DIMENSIONING OF DOMESTIC WATER APPLICATIONS

The thermostatic mixing valves for domestic hot water applications can be dimensioned according to the number of households in the house or the number of showers in, for example sports centers.

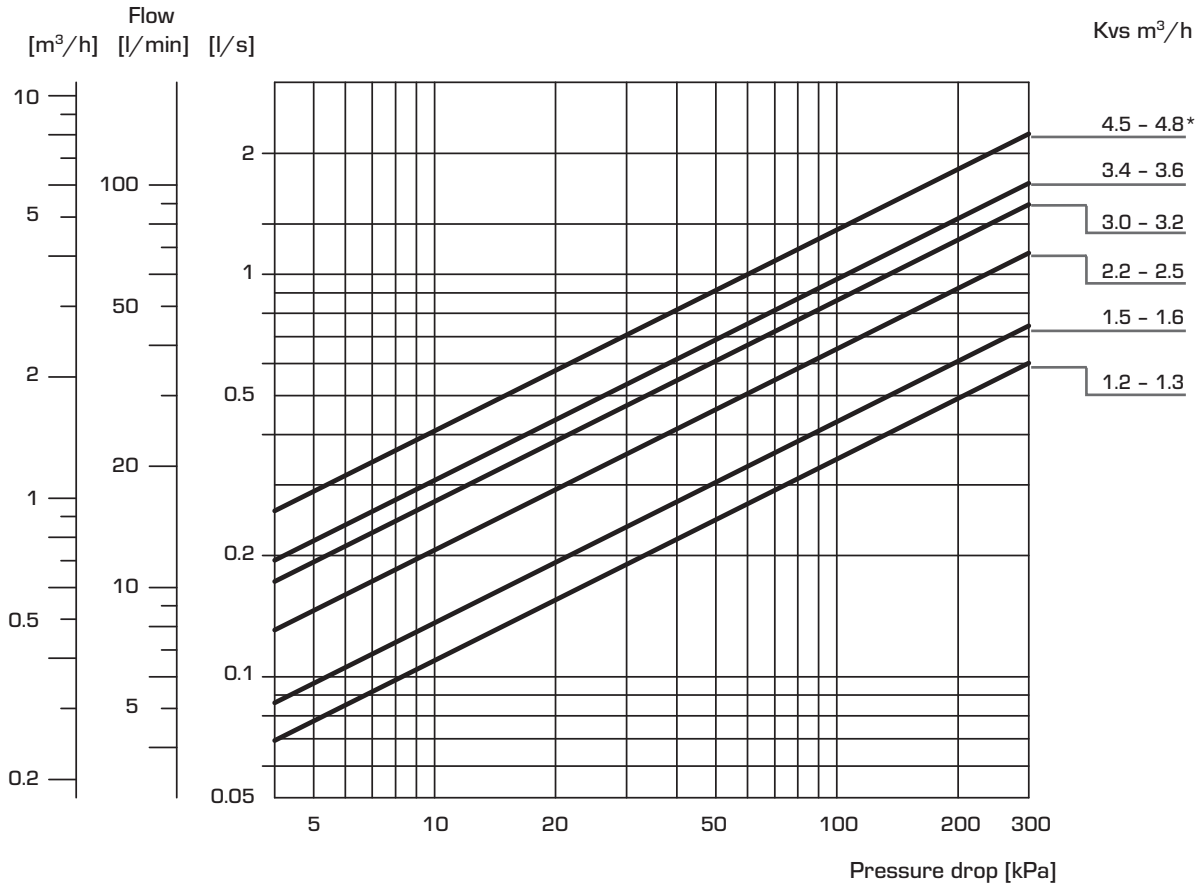
RECOMMENDED KVS-VALUES

Kvs	Typical households[1]	Showers[2]	Shower heads[3]
1.2 - 1.3	1	2	2
1.5 - 1.6	2	3	2
2.2 - 2.5	4	5	3
3.0 - 3.2	5	6	4
3.4 - 3.6	6	7	5



1) A typical household consist of bath, shower, kitchen sink and washbasin with a design flow evaluated from probability curve with a supply pressure >300kPa (3 bar).
2) Showers in for example sport centers meaning supply of scald safe hot water to shower mixer with supply pressure >300kPa (3 bar).
3) Showers in for example sport centers meaning supply of scald safe mixed water to shower head with supply pressure >300kPa (3 bar).

CAPACITY DIAGRAM



* Only underfloor heating applications

ESBE GUIDE
HOW TO CHOOSE THE CORRECT INSTALLATION/POSITION

FACTORS BEHIND HIGH OPERATING SAFETY

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 storage tank this should be drained first.

INSTALLATION

The thermostatic mixing valve should not be under constant thermal load. We therefore recommend heat traps in the piping arrangement. This should be taken into account during installation.

The mixing valve function regardless of mounting position.

APPLICATION EXAMPLES – DOMESTIC HOT WATER

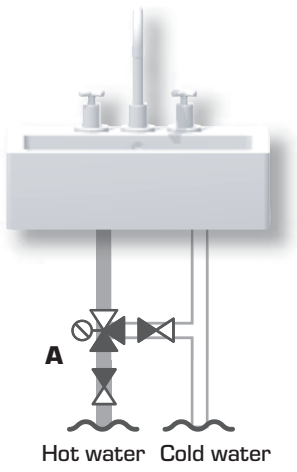
The ESBE thermostatic mixing valves can be used in a great number of applications. Please see the illustrations below for examples of how to install the thermostatic mixing valves in a domestic hot water system.

CONNECTION OF THE SERIES VTA330/VTA360 AT A WASHBASIN

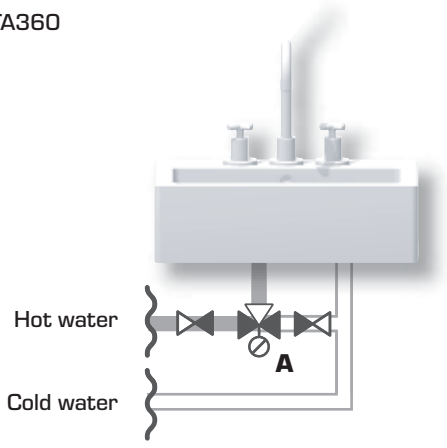
In applications with high requirements for scald safety (hospitals, child care centers etc.) and/or quick and exact regulation accuracy, the series VTA330/VTA360 is the recommended choice.

Please see below for two illustrations of connections at a washbasin. The two mixing valve inlets shall be equipped with check valves.

(A) VTA330



(A) VTA360



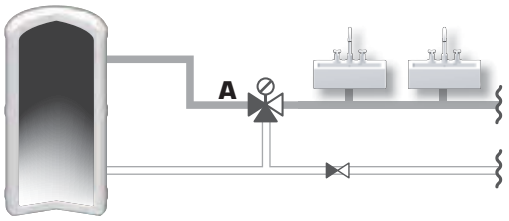
ESBE GUIDE
HOW TO CHOOSE THE CORRECT INSTALLATION/POSITION

DOMESTIC HOT WATER WITHOUT HWC*

If no hot-water circulation exists, the valve should be equipped with hot-water blocking devices (heat traps) in the hot-water and the cold-water feed line.

* HWC = Hot-water circulation

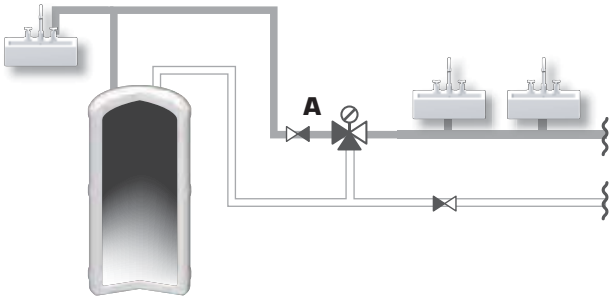
(A) VTA320/VTA310/VTA520/VTA530/VTS520



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.

(A) VTA320/VTA310/VTA520/VTA530/VTS520

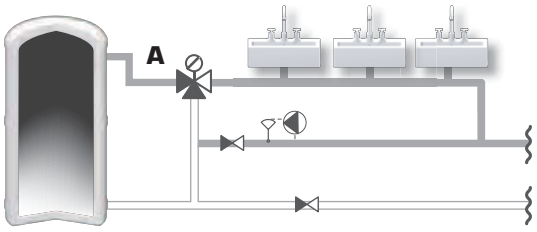


TAP WATER WITH HWC*

To get access to hot-water at a tap without waiting, an HWC-pipe with circulation pump should be installed. Connect each tap to the HWC-pipe. N.B! series VTA310 is not suitable for HWC.

* HWC = Hot-water circulation

(A) VTA320/VTA520/VTA530/VTS520



ESBE GUIDE
HOW TO CHOOSE THE CORRECT INSTALLATION/POSITION

When refurbishing your home you may wish to install an underfloor heating in the bathroom, in the entrance or in any other room. ESBE thermostatic mixing valves series VTA300 alt. series VTA500 offer a simple and economical solution for underfloor heating regulation. The advantage of choosing a thermostatic mixing valve for underfloor heating applications is that it limits the supply line temperature without any needs for an automatic control device/bypass.

APPLICATION EXAMPLES – UNDERFLOOR HEATING

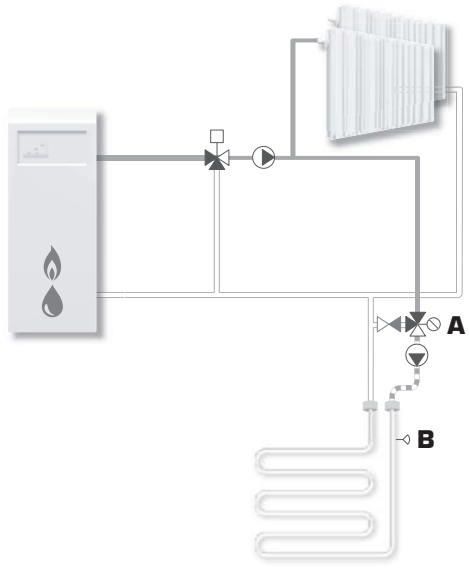
There are some differences in regulating underfloor heating compared to radiator systems, such as;

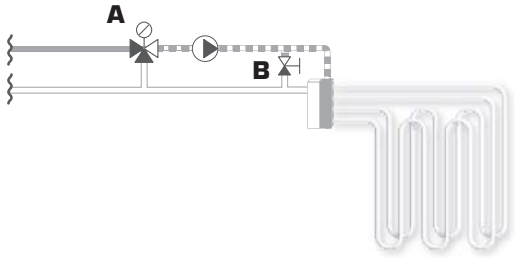
1) The supply line temperature should not exceed 55°C.
For concrete beams normally 40°C is enough, timber joist floor, however, can require up to 55°C.
2) The difference between the supply line temperature and the return temperature Δt is lower, normally 5°C

DIMENSIONING OF UNDERFLOOR HEATING

Normal power requirement = 50 W/m². Δt = 5°C requires a flow of approx. 0.25 l/s per 100 m².
Ex.: A valve of type VTA320 DN20 manages approx. 50 m² with a pressure drop of 8 kPa and VTA520 DN25 approx. 150 m² with a pressure drop of 10 kPa. For more details on dimensioning in heating applications, see diagrams in chapter "Rotary motorized valves".

ONE UNDERFLOOR HEATING LOOP	SEVERAL UNDERFLOOR HEATING LOOPS
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.	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, valves with separate sensors can be installed.
(A) VTA320/VTA370/VTA520/VTA570 **(B)** Separate room sensor which starts and stops the required pump, if room control is required.	**(A)** VTA320/VTA370/VTA520/VTA570 **(B)** Differential pressure valve on by-pass piping





ESBE GUIDE
HOW TO CHOOSE THE CORRECT INSTALLATION/POSITION

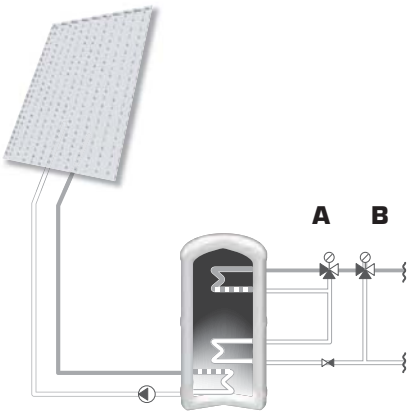
To connect two thermostatic mixing valves in series can be beneficial whenever you have an storage tank with a two level domestic hot water outlet or when the hot water is processed in two different heaters. Preference can then be given to the most effective option.
ESBE thermostatic mixing valves can also be suitable for obtaining the highest possible level of energy from the most beneficial heat source of the system.

APPLICATION EXAMPLES – SOLAR HEATING AND OTHERS

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.

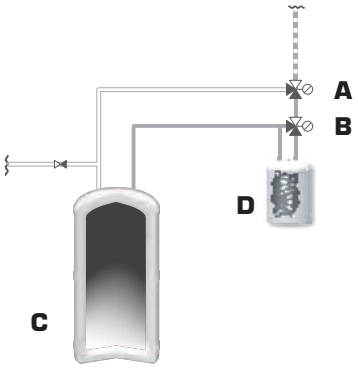
(A) VTS520/VTA520/(VTA320)
(B) VTA520/VTA 320



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 hot to avoid cold water addition.

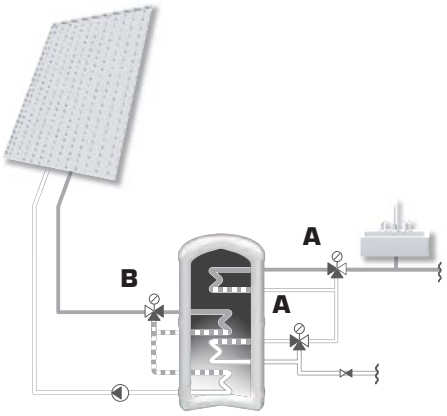
(A) VTS520/VTA520/(VTA320)
(B) VTA520/VTA 320
(C) Heater 1, Storage tank or heat pump
(D) Heater 2, Electrical backup heating



STRATIFICATION IN A SOLAR HEATING SYSTEM

The connection showed below provide good stratification in the storage tank. The best diverting functionality with a thermostatic valve is obtained when using a load valve VTC300.

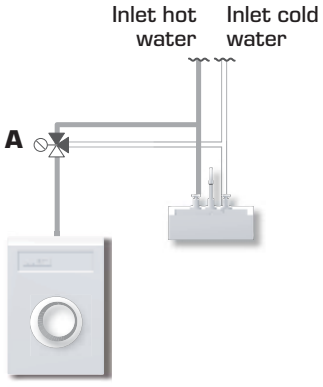
(A) VTS520/VTA520/(VTA320)
(B) VTC300



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, heatpump or a solid fuel system. In this case, the mixing valve is equipped with an adjusting knob to easily adjust to the desired washing temperature. Maximum recommended mixed water temperature setting: 40°C.

(A) VTA320



THERMOSTATIC MIXING VALVE
SOLAR SERIES VTS520, 550

The ESBE thermostatic mixing valves series VTS520 and VTS550 offer high flow capacity and high functionality for domestic hot water distribution connected to solar heating systems with high water temperatures.

VTS520
External thread | With adapters, external thread | With adapters, compression fitting

VTS550
External thread | With adapters, external thread | With adapters, compression fitting

OPERATION

Series VTS520/VTS550 are the number one choice for domestic hot water distribution connected to solar heating systems, where the high water temperatures require extra durable components. The VTS520/VTS550 offers an in-line scald safe* function and are suitable for use where further temperature control devices have been installed at the water taps. These series of valves are also suitable for domestic hot water installations equipped with HWC (hot water circulation).

FUNCTION

VTS520 has asymmetrical flow pattern, VTS550 has symmetrical flow pattern. Scald safe*.

VERSIONS

The product range includes a wide choice of valves delivered with adapter fitting kits, each including three adapter fittings and two check valves, which facilitate easy installation and maintenance.

Supplied with a top cover, unless otherwise stated.

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

MEDIA

These valves can handle the following types of media:
- Fresh water / Potable water
- Closed systems
- Water with antifreeze additive (glycol ≤ 50% mixture)

VALVES ARE DESIGNED FOR

Series	Temperature range 45 – 65°C	Temperature range 50 – 75°C	Application
VTS520	●	●	Potable water, in line
VTS550	●	●	
VTS520			Potable water, point of use
VTS550			
VTS520	●	●	Solar heating
VTS550	●	●	
VTS520			Cooling
VTS550			
VTS520	○		Floor heating
VTS550	○		

● recommended ○ secondary alternative

TECHNICAL DATA

Pressure class: PN 10
Working pressure: 1.0 MPa (10 bar)
Differential pressure: Mixing, max. 0.3 MPa (3 bar)
Pressure drop diagram: see catalogue page 127
Media temperature: continuously max. 110°C
temporarily max. 120°C
Temperature stability: ±4°C*
Connection: External thread, ISO 228/1
Compression fitting, EN 1254-2

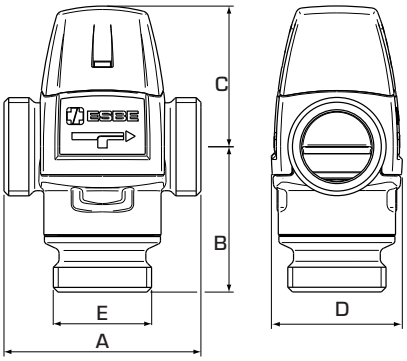
* Valid at unchanged hot/cold water pressure, minimum flow rate 9 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.

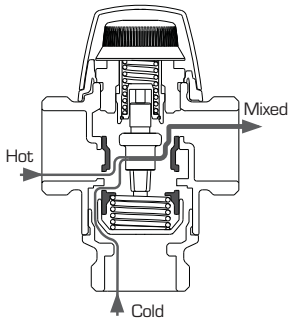
Material
Valve housing and other metal parts with fluid contact:
DZR brass CW602N, resistant to dezincification

PED 97/23/EC, article 3.3

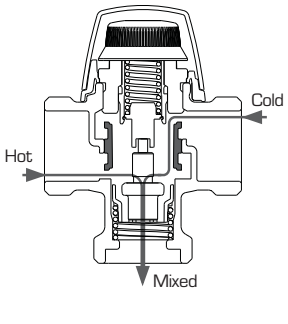
Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice). According to the directive the equipment shall not carry any CE-mark.

THERMOSTATIC MIXING VALVE
SOLAR SERIES VTS520, 550





VTS520



VTS550

SERIES VTS522, EXTERNAL THREAD

Art. No.	Reference	Temp. range	Kvs*	Connection E	Dimension A	B	C	D	Note	Weight [kg]
3172 01 00	VTS522	45 - 65°C	3.2	G 1"	84	62	60	56		0.86
3172 03 00			3.5	G 1¼"						0.95
3172 02 00	VTS522	50 - 75°C	3.2	G 1"	84	62	60	56		0.86
3172 04 00			3.5	G 1¼"						0.95

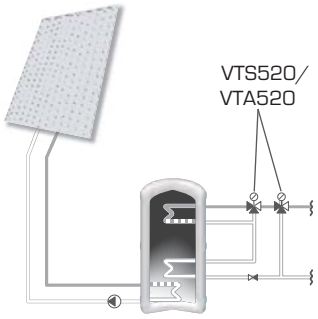
SERIES VTS552, EXTERNAL THREAD

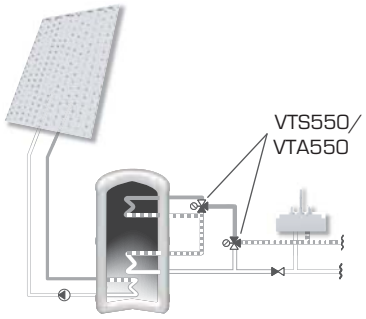
Art. No.	Reference	Temp. range	Kvs*	Connection E	Dimension A	B	C	D	Note	Weight [kg]
3174 01 00	VTS552	45 - 65°C	3.2	G 1"	84	50	60	56		0.78
3174 03 00			3.5	G 1¼"						0.87
3174 02 00	VTS552	50 - 75°C	3.2	G 1"	84	50	60	56		0.78
3174 04 00			3.5	G 1¼"						0.87

* Kvs-value in m^3/h at a pressure drop of 1 bar.

INSTALLATION EXAMPLES

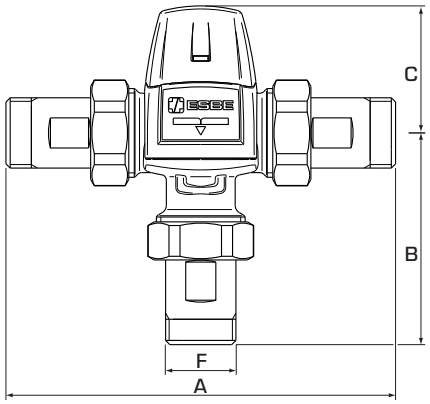
See the catalogue section "How to choose the correct installation/ position" for further information and connection examples.

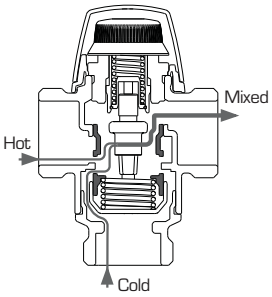




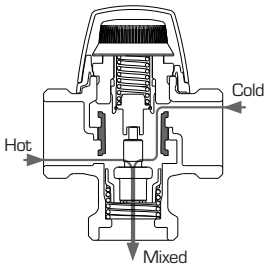
For more variants, please see next page

THERMOSTATIC MIXING VALVE
SOLAR SERIES VTS520, 550





VTS520



VTS550

SERIES VTS522/VTS523, WITH ADAPTERS

Art. No.	Reference	Temp. range	Kvs*	Connection F	Dimension A	B	C	D	Note	Weight [kg]
3172 05 00	VTS522	45 - 65°C	3.0	G ¾"	124	102	60	56	1)	1.30
3172 09 00	VTS523			CPF 22mm	132	110				1.42
3172 07 00	VTS522		3.4	G 1"	134	112				1.73
3172 11 00	VTS523			CPF 28mm	144	122				1.90
3172 06 00	VTS522	50 - 75°C	3.0	G ¾"	124	102	60	56	1)	1.30
3172 10 00	VTS523			CPF 22mm	132	110				1.42
3172 08 00	VTS522		3.4	G 1"	134	112				1.73
3172 12 00	VTS523			CPF 28mm	144	122				1.90

SERIES VTS552/VTS553,WITH ADAPTERS

Art. No.	Reference	Temp. range	Kvs*	Connection F	Dimension A	B	C	D	Note	Weight [kg]
3174 05 00	VTS552	45 - 65°C	3.0	G ¾"	124	90	60	56		1.22
3174 09 00	VTS553			CPF 22mm	132	98				1.34
3174 07 00	VTS552		3.4	G 1"	134	100				1.65
3174 06 00	VTS552	50 - 75°C	3.0	G ¾"	124	90	60	56		1.22
3174 10 00	VTS553			CPF 22mm	132	98				1.34
3174 08 00	VTS552		3.4	G 1"	134	100				1.65

* Kvs-value in m^3/h at a pressure drop of 1 bar. CPF = compression fitting
Note 1) Two check valves for both hot and cold water are included

THERMOSTATIC MIXING VALVE
PREMIUM SERIES VTA330, 530

The ESBE thermostatic mixing valves series VTA330 and VTA530 are designed to satisfy the highest possible market requirements when it comes to accuracy of regulation, quick reaction and safe function with high flow capacity, regardless of varying pressure conditions.

VTA330
External thread

Compression fitting

VTA530
External thread

With adapters, external thread

With adapters, compression fitting

OPERATION

Series VTA330 is primarily designed to provide a highly accurate temperature regulation in point-of-use positions for domestic hot water, at taps or showers where no further temperature-control fittings have been installed.

Series VTA530 is primarily designed to provide an accurate in-line temperature regulation of the domestic hot water in high flow applications, according to standards EN15092 or EN1111/NF079, where further temperature-control fittings have been installed at taps or showers.

FUNCTION

The quick reaction thermostat and the pressure balanced control valve regulator allow the VTA330/VTA530 to provide minimal changes of temperature regardless of varying pressure conditions. Asymmetrical flow pattern. Scald safe*.

VERSIONS

The product range includes a wide choice of valves delivered with adapter fitting kits, each including three adapter fittings and two check valves, which facilitate easy installation and maintenance.

Supplied with a top cover, unless otherwise stated.

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

MEDIA

These valves can handle the following types of media:
- Fresh water / Potable water
- Closed systems
- Water with antifreeze additive (glycol ≤ 50% mixture)

VALVES ARE DESIGNED FOR

	Temperature range				
Series	32 – 49°C	35 – 50°C	35 – 60°C	45 – 65°C	Application
VTA330	○		●		Potable water, in line
VTA530		●		●	
VTA330	●		○		Potable water, point of use
VTA530					
VTA330					Solar heating
VTA530		○		○	
VTA330					Cooling
VTA530					
VTA330	○		○		Floor heating
VTA530		○		○	

● recommended ○ secondary alternative

TECHNICAL DATA

Pressure class: PN 10
Working pressure: 1.0 MPa (10 bar)
Differential pressure: Mixing, max. 0.3 MPa (3 bar)
Pressure drop diagram: see catalogue page 127
Media temperature: VTA330, VTA530 max. 95°C
VTA530 temporarily max. 100°C
Temperature stability: VTA330 ±1°C*
VTA530 ±2°C**
Connection: External thread, ISO 228/1
Compression fitting, EN 1254-2

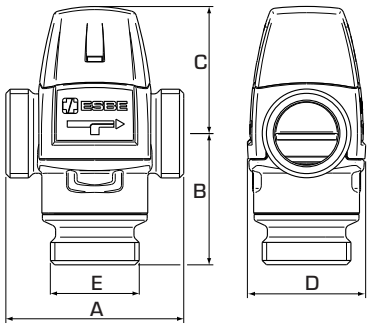
* Valid at unchanged hot/cold water pressure, minimum flow rate 4 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.
** Valid at unchanged hot/cold water pressure, minimum flow rate 9 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.

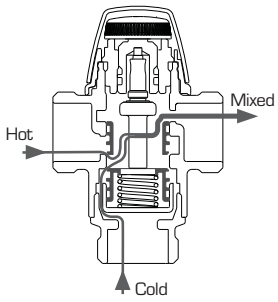
Material
Valve housing and other metal parts with fluid contact: DZR brass CW602N, resistant to dezincification
Surface treatment: Nickel-plated

PED 97/23/EC, article 3.3

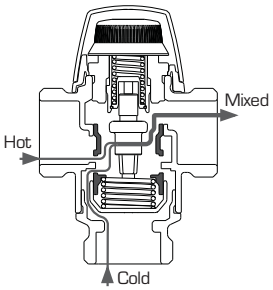
Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice). According to the directive the equipment shall not carry any CE-mark.

THERMOSTATIC MIXING VALVE
PREMIUM SERIES VTA330, 530





VTA330



VTA530

SERIES VTA332/VTA532, EXTERNAL THREAD

Art. No.	Reference	Temp. range	Kvs*	Connection E	Dimension A	B	C	D	Note	Weight [kg]
3115 02 00	VTA332	32 - 49°C	1.2	G ¾"	70	54	52	46		0.52
3164 10 00	VTA532	35 - 50°C	2.3	G 1"	84	62	60	56	2)	0.86
3164 11 00			2.5	G 1¼"						0.95
3115 07 00	VTA332	35 - 60°C	1.2	G ¾"	70	54	52	46		0.52
3115 09 00			1.3	G 1"						0.55
3164 01 00	VTA532	45 - 65°C	2.3	G 1"	84	62	60	56	1)	0.86
3164 02 00			2.5	G 1¼"						0.95

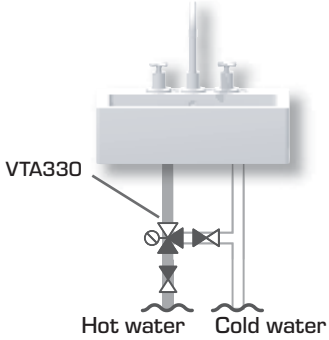
SERIES VTA333, COMPRESSION FITTING

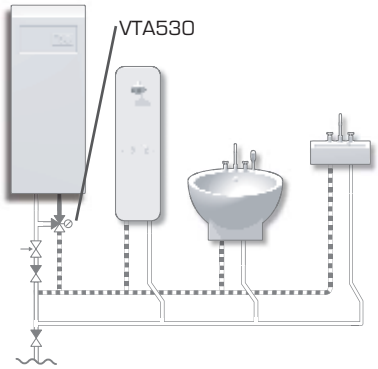
Art. No.	Reference	Temp. range	Kvs*	Connection E	Dimension A	B	C	D	Note	Weight [kg]
3115 03 00	VTA333	35 - 60°C	1.2	CPF 22 mm	86	62	52	46	3)	0.64
3115 21 00				CPF 15/22 mm						0.69

* Kvs-value in m^3/h at a pressure drop of 1 bar. CPF = compression fitting
Note 1) According to standard EN 15092, 2) According to standard EN 1111 + NF079 (France), 3) A non-return valve for the cold water is included.

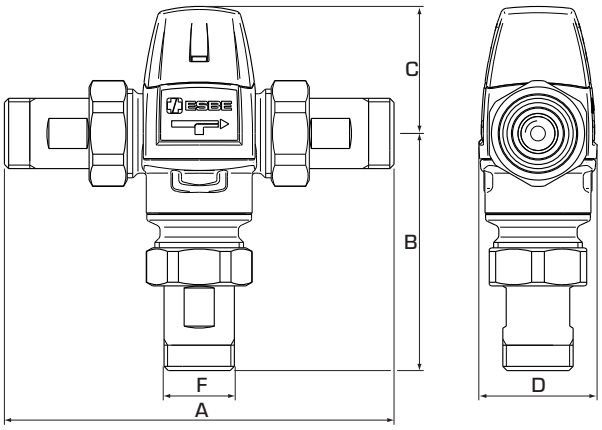
INSTALLATION EXAMPLES

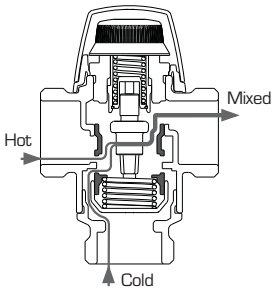
See the catalogue section "How to choose the correct installation/ position" for further information and connection examples.





THERMOSTATIC MIXING VALVE
PREMIUM SERIES VTA330, 530





VTA530

SERIES VTA532/VTA533, WITH ADAPTERS

Art. No.	Reference	Temp. range	Kvs*	Connection F	Dimension A	B	C	D	Note	Weight [kg]
3164 12 00	VTA532	35 - 50°C	2.2	G ¾"	164	102	60	56	2), 3)	1.30
3164 14 00	VTA533			CPF 22mm	180	110				1.42
3164 13 00	VTA532		2.5	G 1"	184	112				1.73
3164 15 00	VTA533			CPF 28mm	204	122				1.90
3164 03 00	VTA532	45 - 65°C	2.2	G ¾"	164	102	60	56	1), 3)	1.30
3164 05 00	VTA533			CPF 22mm	180	110				1.42
3164 04 00	VTA532		2.5	G 1"	184	112				1.73
3164 06 00	VTA533			CPF 28mm	204	122				1.90

* Kvs-value in m^3/h at a pressure drop of 1 bar. CPF = compression fitting
Note 1) According to standard EN 15092, 2) According to standard EN 1111 + NF079 (France), 3) Two check valves for both hot and cold water are included.

THERMOSTATIC MIXING VALVE
PREMIUM SERIES VTA360, 560

The ESBE thermostatic mixing valves series VTA360 and VTA560 are designed to satisfy the highest possible market requirements when it comes to accuracy of regulation, quick reaction and safe function with high flow capacity, regardless of varying pressure conditions.

VTA360
External thread

Compression fitting

VTA560
External thread

With adapters, external thread

With adapters, compression fitting

OPERATION

Series VTA360 is primarily designed to provide a highly accurate temperature regulation in point-of-use positions for domestic hot water, at taps or showers where no further temperature-control fittings have been installed.

Series VTA560 is primarily designed to provide an accurate in-line temperature regulation of the domestic hot water in high flow applications, according to standards EN15092 or EN1111/NF079, where further temperature-control fittings have been installed at taps or showers.

FUNCTION

The quick reaction thermostat and the pressure balanced control valve regulator allow the VTA530/VTA560 to provide minimal changes of temperature regardless of varying pressure conditions. Symmetrical flow pattern. Scald safe*.

VERSIONS

The product range includes a wide choice of valves delivered with adapter fitting kits, each including three adapter fittings and two check valves, which facilitate easy installation and maintenance.

Supplied with a top cover, unless otherwise stated.

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

MEDIA

These valves can handle the following types of media:
- Fresh water / Potable water
- Closed systems
- Water with antifreeze additive (glycol ≤ 50% mixture)

VALVES ARE DESIGNED FOR

	Temperature range				
Series	32 – 49°C	35 – 50°C	35 – 60°C	45 – 65°C	Application
VTA360	○		●		Potable water, in line
VTA560		●		●	
VTA360	●		○		Potable water, point of use
VTA560					
VTA360					Solar heating
VTA560		○		○	
VTA360					Cooling
VTA560					
VTA360	○		○		Floor heating
VTA560		○		○	

● recommended ○ secondary alternative

TECHNICAL DATA

Pressure class: PN 10
Working pressure: 1.0 MPa (10 bar)
Differential pressure: Mixing, max. 0.3 MPa (3 bar)
Pressure drop diagram: see catalogue page 127
Media temperature: VTA360, VTA560 max. 95°C
VTA560 temporarily max. 100°C
Temperature stability: VTA360 ±1°C*
VTA560 ±2°C**
Connection: External thread, ISO 228/1
Compression fitting, EN 1254-2

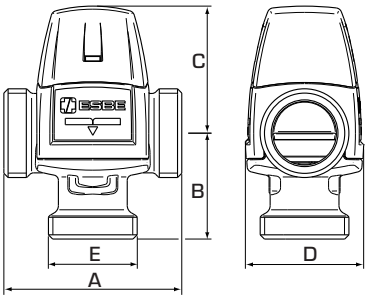
* Valid at unchanged hot/cold water pressure, minimum flow rate 4 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.
** Valid at unchanged hot/cold water pressure, minimum flow rate 9 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.

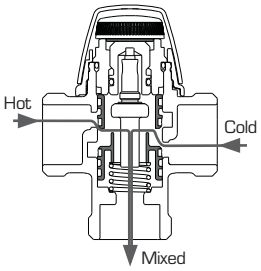
Material
Valve housing and other metal parts with fluid contact: DZR brass CW602N, resistant to dezincification
Surface treatment: Nickel-plated

PED 97/23/EC, article 3.3

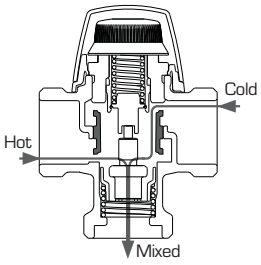
Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice). According to the directive the equipment shall not carry any CE-mark.

THERMOSTATIC MIXING VALVE
PREMIUM SERIES VTA360, 560





VTA360



VTA560

SERIES VTA362/VTA562, EXTERNAL THREAD

Art. No.	Reference	Temp. range	Kvs*	Connection E	Dimension A	B	C	D	Note	Weight [kg]
3115 14 00	VTA362	32–49°C	1.2	G ¾"	70	42	52	46		0.45
3168 10 00	VTA562	35 - 50°C	2.3	G 1"	84	50	60	56	2)	0.78
3168 11 00			2.5	G 1¼"						0.87
3115 11 00	VTA362	35–60°C	1.2	G ¾"	70	42	52	46		0.45
3115 12 00			1.3	G 1"						0.48
3168 01 00	VTA562	45 - 65°C	2.3	G 1"	84	50	60	56	1)	0.78
3168 02 00			2.5	G 1¼"						0.87

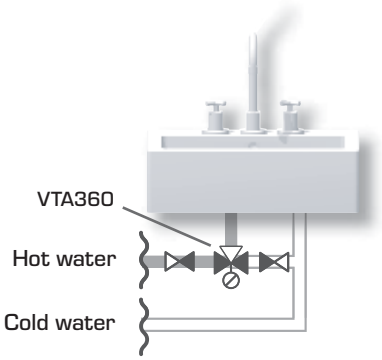
SERIES VTA363, COMPRESSION FITTING

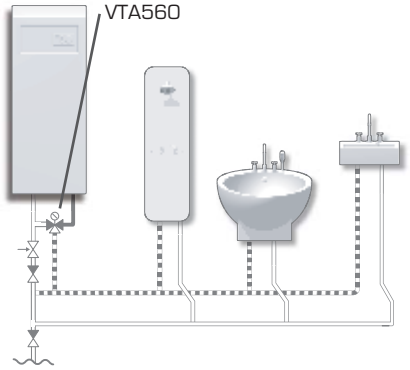
Art. No.	Reference	Temp. range	Kvs*	Connection E	Dimension A	B	C	D	Note	Weight [kg]
3115 10 00	VTA363	35–60°C	1.2	CPF 22 mm	86	50	52	46	3)	0.57

* Kvs-value in m^3/h at a pressure drop of 1 bar. CPF = compression fitting
Note 1) According to standard EN 15092, 2) According to standard EN 1111 + NF079 (France), 3) A non-return valve for the cold water is included.

INSTALLATION EXAMPLES

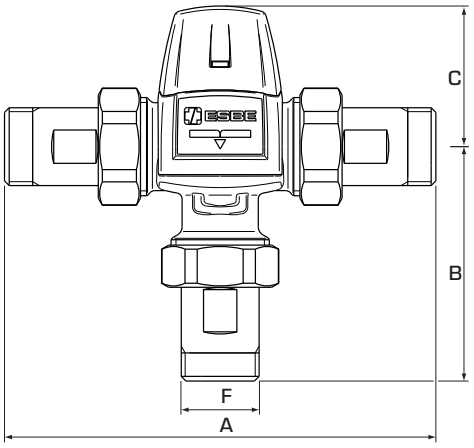
See the catalogue section "How to choose the correct installation/ position" for further information and connection examples.

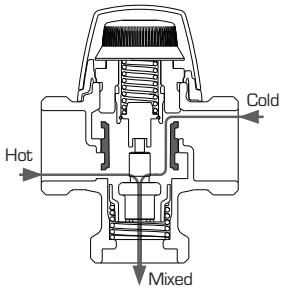




For more variants, please see next page

THERMOSTATIC MIXING VALVE
PREMIUM SERIES VTA360, 560





VTA560

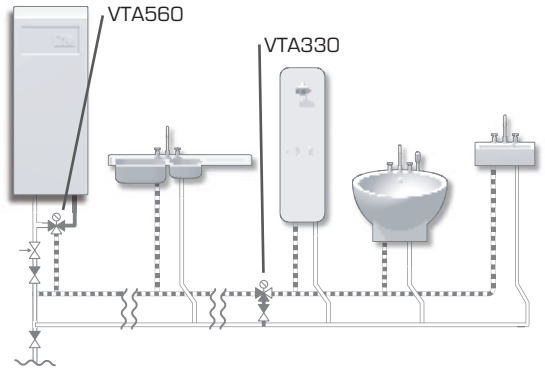
SERIES VTA562/VTA563, WITH ADAPTERS

Art. No.	Reference	Temp. range	Kvs*	Connection F	Dimension A	B	C	D	Surface treatment	Note	Weight [kg]
3168 12 00	VTA562	35 - 50°C	2.2	G ¾"	164	90	60	56	Plated	2), 3)	1.22
3168 14 00	VTA563			CPF 22mm	180	98					1.34
3168 13 00	VTA562		2.5	G 1"	184	100					1.65
3168 15 00	VTA563			CPF 28mm	204	110					1.82
3168 03 00	VTA562	45 - 65°C	2.2	G ¾"	164	90	60	56	Plated	1), 3)	1.22
3168 05 00	VTA563			CPF 22mm	180	98					1.34
3168 04 00	VTA562		2.5	G 1"	184	100					1.65
3168 06 00	VTA563			CPF 28mm	204	110					1.82

* Kvs-value in m^3/h at a pressure drop of 1 bar. CPF = compression fitting
Note 1) According to standard EN 15092, 2) According to standard EN 1111 + NF079 (France), 3) Two check valves for both hot and cold water are included

INSTALLATION EXAMPLES

See the catalogue section "How to choose the correct installation/ position" for further information and connection examples.



THERMOSTATIC MIXING VALVE
BASIC SERIES VTA320, 520

The ESBE thermostatic mixing valves series VTA320/VTA520 offer high flow capacity and good functionality for universal applications, such as domestic hot water with or without HWC (hot water circulation) and smaller underfloor heating circuits.

VTA320
Internal thread

External thread

Compression fitting

VTA520
External thread

With adapters, external thread

With adapters, compression fitting

OPERATION
Series VTA320/VTA520 are the number one choice for domestic hot water systems requiring an in-line scald safe* function and where further temperature control devices have been installed at the water taps. These series of valves are also suitable for domestic hot water installations equipped with HWC (hot water circulation).

Series VTA320/VTA520 are suitable for under floor heating applications, as long as special attention is paid to temperature range and flow requirements.

FUNCTION
Asymmetrical flow pattern. Scald safe*.

VERSIONS
The product range includes a wide choice of valves delivered with adapter fitting kits, each including three adapter fittings and two check valves, which facilitate easy installation and maintenance.

Supplied with a top cover, unless otherwise stated.

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

MEDIA
These valves can handle the following types of media:
- Fresh water / Potable water
- Closed systems
- Water with antifreeze additive (glycol ≤ 50% mixture)

VALVES ARE DESIGNED FOR

	Temperature range					
Series	20 – 43°C	30 – 70°C	35 – 60°C	45 – 65°C	50 – 75°C	Application
VTA320	○	●	●			Potable water, in line
VTA520	○			●	●	
VTA320						Potable water, point of use
VTA520						
VTA320		○	○			Solar heating
VTA520				○	○	
VTA320						Cooling
VTA520						
VTA320	○	○	○			Floor heating
VTA520	○			○		

● recommended ○ secondary alternative

TECHNICAL DATA
Pressure class: PN 10
Working pressure: 1.0 MPa (10 bar)
Differential pressure: Mixing, max. 0.3 MPa (3 bar)
Pressure drop diagram: see catalogue page 127
Media temperature: VTA320, VTA520 max. 95°C
VTA520 temporarily max. 100°C
Temperature stability: VTA320 ±2°C*
VTA520 ±4°C**
Connection: Internal thread, EN 10226-1
External thread, ISO 228/1
Compression fitting, EN 1254-2

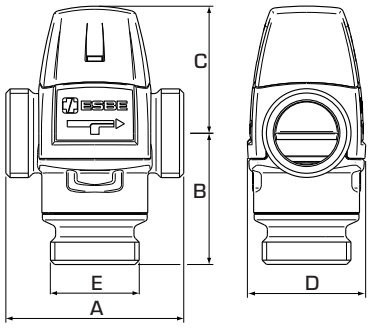
* Valid at unchanged hot/cold water pressure, minimum flow rate 4 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.
** Valid at unchanged hot/cold water pressure, minimum flow rate 9 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.

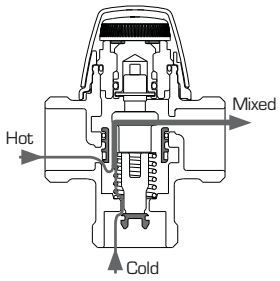
Material
Valve housing and other metal parts with fluid contact:
DZR brass CW602N, resistant to dezincification

PED 97/23/EC, article 3.3

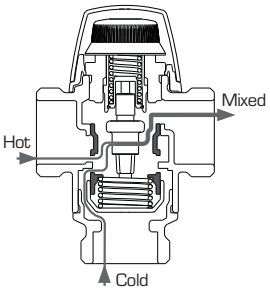
Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice). According to the directive the equipment shall not carry any CE-mark.

THERMOSTATIC MIXING VALVE
BASIC SERIES VTA320, 520





VTA320



VTA520

SERIES VTA321, INTERNAL THREAD

Art. No.	Reference	Temp. range	Kvs*	Connection E	Dimension A	B	C	D	Note	Weight [kg]
3110 03 00	VTA321	20 - 43°C	1.5	Rp ½"	70	42	52	46		0.45
3110 07 00			1.6	Rp ¾"						0.48
3110 04 00	VTA321	35 - 60°C	1.5	Rp ½"	70	42	52	46		0.45
3110 08 00			1.6	Rp ¾"						0.48

SERIES VTA322/VTA522, EXTERNAL THREAD

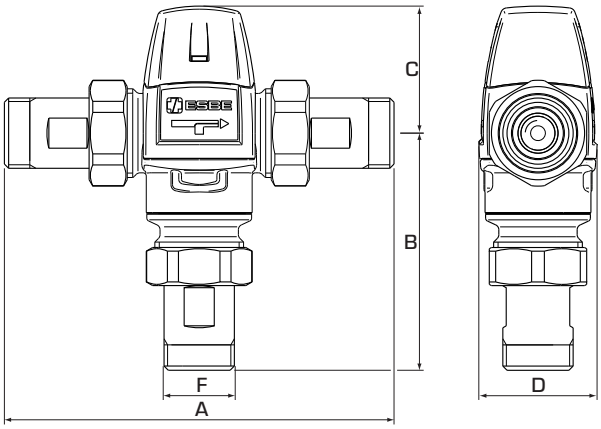
Art. No.	Reference	Temp. range	Kvs*	Connection E	Dimension A	B	C	D	Note	Weight [kg]
3110 28 00	VTA322	20 - 43°C	1.2	G ½"	70	42	52	46		0.41
3110 05 00			1.5	G ¾"						0.45
3110 09 00			1.6	G 1"						0.48
3162 01 00	VTA522		3.2	G 1"	84	62	60	56		0.86
3162 04 00			3.5	G 1¼"						0.95
3110 32 00	VTA322	30 - 70°C	1.6	G 1"	70	42	52	46		0.53
3110 29 00	VTA322	35 - 60°C	1.2	G ½"	70	42	52	46		0.41
3110 06 00			1.5	G ¾"						0.45
3110 10 00			1.6	G 1"						0.48
3110 47 00	VTA322	45 - 65°C	1.6	G 1"	70	42	52	46		0.55
3162 02 00	VTA522		3.2	G 1"	84	62	60	56		0.86
3162 05 00			3.5	G 1¼"						0.95
3162 03 00	VTA522	50 - 75°C	3.2	G 1"	84	62	60	56		0.86
3162 06 00			3.5	G 1¼"						0.95

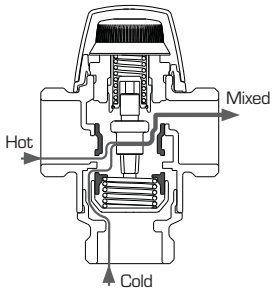
SERIES VTA323, COMPRESSION FITTINGS

Art. No.	Reference	Temp. range	Kvs*	Connection E	Dimension A	B	C	D	Note	Weight [kg]
3110 26 00	VTA323	20 - 43°C	1.2	CPF 15 mm	86	50	52	46	1)	0.49
3110 01 00			1.5	CPF 22 mm						0.57
3110 27 00	VTA323	35 - 60°C	1.2	CPF 15 mm	86	50	52	46	1)	0.49
3110 39 00			1.5	CPF 18 mm						0.66
3110 02 00			1.5	CPF 22 mm					1)	0.57

* Kvs-value in m^3/h at a pressure drop of 1 bar. CPF = compression fitting
Note 1) A non-return valve for the cold water is included.

THERMOSTATIC MIXING VALVE
BASIC SERIES VTA320, 520





VTA520

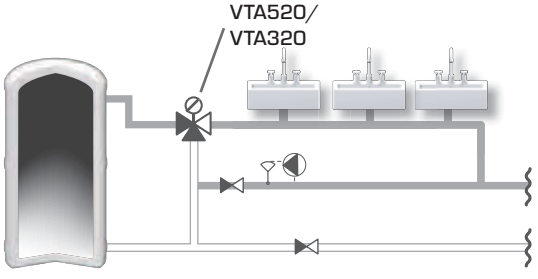
SERIES VTA522/VTA523, WITH ADAPTERS

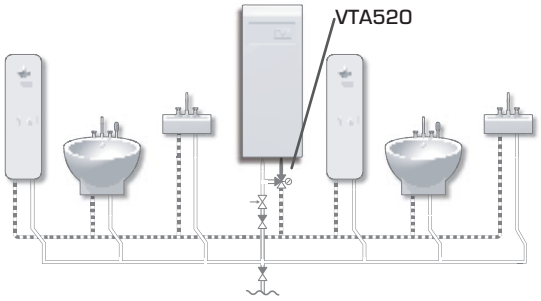
Art. No.	Reference	Temp. range	Kvs*	Connection F	Dimension A	B	C	D	Note	Weight [kg]
3162 07 00	VTA522	20 - 43°C	3.0	G ¾"	164	102	60	56	2)	1.30
3162 13 00	VTA523			CPF 22mm	180	110				1.42
3162 10 00	VTA522		3.4	G 1"	184	112				1.73
3162 16 00	VTA523			CPF 28mm	204	122				1.90
3162 08 00	VTA522	45 - 65°C	3.0	G ¾"	164	102	60	56	2)	1.30
3162 14 00	VTA523			CPF 22mm	180	110				1.42
3162 11 00	VTA522		3.4	G 1"	184	112				1.73
3162 17 00	VTA523			CPF 28mm	204	122				1.90
3162 09 00	VTA522	50 - 75°C	3.0	G ¾"	164	102	60	56	2)	1.30
3162 15 00	VTA523			CPF 22mm	180	110				1.42
3162 12 00	VTA522		3.4	G 1"	184	112				1.73
3162 18 00	VTA523			CPF 28mm	204	122				1.90

* Kvs-value in m^3/h at a pressure drop of 1 bar. CPF = compression fitting
Note 2) Two check valves for both hot and cold water are included

INSTALLATION EXAMPLES

See the catalogue section "How to choose the correct installation/ position" for further information and connection examples.





THERMOSTATIC MIXING VALVE
BASIC SERIES VTA550

The ESBE thermostatic mixing valves series VTA550 offer high flow capacity and good functionality for universal applications, such as domestic hot water with or without HWC (hot water circulation).

External thread

With adapters, external thread

With adapters, compression fitting

OPERATION
The series VTA550 is the number one choice for domestic hot water systems requiring an in-line scald safe* function and where further temperature control devices have been installed at the water taps. These series of valves are also suitable for domestic hot water installations equipped with HWC (hot water circulation). Series VTA550 is suitable for under floor heating applications, as long as special attention is paid to temperature range and flow requirements.

FUNCTION
Symmetrical flow pattern. Scald safe*.

VERSIONS
The product range includes a wide choice of valves delivered with adapter fitting kits, each including three adapter fittings and two check valves, which facilitate easy installation and maintenance.

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

MEDIA
These valves can handle the following types of media:
- Fresh water / Potable water
- Closed systems
- Water with antifreeze additive (glycol ≤ 50% mixture)

VALVES ARE DESIGNED FOR

Series	Temperature range 20 - 43°C	45 - 65°C	50 - 75°C	Application
VTA550	○	●	●	Potable water, in line
VTA550				Potable water, point of use
VTA550		○	○	Solar heating
VTA550				Cooling
VTA550	○	○		Floor heating

● recommended ○ secondary alternative

TECHNICAL DATA
Pressure class: PN 10
Working pressure: 1.0 MPa (10 bar)
Differential pressure: Mixing, max. 0.3 MPa (3 bar)
Pressure drop diagram: see catalogue page 127
Media temperature: max. 95°C
temporarily max. 100°C
Temperature stability: ±4°C*
Connection: External thread, ISO 228/1
Compression fitting, EN 1254-2

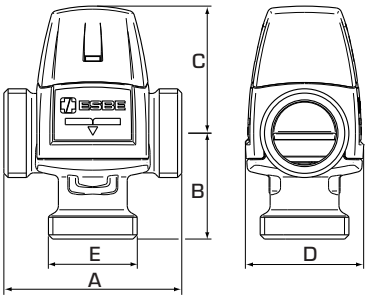
* Valid at unchanged hot/cold water pressure, minimum flow rate 9 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.

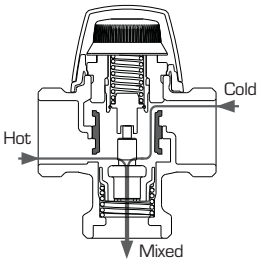
Material
Valve housing and other metal parts with fluid contact:
DZR brass CW602N, resistant to dezincification

PED 97/23/EC, article 3.3

Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice). According to the directive the equipment shall not carry any CE-mark.

THERMOSTATIC MIXING VALVE
BASIC SERIES VTA550





VTA550

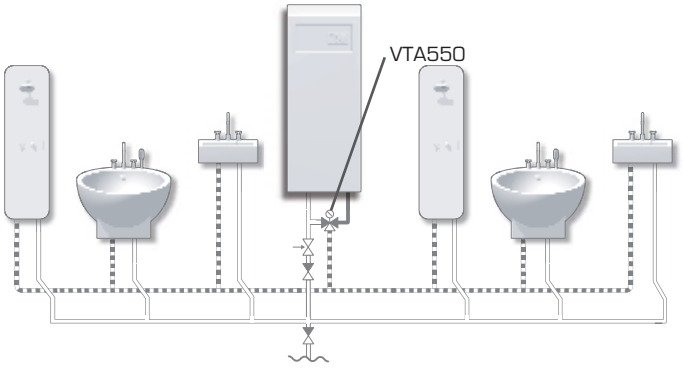
SERIES VTA552, EXTERNAL THREAD

Art. No.	Reference	Temp. range	Kvs*	Connection E	Dimension A	B	C	D	Note	Weight [kg]
3166 01 00	VTA552	20 - 43°C	3.2	G 1"	84	50	60	56		0.78
3166 04 00			3.5	G 1¼"						0.87
3166 02 00	VTA552	45 - 65°C	3.2	G 1"	84	50	60	56		0.78
3166 05 00			3.5	G 1¼"						0.87
3166 03 00	VTA552	50 - 75°C	3.2	G 1"	84	50	60	56		0.78
3166 06 00			3.5	G 1¼"						0.87

* Kvs-value in m^3/h at a pressure drop of 1 bar.

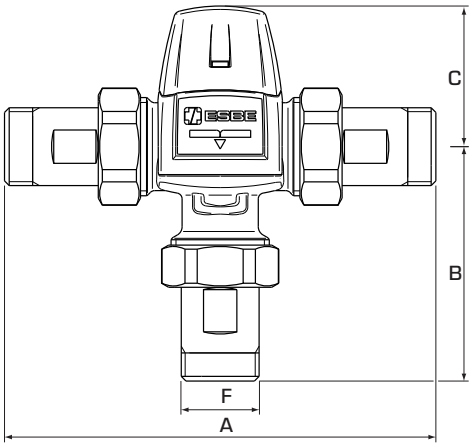
INSTALLATION EXAMPLES

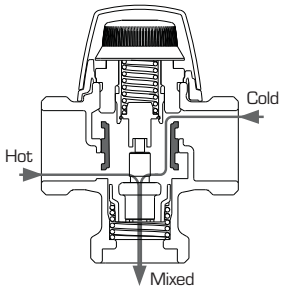
See the catalogue section “How to choose the correct installation/ position” for further information and connection examples.



For more variants, please see next page

THERMOSTATIC MIXING VALVE
BASIC SERIES VTA550





VTA550

SERIES VTA552/VTA553, WITH ADAPTERS

Art. No.	Reference	Temp. range	Kvs*	Connection F	Dimension A	B	C	D	Note	Weight [kg]
3166 07 00	VTA552	20 - 43°C	3.0	G ¾"	164	90	60	56	1)	1.22
3166 13 00	VTA553			CPF 22mm	180	98				1.34
3166 10 00	VTA552		3.4	G 1"	184	100				1.65
3166 08 00	VTA552	45 - 65°C	3.0	G ¾"	164	90	60	56	1)	1.22
3166 14 00	VTA553			CPF 22mm	180	98				1.34
3166 11 00	VTA552		3.4	G 1"	184	100				1.65
3166 09 00	VTA552	50 - 75°C	3.0	G ¾"	164	90	60	56	1)	1.22
3166 15 00	VTA553			CPF 22mm	180	98				1.34
3166 12 00	VTA552		3.4	G 1"	184	100				1.65

* Kvs-value in m^3/h at a pressure drop of 1 bar. CPF = compression fitting
Note 1) Two check valves for both hot and cold water are included

THERMOSTATIC MIXING VALVE
BASIC SERIES VTA370, 570

The ESBE thermostatic mixing valves series VTA370 and VTA570 offer high flow capacity and high functionality for under floor heating circuits.

VTA370
External thread

VTA570
External thread

With adapters, pump flange

With adapters, rotating nut

OPERATION

The series VTA370/VTA570 is the number one choice for under floor heating systems requiring a scald safe* function, which is important in order to protect under floor heating pipes and also the floor itself. These valves are also suitable as pre-mixing devices for domestic hot water installations where very high flow rates are required, in which case further mandatory temperature control devices has to be installed at the water taps to provide point of use protection.

Series VTA570 is also suitable for cooling applications.

FUNCTION

Asymmetrical flow pattern. Scald safe*.

VERSIONS

The product range includes a wide choice of valves delivered with adapter fitting kits, each including three adapter fittings and two check valves, which facilitate easy installation and maintenance.

Supplied with large temperature setting knob instead of top cover, unless otherwise stated.

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

MEDIA

These valves can handle the following types of media:
- Closed systems
- Water with antifreeze additive (glycol ≤ 50% mixture)

VALVES ARE DESIGNED FOR

Series	Temperature range 10 – 30°C	20 – 43°C	35 – 60°C	45 – 65°C	Application
VTA370					Potable water, in line
VTA570	○			○	
VTA370					Potable water, point of use
VTA570					
VTA370					Solar heating
VTA570					
VTA370					Cooling
VTA570	●				
VTA370			●		Floor heating
VTA570		●		●	

● recommended ○ secondary alternative

TECHNICAL DATA

Pressure class: PN 10
Working pressure: 1.0 MPa (10 bar)
Differential pressure, mixing: VTA370 max. 0.3 MPa (3 bar)
VTA570 max. 0.1 MPa (1 bar)
Pressure drop diagram: see catalogue page 127
Max. media temperature:
VTA370 95°C
VTA570, Temp. range 10–30°C 65°C
Temp. range 20–43, 45–65°C continuously 95°C
temporarily 100°C
Min. media temperature: 0°C
Temperature stability:
VTA570 - Temp. range 10–30°C ±2°C*
VTA370, VTA570 - Temp. range 20–43, 45–65°C ±3°C**
Connection: External thread, ISO 228/1

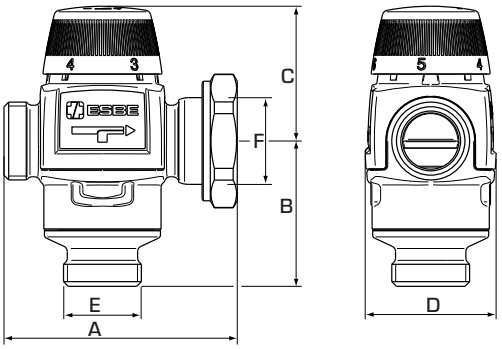
* Valid at unchanged hot/cold water pressure, minimum flow rate 9 l/min. Minimum temperature difference between cold water inlet and mixed water outlet 3°C and recommended maximum temperature difference between return water /cold water inlet and mixed water outlet: 10°C.
** Valid at unchanged hot/cold water pressure, minimum flow rate 9 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C and recommended maximum temperature difference between return water /cold water inlet and mixed water outlet: 10°C.

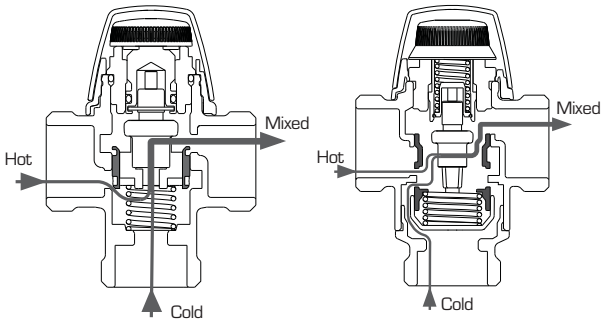
Material
Valve housing and other metal parts with fluid contact:
DZR brass CW602N, resistant to dezincification

PED 97/23/EC, article 3.3

Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice). According to the directive the equipment shall not carry any CE-mark.

THERMOSTATIC MIXING VALVE
BASIC SERIES VTA370, 570





VTA370 VTA570

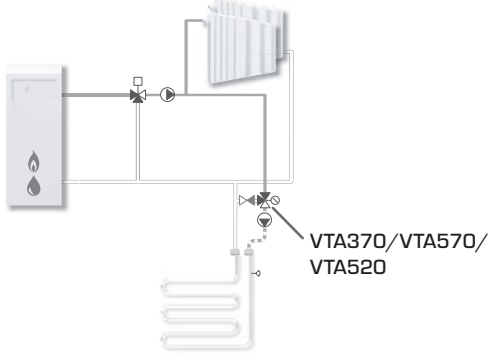
SERIES VTA372/VTA572, EXTERNAL THREAD

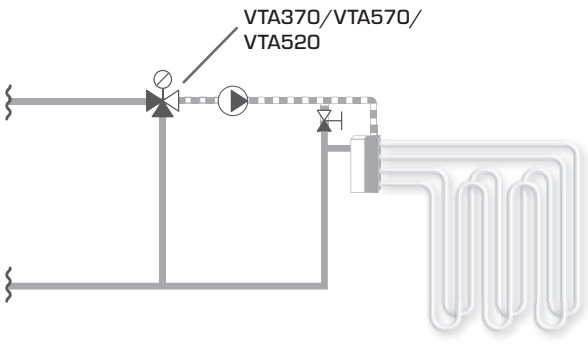
Art. No.	Reference	Temp. range	Kvs*	Connection E	Dimension A	B	C	D	Note	Weight [kg]
3170 01 00	VTA572	10 -30°C	4.5	G 1"	84	62	60	56		0.86
3170 04 00			4.8	G 1¼"						0.95
3110 44 00	VTA372	20 - 43°C	3.4	G 1"	70	42	52	46		0.51
3170 02 00	VTA572	20 - 43°C	4.5	G 1"	84	62	60	56		0.86
3170 05 00			4.8	G 1¼"						0.95
3110 45 00	VTA372	35 - 60°C	3.4	G 1"	70	42	52	46		0.51
3170 03 00	VTA572	45 - 65°C	4.5	G 1"	84	62	60	56		0.86
3170 06 00			4.8	G 1¼"						0.95

* Kvs-value in m^3/h at a pressure drop of 1 bar.

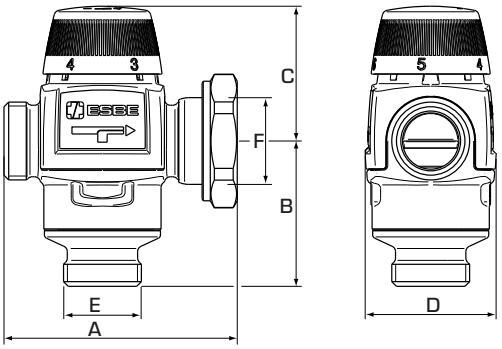
INSTALLATION EXAMPLES

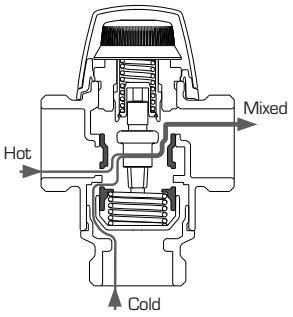
See the catalogue section “How to choose the correct installation/ position” for further information and connection examples.





THERMOSTATIC MIXING VALVE
BASIC SERIES VTA370, 570





VTA570

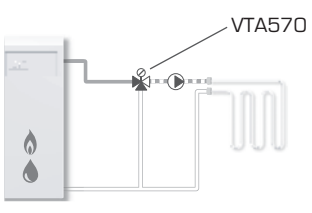
SERIES VTA577/VTA578, WITH ADAPTERS

Art. No.	Reference	Temp. range	Kvs*	Connection		Dimension				Note	Weight [kg]
				E	F	A	B	C	D		
3170 10 00	VTA577	10 -30°C	4.5	G 1"	PF 1½"	100	62	60	57		0.99
3170 16 00	VTA578			G 1¼"	RN 1"	93			56		0.91
3170 11 00	VTA577	20 - 43°C	4.5	G 1"	PF 1½"	100	62	60	57		0.99
3170 17 00	VTA578			G 1¼"	RN 1"	93			56		0.91
3170 12 00	VTA577	45 - 65°C	4.5	G 1"	PF 1½"	100	62	60	57		0.99
3170 18 00	VTA578			G 1¼"	RN 1"	93			56		0.91

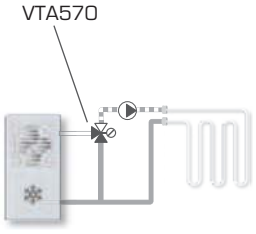
* Kvs-value in m^3/h at a pressure drop of 1 bar. PF = Pump Flange, RN = Rotating Nut

INSTALLATION EXAMPLES

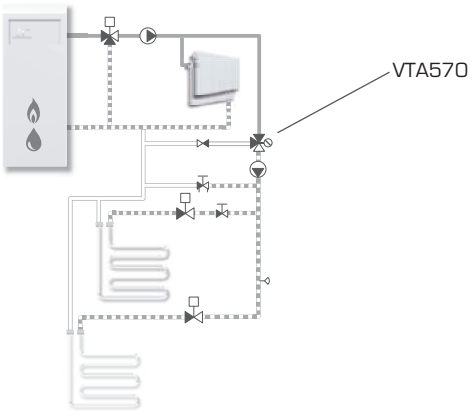
See the catalogue section "How to choose the correct installation/ position" for further information and connection examples.



Heating



Cooling



THERMOSTATIC MIXING VALVE SERIES VTA310

The ESBE thermostatic mixing valves series VTA310 is primarily designed for domestic hot water regulation at heaters without any requirement for a scald safe function.

VTA310
External thread

Compression fitting

OPERATION

The series VTA310 is designed for temperature control in domestic hot water installations without any requirements for a scald safe function. This series of valves is not suitable for domestic hot water installations equipped with HWC.

FUNCTION

Asymmetrical flow pattern.

VERSIONS

Supplied with a knob unless otherwise stated.

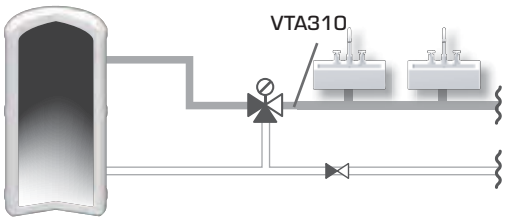
INSTALLATION EXAMPLES

See the catalogue section "How to choose the correct installation/position" for further information and connection examples.

VALVES ARE DESIGNED FOR

Series	Temperature range 30 – 70°C	Temperature range 35 – 60°C	Application
VTA310	●	●	Potable water, in line
VTA310			Potable water, point of use
VTA310			Solar heating
VTA310			Cooling
VTA310			Floor heating

● recommended ○ secondary alternative



TECHNICAL DATA

Pressure class: PN 10
Differential pressure: Mixing, max. 0.3 MPa (3 bar)
Pressure drop diagram: see page 127
Media temperature: max. 95°C
Temperature stability: ±2°C*
Connection: External thread, ISO 228/1
Compression fitting, EN 1254-2

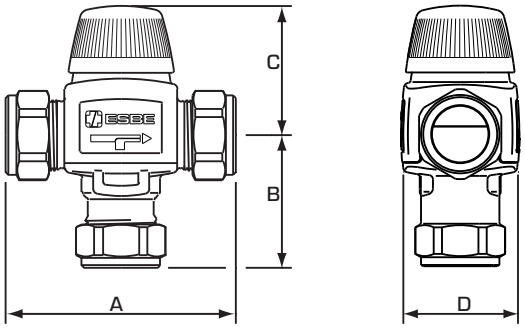
* Valid at unchanged hot/cold water pressure, minimum flow rate 4 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.

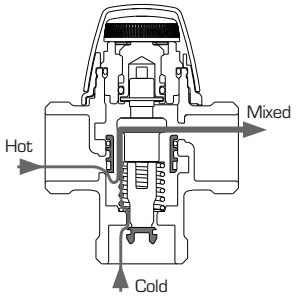
Material
Valve housing and other metal parts with fluid contact:
DZR brass CW602N, resistant to dezincification

PED 97/23/EC, article 3.3

Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice). According to the directive the equipment shall not carry any CE-mark.

THERMOSTATIC MIXING VALVE
SERIES VTA310





VTA310

SERIES VTA312, EXTERNAL THREAD

Art. No.	Reference	Temp. range	Kvs*	Connection	Dimension A	B	C	D	Note	Weight [kg]
3105 02 00	VTA312	35 - 60°C	1.2	G ½"	70	42	52	46		0.41

SERIES VTA313, COMPRESSION FITTING

Art. No.	Reference	Temp. range	Kvs*	Connection	Dimension A	B	C	D	Note	Weight [kg]
3105 01 00	VTA313	35 - 60°C	1.2	CPF 15 mm	86	50	52	46	1)	0.49
3105 03 00			1.5	CPF 18 mm						0.62
3105 04 00				CPF 22 mm					1)	0.57
3105 05 00	VTA313	30 - 70°C	1.5	CPF 22 mm	86	50	52	46	1)	0.62

* Kvs-value in m^3/h at a pressure drop of 1 bar. CPF = compression fitting
Note 1) A non-return valve for the cold water is included.

NEW

SOLAR KIT
SERIES VMC300, VMC500

The ESBE thermic solar kit series VMC300/VMC500 offers dual functionality for tap water applications: It diverts incoming water when additional heating is needed and makes outgoing water scald safe, all in an easy-to-install solar kit.*

VMC300
External thread

With adapters, external thread

VMC500
External thread

With adapters, external thread

OPERATION

ESBE solar kit VMC300/VMC500 offers optimized energy usage, scald protection and comfort in a compact and efficient way. Using only thermostatic components (non-electrical) the unit is completely independent and provides very easy installation.

Series VMC300 is intended for smaller solar heating systems (Kvs 1.5) and series VMC500 is intended for larger systems (Kvs 2.5).

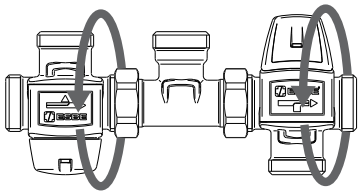
FUNCTION

If the incoming water from the solar collector is not hot enough, it is diverted to an additional heat source, such as a gas boiler, and once it is heated it is mixed to a suitable temperature for domestic hot water applications. If the incoming water from the solar collector is already hot enough, it will be mixed directly for domestic hot water use, efficiently utilizing the solar energy.

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

VALVE VMC300/VMC500 DESIGNED FOR

- ○ Heating
- ○ Comfort Cooling
- ● Potable water
- ○ Floor heating
- ● Solar heating
- ○ Ventilation
- ○ Zone
- ○ District Hot Water
- ○ District Heating
- ○ District Cooling



All parts can be rotated 360° for maximum flexibility of connection.

TECHNICAL DATA

Pressure class: PN 10
Max. flow from collector- VMC300: 0.7 l/s (42 l/min)
VMC500: 1.0 l/s (60 l/min)
Temperature of water from collector: max 95°C
min 0°C
Temperature from additional heat source: max. 95°C
Change-over point, accuracy: ±1°C
Diverting range shut off: 45°C ±2°C
50°C, 60°C ±3°C
Temperature range, mixing valve - VMC300: 35 - 60°C
VMC500: 45 - 65°C
Temperature stability of outgoing water - VMC300: ±2°C*
VMC500: ±4°C**
Connection: External thread, ISO 228/1

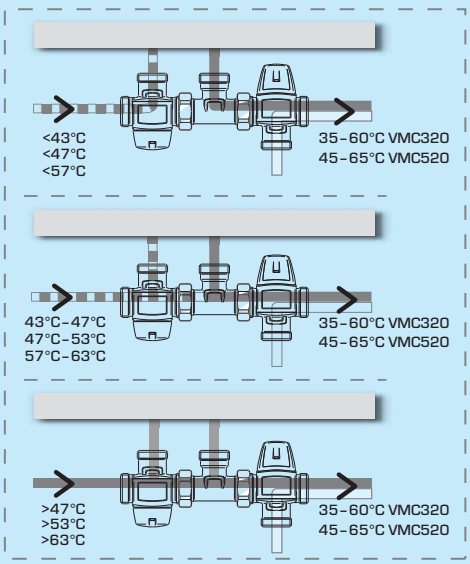
* Valid at unchanged hot/cold water pressure, minimum flow rate 4 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.
** Valid at unchanged hot/cold water pressure, minimum flow rate 9 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.

Material
Valve housing and other metal parts with fluid contact:
DZR brass CW602N, resistant to dezincification

PED 97/23/EC, article 3.3

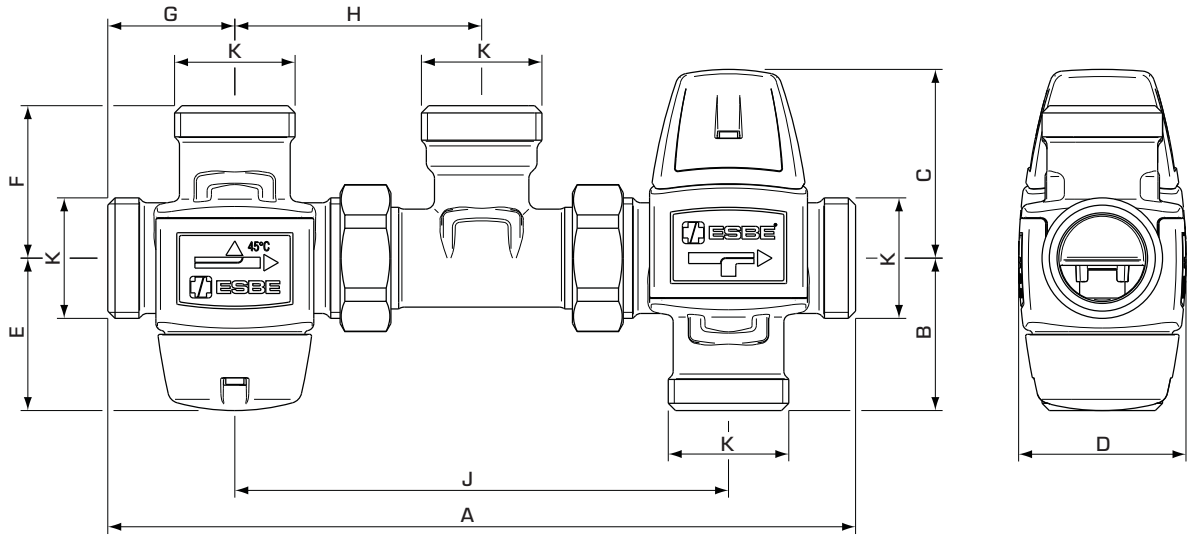
Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice). According to the directive the equipment shall not carry any CE-mark.

FLOW PATTERN



SOLAR KIT
SERIES VMC300, VMC500

NEW



SERIES VMC322, EXTERNAL THREAD

Art. No.	Reference	Change-over point	Kvs*	Connection K	Dimension									Note	Weight [kg]
					A	B	C	D	E	F	G	H	J		
3152 10 00	VMC322	45°C	1.5	G 1"	206	42	52	46	42	42	35	68	136		1.22
3152 11 00		50°C													
3152 12 00		60°C													

SERIES VMC522, EXTERNAL THREAD

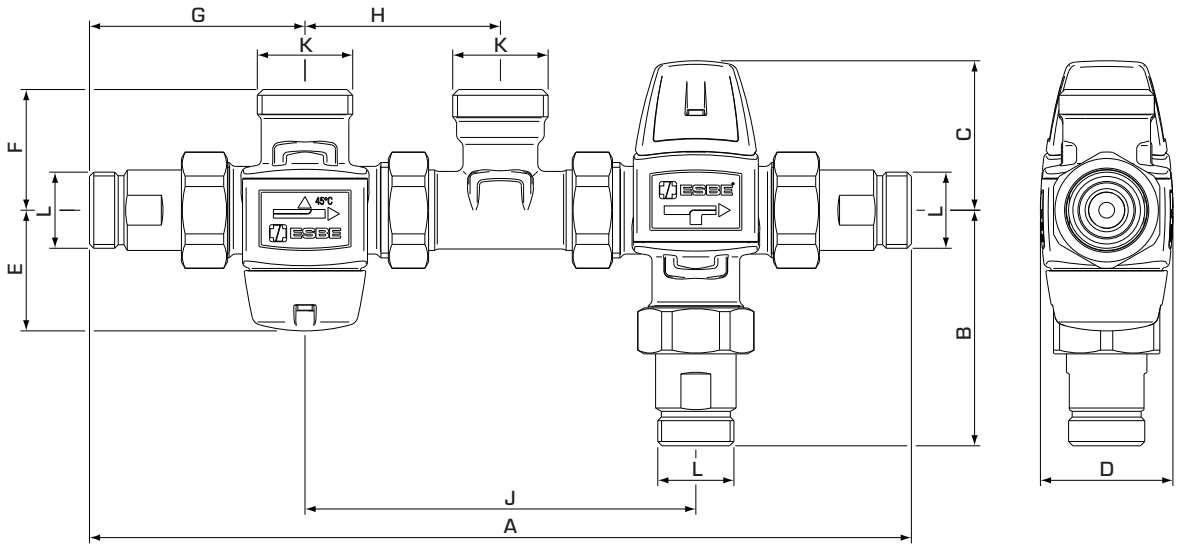
Art. No.	Reference	Change-over point	Kvs*	Connection K	Dimension									Note	Weight [kg]
					A	B	C	D	E	F	G	H	J		
3152 30 00	VMC522	45°C	2.5	G 1"	220	62	60	56	42	42	35	68	143		1.50
3152 31 00		50°C													
3152 32 00		60°C													

* Kvs-value in m^3/h at a pressure drop of 1 bar.

For more variants, please see next page

NEW

SOLAR KIT
SERIES VMC300, VMC500



SERIES VMC322, WITH ADAPTERS

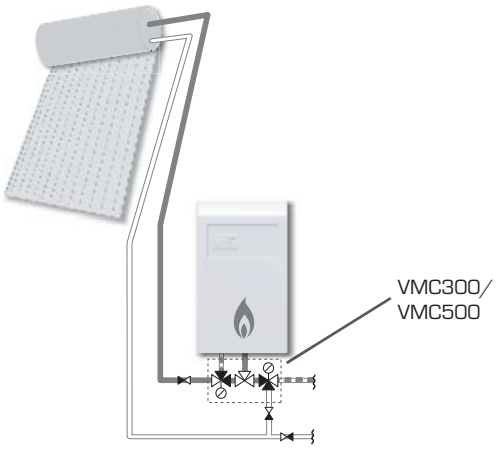
Art. No.	Reference	Change-over point	Kvs*	Connection		Dimension									Note	Weight [kg]
				K	L	A	B	C	D	E	F	G	H	J		
3152 13 00	VMC322	45°C	1.4	G 1"	G ¾"	286	82	52	46	42	42	75	68	136	1)	1.62
3152 14 00		50°C														
3152 15 00		60°C														

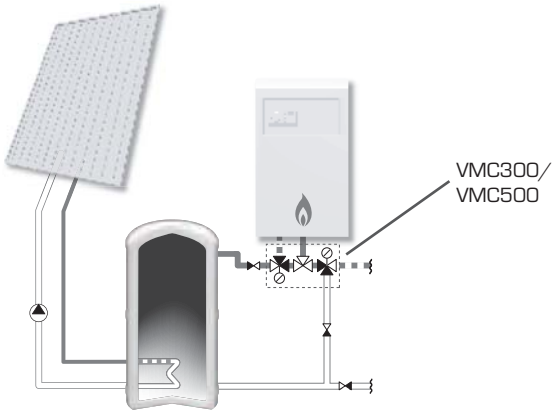
SERIES VMC522, WITH ADAPTERS

Art. No.	Reference	Change-over point	Kvs*	Connection		Dimension									Note	Weight [kg]
				K	L	A	B	C	D	E	F	G	H	J		
3152 33 00	VMC522	45°C	2.3	G 1"	G ¾"	300	102	60	56	42	42	75	68	143	1)	1.90
3152 34 00		50°C														
3152 35 00		60°C														

* Kvs-value in m^3/h at a pressure drop of 1 bar. Note 1) Two check valves for both hot and cold water are included

INSTALLATION EXAMPLES





VALVE MANIFOLD
BASIC SERIES VMB400

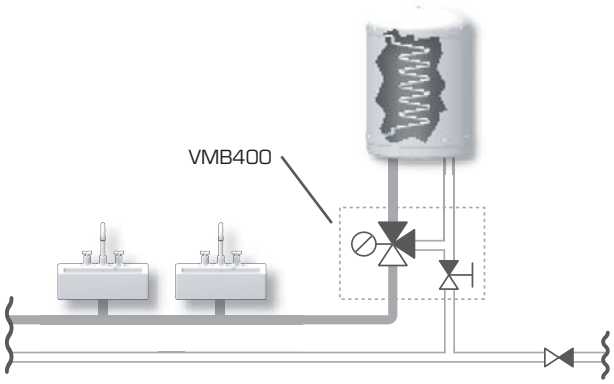
The ESBE series VMB is a compact valve combination for hot water storage. Incoming cold water has the following incorporated components; non return and shut-down device and connections for safety valve, vacuum valve etc. The incoming hot-water is regulated within a temperature range of 35 to 60°C by thermostatic mixing valves series VTA320.

VMB400
Compression fitting

HOW TO USE THE VALVES

The manifold has 2 connections with internal threads DN 15 to connect safety valve (VSB), vacuum valve (VVA), filling valve (VFA), HWC-pipe etc. The manifold also has shut off functionality and backflow protection type EB complying with EN1717.

INSTALLATION EXAMPLES



VALVE MANIFOLD VMB400 DESIGNED FOR

- ○ Heating
- ○ Comfort Cooling
- ● Potable water
- ○ Floor heating
- ○ Solar heating
- ○ Ventilation
- ○ Zone
- ○ District Hot Water
- ○ District Heating
- ○ District Cooling

TECHNICAL DATA

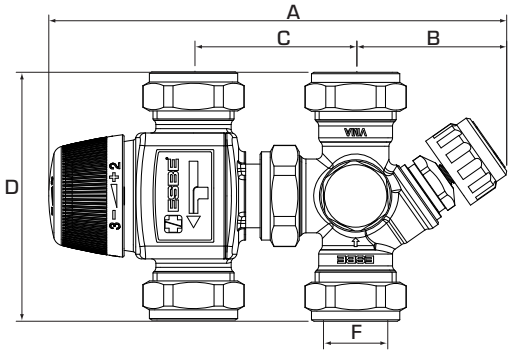
Pressure class: PN 10
Differential pressure: Mixing, max. 0.3 MPa (3 bar)
Media temperature: max. 95°C
Temperature stability: ±2°C*
Temperature range: 35-60°C
Connection: Internal thread, EN 10226-1
Compression fitting, EN 1254-2

* Valid at unchanged hot/cold water pressure, minimum flow rate 4 l/min. Minimum temperature difference between hot water inlet and mixed water outlet 10°C.

Material
Valve housing and other metal parts with fluid contact:
DZR brass CW602N, resistant to dezincification

PED 97/23/EC, article 3.3

Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice). According to the directive the equipment shall not carry any CE-mark.



SERIES VMB400, COMPRESSION FITTING

Art. No.	Reference	DN	Kvs	Connection	Safety valve [MPa]	Safety valve [bar]	A	B	C	D	F	Weight [kg]
3150 20 00	VMB423	15	1.1	CPF 15 mm	–	–	165	53	ca 55	86	15	0.78
3150 21 00	VMB423	20	1.6	CPF 22 mm	–	–	165	53	52-60	86	22	0.86
3150 22 00					0.6	6						1.01
3150 23 00					0.7	7						1.01
3150 24 00					0.9	9						1.01

CPF = compression fitting

NEW

THERMOSTATIC CONTROL UNITS

DIVERTING VALVE
SERIES VTD300

The thermic valve series ESBE VTD300 is used for diverting applications. The valve diverts the incoming flow to the A or B port depending on fluid temperature.

External thread

OPERATION

The ESBE series VTD300 is a thermic 3-way valve designed for diverting applications. When the incoming fluid temperature is below the nominal diverting temperature it is diverted to the B port, when the incoming fluid temperature is above the nominal diverting temperature it is diverted to the A port.

FUNCTION

The valve contains a thermostat with a certain diverting temperature, which reacts on the incoming fluid temperature and changes the outgoing flow direction accordingly. The change-over from one port to the other is within a range of approximately ±2°C to ±3°C, depending on temperature range, from the nominal diverting temperature. This means that a valve with a nominal diverting temperature of 45°C at an incoming fluid temperature of <43°C will divert the flow to port B, at an incoming fluid temperature of 43-47°C will divert it to both A and B, and at an incoming fluid temperature of >47°C will divert the flow to port A.

Four different nominal diverting temperatures are available; 45°C, 50°C, 60°C and 70°C.

The function of the valve is independent of assembly position.

MEDIA

Maximum 50% glycol for freezing protection and oxygen absorbing compounds are allowed as additives. As both the viscosity and the thermal conduction are affected when glycol is added to the system water, this fact has to be considered when dimensioning the valve. When 30 - 50 % glycol is added, the maximum output effect of the valve is decreased by 30 - 40 %. A lower concentration of glycol may be disregarded.

SERVICE AND MAINTENANCE

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

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

DIVERTING VALVE VTD300 DESIGNED FOR

- ● Heating
- ○ Comfort Cooling
- ● Potable water
- ○ Floor heating
- ● Solar heating
- ○ Ventilation
- ● Zone
- ○ District Hot Water
- ○ District Heating
- ○ District Cooling

TECHNICAL DATA

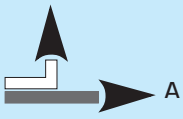
Pressure class: PN 10
Change-over point accuracy: ±1°C
Diverting range shut off: 45°C ±2°C
50°C, 60°C, 70°C ±3°C
Media temperature: continuously max. 100°C
temporarily max. 110°C
min 0°C
Max. differential pressure: 100 kPa (1.0 bar)
Leakrate AB - A, AB - B: Tight sealing
Connections: External thread, ISO 228/1

Material
Valve housing and other metal parts with fluid contact:
Brass DZR, CW 602N, resistant to dezincification

PED 97/23/EC, article 3.3

Pressure Equipment in conformity with PED 97/23/EC, article 3.3 (sound engineering practice). According to the directive the equipment shall not carry any CE-mark.

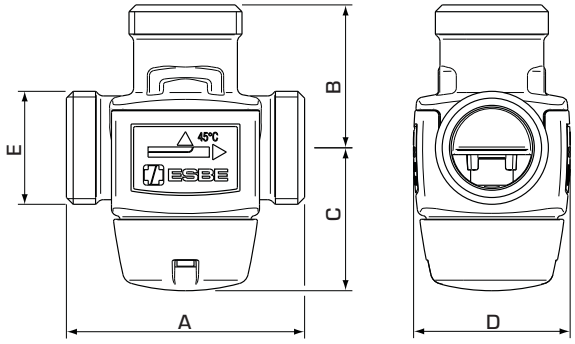
FLOW PATTERN



Diverting

DIVERTING VALVE
SERIES VTD300

NEW



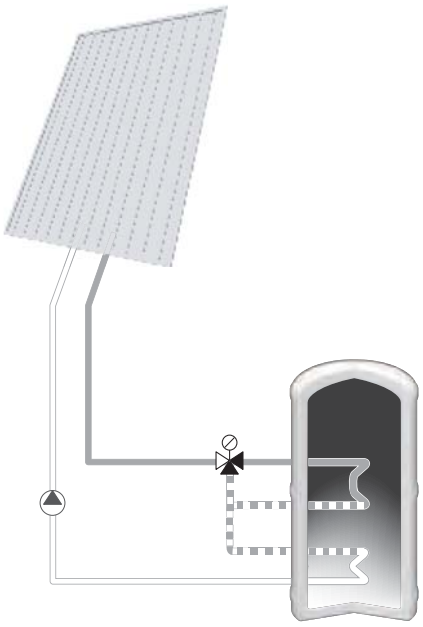
VTD322

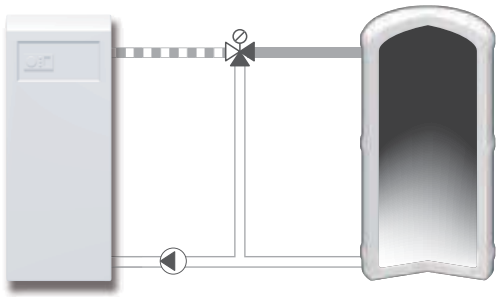
SERIES VTD322, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection E	Change-over point	A	B	C	D	Weight [kg]
3160 01 00	VTD322	20	3.6	G 1“	45°C	70	42	42	46	0.45
3160 02 00					50°C					
3160 03 00					60°C					
3160 04 00					70°C					

* Kvs-value in m^3/h at a pressure drop of 1 bar.

INSTALLATION EXAMPLES





NEW

CONNECTION KIT
SERIES KCD300

Connection kit with compression fittings for use on externaly threaded valves.

KCD300
Compression fitting

Compression fitting, plated

VERSIONS

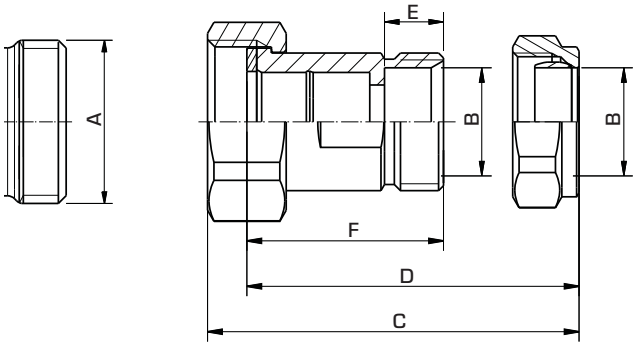
Each package contains three of each of connection pieces, nuts, gaskets compression rings and compression nuts.

Check valves and surface plating available according to table.

SUITABLE VALVES

The connection kit series KCD300 may most easily be fitted with ESBE thermostatic control units:

- Series VTS522, 552
- Series VTA332, 532
- Series VTA362, 562
- Series VTA322, 522
- Series VTA552
- Series VTA372, 572
- Series VMC312



TECHNICAL DATA

Pressure class: PN10
Media temperature: max. +120°C
min. -20°C
Connection - nipple design: acc. to EN 1254-2
External thread, ISO 228/1
Compression fitting, EN 1254-2
Internal thread, EN 10226-1

Material
Nut: Brass CW 614N
Connection piece: Brass DZR, CW 602N
Gasket: Klingersil C-4400
Compression fitting nut: Brass CW 614N
Compression ring: Brass DZR, CW 602N
Surface treatment: Nickel-plated

SERIES KCD300, COMPRESSION FITTING (3 CONNECTIONS/PACKAGE)

Art. No.	Reference	Valve thread A	Connection B	Dimension C	D	E	F	Note	Weight [kg]
3655 28 00	KCD313	G ¾"	CPF 15 mm	44.5	38	10	30	1)	0.31
3655 31 00	KCD313							1) Plated	0.31
3655 29 00	KCD313	G 1"	CPF 22 mm	54	48	12	40	1)	0.56
3655 32 00	KCD313							1) Plated	0.56
3655 30 00	KCD313	G 1¼"	CPF 28 mm	66.5	60	16	50	1)	0.95
3655 33 00	KCD313							1) Plated	0.95

Note 1) Two check valves included CPF = Compression fitting

CONNECTION KIT
SERIES KSD300

Connection kit with solder connection for use on externaly threaded valves.

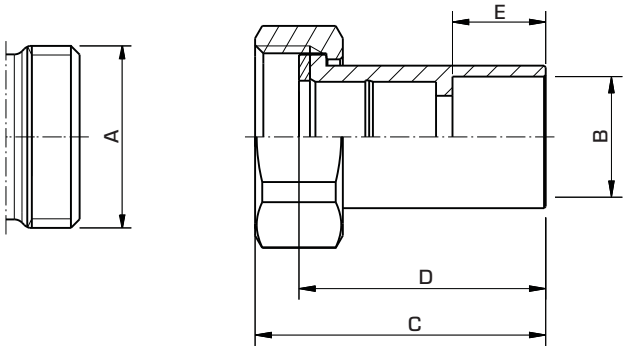
KSD300
Soldering type

NEW

VERSIONS

Each package contains three of each of connection pieces, nuts and gaskets.

Check valves available according to table.



SUITABLE VALVES

The connection kit series KSD300 may most easily be fitted with ESBE thermostatic control units:

- Series VTS522, 552
- Series VTA332, 532
- Series VTA362, 562
- Series VTA322, 522
- Series VTA552
- Series VTA372, 572
- Series VMC312

TECHNICAL DATA

Pressure class: PN10
Media temperature: max. +120°C
min. -20°C
Connection - nipple design: acc. to EN 1254-1
External thread, ISO 228/1
Internal thread, EN 10226-1

Material
Nut: Brass CW 614N
Connection piece: Brass DZR, CW 602N
Gasket: Klingersil C-4400

SERIES KSD300, FITTINGS SOLDERING TYPE (3 CONNECTIONS/PACKAGE)

Art. No.	Reference	Valve thread A	Connection B	Dimension C	D	E	Note	Weight [kg]
3655 34 00	KSD314	G 1"	22 mm	53	45	17	1)	0.42

Note 1) Two check valves included

NEW

THERMOSTATIC CONTROL UNITS

CONNECTION KIT
SERIES KTD200, 300

Connection kit with external thread for use on externaly threaded valves.

KTD200
External thread

KTD300
External thread

External thread, plated

VERSIONS

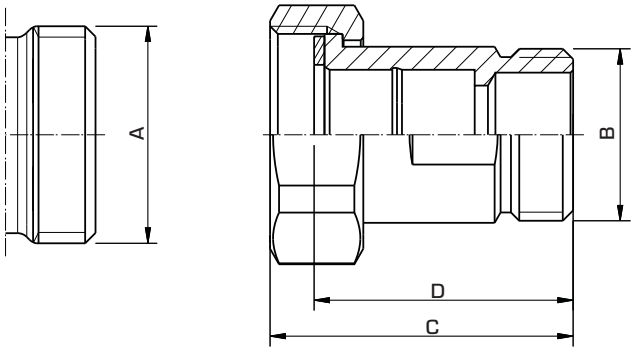
Each package contains three of each of connection pieces, nuts and gaskets.

Check valves and surface plating available according to table.

SUITABLE VALVES

The connection kit series KTD200 and KTD300 may most easily be fitted with ESBE thermostatic control units:

- Series VTS522, 552
- Series VTA332, 532
- Series VTA362, 562
- Series VTA322, 522
- Series VTA552
- Series VTA372, 572
- Series VMC312



TECHNICAL DATA

Pressure class: PN10
Media temperature: max. +120°C
min. -20°C
Connection - nipple design: acc. to EN 1254-4
External thread, ISO 228/1
Internal thread, EN 10226-1

Material
Nut: Brass CW 614N
Connection piece: Brass DZR, CW 602N
Gasket: Klingersil C-4400
Surface treatment: Nickel-plated

SERIES KTD212, 312 EXTERNAL THREAD (3 CONNECTIONS/PACKAGE)

Art. No.	Reference	Valve thread A	Connection thread B	Dimension C	Dimension D	Note	Weight [kg]
3655 22 00	KTD212	G 1"	G ¾"	48	40	1)	0.44
3655 24 00	KTD312					2)	0.44
3655 26 00						2), Plated	0.44
3655 23 00	KTD212	G 1¼"	G 1"	58.5	50	1)	0.78
3655 25 00	KTD312					2)	0.79
3655 27 00						2), Plated	0.79

Note 1) One check valve included 2) Two check valves included


MADE IN SWEDEN SINCE 1906
06
ESBE NO. 1 IN HYDRONIC SYSTEM CONTROL

EXCELLENT REGULATION. LONG SERVICE LIFE. SILENT AND STABLE.

ESBE valves and actuators have been developed to function together at an optimum level of efficiency. With both valve and actuator produced by the same supplier – ESBE – you have a safe investment with a secure product performance guarantee.

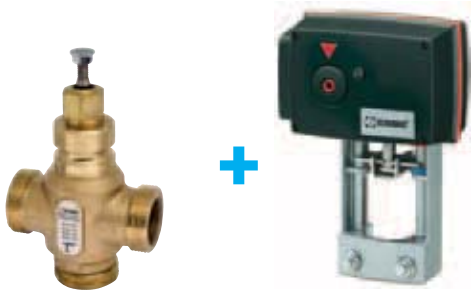
Our system of linear motorized valves includes several innovative solutions for applications in district heating stations, central heating systems and district cooling and hot tap water systems. All ensure precise adjustment and problem-free operation for many years.

CONTENTS LINEAR MOTORIZED VALVES

FEATURES AND BENEFITS

OPTIMUM COMBINATIONS

ESBE's valves and actuators have been developed to function optimally together. Obtaining both valve and actuator from ESBE ensures a safe investment with a secure product guarantee.



CONTROL VALVES

ESBE's 2 and 3-way control valves are available in a wide range. The 3-way valves are designed for mixing and thanks to a long service life and minimal servicing requirements, they provide a cost-effective investment.

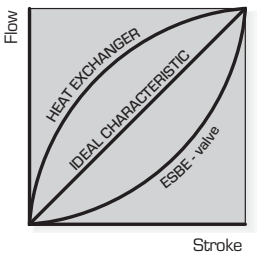
LARGE RANGEABILITY
The valves offer a large rangeability (greater than R50/100), which provides excellent regulation for small flows. This helps to extend the service life of the actuator.

PRESSURE BALANCED
The regulating valves are available with pressure-balanced plug, allowing them to be regulated with low force even with large pressure drops, and extend actuator life time.

DURABILITY AND LONG SERVICE LIFE
The design of the valve plug prevents particles in the medium from getting caught. It also offers excellent resistance to erosion and corrosion damage.

SILENT AND STABLE
The plug is guided into the seat to prevent vibrations and noise. The patented design also helps minimize flow noise.

POWER-LINEAR CHARACTERISTIC AS PER EQM
The valve's flow is in accordance with a modified equal percentage characteristic, providing good regulating control for the installation as a whole. This gives a high level of precision even when regulating small flows.



LOW INTERNAL LEAKAGE
Valves from ESBE are characterized by very low internal leakage. This minimizes energy loss when valves are closed.

SIMPLE MAINTENANCE
Stem seals and glands are located in a packing box for easy maintenance. With "soft seal" valves, the plug and pressure-balancing cylinder, where incorporated, can also be easily replaced. This minimizes maintenance costs and extends the service life of the valve.

SIMPLE INSTALLATION
The valves are compact and, above all, lightweight, which facilitates installation.

ACTUATORS

STABLE DESIGN
The actuators have a stable fastening designed for ESBE's control valves. This provides a secure design that makes installation simple and minimizes the risk of backlash and vibrations.

SIMPLE INSTALLATION
The actuators are small and compact and have self-setting end positions, making them simple to install and quick to put into operation.

MANUAL CONTROL
The actuators are easy to operate manually.

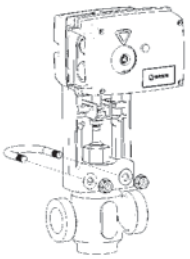
CONTROL SIGNALS
The actuators can be controlled either with a 3-point signal or with a proportional signal.

DISPOSAL OF VALVES
The products must not be disposed of together with domestic waste, but should be treated as metal scrap. Local and currently valid legislation must be observed.

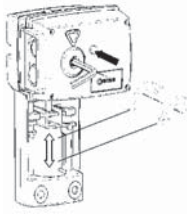
DISPOSAL OF ACTUATORS
The device must not be disposed of together with domestic waste. This applies in particular to the printed circuit card. Legislation may demand special handling of certain components, or it may be desirable from an ecological point of view. Local and currently valid legislation must be observed.

Series ALA actuators have been developed for safe and reliable operation year after year. Available with 3-point or proportional signal.

The stand is stable and robust, as well as quick and easy to mount on a regulating valve.



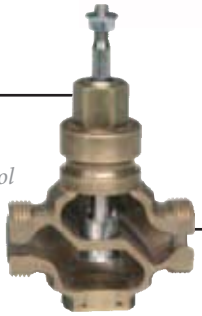
Easy to operate manually



Our valves are available in both 2 and 3 way versions and in flanged or threaded models.

The packing box can be replaced simply

The plug's (patented design) principal properties:
- *Permit a high level of control accuracy*
- *Minimal risk of noise*
- *Minimal risk of cavitation*



Also available with pressure-balanced cone in patented design. The valve requires lower actuating power, making it possible to use a smaller actuator.

CE

VALVES, RE. PED 97/23/EC

All our products, which are concerned by this directive, conform to the same. Those products which shall carry a CE-sign are marked accordingly. The products which shall not carry the sign are not marked but still conform to the directive.

ACTUATORS, RE. LVD 2006/95/EC AND EMC 2004/108/EC

All our products, which are concerned by these directives, conform to the same. Those products carry accordingly a CE-sign.

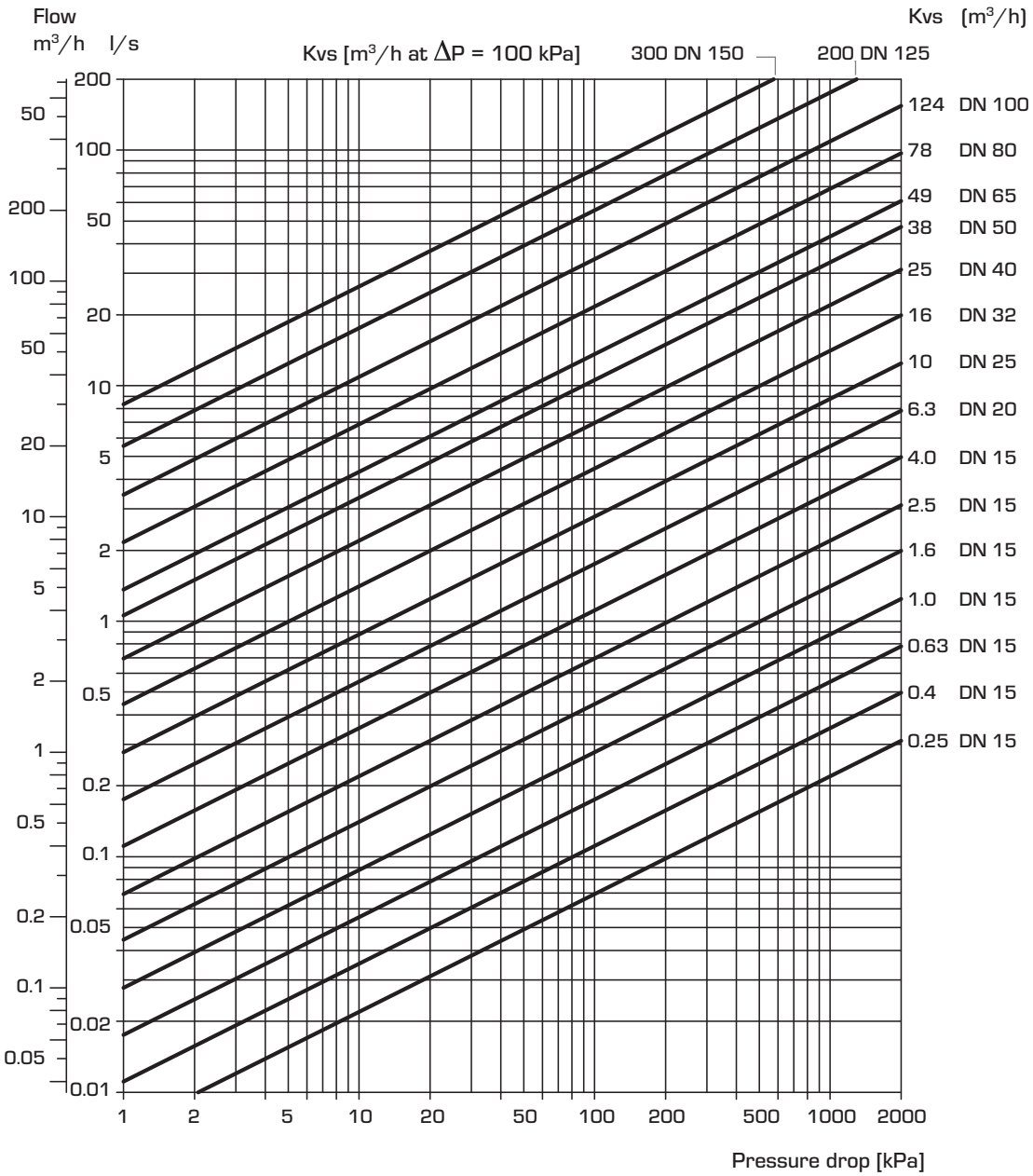
ESBE GUIDE
DIMENSIONING CONTROL VALVES

FLOW CHART

To be considered: As both the viscosity and the thermal conduction are affected when glycol is added to the system water, this fact has to be considered when dimensioning the valve.

A good rule is to choose one size higher Kv-value when 30 – 50% glycol is added. A lower concentration of glycol may be disregarded.

N.B.! Maximum 50% glycol for freezing protection and oxygen absorbing compounds are allowed as additives.



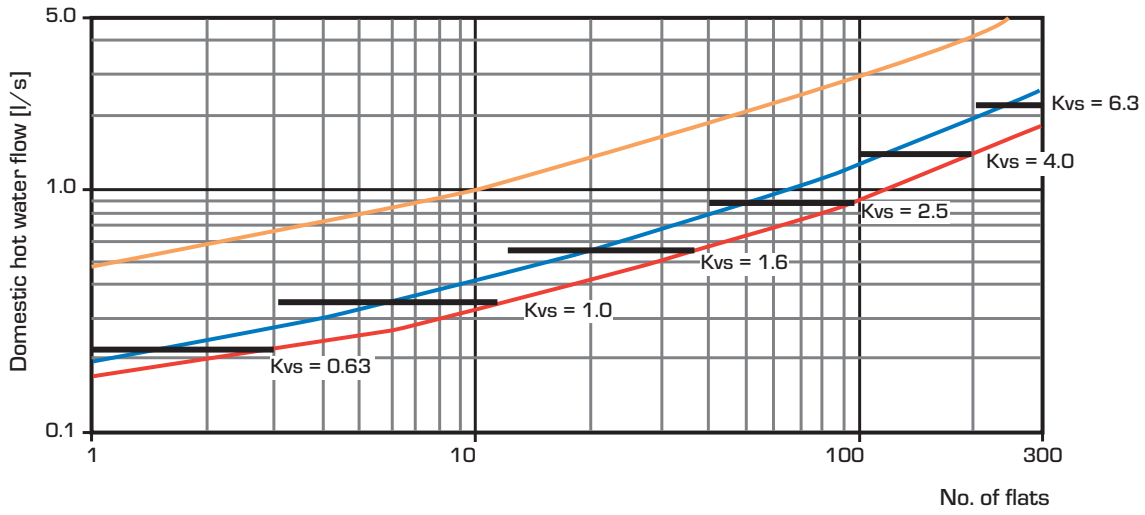
ESBE GUIDE
DIMENSIONING CONTROL VALVES, DOMESTIC HOT WATER IN DISTRICT HEATING SYSTEM

FLOW CHART

Domestic water design specifications are pursuant to Swedish District Heating Association recommendations for District heating centers – Installation and operation, Technical regulations F:101, November 2004.

In the diagram the Kv value is estimated at 150 kPa difference pressure and a flow pipe temperature of 65°C.

DESIGN SPECIFICATION – DOMESTIC HOT WATER, PRIMARY VALVE IN DISTRICT HEATING CENTER



Older recommendations

New recommendations,
Old buildings, special requirements

New recommendations,
New constructions, low flow technology

Recommended Kvs for control valve primary side

Special requirements

Buildings with considerable need of hot water, such as student flats or other kinds of buildings that do not function solely as housing.

ESBE GUIDE
CONTROL VALVES, INSTALLATION

INSTALLATION

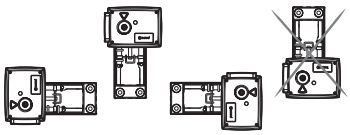
The valve should be mounted with flow direction in accordance with the valve marking.

If possible, the valve should be installed in the return pipe, in order to avoid exposing the actuator to high temperatures.

The valve must not be installed with the actuator mounted below the valve.

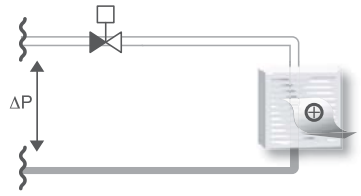
To ensure that suspended solids will not become jammed between the valve plug and seat, a filter should be installed upstream of the valve, and the pipe system should be flushed before the valve is installed.

All mounting positions are allowed except when the actuator is placed under the valve body.



2-WAY CONTROL VALVES, EXAMPLE A–B

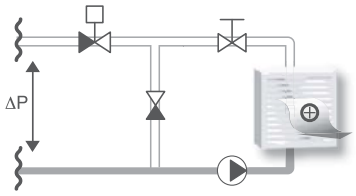
A



Installation without local circulating pump

To provide a good function, the pressure drop across the valve should be not less than half of the available pressure (ΔP). This corresponds to a valve authority of 50%.

B

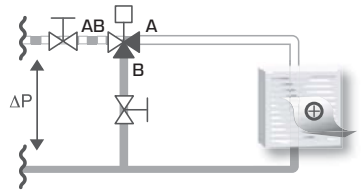


Installation with local circulating pump

The KV value of the valve to be selected so that the entire available pressure drop (ΔP) falls across the control valve.

3-WAY CONTROL VALVES, EXAMPLE C–E

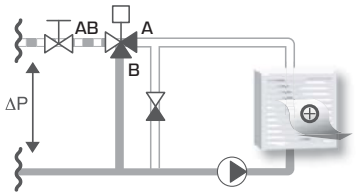
C



Circuit without local circulation pump

To obtain good function the pressure drop across the valve should be not less than half of the available pressure drop (ΔP). This will give a valve authority of 50%.

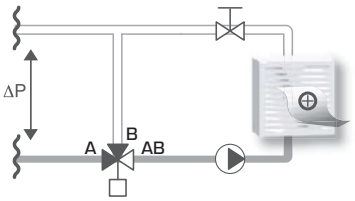
D



Circuit with local circulation pump

The KV value of the valve to be selected so that the entire available pressure drop, ΔP, falls across the control valve.

E



Circuit with local circulating pump

The KV value of the valve to be selected so that the pressure drop across the control valve becomes equal to or greater than ΔP.

ESBE GUIDE
LINEAR MOTORIZED VALVES, OVERVIEW

OPTIMUM SOLUTIONS FOR ANY REQUIREMENT

A system is only as good as its incorporated components. Undersized products cause inferior results and oversized ones cause unnecessary investment. Therefore, our linear valves and actuators are available in a well-adapted selection within a large rangeability. This makes it easy to find the optimum solution for each installation.

Valves series		Max. working pressure	Application										Dimension		Connection			Max. leakrate [%]		Temperature [°C]		Suitable actuator		
2-way	3-way		Heating	Comfort Cooling	Potable Water	Floor Heating	Solar Heating	Ventilation	Zone	District Hot Water	District Heating	District Cooling	DN	Kvs	Flange	External thread	Internal thread	A-AB	B-AB	max.	min.	Series ALA	Series ALB	Series ALD
VLF125	VLF135	PN 6	•	•		•	•	•			•	•	15-50	1.6-38	•			0.0**	0.0**	+120	-20	•	•	•
	VLF335	PN 6	•	•		•	•	•			•	•	65-80	49-78	•			0.05	1	+130	-10	•	•	•
VLA121	VLA131	PN 16	•	•		•	•	•		•	•	•	15-50	1.6-38			•	0.0**	0.0**	+130	-20	•	•	•
VLA221*		PN 16	•	•		•	•	•		•	•	•	25-50	10-38			•	0.0**		+130	-20	•	•	•
VLA325	VLA335	PN 16	•	•		•	•	•		•	•	•	15-50	1.6-38	•			0.0**	0.0**	+130	-20	•	•	•
VLB225	VLB235	PN 16	•	•		•	•	•		•	•	•	65-150	49-300	•			0.05	1	+120	-10	•	•	•
VLA425*		PN 16	•	•		•	•	•		•	•	•	25-50	10-38	•			0.0**		+130	-20	•	•	•
VLE122		PN 16	•	•	•	•	•	•		•	•	•	15-50	0.25-38		•		0.02	0.05	+150	-20	•	•	•
	VLE132	PN 16	•	•	•	•	•	•		•	•	•	15-50	1.6-38		•		0.02	0.05	+150	-20	•	•	•
VLE222*		PN 16	•	•	•	•	•	•		•	•	•	25-50	10-38		•		0.02		+150	-20	•	•	•
VLE325		PN 16	•	•				•		•	•	•	20-40	0.63-6.3	•			0.02		+130	-20	•	•	•
VLC125		PN 25	•	•						•	•	•	15-50	0.25-38	•			0.02		+150	-20	•	•	•
VLC225*		PN 25	•	•						•	•	•	25-50	10-38	•			0.02		+150	-20	•	•	•
VLC325		PN 25	•	•						•	•	•	15-50	0.25-38	•			0.02		+180	-20	•	•	•
VLC425*		PN 25	•	•						•	•	•	25-50	10-38	•			0.02		+180	-20	•	•	•

Max. diffential pressure [kPa]: see pages 170-176 * Valves provided with a pressure-balanced plug. ** Tight sealing

ESBE SELECTION GUIDE
TO COMBINE VALVES/ACTUATORS

2-WAY VALVES												
Supply voltage	3-point	Proportional										
24V	●		2200 07 00	2200 01 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00	
24V		●	2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00	
230V	●		2200 08 00	2200 02 00		2215 03 00*	2215 01 00	2215 05 00	2215 09 00	2215 13 00*	2215 11 00	
Auxiliary switch					2620 07 00**							
Feed back 0-10V/2-10V			2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00	
Safety function 24V*	●	●			2205 02 00*	2215 04 00*				2215 14 00*		
Safety function 230V	●	●				2215 03 00*				2215 13 00*		
Running time [s]			35	140	15	70	150	150	300	140	190	
Stroke [mm]			20		40	20		20	40	40		
Force [N]			400	750	800	900		1200		2000		
Actuators. series			ALA		ALB	ALD						

* 2205 02 00 with power back-up; 2215 03 00, 2215 04 00, 2215 13 00 and 2215 14 00 with spring return. ** Options

PN [bar]	T [°C]	Series	Art. No.	DN	Kvs [m³/h]	Stroke [mm]	Δp max [kPa]		Δp max [kPa]	Δp max [kPa]		Δp max [kPa]		Δp max [kPa]
6	-20 ... +120	VLF125 	2100 01 00	15	1.6	20	600	600	600	600		600		
			2100 02 00	15	2.5	20	600	600	600	600		600		
			2100 03 00	15	4.0	20	600	600	600	600		600		
			2100 04 00	20	6.3	20	600	600	600	600		600		
			2100 05 00	25	10	20	500	600	600	600		600		
			2100 06 00	32	16	20	360	600	600	600		600		
			2100 07 00	40	25	20	250	480	570	570		600		
			2100 08 00	50	38	20	180	330	390	390		530		
16	-20 .... +130	VLA325 	2120 01 00	15	1.6	20	800	1500	1600	1600		1600		
			2120 02 00	15	2.5	20	800	1500	1600	1600		1600		
			2120 03 00	15	4.0	20	800	1500	1600	1600		1600		
			2120 04 00	20	6.3	20	630	1180	1400	1400		1600		
			2120 05 00	25	10	20	500	920	1100	1100		1480		
			2120 06 00	32	16	20	360	660	800	800		1060		
			2120 07 00	40	25	20	250	480	570	570		750		
			2120 08 00	50	38	20	180	330	390	390		530		
16	-10 .... +120	VLB225 	2120 31 00	65	49	20	90	170	180	210		290	290	510
			2120 32 00	80	78	20	60	120	130	140		200	200	350
			2120 33 00	100	124	40			80				130	220
			2120 34 00	125	200	40			50				80	140
			2120 35 00	150	300	40			30				50	100
16	-20 .... +130	VLA425 	2120 17 00	25	10	20	950	1600	1600	1600		1600		
			2120 18 00	32	16	20	950	1600	1600	1600		1600		
			2120 19 00	40	25	20	950	1600	1600	1600		1600		
			2120 20 00	50	38	20	950	1600	1600	1600		1600		

Δp max: Closing pressure. For further information about maximum pressure drop limits where cavitation might occur, see diagrams for each specific type of valve.

ESBE SELECTION GUIDE
TO COMBINE VALVES/ACTUATORS

2-WAY VALVES												
Supply voltage	3-point	Proportional										
24V	●		2200 07 00	2200 01 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
24V		●	2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
230V	●		2200 08 00	2200 02 00		2215 03 00*	2215 01 00	2215 05 00	2215 09 00	2215 13 00*	2215 11 00
Auxiliary switch					2620 07 00**						
Feed back 0-10V/2-10V			2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
Safety function 24V*	●	●			2205 02 00*	2215 04 00*				2215 14 00*	
Safety function 230V	●	●				2215 03 00*				2215 13 00*	
Running time [s]			35	140	15	70	150	150	300	140	190
Stroke [mm]			20		40	20		20	40	40	
Force [N]			400	750	800	900		1200		2000	
Actuators. series			ALA		ALB	ALD					

* 2205 02 00 with power back-up; 2215 03 00, 2215 04 00, 2215 13 00 and 2215 14 00 with spring return. ** Options

PN [bar]	T [°C]	Series	Art. No.	DN	Kvs [m³/h]	Stroke [mm]	Δp max [kPa]		Δp max [kPa]	Δp max [kPa]		Δp max [kPa]		Δp max [kPa]
16	-20 .... +130	VLA121 	2115 01 00	15	1.6	20	800	1500	1600	1600		1600		
			2115 02 00	15	2.5	20	800	1500	1600	1600		1600		
			2115 03 00	15	4.0	20	800	1500	1600	1600		1600		
			2115 04 00	20	6.3	20	630	1180	1400	1400		1600		
			2115 05 00	25	10	20	500	920	1100	1100		1480		
			2115 06 00	32	16	20	360	660	800	800		1060		
			2115 07 00	40	25	20	250	480	570	570		750		
			2115 08 00	50	38	20	180	330	390	390		530		
16	-20 .... +130	VLA221 	2115 17 00	25	10	20	950	1600	1600	1600		1600		
			2115 18 00	32	16	20	950	1600	1600	1600		1600		
			2115 19 00	40	25	20	950	1600	1600	1600		1600		
			2115 20 00	50	38	20	950	1600	1600	1600		1600		
16	-20 ... +150	VLE122 	2125 01 00	15	0.25	20	800	1500	1600	1600		1600		
			2125 02 00	15	0.4	20	800	1500	1600	1600		1600		
			2125 03 00	15	0.63	20	800	1500	1600	1600		1600		
			2125 04 00	15	1.0	20	800	1500	1600	1600		1600		
			2125 05 00	15	1.6	20	800	1500	1600	1600		1600		
			2125 06 00	15	2.5	20	800	1500	1600	1600		1600		
			2125 07 00	15	4.0	20	800	1500	1600	1600		1600		
			2125 08 00	20	6.3	20	630	1180	1410	1410		1600		
			2125 09 00	25	10	20	500	920	1100	1100		1480		
			2125 10 00	32	16	20	360	660	800	800		1070		
			2125 11 00	40	25	20	250	480	570	570		860		
			2125 12 00	50	38	20	180	330	390	390		530		
16	-20 ... +150	VLE222 	2125 21 00	25	10	20	950	1600	1600	1600		1600		
			2125 22 00	32	16	20	950	1600	1600	1600		1600		
			2125 23 00	40	25	20	950	1600	1600	1600		1600		
			2125 24 00	50	38	20	950	1600	1600	1600		1600		

Δp max: Closing pressure. For further information about maximum pressure drop limits where cavitation might occur, see diagrams for each specific type of valve.

ESBE SELECTION GUIDE
TO COMBINE VALVES/ACTUATORS

2-WAY VALVES												
Supply voltage	3-point	Proportional										
24V	●		2200 07 00	2200 01 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
24V		●	2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
230V	●		2200 08 00	2200 02 00		2215 03 00*	2215 01 00	2215 05 00	2215 09 00	2215 13 00*	2215 11 00
Auxiliary switch					2620 07 00**						
Feed back 0-10V/2-10V			2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
Safety function 24V*	●	●			2205 02 00*	2215 04 00*				2215 14 00*	
Safety function 230V	●	●				2215 03 00*				2215 13 00*	
Running time [s]			35	140	15	70	150	150	300	140	190
Stroke [mm]			20		40	20		20	40	40	
Force [N]			400	750	800	900		1200		2000	
Actuators. series			ALA		ALB	ALD					

* 2205 02 00 with power back-up; 2215 03 00, 2215 04 00, 2215 13 00 and 2215 14 00 with spring return. ** Options

PN [bar]	T [°C]	Series	Art. No.	DN	Kvs [m³/h]	Stroke [mm]	Δp max [kPa]		Δp max [kPa]	Δp max [kPa]		Δp max [kPa]		Δp max [kPa]
16	-20 ... +130	VLE325	2140 01 00	20	0.63	20	630	1180	1600	1600		1600		
			2140 02 00	20	1.0	20	630	1180	1600	1600		1600		
			2140 03 00	20	1.6	20	630	1180	1600	1600		1600		
			2140 04 00	20	2.5	20	630	1180	1600	1600		1600		
			2140 05 00	20	4.0	20	630	1180	1600	1600		1600		
			2140 06 00	25	1.0	20	500	920	1600	1600		1600		
			2140 07 00	25	1.6	20	500	920	1600	1600		1600		
			2140 08 00	25	2.5	20	500	920	1600	1600		1600		
			2140 09 00	25	4.0	20	500	920	1600	1600		1600		
			2140 10 00	32	1.6	20	360	660	1600	1600		1600		
			2140 11 00	32	2.5	20	360	660	1600	1600		1600		
			2140 12 00	32	4.0	20	360	660	1600	1600		1600		
			2140 16 00	32	6.3	20	360	660	1410	1410		1600		
			2140 13 00	40	1.6	20	250	480	1600	1600		1600		
			2140 14 00	40	2.5	20	250	480	1600	1600		1600		
			2140 15 00	40	4.0	20	250	480	1600	1600		1600		
			2140 17 00	40	6.3	20	250	480	1410	1410		1600		

Δp max: Closing pressure. For further information about maximum pressure drop limits where cavitation might occur, see diagrams for each specific type of valve.

ESBE SELECTION GUIDE
TO COMBINE VALVES/ACTUATORS

2-WAY VALVES												
Supply voltage	3-point	Proportional										
24V	●		2200 07 00	2200 01 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
24V		●	2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
230V	●		2200 08 00	2200 02 00		2215 03 00*	2215 01 00	2215 05 00	2215 09 00	2215 13 00*	2215 11 00
Auxiliary switch					2620 07 00**						
Feed back 0-10V/2-10V			2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
Safety function 24V*	●	●			2205 02 00*	2215 04 00*				2215 14 00*	
Safety function 230V	●	●				2215 03 00*				2215 13 00*	
Running time [s]			35	140	15	70	150	150	300	140	190
Stroke [mm]			20		40	20		20	40	40	
Force [N]			400	750	800	900		1200		2000	
Actuators. series			ALA		ALB	ALD					

* 2205 02 00 with power back-up; 2215 03 00, 2215 04 00, 2215 13 00 and 2215 14 00 with spring return. ** Options

PN [bar]	T [°C]	Series	Art. No.	DN	Kvs [m³/h]	Stroke [mm]	Δp max [kPa]		Δp max [kPa]	Δp max [kPa]		Δp max [kPa]
25	-20 .... +150	VLC125	2130 01 00	15	0.25	20	800	1500	1800	1800	2400	
			2130 02 00	15	0.4	20	800	1500	1800	1800	2400	
			2130 03 00	15	0.63	20	800	1500	1800	1800	2400	
			2130 04 00	15	1.0	20	800	1500	1800	1800	2400	
			2130 05 00	15	1.6	20	800	1500	1800	1800	2400	
			2130 06 00	15	2.5	20	800	1500	1800	1800	2400	
			2130 07 00	15	4.0	20	800	1500	1800	1800	2400	
			2130 08 00	20	6.3	20	630	1180	1410	1410	1870	
			2130 17 00	25	1.6	20	500	920	1100	1100	1480	
			2130 18 00	25	2.5	20	500	920	1100	1100	1480	
			2130 19 00	25	4.0	20	500	920	1100	1100	1480	
			2130 20 00	25	6.3	20	500	920	1100	1100	1480	
			2130 09 00	25	10	20	500	920	1100	1100	1480	
			2130 10 00	32	16	20	360	660	800	800	1060	
			2130 21 00	40	1.6	20	250	480	570	570	750	
			2130 22 00	40	2.5	20	250	480	570	570	750	
			2130 23 00	40	4.0	20	250	480	570	570	750	
			2130 24 00	40	6.3	20	250	480	570	570	750	
			2130 25 00	40	10	20	250	480	570	570	750	
			2130 26 00	40	16	20	250	480	570	570	750	
			2130 11 00	40	25	20	250	480	570	570	750	
			2130 12 00	50	38	20	180	330	390	390	530	
25	-20 .... +150	VLC225	2130 13 00	25	10	20	950	1850	2100	2100	2500	
			2130 14 00	32	16	20	950	1850	2100	2100	2500	
			2130 15 00	40	25	20	950	1850	2100	2100	2500	
			2130 16 00	50	38	20	950	1850	2100	2100	2500	

Δp max: Closing pressure. For further information about maximum pressure drop limits where cavitation might occur, see diagrams for each specific type of valve.

ESBE SELECTION GUIDE
TO COMBINE VALVES/ACTUATORS

2-WAY VALVES												
Supply voltage	3-point	Proportional										
24V	●		2200 07 00	2200 01 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00	
24V		●	2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00	
230V	●		2200 08 00	2200 02 00		2215 03 00*	2215 01 00	2215 05 00	2215 09 00	2215 13 00*	2215 11 00	
Auxiliary switch					2620 07 00**							
Feed back 0-10V/2-10V			2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00	
Safety function 24V*	●	●			2205 02 00*	2215 04 00*				2215 14 00*		
Safety function 230V	●	●				2215 03 00*				2215 13 00*		
Running time [s]			35	140	15	70	150	150	300	140	190	
Stroke [mm]			20		40	20		20	40	40		
Force [N]			400	750	800	900		1200		2000		
Actuators. series			ALA		ALB	ALD						

* 2205 02 00 with power back-up; 2215 03 00, 2215 04 00, 2215 13 00 and 2215 14 00 with spring return. ** Options

PN [bar]	T [°C]	Series	Art. No.	DN	Kvs [m³/h]	Stroke [mm]	Δp max [kPa]		Δp max [kPa]	Δp max [kPa]		Δp max [kPa]	
25	-20 .... +180	VLC325	2135 01 00	15	0.25	20	800	1500	1800	1800	2400		
			2135 02 00	15	0.4	20	800	1500	1800	1800	2400		
			2135 03 00	15	0.63	20	800	1500	1800	1800	2400		
			2135 04 00	15	1.0	20	800	1500	1800	1800	2400		
			2135 05 00	15	1.6	20	800	1500	1800	1800	2400		
			2135 06 00	15	2.5	20	800	1500	1800	1800	2400		
			2135 07 00	15	4.0	20	800	1500	1800	1800	2400		
			2135 08 00	20	6.3	20	630	1180	1410	1410	1870		
			2135 09 00	25	10	20	500	920	1100	1100	1480		
			2135 10 00	32	16	20	360	660	800	800	1060		
			2135 11 00	40	25	20	250	480	570	570	750		
			2135 12 00	50	38	20	180	330	390	390	530		
25	-20 ... +180	VLC425	2135 13 00	25	10	20	950	1850	2100	2100	2500		
			2135 14 00	32	16	20	950	1850	2100	2100	2500		
			2135 15 00	40	25	20	950	1850	2100	2100	2500		
			213516 00	50	38	20	950	1850	2100	2100	2500		

Δp max: Closing pressure. For further information about maximum pressure drop limits where cavitation might occur, see diagrams for each specific type of valve.

ESBE SELECTION GUIDE
TO COMBINE VALVES/ACTUATORS

3-WAY VALVES												
Supply voltage	3-point	Proportional										
24V	●		2200 07 00	2200 01 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
24V		●	2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
230V	●		2200 08 00	2200 02 00		2215 03 00*	2215 01 00	2215 05 00	2215 09 00	2215 13 00*	2215 11 00
Auxiliary switch					2620 07 00**						
Feed back 0-10V/2-10V			2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00
Safety function 24V*	●	●			2205 02 00*	2215 04 00*				2215 14 00*	
Safety function 230V	●	●				2215 03 00*				2215 13 00*	
Running time [s]			35	140	15	70	150	150	300	140	190
Stroke [mm]			20		40	20		20	40	40	
Force [N]			400	750	800	900		1200		2000	
Actuators. series			ALA		ALB	ALD					

* 2205 02 00 with power back-up; 2215 03 00, 2215 04 00, 2215 13 00 and 2215 14 00 with spring return. ** Options

PN [bar]	T [°C]	Series	Art. No.	DN	Kvs [m³/h]	Stroke [mm]	Δp max [kPa]		Δp max [kPa]	Δp max [kPa]		Δp max [kPa]	
6	-20 ... +120	VLF135 	2100 09 00	15	1.6	20	600	600	600	600	600		
			2100 10 00	15	2.5	20	600	600	600	600	600		
			2100 11 00	15	4.0	20	600	600	600	600	600		
			2100 12 00	20	6.3	20	600	600	600	600	600		
			2100 13 00	25	10	20	500	600	600	600	600		
			2100 14 00	32	16	20	360	600	600	600	600		
			2100 15 00	40	25	20	250	480	570	570	600		
			2100 16 00	50	38	20	180	330	390	390	530		
6	-10 ... +130	VLF335 	2100 19 00	65	49	20	90	170	180	210	290	290	510
			2100 20 00	80	78	20	60	120	130	140	200	200	350
16	-20 ... +130	VLA335 	2120 09 00	15	1.6	20	800	1500	1600	1600	1600		
			2120 10 00	15	2.5	20	800	1500	1600	1600	1600		
			2120 11 00	15	4.0	20	800	1500	1600	1600	1600		
			2120 12 00	20	6.3	20	630	1180	1400	1400	1600		
			2120 13 00	25	10	20	500	920	1100	1100	1480		
			2120 14 00	32	16	20	360	660	800	800	1070		
			2120 15 00	40	25	20	250	480	570	570	750		
			2120 16 00	50	38	20	180	330	390	390	530		
16	-10 ... +120	VLB235 	2120 36 00	65	49	20	90	170	180	210	290	290	510
			2120 37 00	80	78	20	60	120	130	140	200	200	350
			2120 38 00	100	124	40			80			130	220
			2120 39 00	125	200	40			50			80	140
			2120 40 00	150	300	40			30			50	100
16	-20 ... +130	VLA131 	2115 09 00	15	1.6	20	800	1500	1600	1600	1600		
			2115 10 00	15	2.5	20	800	1500	1600	1600	1600		
			2115 11 00	15	4.0	20	800	1500	1600	1600	1600		
			2115 12 00	20	6.3	20	630	1180	1400	1400	1600		
			2115 13 00	25	10	20	500	920	1100	1100	1480		
			2115 14 00	32	16	20	360	660	800	800	1070		
			2115 15 00	40	25	20	250	480	570	570	750		
			2115 16 00	50	38	20	180	330	390	390	530		

Δp max: Closing pressure. For further information about maximum pressure drop limits where cavitation might occur, see diagrams for each specific type of valve.

ESBE SELECTION GUIDE
TO COMBINE VALVES/ACTUATORS

3-WAY VALVES												
Supply voltage	3-point	Proportional										
24V	●		2200 07 00	2200 01 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00	
24V		●	2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00	
230V	●		2200 08 00	2200 02 00		2215 03 00*	2215 01 00	2215 05 00	2215 09 00	2215 13 00*	2215 11 00	
Auxiliary switch					2620 07 00**							
Feed back 0-10V/2-10V			2200 09 00	2200 03 00	2205 01 00	2215 04 00*	2215 02 00	2215 06 00	2215 10 00	2215 14 00*	2215 12 00	
Safety function 24V*	●	●			2205 02 00*	2215 04 00*				2215 14 00*		
Safety function 230V	●	●				2215 03 00*				2215 13 00*		
Running time [s]			35	140	15	70	150	150	300	140	190	
Stroke [mm]			20		40	20		20	40	40		
Force [N]			400	750	800	900		1200		2000		
Actuators. series			ALA		ALB	ALD						

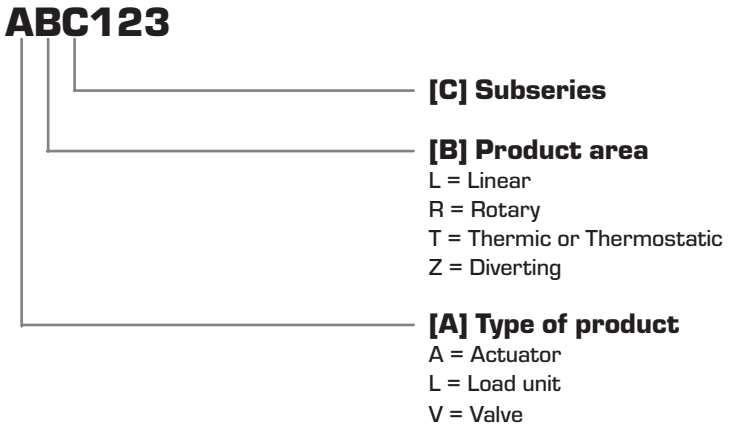
* 2205 02 00 with power back-up; 2215 03 00, 2215 04 00, 2215 13 00 and 2215 14 00 with spring return. ** Options

PN [bar]	T [°C]	Series	Art. No.	DN	Kvs [m³/h]	Stroke [mm]	Δp max [kPa]		Δp max [kPa]		Δp max [kPa]		Δp max [kPa]	
16	-20 ... +150	VLE132 	2125 13 00	15	1.6	20	800	1500	1600		1600	1600		
			2125 14 00	15	2.5	20	800	1500	1600		1600	1600		
			2125 15 00	15	4.0	20	800	1500	1600		1600	1600		
			2125 16 00	20	6.3	20	630	1180	1400		1400	1600		
			2125 17 00	25	10	20	500	920	1100		1100	1480		
			2125 18 00	32	16	20	360	660	800		800	1070		
			2125 19 00	40	25	20	250	480	570		570	750		
			2125 20 00	50	38	20	180	330	390		390	530		

Δp max: Closing pressure. For further information about maximum pressure drop limits where cavitation might occur, see diagrams for each specific type of valve.

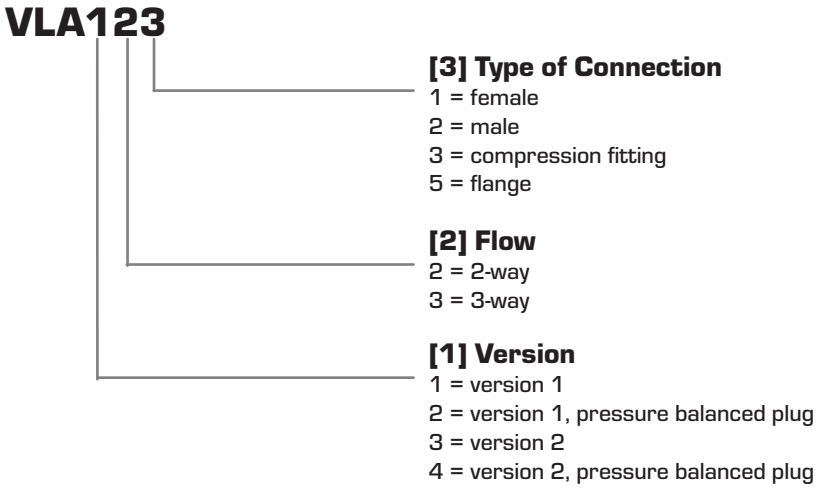
ESBE GUIDE
DESIGNATION CODE SYSTEM FOR NEW PRODUCTS

Type designations consists of 6 characters in a combination of 3 letters and 3 digits as illustrated below.

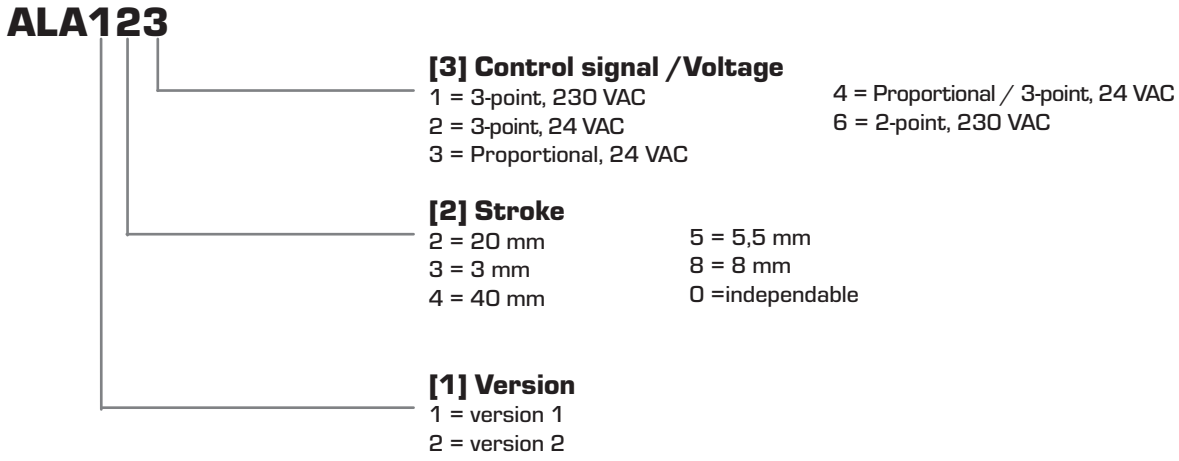


DESIGNATION CODE SYSTEM FOR LINEAR MOTORIZED VALVES

CONTROL VALVES [VL_]
Control valves is available in many series.



LINEAR ACTUATORS [AL_]
Linear Actuators is available in many series.



CONTROL VALVE PN6
SERIES VLF125 AND VLF135/ VLF335

ESBE valves series VLF125 and VLF135/VLF335 are 2-way and 3-way flanged valves for PN6, DN 15–80.

Flange PN6 Flange PN6

MEDIA

These valves can handle the following types of media:
– Hot and cold water.
– Water with antifreeze additives such as glycol.

If the valve is used for media at temperatures below 0°C (32°F), it should be equipped with a stem heater in order to prevent ice formation on the valve stem.

OPTION DN 15 – 50

Adaptor kit _____ Siemens SQX, Art. No. 2600 07 00

CONTROL VALVE DESIGNED FOR

- ● Heating
- ● Comfort Cooling
- ○ Potable water
- ● Floor heating
- ● Solar heating
- ● Ventilation
- ○ Zone
- ○ District Hot Water
- ● District Heating
- ● District Cooling

SUITABLE ACTUATORS

The control valve series VLF125 and VLF135/VLF335 may most easily be fitted with ESBE actuators:

- ● Series ALA200
- ● Series ALB140
- ● Series ALD100
- ● Series ALD200

TECHNICAL DATA

Type: _____ 2- and 3-way plug valve
Pressure class: _____ PN 6
Flow characteristic A–AB: _____ EQM
Flow characteristic B–AB, DN15-50: _____ Complementary
DN65-80: _____ Linear
Stroke: _____ 20 mm
Rangeability Kv/Kv^{min}: _____ see table
Leakrate A–AB, DN15-50: _____ Tight sealing
DN65-80: _____ max. 0.05% of Kvs
Leakrate B–AB, DN15-50: _____ Tight sealing
DN65-80: _____ max. 1% of Kvs
ΔP_{max}: _____ see tables pages 170-176
Media temperature, DN15-50: _____ max. +120°C, min. -20°C
DN65-80: _____ max. +130°C, min. -10°C
Connection: _____ Flange, ISO 7005–2

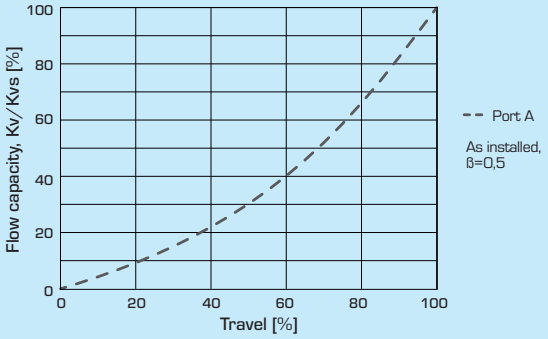
Material, DN15-50
Body: _____ Nodular iron EN-JS 1030
Stem: _____ Stainless steel SS 2346
Plug: _____ Brass CW602N
Seat: _____ Nodular iron EN-JS 1030
Blind plug: _____ Brass CW602N
Seat seal: _____ EPDM
Packing box seal: _____ PTFE / EPDM

Material, DN65-80
Body: _____ Grey cast iron EN-JL 1040
Stem: _____ Stainless steel DIN 1.4305
Plug: _____ Brass CW617N
Seat: _____ Grey cast iron EN-JL 1040
Seat seal: _____ Metallic
Packing box seal: _____ EPDM

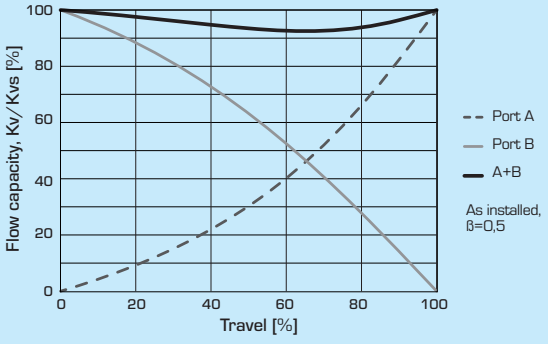
PED 97/23/EC, article 3.3

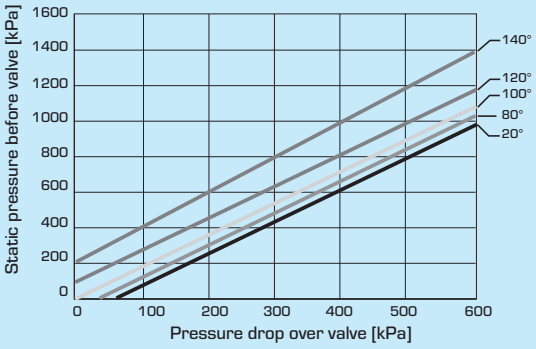
VALVE CHARACTERISTICS

2-way valves, DN15-50



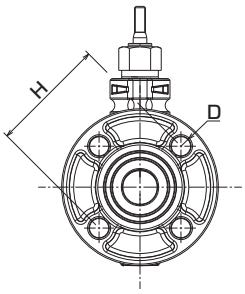
3-way valves, DN15-50

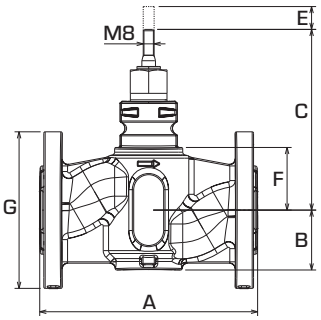


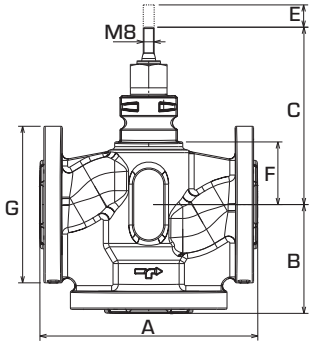


Pressure drop limit where caviation might occur. Is dependent of valve inlet pressure and temperature of water.

CONTROL VALVE PN6
SERIES VLF125 AND VLF135/ VLF335







2-WAY CONTROL VALVE SERIES VLF125

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	H	Rangeability Kv/Kv^{min}	Weight [kg]
2100 01 00	VLF125	15	1.6	130	42	123	4x11	20	38	80	55	>50	1.9
2100 02 00			2.5										1.9
2100 03 00			4										1.9
2100 04 00	VLF125	20	6.3	150	44	126	4x11	20	41	90	65	>50	2.4
2100 05 00	VLF125	25	10	160	44	131	4x11	20	46	100	75	>50	2.9
2100 06 00	VLF125	32	16	180	58	144	4x14	20	60	120	90	>50	4.2
2100 07 00	VLF125	40	25	200	60	146	4x14	20	61	130	100	>50	5.4
2100 08 00	VLF125	50	38	230	74	161	4x14	20	76	140	110	>50	6.7

3-WAY CONTROL VALVE SERIES VLF135/VLF335

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	H	Rangeability Kv/Kv^{min}	Weight [kg]
2100 09 00	VLF135	15	1.6	130	65	123	4x11	20	38	80	55	>50	2.2
2100 10 00			2.5										
2100 11 00			4										
2100 12 00	VLF135	20	6.3	150	75	126	4x11	20	41	90	65	>50	2.9
2100 13 00	VLF135	25	10	160	80	131	4x11	20	46	100	75	>50	3.4
2100 14 00	VLF135	32	16	180	90	144	4x14	20	60	120	90	>50	6.0
2100 15 00	VLF135	40	25	200	100	146	4x14	20	61	130	100	>50	6.5
2100 16 00	VLF135	50	38	230	115	161	4x14	20	76	140	110	>50	8.2
2100 19 00	VLF335	65	49	240	120	119	4x14	20	62	160	130	50	10.7
2100 20 00	VLF335	80	78	260	130	119	4x19	20	62	190	150	50	15.2

* Kvs-value in m^3/h at a pressure drop of 1 bar.

CONTROL VALVE PN16
SERIES VLA121/VLA221 AND VLA131

ESBE control valves series VLA121/VLA221 and VLA131 are 2-way and 3-way internal threaded valves for PN16, DN 15–50.

Internal thread PN16

Internal thread PN16, pressure-balanced plug

Internal thread PN16

MEDIA

These valves can handle the following types of media:
– Hot and cold water.
– Water with antifreeze additives such as glycol.

If the valve is used for media at temperatures below 0°C (32°F), it should be equipped with a stem heater in order to prevent ice formation on the valve stem.

OPTION

Adaptor kit _____ Siemens SQX, Art. No. 2600 07 00

CONTROL VALVE DESIGNED FOR

- ● Heating
- ● Comfort Cooling
- ○ Potable water
- ● Floor heating
- ● Solar heating
- ● Ventilation
- ○ Zone
- ● District Hot Water
- ● District Heating
- ● District Cooling

SUITABLE ACTUATORS

The control valve series VLA121/VLA221 and VLA131 may most easily be fitted with ESBE actuators:

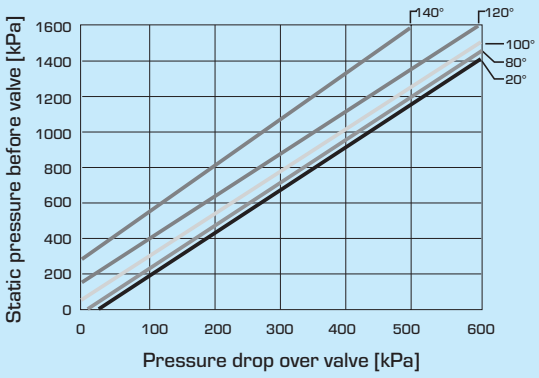
- ● Series ALA200
- ● Series ALB140
- ● Series ALD100
- ● Series ALD200

TECHNICAL DATA

Type: _____ 2- and 3-way plug valve
Pressure class: _____ PN 16
Flow characteristic A–AB: _____ EQM
Flow characteristic B–AB: _____ Complementary
Stroke: _____ 20 mm
Rangeability Kv/Kv^{min}: _____ see table
Leakrate A–AB: _____ Tight sealing
Leakrate B–AB: _____ Tight sealing
ΔP_{max}: _____ see tables pages 170-176
Media temperature: _____ max. +130°C
_____ min. -20°C
Connection: _____ Internal thread, EN 10226-1

Material
Body: _____ Nodular iron EN-JS 1030
Stem: _____ Stainless steel SS 2346
Plug: _____ Brass CW602N
Seat: _____ Nodular iron EN-JS 1030
Blind plug: _____ Brass CW602N
Seat seal: _____ EPDM
Packing box seal: _____ PTFE/EPDM

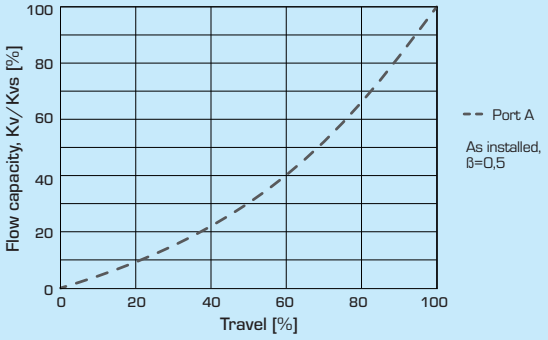
PED 97/23/EC, article 3.3



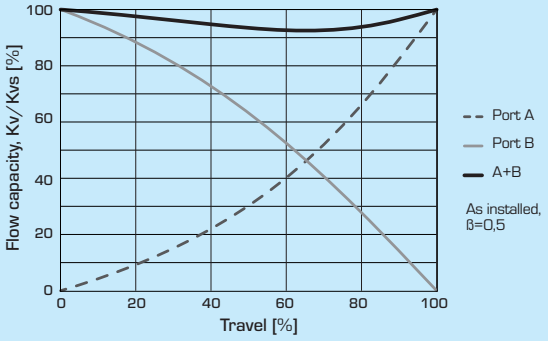
Pressure drop limit where caviation might occur. Is dependent of valve inlet pressure and temperature of water.

VALVE CHARACTERISTICS

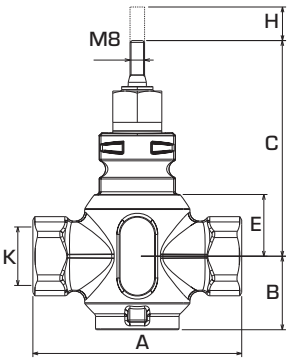
2-way valves, DN15-50



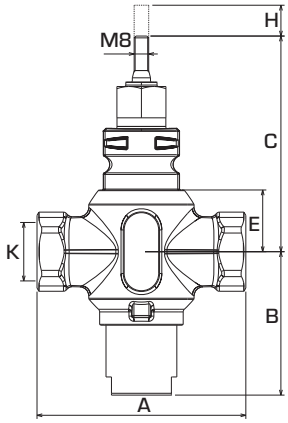
3-way valves, DN15-50



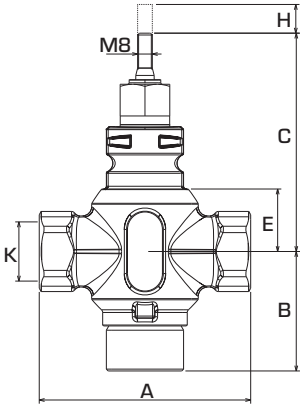
CONTROL VALVE PN16
SERIES VLA121/VLA221 AND VLA131



VLA121



VLA221



VLA131

2-WAY CONTROL VALVE SERIES VLA121

Art. No.	Reference	DN	Kvs*	A	B	C	E	H	K	Rangeability Kv/Kv^{min}	Weight [kg]
2115 01 00	VLA121	15	1.6	85	38	108	24	20	Rp ½"	>50	1.0
2115 02 00			2.5								
2115 03 00			4								
2115 04 00	VLA121	20	6.3	100	40	115	30	20	Rp ¾"	>50	1.2
2115 05 00	VLA121	25	10	115	40	119	34	20	Rp 1"	>50	1.3
2115 06 00	VLA121	32	16	130	41	120	35	20	Rp 1¼"	>50	1.8
2115 07 00	VLA121	40	25	150	50	128	42	20	Rp 1½"	>50	2.7
2115 08 00	VLA121	50	38	180	59	138	53	20	Rp 2"	>50	4.2

2-WAY CONTROL VALVE SERIES VLA221 WITH PRESSURE BALANCED PLUG

Art. No.	Reference	DN	Kvs*	A	B	C	E	H	K	Rangeability Kv/Kv^{min}	Weight [kg]
2115 17 00	VLA221	25	10	115	79	119	34	20	Rp 1"	>50	1.7
2115 18 00	VLA221	32	16	130	70	120	35	20	Rp 1¼"	>50	2.2
2115 19 00	VLA221	40	25	150	74	128	42	20	Rp 1½"	>50	3.1
2115 20 00	VLA221	50	38	180	84	138	53	20	Rp 2"	>50	4.5

3-WAY CONTROL VALVES SERIES VLA131

Art. No.	Reference	DN	Kvs*	A	B	C	E	H	K	Rangeability Kv/Kv^{min}	Weight [kg]
2115 09 00	VLA131	15	1.6	85	58	108	24	20	Rp ½"	>50	1.1
2115 10 00			2.5								
2115 11 00			4								
2115 12 00	VLA131	20	6.3	100	61	115	30	20	Rp ¾"	>50	1.3
2115 13 00	VLA131	25	10	115	65	119	34	20	Rp 1"	>50	1.5
2115 14 00	VLA131	32	16	130	70	120	35	20	Rp 1¼"	>50	2.1
2115 15 00	VLA131	40	25	150	74	128	42	20	Rp 1½"	>50	3.0
2115 16 00	VLA131	50	38	180	90	138	53	20	Rp 2"	>50	4.7

* Kvs-value in m^3/h at a pressure drop of 1 bar.

CONTROL VALVE PN16
SERIES VLA325/VLB225/ VLA425 AND VLA335/VLB235

ESBE control valves series VLA325/VLB225/VLA425 and VLA335/VLB235 are 2-way and 3-way flanged valves for PN16, DN 15–150.

Flange PN16

Flange PN16, pressure-balanced plug

Flange PN16

MEDIA

These valves can handle the following types of media:
– Hot and cold water.
– Water with antifreeze additives such as glycol.
– Low pressure steam < 115°C, only DN 65-150

If the valve is used for media at temperatures below 0°C (32°F), it should be equipped with a stem heater in order to prevent ice formation on the valve stem.

OPTION DN 15 – 50

Adaptor kit _____ Siemens SQX, Art. No. 2600 07 00

CONTROL VALVE DESIGNED FOR

- ● Heating
- ● Comfort Cooling
- ○ Potable water
- ● Floor heating
- ● Solar heating
- ● Ventilation
- ○ Zone
- ● District Hot Water
- ● District Heating
- ● District Cooling

SUITABLE ACTUATORS

The control valve series VLA325/VLB225/VLA425 and VLA335/VLB235 may most easily be fitted with ESBE actuators:

- ● Series ALA200
- ● Series ALB140
- ● Series ALD100
- ● Series ALD200

TECHNICAL DATA

Type: _____ 2- and 3-way plug valve
Pressure class: _____ PN 16
Flow characteristic A–AB: _____ EQM
Flow characteristic B–AB: _____ DN 15-50, Complementary
_____ DN 65-150, Linear
Stroke: _____ DN 15-80, 20 mm
_____ DN 100-150, 40 mm
Rangeability Kv/Kv^{min}: _____ see table
Leakrate A–AB: _____ DN 15-50, Tight sealing
_____ DN 65-150, 0.05% of Kvs
Leakrate B–AB: _____ DN 15-50, Tight sealing
_____ DN 65-150, 1% of Kvs
ΔP_{max}: _____ see tables pages 170-176
Media temperature: _____ DN 15-50, max. +130°C
_____ min. -20°C
_____ DN 65-150, max. +120°C
_____ min. -10°C
Connection: _____ Flange, ISO 7005–2

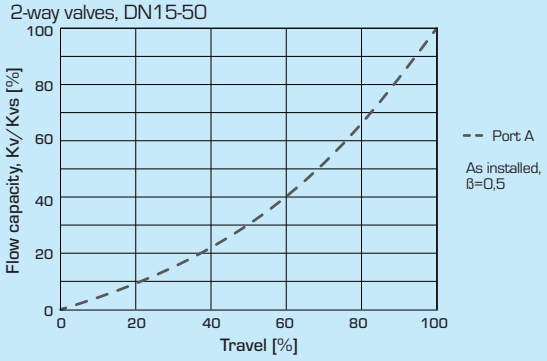
Material DN 15 – 50
Body: _____ Nodular iron EN-JS 1030
Stem: _____ Stainless steel SS 2346
Plug: _____ Brass CW602N
Seat: _____ Nodular iron EN-JS 1030
Blind plug: _____ Brass CW602N
Seat seal: _____ EPDM
Packing box seal: _____ PTFE/EPDM

Material DN 65 – 150
Body: _____ Grey cast iron EN-JL 1040
Stem: _____ Stainless steel DIN 1.4305
Plug: _____ Brass CW617N
Seat: _____ Grey cast iron EN-JL 1040
Seat seal: _____ Metallic
Packing box seal: _____ EPDM

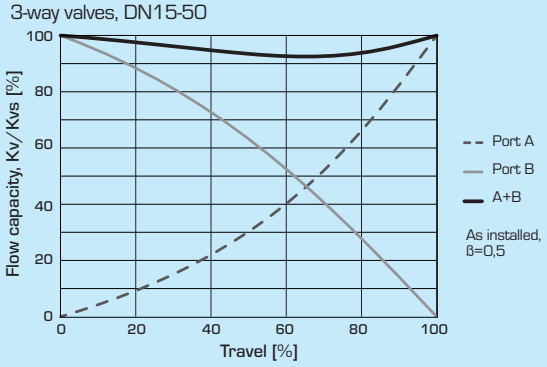
PED 97/23/EC, article 3.3

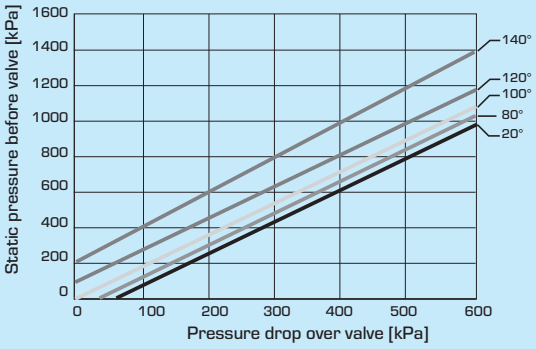
VALVE CHARACTERISTICS

2-way valves, DN15-50



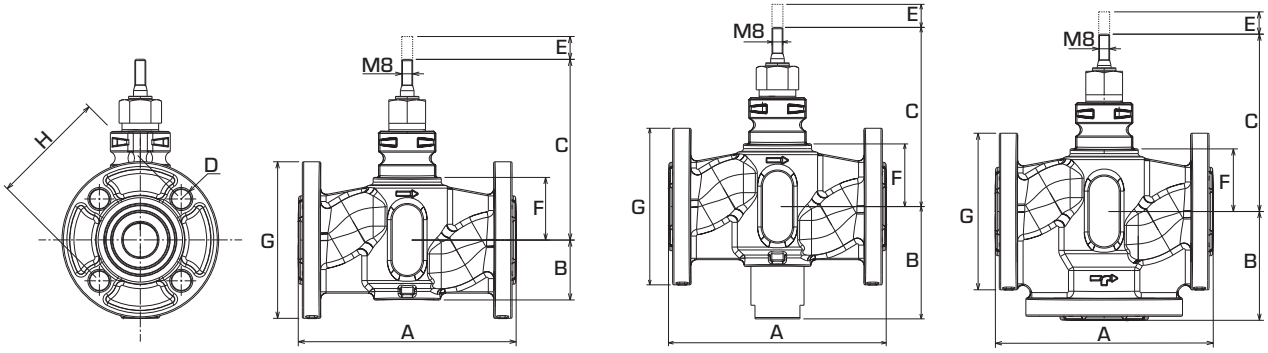
3-way valves, DN15-50





Pressure drop limit where caviation might occur. Is dependent of valve inlet pressure and temperature of water.

CONTROL VALVE PN16
SERIES VLA325/VLB225/ VLA425 AND VLA335/VLB235



VLA325/VLB225 VLA425 VLA335/VLB235

2-WAY CONTROL VALVE SERIES VLA325/VLB225

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	H	Rangeability Kv/Kv^{min}	Weight [kg]
2120 01 00	VLA325	15	1.6	130	42	123	4x14	20	38	95	65	>50	2.1
2120 02 00			2.5										
2120 03 00			4										
2120 04 00	VLA325	20	6.3	150	44	126	4x14	20	41	105	75	>50	2.6
2120 05 00	VLA325	25	10	160	44	131	4x14	20	46	115	85	>50	3.2
2120 06 00	VLA325	32	16	180	58	144	4x19	20	60	140	100	>50	4.6
2120 07 00	VLA325	40	25	200	60	146	4x19	20	61	150	110	>50	5.8
2120 08 00	VLA325	50	38	230	74	161	4x19	20	76	165	125	>50	8.0
2120 31 00	VLB225	65	49	290	173	119	4x19	20	62	185	145	50	17.3
2120 32 00	VLB225	80	78	310	185	119	8x19	20	62	200	160	50	22.9
2120 33 00	VLB225	100	124	350	205	150	8x19	40	93	220	180	50	33.0
2120 34 00	VLB225	125	200	400	232	161	8x18	40	104	250	210	50	48.0
2120 35 00	VLB225	150	300	480	275	177	8x22	40	120	285	240	50	68.0

2-WAY CONTROL VALVE SERIES VLA425 WITH PRESSURE BALANCED PLUG

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	H	Rangeability Kv/Kv^{min}	Weight [kg]
2120 17 00	VLA425	25	10	160	83	131	4x14	20	46	115	85	>50	3.4
2120 18 00	VLA425	32	16	180	88	144	4x19	20	60	140	100	>50	5.0
2120 19 00	VLA425	40	25	200	84	146	4x19	20	61	150	110	>50	6.1
2120 20 00	VLA425	50	38	230	100	161	4x19	20	76	165	125	>50	8.3

3-WAY CONTROL VALVE SERIES VLA335/VLB235

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	H	Rangeability Kv/Kv^{min}	Weight [kg]
2120 09 00	VLA335	15	1.6	130	65	123	4x14	20	38	95	65	>50	2.5
2120 10 00			2.5										
2120 11 00			4										
2120 12 00	VLA335	20	6.3	150	75	126	4x14	20	41	105	75	>50	3.2
2120 13 00	VLA335	25	10	160	80	131	4x14	20	46	115	85	>50	3.8
2120 14 00	VLA335	32	16	180	90	144	4x19	20	60	140	100	>50	6.6
2120 15 00	VLA335	40	25	200	100	146	4x19	20	61	150	110	>50	7.5
2120 16 00	VLA335	50	38	230	115	161	4x19	20	76	165	125	>50	10.0
2120 36 00	VLB235	65	49	290	145	119	4x19	20	62	185	145	50	14.7
2120 37 00	VLB235	80	78	310	155	119	8x19	20	62	200	160	50	18.8
2120 38 00	VLB235	100	124	350	175	150	8x19	40	93	220	180	50	29.0
2120 39 00	VLB235	125	200	400	200	161	8x18	40	104	250	210	50	42.0
2120 40 00	VLB235	150	300	480	240	177	8x22	40	120	285	240	50	61.0

* Kvs-value in m^3/h at a pressure drop of 1 bar.

CONTROL VALVE PN16
SERIES VLE122/VLE222 AND VLE132

ESBE control valves series VLE122/VLE222 och VLE132 are 2-way and 3-way external threaded valves for PN16, DN 15–50.

External thread PN16

External thread PN16, pressure-balanced plug

External thread PN16

MEDIA

These valves can handle the following types of media:
– Hot and cold water.
– Water containing phosphate or hydrazine additives.
– Water with antifreeze additives such as glycol.

If the valve is used for media at temperatures below 0°C (32°F), it should be equipped with a stem heater in order to prevent ice formation on the valve stem.

OPTION

Connection sets with Internal Thread Fittings, Soldering Fitting or Weld Fittings are available as an option, see page 198.

Adaptor kit _____ Siemens SQX, Art. No. 2600 07 00

CONTROL VALVE DESIGNED FOR

- ● Heating
- ● Comfort Cooling
- ● Potable water
- ● Floor heating
- ● Solar heating
- ● Ventilation
- ○ Zone
- ● District Hot Water
- ● District Heating
- ● District Cooling

SUITABLE ACTUATORS

The control valve series VLE122/VLE222 and VLE132 may most easily be fitted with ESBE actuators:

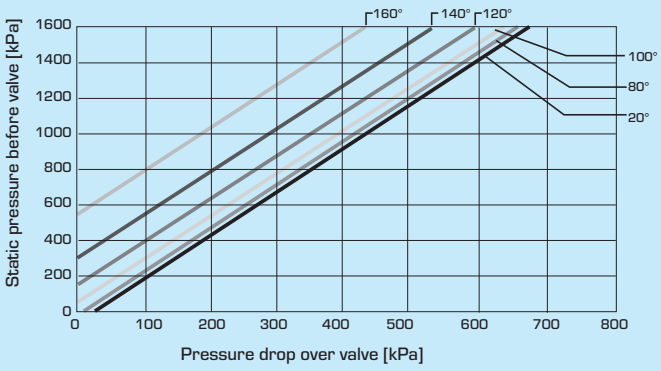
- ● Series ALA200
- ● Series ALB140
- ● Series ALD100
- ● Series ALD200

TECHNICAL DATA

Type: _____ 2- and 3-way plug valve
Pressure class: _____ PN 16
Flow characteristic A–AB: _____ EQM
Flow characteristic B–AB: _____ Complementary
Stroke: _____ 20 mm
Rangeability Kv/Kv^{min}: _____ see table
Leakrate A–AB: _____ max. 0.02% of Kv
Leakrate B–AB: _____ max. 0.05% of Kv
ΔP_{max}: _____ see tables pages 170-176
Media temperature: _____ max. +150°C
_____ min. -20°C
Connection: _____ External pipe thread, ISO 228/1

Material
Body: _____ Bronze Rg5
Stem: _____ Stainless steel SS 2346
Plug: _____ Stainless steel SS 2346
Seat: _____ Stainless steel SS 2346
Blind plug: _____ Brass CW602N
Seat seal: _____ Metallic
Packing box seal: _____ PTFE/EPDM

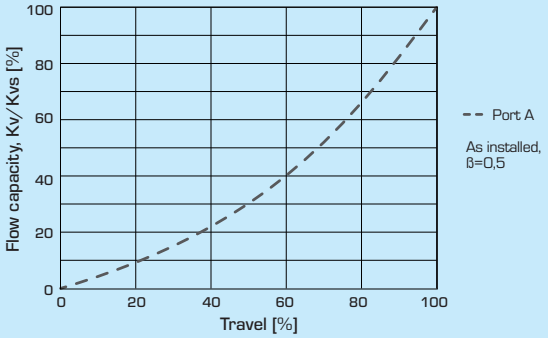
PED 97/23/EC, article 3.3



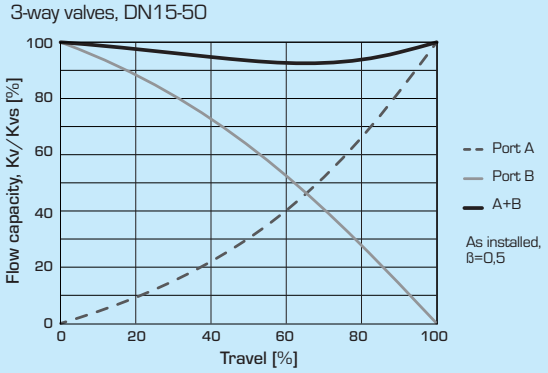
Pressure drop limit where caviation might occur. Is dependent of valve inlet pressure and temperature of water.

VALVE CHARACTERISTICS

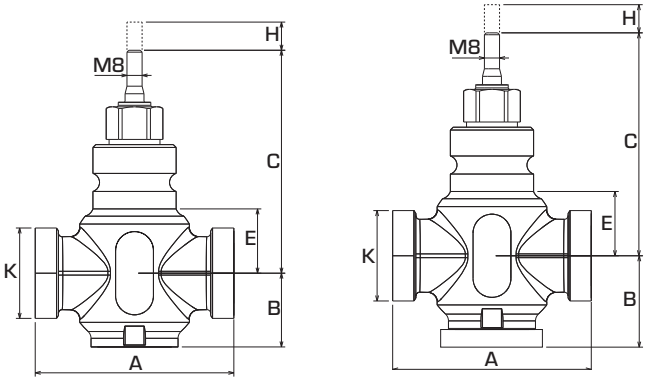
2-way valves, DN15-50



3-way valves, DN15-50



CONTROL VALVE PN16
SERIES VLE122/VLE222 AND VLE132



2-WAY CONTROL VALVE SERIES VLE122

Art. No.	Reference	DN	Kvs*	A	B	C	E	H	K	Rangeability Kv/Kv^{min}	Weight [kg]
2125 01 00	VLE122	15	0.25	100	36	110	24	20	G 1“	>50	1.0
2125 02 00			0.4								
2125 03 00			0.63								
2125 04 00			1								
2125 05 00			1.6								
2125 06 00			2.5								
2125 07 00			4								
2125 08 00	VLE122	20	6.3	100	38	116	30	20	G 1¼“	>100	1.2
2125 09 00	VLE122	25	10	105	39	120	34	20	G 1½“	>100	1.4
2125 10 00	VLE122	32	16	105	39	121	35	20	G 2“	>100	1.8
2125 11 00	VLE122	40	25	130	48	128	42	20	G 2¼“	>100	2.6
2125 12 00	VLE122	50	38	150	58	139	53	20	G 2¾“	>100	4.3

2-WAY CONTROL VALVE SERIES VLE222 WITH PRESSURE BALANCED PLUG

Art. No.	Reference	DN	Kvs*	A	B	C	E	H	K	Rangeability Kv/Kv^{min}	Weight [kg]
2125 21 00	VLE222	25	10	105	39	120	34	20	G 1½“	>100	1.4
2125 22 00	VLE222	32	16	105	39	121	35	20	G 2“	>100	1.8
2125 23 00	VLE222	40	25	130	48	128	42	20	G 2¼“	>100	2.6
2125 24 00	VLE222	50	38	150	58	139	53	20	G 2¾“	>100	4.3

3-WAY CONTROL VALVE SERIES VLE132

Art. No.	Reference	DN	Kvs*	A	B	C	E	H	K	Rangeability Kv/Kv^{min}	Weight [kg]
2125 13 00	VLE132	15	1.6	100	50	110	24	20	G 1“	>50	1.1
2125 14 00			2.5								
2125 15 00			4								
2125 16 00	VLE132	20	6.3	100	50	116	30	20	G 1¼“	>100	1.3
2125 17 00	VLE132	25	10	105	52	120	34	20	G 1½“	>100	1.6
2125 18 00	VLE132	32	16	105	52	121	35	20	G 2“	>100	2.0
2125 19 00	VLE132	40	25	130	65	128	42	20	G 2¼“	>100	2.9
2125 20 00	VLE132	50	38	150	75	139	53	20	G 2¾“	>100	4.6

* Kvs-value in m^3/h at a pressure drop of 1 bar.

LINEAR MOTORIZED VALVES

CONTROL VALVE PN16
SERIES VLE325

The ESBE control valves series VLE325 are provided with flanges and are especially designed for replacement of STL-valves in existing applications.

Flange PN16

MEDIA

These valves can handle the following types of media:
– Hot and cold water.
– Water with antifreeze additives such as glycol.

If the valve is used for media at temperatures below 0°C (32°F), it should be equipped with a stem heater in order to prevent ice formation on the valve stem.

CONTROL VALVE DESIGNED FOR

- ● Heating
- ● Comfort Cooling
- ○ Potable water
- ○ Floor heating
- ○ Solar heating
- ● Ventilation
- ○ Zone
- ● District Hot Water
- ● District Heating
- ● District Cooling

SUITABLE ACTUATORS

The control valve series VLE325 may most easily be fitted with ESBE actuators:

- ● Series ALA200
- ● Series ALB140
- ● Series ALD100
- ● Series ALD200

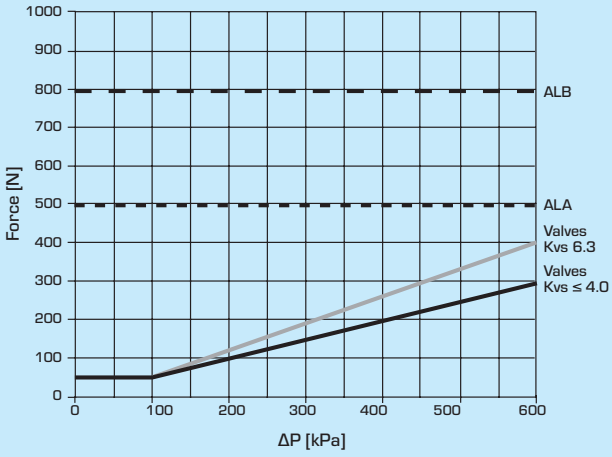
TECHNICAL DATA

Type: 2-way plug valve
Pressure class: PN16
Flow characteristic A–AB: EQM
Stroke: 20 mm
Rangeability: see table
Leakrate A–AB: max. 0.02% of Kv
ΔP_{max}*: see graph below
Temperature of medium: max. +130°C
min. –20°C
Connection: Flange, ISO 7005–2

* ΔPmax = Max. differential pressure for valve and actuator combinations.

Material
Body: Bronze Rg5
Flanges: Steel SS 1914
Stem: Stainless steel SS 2346
Plug: Stainless steel SS 2346
Seat: Stainless steel SS 2346
Blind plug: Brass CW602N
Seat seal: Metallic
Packing box seal: PTFE/EPDM

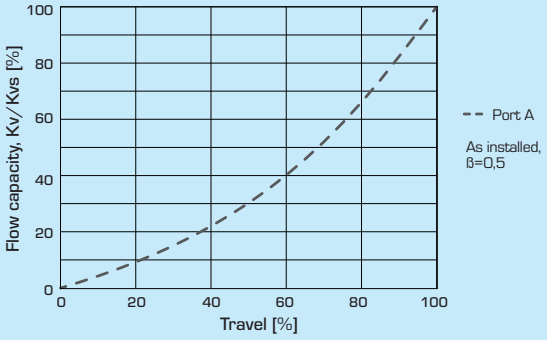
PED 97/23/EC, article 3.3



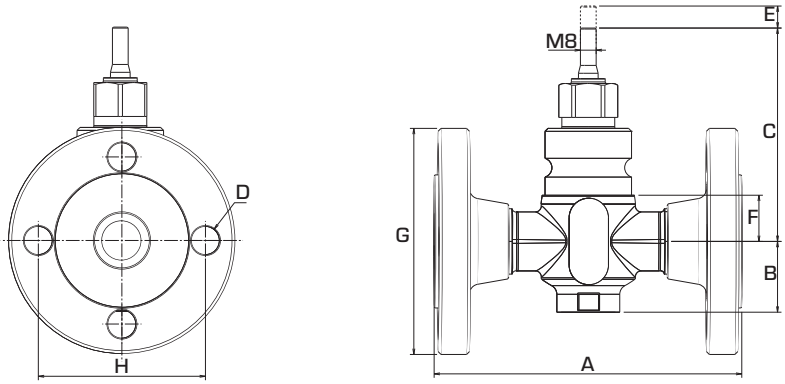
Required clamping force of the control unit for tightness 0.02% of Kvs.

VALVE CHARACTERISTICS

2-way valves, DN15-50



CONTROL VALVE PN16
SERIES VLE325



2-WAY CONTROL VALVE SERIES VLE325

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	H	Rangeability Kv/Kv^{min}	Weight [kg]
2140 01 00	VLE325	20	0.63	143	36	110	4x14	20	24	105	75	>100	3.0
2140 02 00			1										
2140 03 00			1.6										
2140 04 00			2.5										
2140 05 00			4										
2140 06 00	VLE325	25	1	156	36	110	4x14	20	24	115	85	>100	3.7
2140 07 00			1.6										
2140 08 00			2.5										
2140 09 00			4										
2140 10 00	VLE325	32	1.6	165	36	110	4x18	20	24	140	100	>100	5.0
2140 11 00			2.5										
2140 12 00			4										
2140 16 00			6.3										
2140 13 00	VLE325	40	1.6	170	36	110	4x18	20	24	150	110	>100	5.6
2140 14 00			2.5										
2140 15 00			4										
2140 17 00			6.3										

* Kvs-value in m^3/h at a pressure drop of 1 bar.

LINEAR MOTORIZED VALVES

CONTROL VALVE PN25
SERIES VLC125 AND VLC225

ESBE control valves series VLC125 and VLC225 are 2-way flanged valves for PN25, DN 15–50.

Flange PN25

Flange PN25, pressure-balanced plug

MEDIA

These valves can handle the following types of media:
– Hot and cold water.
– Water with antifreeze additives such as glycol.

If the valve is used for media at temperatures below 0°C (32°F), it should be equipped with a stem heater in order to prevent ice formation on the valve stem.

OPTION DN 15 – 50

Adaptor kit _____ Siemens SQX, Art. No. 2600 07 00

CONTROL VALVE DESIGNED FOR

- ● Heating
- ● Comfort Cooling
- ○ Potable water
- ○ Floor heating
- ○ Solar heating
- ○ Ventilation
- ○ Zone
- ● District Hot Water
- ● District Heating
- ● District Cooling

SUITABLE ACTUATORS

The control valve series VLC125 and VLC225 may most easily be fitted with ESBE actuators:

- ● Series ALA200
- ● Series ALB140
- ● Series ALD100
- ● Series ALD200

TECHNICAL DATA

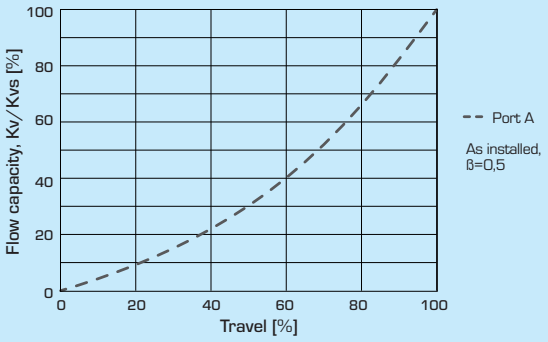
Type: _____ 2-way plug valve
Pressure class: _____ PN25
Flow characteristic A–AB: _____ EQM
Stroke: _____ 20 mm
Rangeability Kv/Kv^{min}: _____ see table
Leakrate A–AB: _____ max. 0.02% of Kv
ΔP_{max}: _____ see tables pages 170-176
Temperature of medium: _____ max. +150°C
_____ min. –20°C
Connection: _____ Flange, ISO 7005–2

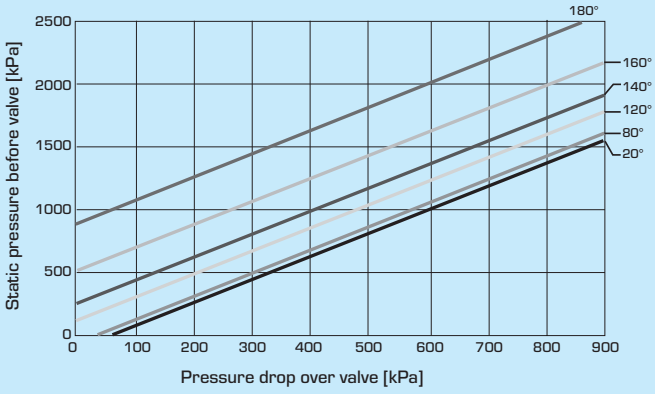
Material
Body: _____ Nodular iron EN-JS 1030
Stem: _____ Stainless steel SS 2346
Plug: _____ Stainless steel SS 2346
Seat: _____ Stainless steel SS 2346
Seat seal: _____ Metallic
Packing box seal: _____ PTFE/EPDM

PED 97/23/EC, article 3.3

VALVE CHARACTERISTICS

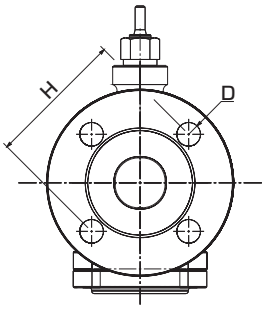
2-way valves, DN15-50

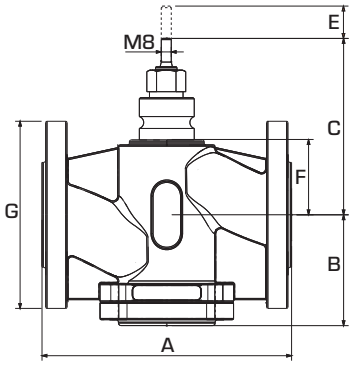




Pressure drop limit where caviation might occur.
Is dependent of valve inlet pressure and temperature of water.

CONTROL VALVE PN25
SERIES VLC125 AND VLC225





2-WAY CONTROL VALVE SERIES VLC125

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	H	Rangeability Kv/Kv^{min}	Weight [kg]
2130 01 00	VLC125	15	0.25	130	81	122	4x14	20	37	95	65	>50	3.6
2130 02 00			0.4										
2130 03 00			0.63										
2130 04 00			1										
2130 05 00			1.6										
2130 06 00			2.5										
2130 07 00			4										
2130 08 00	VLC125	20	6.3	150	92	124	4x14	20	40	105	75	>200	4.4
2130 17 00	VLC125	25	1.6	160	96	130	4x14	20	45	115	85	>30	4.4
2130 18 00			2.5									>70	
2130 19 00			4									>100	
2130 20 00			6.3									>200	
2130 09 00			10									>200	5.6
2130 10 00	VLC125	32	16	180	100	143	4x19	20	58	140	100	>200	7.7
2130 21 00	VLC125	40	1.6	200	99	144	4x19	20	60	150	110	>30	7.7
2130 22 00			2.5									>70	
2130 23 00			4									>70	
2130 24 00			6.3									>100	
2130 25 00			10									>200	
2130 26 00			16									>200	
2130 11 00			25									>200	8.8
2130 12 00	VLC125	50	38	230	111	160	4x19	20	75	165	125	>200	12.6

2-WAY CONTROL VALVE SERIES VLC225 WITH PRESSURE BALANCED PLUG

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	H	Rangeability Kv/Kv^{min}	Weight [kg]
2130 13 00	VLC225	25	10	160	96	130	4x14	20	45	115	85	>200	5.9
2130 14 00	VLC225	32	16	180	100	143	4x19	20	58	140	100	>200	8.1
2130 15 00	VLC225	40	25	200	99	144	4x19	20	60	150	110	>200	9.3
2130 16 00	VLC225	50	38	230	111	160	4x19	20	75	165	125	>200	13.5

* Kvs-value in m^3/h at a pressure drop of 1 bar.

LINEAR MOTORIZED VALVES

CONTROL VALVE PN25
SERIES VLC325 AND VLC425

ESBE control valves series VLC325/VLC425 are 2-way flanged valves for PN25, DN 15–50.
The valves series VLC325/VLC425 are equipped with a high temperature packing box for applications working up to 180°C.

Flange PN25

Flange PN25, pressure-balanced plug

MEDIA
These valves can handle the following types of media:
– Hot and cold water.
– Water with antifreeze additives such as glycol.
If the valve is used for media at temperatures below 0°C (32°F), it should be equipped with a stem heater in order to prevent ice formation on the valve stem.

OPTION DN 15 – 50
Adaptor kit _____ Siemens SQX, Art. No. 2600 07 00

CONTROL VALVE DESIGNED FOR
- ● Heating
- ● Comfort Cooling
- ○ Potable water
- ○ Floor heating
- ○ Solar heating
- ○ Ventilation
- ○ Zone
- ● District Hot Water
- ● District Heating
- ● District Cooling

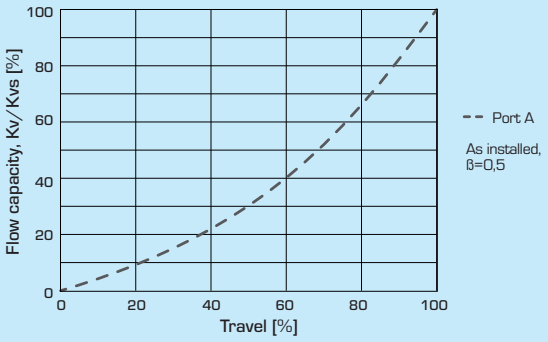
SUITABLE ACTUATORS
The control valve series VLC325 and VLC425 may most easily be fitted with ESBE actuators:
- ● Series ALA200
- ● Series ALB140
- ● Series ALD100
- ● Series ALD200

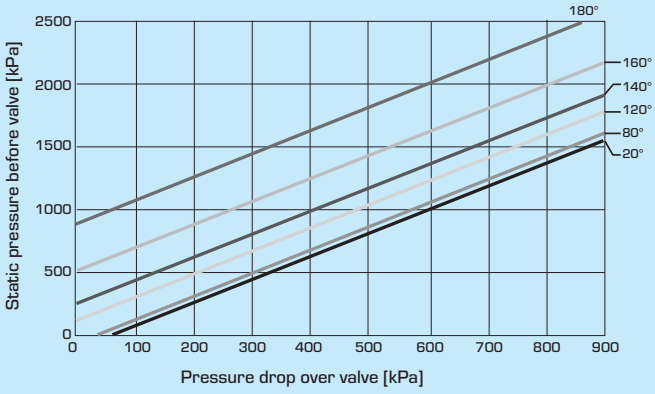
TECHNICAL DATA
Type: _____ 2-way plug valve
Pressure class: _____ PN25
Flow characteristic A–AB: _____ EQM
Stroke: _____ 20 mm
Rangeability Kv/Kv^{min}: _____ see table
Leakrate A–AB: _____ max. 0.02% of Kv
ΔP_{max}: _____ see tables pages 170-176
Temperature of medium: _____ max. +180°C
_____ min. –20°C
Connection: _____ Flange, ISO 7005–2

Material
Body: _____ Nodular iron EN-JS 1030
Stem: _____ Stainless steel SS 2346
Plug: _____ Stainless steel SS 2346
Seat: _____ Stainless steel SS 2346
Seat seal: _____ Metallic
Packing box seal: _____ PTFE/EPDM

PED 97/23/EC, article 3.3

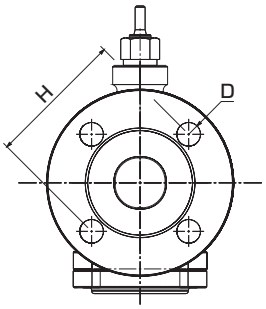
VALVE CHARACTERISTICS
2-way valves, DN15-50

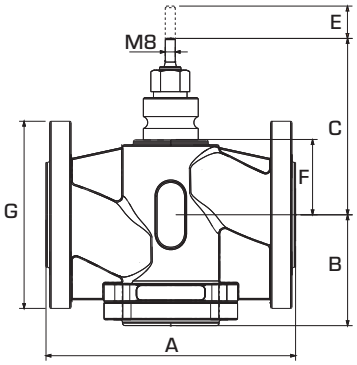




Pressure drop limit where caviation might occur.
Is dependent of valve inlet pressure and temperature of water.

CONTROL VALVE PN25
SERIES VLC325 AND VLC425





2-WAY CONTROL VALVE SERIES VLC325

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	H	Rangeability Kv/Kv^{min}	Weight [kg]
2135 01 00	VLC325	15	0.25	130	81	122	4x14	20	37	95	65	>50	3.6
2135 02 00			0.4										
2135 03 00			0.63										
2135 04 00			1										
2135 05 00			1.6										
2135 06 00			2.5										
2135 07 00			4										
2135 08 00	VLC325	20	6.3	150	92	124	4x14	20	40	105	75	>200	4.4
2135 09 00	VLC325	25	10	160	96	130	4x14	20	45	115	85	>200	5.6
2135 10 00	VLC325	32	16	180	100	143	4x19	20	58	140	100	>200	7.7
2135 11 00	VLC325	40	25	200	99	144	4x19	20	60	150	110	>200	8.8
2135 12 00	VLC325	50	38	230	111	160	4x19	20	75	165	125	>200	12.6

2-WAY CONTROL VALVE SERIES VLC425 WITH PRESSURE BALANCED PLUG

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	F	G	H	Rangeability Kv/Kv^{min}	Weight [kg]
2135 13 00	VLC425	25	10	160	96	130	4x14	20	45	115	85	>200	5.9
2135 14 00	VLC425	32	16	180	100	143	4x19	20	58	140	100	>200	8.1
2135 15 00	VLC425	40	25	200	99	144	4x19	20	60	150	110	>200	9.3
2135 16 00	VLC425	50	38	230	111	160	4x19	20	75	165	125	>200	13.5

* Kvs-value in m^3/h at a pressure drop of 1 bar.

LINEAR MOTORIZED VALVES

ACTUATOR
SERIES ALA200

ESBE series ALA is easily and quickly and fitted to ESBEs control valves and is suitable in applications with requirement of force 750 N or fast running time.

3-point/Proportional

OPERATION

ESBE series ALA is controlled either by a 3-point (increase/decrease) signal and supply voltage 24 or 230 VAC, or proportional (0..10V, 2..10V, 0..20mA or 4..20mA) signal with supply voltage 24 VAC. The actuator is simple to install. It is designed for direct fitting on ESBEs control valves. No adaptor kit is required. The actuator is suitable for control valves with a stroke of 10..20 mm and has a built-in force limitation. The actuators series ALA for proportional signals are automatically adjusted for the actual valve stroke.

FUNCTION

– The Actuator

The actuator receives a control signal from a controller. A linear movement is transmitted via a rack to the stem of the valve.

– Manual operation

The actuator is simple to operate manually by a 6 mm allen key on the front.

– Position indicator

The end positions of movement are set by a red and a blue indicator on the housing. Actuators for proportional signals are also equipped with a 2–10 V DC position feedback signal, where 2 V always corresponds to the closed position and 10V to the open position.

– Sequence control

Actuators (3-Points version) are able to be controlled in sequence.

LINKAGE KITS

No linkage kits are required for the fitting to ESBE valves. Adaptor kits for other valves are available as follows:

Ari	12485, 12486, 12487, 12488	Art. No. 2600 03 00
Danfoss	VF3, VFS2, VRB3, VRG3	Art. No. 2600 04 00
Honeywell	V5011R, V5013R, V538, V5049A, V5050A, V5328A, V5329A, V5329C, V5095A, V176, V5015	Art. No. 2600 10 00
Hora	216GG, 206GG, 306GG, 316GG	Art. No. 2600 03 00
Osby/Regin	MTV/MTVS, MTR/MTRS, 2SA/2SB, FRS, GTR/RTV/BTRV, GTVS/RTVS, GTRS/RTRS	Art. No. 2600 11 00
Satchwell	VZ, VJF, VSF 15-50, VZF, MZF 65-150	Art. No. 2600 08 00
Sauter	B6F, B6G, B6R, B6S, BXD, BXE, V6F, V6G, V6R, V6S, VXD, VXE	Art. No. 2600 05 00
Sauter	BUD, BUE, VUE	Art. No. 2600 09 00
Siemens	VVF 31, VXF 31, VVG 41, VXG 41, VVF 52, VXF 21, VXF 41, VVF 21	Art. No. 2600 01 00
Wittler	V225T, V206H, V216H, V216R, V306H, V316H, V316R	Art. No. 2600 06 00

OPTIONS

Stem heater DN 15-50, 24 V _____ Art. No. 2610 19 00

SUITABLE CONTROL VALVES

- Series VLA121, VLA221, VLA131
- Series VLA325, VLA335, VLA425
- Series VLB225, VLB235 ≤ DN80
- Series VLE122, VLE222, VLE132
- Series VLF125, VLF135, VLF335
- Series VLE325
- Series VLC125, VLC225
- Series VLC325, VLC425

TECHNICAL DATA

Supply voltage (±10%):	See table
Ambient temperature:	-10°C* - +50°C
Media temperature:	-20°C* - +180°C
Ambient humidity:	max. 90% RH non condensing
Enclosure rating:	IP 54
Protection class:	II
Weight:	1.2 kg
Stroke:	10–20 mm
Duty cycle:	max. 20%/h

Material

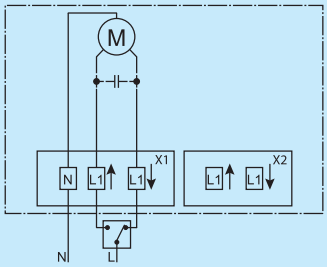
Cover:	Plastic
Housing:	Aluminum

* If the actuator is used in applications with media temperatures below 0°C, the valve should be equipped with a stem heater.

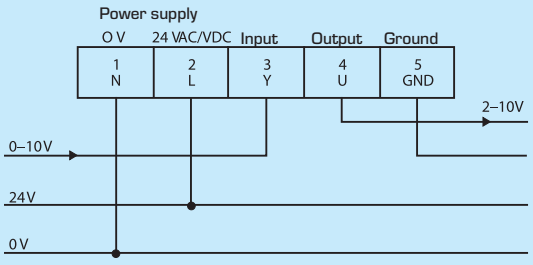
CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

WIRING

The actuator should be preceded by a multi-pole contact breaker in the fixed wiring.

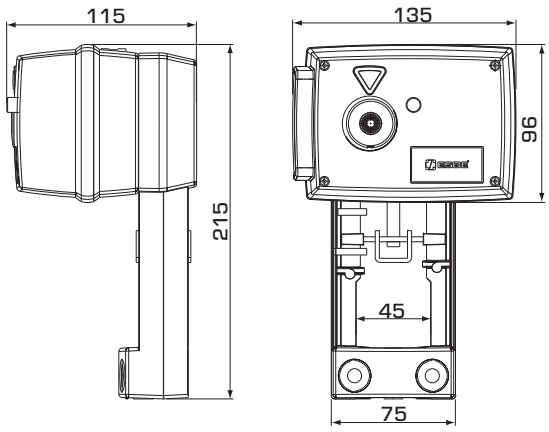


Series ALA221, ALA222



Series ALA223

ACTUATOR
SERIES ALA200



SERIES ALA221, 3-POINT CONTROL SIGNAL 230 VAC

Art. No.	Reference	Supply voltage [V]	Force [N]	Running time (20mm)	Power consumption [VA]	Note
2200 08 00	ALA221	230 VAC, 50Hz	400	35	5.0	
2200 02 00			750	140		

SERIES ALA222, 3-POINT CONTROL SIGNAL 24 VAC

Art. No.	Reference	Supply voltage [V]	Force [N]	Running time (20mm)	Power consumption [VA]	Note
2200 07 00	ALA222	24 VAC, 50Hz	400	35	3.0	
2200 01 00			750	140		

SERIES ALA223, PROPORTIONAL CONTROL SIGNAL 24 V AC/DC

Art. No.	Reference	Supply voltage [V]	Force [N]	Running time (20mm)	Power consumption [VA]	Note
2200 09 00	ALA223	24 VAC/DC, 50/60Hz	400	35	7.5	1)
2200 03 00			750	140		

Note 1) Control signal 0...10V, 2...10V, 0...20mA or 4...20mA

LINEAR MOTORIZED VALVES

ACTUATOR
SERIES ALB100

ESBE series ALB is specially designed for applications which require a high resolution and high velocity.

3-point/Proportional

OPERATION

ESBE series ALB is either controlled by a 3-point (increase/decrease) signal or by a proportional (0..10V, 2..10V) signal. Proportional control signal gives a fast actuator.

The electronic circuitry of the actuator ensures that the running time is the same, regardless of the stroke of the valve in question.

It is easy to mount and connect the actuator. It can be mounted directly onto ESBEs control valves, without any linkage kit.

The working range of the actuator is adjusted automatically depending on the stroke of the valve. The electronic circuitry of the actuator then takes care of the adjustment of the valve end positions.

FUNCTION

– The actuator

The actuator receives a control signal from a controller. The screw transmits a linear movement which moves the stem of the valve.

– Manual operation

There is a manual operation handle on the actuator. When it is lowered, the motor stops. The actuator can then be operated manually if the handle is turned.

– Position feedback

The actuator is equipped with a 2–10V DC position feedback signal, where 2V always corresponds to the closed position and 10V to the open position.

– End position contacts

At sequence control the end position contacts could be used to switch entirely at closed respectively fully open positions.

LINKAGE KITS

No linkage kits are required for the fitting to ESBE valves. Adaptor kits for other valves are available as follows:

Siemens VVF 31, VXF 31, VVG 41, VXG 41, VVF 52, VVF 61, VXF 61, VVF 45, VVF 51, VXF 11, VVG 11, VFG 34 _____ Art. No. 2600 02 00

Satchwell VZ, VJF, VSF 15–50, VZF, MZF 65–150 _____ Art. No. 2600 08 00

OPTIONS

End position contacts, 24 V: _____ Art. No. 2620 07 00

SUITABLE CONTROL VALVES

- Series VLA121, VLA221, VLA131
- Series VLA325, VLA335, VLA425
- Series VLE122, VLE222, VLE132
- Series VLF125, VLF135, VLF335
- Series VLE325
- Series VLB225, VLB235
- Series VLC125, VLC225
- Series VLC325, VLC425

TECHNICAL DATA

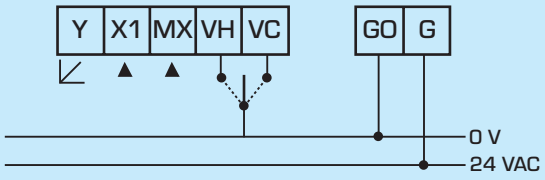
Supply voltage: _____ 24 VAC ±10%, 50/60 Hz
Power consumption: _____ 15 VA
Running time by proportional signal
Valve with stroke 10–25 mm: _____ 15 s
Valve with stroke 10–32 mm: _____ 20 s
Valve with stroke 10–52 mm: _____ 30 s
Running time by increase/decrease signal: _____ 300 s/60 s
Stroke: _____ 10–52 mm
Force: _____ 800 N
Duty cycle: _____ max. 20%/h
Output Y, Voltage: _____ 2–10 V (0–100%)
Ambient temperature: _____ -10°C – +50°C *
Ambient humidity: _____ max. 90% RH
Enclosure rating: _____ IP 54

Material
Cover: _____ Plastic / Metal
Housing: _____ Aluminum
Weight: _____ 1.8 kg

* If the actuator is used in applications with media temperatures below 0°C, the valve should be equipped with a stem heater.

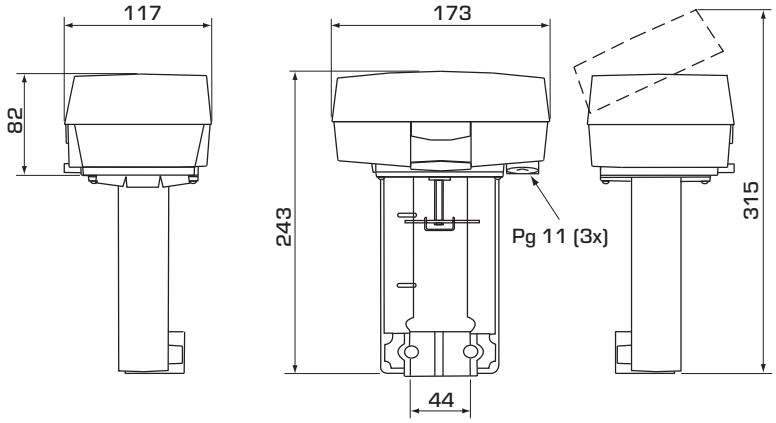
CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

WIRING



Y = Feedback signal
X1 = Control signal
MX = Input neutral
VH/VC = Increase/Decrease
GO/G = Supply voltage

ACTUATOR
SERIES ALB100



SERIES ALB144, PROPORTIONAL OR 3-POINT CONTROL SIGNAL 24 V AC

Art. No.	Reference	Supply voltage [V]	Force [N]	Power consumption [VA]	Note
2205 01 00	ALB144	24 V AC, 50/60Hz	800	15.0	1)

Note 1) 0...10 V, 2...10 V or 3-point control signal.

LINEAR MOTORIZED VALVES

ACTUATOR
SERIES ALD100 AND ALD200

ESBE series ALD offers excellent performance in applications with requirements of forces 900N, 1200N or 2000/2200N.

3-point/Proportional

OPERATION

ESBE series ALD is designed for proportional signal (0..10V, 2..10V, 0..20mA or 4..20mA) or 3-point (increase/decrease) signal. Supply voltage 24 VAC or 230 VAC. Force 900N /1200N/ 2000N.

The actuator is simple to install. It is designed for direct fitting on ESBEs control valves. No adaptor kit is required. The actuator is suitable for control valves with a stroke of either 10 .. 25 mm or 10 .. 45 mm and has a built-in force limitation.

The actuators series ALD for proportional signals are automatically adjusted for the actual valve stroke.

Actuators with premounted spring return are also available.

FUNCTION

– The Actuator
The actuator receives a control signal from a controller. Linear movement is transmitted by a screw via a gear wheel the to the stem of the valve.
– Manual operation
The actuator is simple to operate manually by a wheel or a crank. (Versions with spring return function applied are not able to be manually operated).
– Position indicator
The end positions of movement are set by a red and a blue indicator on the bracket. Actuators for proportional signals are also equipped with a 0..10 V DC position feedback signal, where 0 V always corresponds to the closed position and 10 V to the open position.
– Sequence control
Actuators (0..10V versions) are able to be controlled in sequence.

SUITABLE CONTROL VALVES

SERIES ALD120/ALD220

- Series VLA121, VLA221, VLA131
- Series VLA325, VLA335, VLA425
- Series VLB225, VLB235 ≤ DN80
- Series VLE122, VLE222, VLE132
- Series VLF125, VLF135, VLF335
- Series VLE325
- Series VLC125, VLC225
- Series VLC325, VLC425

SERIES ALD140/ALD240

- Series VLF335
- Series VLB225, VLB235

OPTIONS

Stem heater DN 15–50, 24 V (stroke 10..25):
_____Art. No. 2610 19 00
Stem heater DN 65–150, 24 V (stroke 10..45):
_____Art. No. 2610 20 00

TECHNICAL DATA

Supply voltage (±10%): _____See table
Ambient temperature: _____ -20°C – +50°C *
_____with spring return applied 0°C – +50°C
Ambient humidity:_____max. 90% RH non condensing
Enclosure rating:_____ IP 43
_____ with spring return applied IP 65
Protection class:_____ II (24 V)
_____ I (230 V)
Weight: _____See table
Stroke:_____10..25 or 10..45 mm
Duty cycle:_____ max. 30%/h
_____with spring return applied max. 100%/h

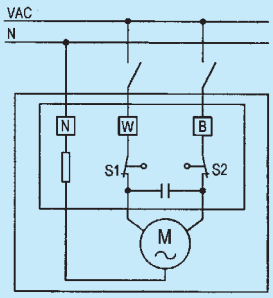
Material
Cover: _____ Plastic / Metal
Housing: _____ Aluminum / Steel

* If the actuator is used in applications with media temperatures below 0°C, the valve should be equipped with a stem heater.

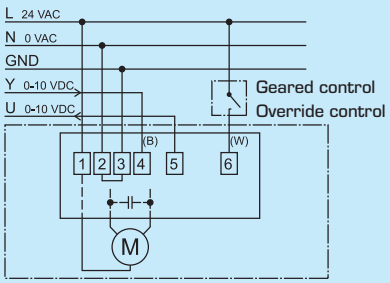
CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

WIRING

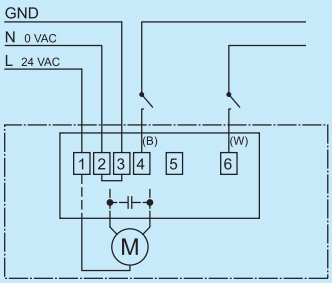
The motor should be preceded by a multi-pole contact breaker in the fixed wiring.



Series ALD121, ALD221, ALD141, ALD241

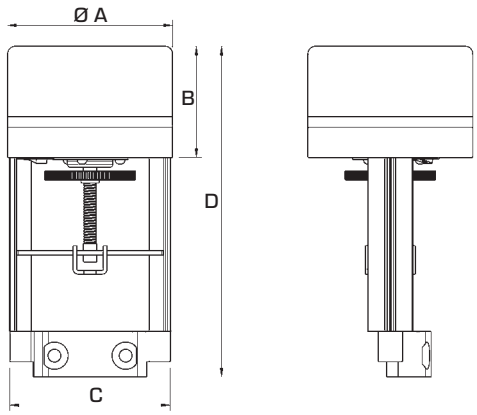


Series ALD124, ALD224, ALD144, ALD244 - 0...10V/0...20mA



Series ALD124, ALD224, ALD144, ALD244, 3-point

ACTUATOR
SERIES ALD100 AND ALD200



SERIES ALD124 AND ALD224, PROPORTIONAL OR 3-POINT CONTROL SIGNAL 24 VAC

Art. No.	Reference	Supply voltage [VAC]	Force [N]	Running time [s]	Stroke [mm]	Power consump. [VA]	A	B	C	D	Note	Weight [kg]
2215 02 00	ALD124	24 VAC, 50Hz	900	150	20	7.0	110	75	118	215	1)	1.3
2215 06 00			1200			5.0	130	101		260		1.7
2215 04 00	ALD224		900	70		25.0	192	185	118	462	1), 2)	8.7

Note 1) 0...10V, 2...10V, 0...20mA, 4...20mA or 3-point control signal. 2) With spring return. Closing time: ~ 5s/20mm

SERIES ALD144 AND ALD244, PROPORTIONAL OR 3-POINT CONTROL SIGNAL 24 VAC

Art. No.	Reference	Supply voltage [VAC]	Force [N]	Running time [s]	Stroke [mm]	Power consump. [VA]	A	B	C	D	Note	Weight [kg]
2215 10 00	ALD144	24 VAC, 50Hz	1200	300	40	5.0	130	101	118	330	1)	1.8
2215 12 00			2000	190						360		2.5
2215 14 00	ALD244		2200	140		25.0	192	185	118	570	1), 3)	10.0

Note 1) 0...10V, 2...10V, 0...20mA, 4...20mA or 3-point control signal. 3) With spring return. Closing time: ~ 10s/40mm

SERIES ALD121 AND ALD221, 3-POINT CONTROL SIGNAL 230 VAC

Art. No.	Reference	Supply voltage [VAC]	Force [N]	Running time [s]	Stroke [mm]	Power consump. [VA]	A	B	C	D	Note	Weight [kg]
2215 01 00	ALD121	230 VAC, 50Hz	900	150	20	6.0	110	75	118	215		1.3
2215 05 00			1200			5.0	130	101		260		1.7
2215 03 00	ALD221		900	70		25.0	192	185	118	462	2)	8.7

Note 2) With spring return. Closing time: ~ 5s/20mm

SERIES ALD141 AND ALD241, 3-POINT CONTROL SIGNAL 230 VAC

Art. No.	Reference	Supply voltage [VAC]	Force [N]	Running time [s]	Stroke [mm]	Power consump. [VA]	A	B	C	D	Note	Weight [kg]
2215 09 00	ALD141	230 VAC, 50Hz	1200	300	40	5.0	130	101	118	330		1.8
2215 11 00			2000	190						360		2.5
2215 13 00	ALD241		2200	140		25.0	192	185	118	570	3)	10.0

Note 3) With spring return. Closing time: ~ 10s/40mm

CONNECTION KIT
SERIES KTB112, KSB114 AND KWB118

ESBE connection kits for valves with external thread.
One package / port.

KTB100
Internal thread

KSB100
Soldering type

KWB100
Welded type

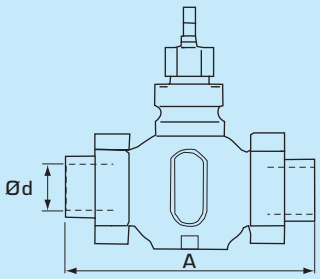
SUITABLE VALVES

The connection kit series KTB112, KSB114 and KWB118 may most easily be fitted with ESBE control valve:

- Series VLE122, 222
- Series VLE132

TECHNICAL DATA

Max. working pressure: _____ PN 16
Max. temperature of medium: _____ +150°C
Min. temperature of medium: _____ -20°C
Connection: _____ Internal thread, EN 10226-1
_____ External thread, ISO 228/1



INTERNAL THREAD CONNECTION, SERIES KTB112

Material
Union nut: _____ Malleable iron casting, galv.
Union end: _____ Malleable iron casting, galv.
Standard gasket: _____ Klingersil C4400

SOLDERING TYPE CONNECTION, SERIES KSB114

Material
Union nut: _____ Brass, CW614N
Union end: _____ Bronze, SS5204
Standard gasket: _____ Klingersil C4400

WELDED TYPE CONNECTION, SERIES KWB118

Material
Union nut: _____ Malleable iron casting, galv.
Union end: _____ Steel SS1312
Standard gasket: _____ Novatec eco

SERIES KTB112, FITTINGS INTERNAL THREAD (1 PACKAGE/PORT)

Art. No.	DN	Valves thread	Connection Ød	A (VLE100/VLE200)	A (VLD122/VLD132)	Weight [kg]
2610 07 00	15	G 1"	Rp ½"	146	146	0.12
2610 08 00	20	G 1¼"	Rp ¾"	146	146	0.20
2610 09 00	25	G 1½"	Rp 1"	159	159	0.23
2610 10 00	32	G 2"	Rp 1¼"	169	194	0.41
2610 11 00	40	G 2¼"	Rp 1½"	197	207	0.45
2610 12 00	50	G 2¾"	Rp 2"	222	–	0.64

SERIES KSB114, FITTINGS SOLDERING TYPE (1 PACKAGE/PORT)

Art. No.	DN	Valves thread	Connection Ød	A (VLE100/VLE200)	A (VLD122/VLD132)	Weight [kg]
2610 13 00	15	G 1"	15 mm	136	136	0.13
2610 14 00	20	G 1¼"	22 mm	146	146	0.19
2610 15 00	25	G 1½"	28 mm	155	155	0.23
2610 16 00	32	G 2"	35 mm	163	188	0.45
2610 17 00	40	G 2¼"	42 mm	200	210	0.48
2610 18 00	50	G 2¾"	54 mm	232	–	0.77

SERIES KWB118, FITTINGS WELDED TYPE (1 PACKAGE/PORT)

Art. No.	DN	Valves thread	Connection Ød	A (VLE100/VLE200)	A (VLD122/VLD132)	Weight [kg]
2610 01 00	15	G 1"	21.3 mm	182	182	0.12
2610 02 00	20	G 1¼"	26.9 mm	182	182	0.19
2610 03 00	25	G 1½"	33.7 mm	187	187	0.25
2610 04 00	32	G 2"	42.4 mm	197	222	0.44
2610 05 00	40	G 2¼"	48.3 mm	232	242	0.46
2610 06 00	50	G 2¾"	60.3 mm	262	–	0.66


MADE IN SWEDEN SINCE 1906
06
ESBE NO. 1 IN HYDRONIC SYSTEM CONTROL

PRODUCTS THAT ARE PHYSICALLY SMALL – BUT SOMETIMES THE REALLY IMPORTANT ONES.

Filling valves, check valves, safety valves and draining valves. All are small, but important, components that complete the installation of boilers, water heaters, pipeline systems, storage tanks and heat pumps. And it does not matter if the current need is for tap water, heating or solar applications. You can read more about ESBE's range to cover the need for complimentary products on the next few pages.

CONTENTS COMPLEMENTARY PRODUCTS

MANIFOLD
SERIES VMA200

ESBE manifolds series VMA are equipped with connections for safety valve, draining valve, filling valve and vacuum valve for use in cold water installations.

Compression fitting/ internal thread

Compression fitting

OPERATION

The valve is intended for use as an inlet valve in domestic hot water systems. The valve has built-in shut-off and check valve functions with backflow protection type EB complying with EN1717. The end connections are in the form of compression fittings.

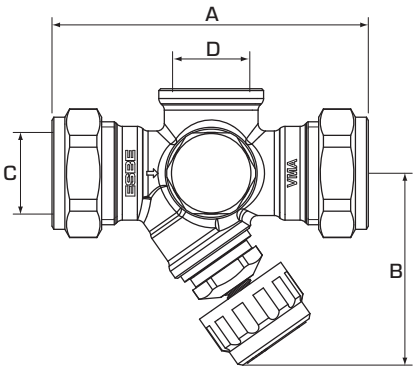
Articles in series VMA213 are provided with three internal threaded connections DN15 for connection of safety valve (VSB), draining valve (VDA/VDB), vacuum valve (VVA), filling valve (VFA) etc.

Articles in series VMA233 has the connection opposite the knob designed with compression fitting. The other two connections are internal threaded DN15.

TECHNICAL DATA

Pressure class: PN 16
Max. working temperature: 100°C
Connection: Internal thread (G), EN 10226-1
Compression fitting (CPF), EN 1254-2

Material
Valve housing and other metal parts with fluid contact:
DZR brass CW602N, resistant to dezincification
Seat seal: EPDM
O-rings: EPDM
Knob: Plastic
Regulating cone: Plastic (PPA)



SERIES VMA200

Art. No.	Reference	DN	Kvs	Connection		Dimension		Weight [kg]
				C	D	A	B	
3640 10 00	VMA213	15	2.5	CPF 15 mm	G ½"	86	53	0.30
3640 11 00	VMA213	20	3.5	CPF 22 mm	G ½"	86	53	0.35
3640 12 00	VMA233		3.5		CPF 22 mm			0.38

CPF = compression fitting

SAFETY VALVE
SERIES VSB100

External thread/
compression fitting

ESBE safety valves series VSB100 are intended for protection against excess pressure in domestic hot water applications.

Externally threaded inlet connections with compression fittings on the outlet are provided in DN15 and DN20.

OPERATION

ESBE safety valves series VSB100 are used to secure domestic hot water systems against excess pressure. When choosing safety valve the effect marking on the safety valve must exceed the nominal effect of the vessel. ESBE safety valves carry CE-marking.

If the temperature of the heating medium is lower than the boiling temperature corresponding to the maximum allowed pressure of the heater, the safety valve needs only to be dimensioned for the thermic expansion of the water. If the temperature of the heating medium is higher than the boiling temperature corresponding to the maximum allowed pressure of the heater, the valve must be dimensioned to discharge the whole steam flow at the maximum added effect. The maximum capacity of heaters for which it is intended is marked on the safety valve.

MOUNTING

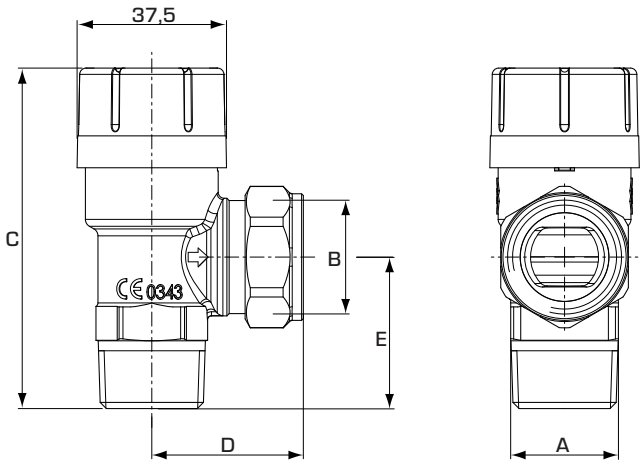
If several heaters are used, and if they may be shut off independently of each other, each heater should be equipped with a safety valve. In order to observe the valve in operation, the installation of a funnel is always recommended, and in some instances also mandatory. Please make sure all installations of valves, exhaust pipes, funnels etc are made in accordance with applicable codes and ordinances.

TECHNICAL DATA

Pressure class: PN 16
Temperature: max. 95°C
min. 0°C
Connection: External thread (R), EN 10226-1
Compression fitting (CPF), EN 1254-2

Material
Valve housing and other metal parts with fluid contact:
DZR brass CW 602N, resistant to dezincification

CE PED 97/23/EC TÜV ACS



SERIES VSB132, EXTERNAL THREAD AND COMPRESSION FITTING

Art. No.	Reference	Opening pressure [MPa]	Opening pressure [bar]	Blow-off capacity* [kW][1)]	Blow-off capacity* [l/h][2)]	DN	Connection A	Connection B	C	D	E	Weight [kg]
3602 01 00	VSB132	0.6	6.0	75	76	15	R ½"	CPF 15 mm	81.2	40.5	34.0	0.18
3602 02 00		0.7	7.0									
3602 03 00		0.8	8.0									
3602 04 00		0.9	9.0									
3602 05 00		1.0	10.0									
3602 06 00	VSB132	1.0	10.0	150	176	20	R ¾"	CPF 22 mm	85.4	38.0	38.0	0.20

* given at specified pressure +20% CPF = compression fitting
Note 1) Acc. to EN-1491 § 9 2) Acc. to EN-1491 § 6.2.4

SAFETY VALVE
SERIES VSB200

Internal thread

External thread/
compression fitting

ESBE safety valves series VSB200 are intended for protection against excess pressure in heating applications.

Internally threaded inlet and outlet connections in DN20. Externally threaded inlet and compression fitting on the outlet is available in DN15.

OPERATION

ESBE safety valves series VSB200 are used to secure heating systems with temperatures up to 120°C against excess pressure. When choosing safety valve the effect marking on the safety valve must exceed the nominal effect of the vessel. ESBE safety valves carry CE-marking.

If the temperature of the heating medium is lower than the boiling temperature corresponding to the maximum allowed pressure of the heater, the safety valve needs only to be dimensioned for the thermic expansion of the water. If the temperature of the heating medium is higher than the boiling temperature corresponding to the maximum allowed pressure of the heater, the valve must be dimensioned to discharge the whole steam flow at the maximum added effect. The maximum capacity of heaters for which it is intended is marked on the safety valve.

MOUNTING

If several heaters are used, and if they may be shut off independently of each other, each heater should be equipped with a safety valve. In order to observe the valve in operation, the installation of a funnel is always recommended, and in some instances also mandatory. Please make sure all installations of valves, exhaust pipes, funnels etc are made in accordance with applicable codes and ordinances.

TECHNICAL DATA

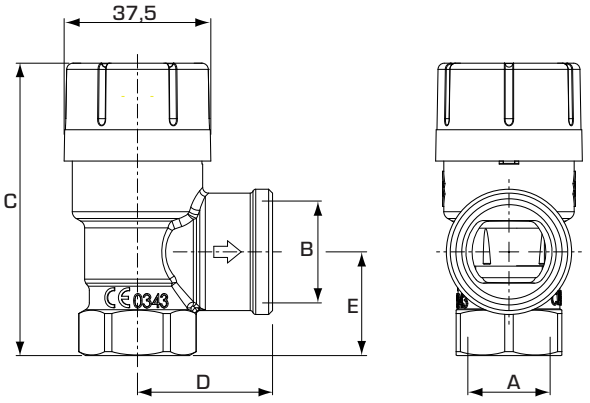
Pressure class: PN 16
Temperature: max. 120°C
min. -10°C
Connection: Internal thread (Rp), EN 10226-1
External thread (R), ISO 7/1
Compression fitting (CPF), EN 1254-2

Material
Valve housing and other metal parts with fluid contact:
Brass CW 617N

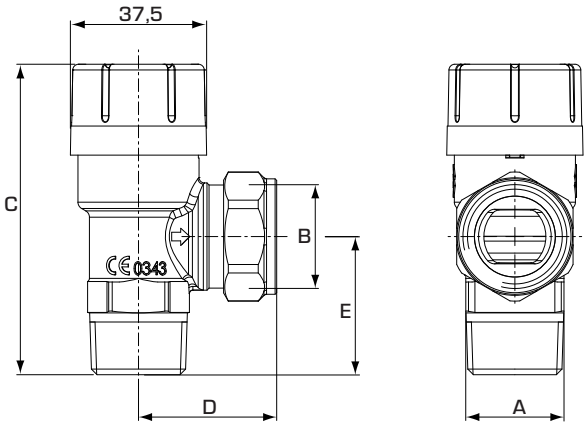
CE PED 97/23/EC

TÜV TÜV

SAFETY VALVE
SERIES VSB200



VSB211



VSB232

SERIES VSB211, INTERNAL THREAD

Art. No.	Reference	Opening pressure [MPa]	[bar]	Blow-off capacity* [kW][1)]	[l/h][2)]	DN	Connection A	B	C	D	E	Weight [kg]
3602 25 00	VSB211	0.15	1.5	115	350	20	Rp ¾"	Rp ¾"	70.9	30.5	23.5	0.14
3602 26 00		0.2	2.0	135	350							
3602 27 00		0.25	2.5	150	425							
3602 28 00		0.3	3.0	165	425							
3602 29 00		0.35	3.5	185	475							
3602 30 00	VSB211	0.15	1.5	125	350	20	Rp ¾"	Rp 1"	76.8	36.5	29.5	0.19
3602 31 00		0.2	2.0	145	350							
3602 32 00		0.25	2.5	165	425							
3602 33 00		0.3	3.0	180	425							
3602 34 00		0.35	3.5	205	475							

SERIES VSB232, EXTERNAL THREAD AND COMPRESSION FITTING

Art. No.	Reference	Opening pressure [MPa]	[bar]	Blow-off capacity* [kW][1)]	[l/h][2)]	DN	Connection D	E	A	B	C	Weight [kg]
3602 20 00	VSB232	0.15	1.5	80	175	15	R ½"	CPF 15 mm	81.2	40.5	34.0	0.18
3602 21 00		0.2	2.0	95	175							
3602 22 00		0.25	2.5	105	200							
3602 23 00		0.3	3.0	115	200							
3602 24 00		0.35	3.5	130	225							

* given at specified pressure +20% CPF = compression fitting
Note 1) Measurements by supplier 2) Acc. to EN-1489 § 6.2.4

SAFETY VALVE
SERIES VSB300

Internal thread

ESBE safety valves series VSB300 are intended for protection against excess pressure in solar heating applications.

Internally threaded inlet and outlet connections in DN15.

OPERATION

ESBE safety valves series VSB300 are used to secure solar heating systems with temperatures up to 160°C against excess pressure. When choosing safety valve the effect marking on the safety valve must exceed the nominal effect of the vessel. ESBE safety valves carry CE-marking.

If the temperature of the heating medium is lower than the boiling temperature corresponding to the maximum allowed pressure of the heater, the safety valve needs only to be dimensioned for the thermic expansion of the water. If the temperature of the heating medium is higher than the boiling temperature corresponding to the maximum allowed pressure of the heater, the valve must be dimensioned to discharge the whole steam flow at the maximum added effect. The maximum capacity of heaters for which it is intended is marked on the safety valve.

MOUNTING

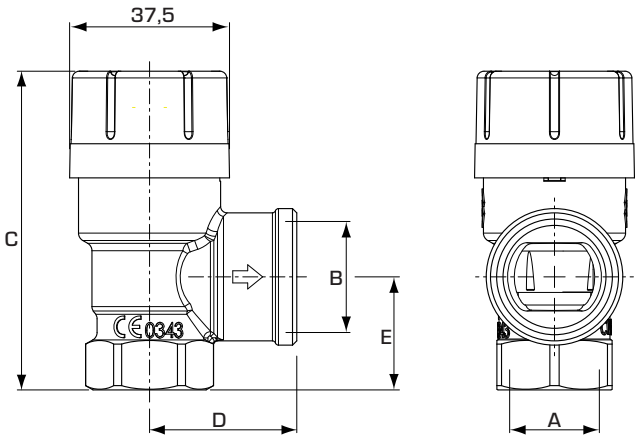
If several heaters/solar panels are used, and if they may be shut off independently of each other, each heater should be equipped with a safety valve. In order to observe the valve in operation, the installation of a funnel is always recommended, and in some instances also mandatory. Please make sure all installations of valves, exhaust pipes, funnels etc are made in accordance with applicable codes and ordinances.

TECHNICAL DATA

Pressure class: PN 16
Temperature: max. (continuously) +120°C
max. (temporarily) +160°C
min. -10°C
Connection: Internal thread (G), ISO 228/1
Internal thread (Rp), EN 10226-1

Material
Valve housing and other metal parts with fluid contact:
Brass CW 617N

CE PED 97/23/EC TÜV TÜV



SERIES VSB311, INTERNAL THREAD

Art. No.	Reference	Opening pressure [MPa]	Opening pressure [bar]	Blow-off capacity* [kW]1)	Blow-off capacity* [a_w]2)	DN	Connection A	Connection B	C	D	E	Weight [kg]
3602 50 00	VSB311	0.35	3.5	50	0.58	15	G ½"	Rp ¾"	74.7	34.5	26.5	0.16
3602 51 00		0.6	6.0									

* given at specified pressure +20%
Note 1) Acc. to TRD 721 § 7.2.4.2 2) Acc. to TRD 721 § 6.2.5

FILLING VALVE
SERIES VFA100 AND VFB100

ESBE filling valves for the filling of heating system and other closed fluid systems.

VFA
Compression fitting

VFB
Compression fitting/
internal thread

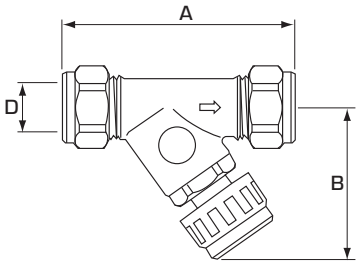
OPERATION

The valve is intended for the filling of heating systems and other closed fluid systems. The valve series VFA has built-in shut-off and spring-loaded check valve functions with back-flow protection type EB complying with EN1717.

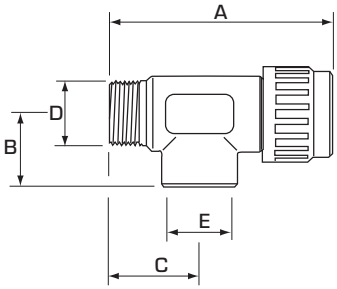
TECHNICAL DATA

Pressure class: PN 16
Max. working temperature: 100°C
Connections: Internal and external thread, ISO 228/1
Compression fitting, EN 1254-2

Material
Valve housing and other metal parts with fluid contact:
DZR brass CW 602N, resistant to dezincification
Seat seal: VFA = Silicone
VFB = EPDM
O-rings: EPDM
Knob: Plastic



VFA



VFB

SERIES VFA100

Art. No.	Reference	DN	Kvs*	A	B	C	Connection D	Connection E	Weight [kg]
3630 01 00	VFA103	15	2	75	58	–	CPF 15 mm	–	0.21

SERIES VFB100

Art. No.	Reference	DN	Kvs*	A	B	C	Connection D	Connection E	Weight [kg]
3630 03 00	VFB102	20	12	110	30	37	G ¾"	G ¾"	0.32
3630 02 00	VFB103	20	12	110	30	45	CPF 22 mm	G ¾"	0.42
3630 04 00					38			CPF 22 mm	0.42

* Kvs-value in m^3/h at a pressure drop of 1 bar. CPF = compression fitting

DRAINING VALVE
SERIES VDA100 AND VDB100

ESBE draining valves for boilers, hot water tanks, pipes etc.
Opens automatically when connecting a hose nipple.

VDA
External thread

VDB
External thread

OPERATION
The valve is intended for the draining of boilers, hot water tanks and other liquid containers, as well as pipe systems. The article series VDA has brass caps. Article 3620 04 00 has a brass cap while article 3620 05 00 has a plastic cap.

FUNCTION
Draining valves series VDA are opened by connecting a hose nipple. The spring-loaded plug is then moved to open position. Outlet connection for hose nipple pursuant to SMS 1077, with packing and wing nut as per SMS 1078 (G 1/2). Input connection is external G 1/2 alt. R 1/2.

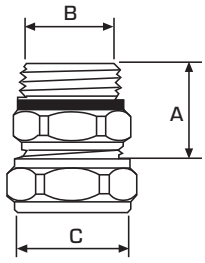
Draining valves series VDB are opened with a 6-sided spanner. Inlet and outlet connections are external G 1/2.

TECHNICAL DATA, SERIES VDA
Pressure class: PN 16
Max. working temperature: 90°C
Connections: External thread, ISO 228/1

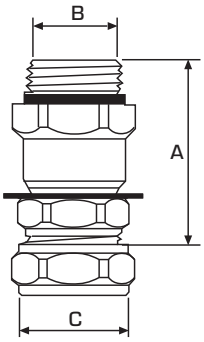
Material
Valve housing and other metal parts with fluid contact: DZR brass CW 602N, resistant to dezincification
Plug: Plastic
O-rings: EPDM

TECHNICAL DATA, SERIES VDB
Pressure class: PN 16
Max. working temperature: 120°C
Connection: External thread, ISO 228/1

Material
Valve housing and other metal parts with fluid contact: DZR brass CW 602N, resistant to dezincification
O-rings: EPDM



VDA



VDB

SERIES VDA100

Art. No.	Reference	DN	A	Connection B	Connection C	Cover	Weight [kg]
3620 01 00	VDA102	15	26	G ½"	G ½"	Brass	0.06

SERIES VDB100

Art. No.	Reference	DN	A	Connection B	Connection C	Cover	Weight [kg]
3620 04 00	VDB102	15	47	G ½"	G ½"	Brass	0.10
3620 05 00						Plastic	0.09

CHECK VALVE
SERIES VCA100

ESBE check valves are designed for lowest possible pressure drop combined with a low opening pressure.

OPERATION
ESBE check valve series VCA is constructed for a low pressure reduction combined with low opening pressure. The valve's function is independent of position with the lowest opening pressure in a vertical pipe with the flow from above.

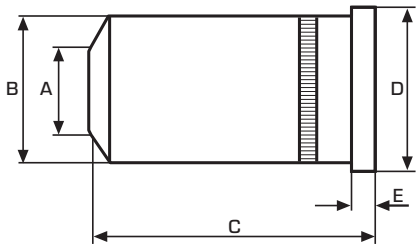
The valve is intended for internal use in pipes 15x1, 22x1 or 28x1.2.

MEDIA
Maximum 50% glycol for freezing protection and oxygen absorbing compounds are allowed as additives. As both the viscosity and the thermal conduction are affected when glycol is added to the system water, this fact has to be considered when dimensioning the valve.

A good rule is to choose one size higher Kv-value when 30 - 50% glycol is added. A lower concentration of glycol may be disregarded.

TECHNICAL DATA
Pressure class: PN 10
Max. working temperature: 110°C

Material
Body: - DN15, DN 25 Brass CW 602N
- DN 20 Brass CW 602N/Copper
Plug: - DN15, DN 20 Brass CW 602N
- DN 25 Plastic
Spring resort: - DN 15, DN 20 Plastic
- DN 25 Brass CW 602N
Spring: Stainless steel
O-ring: EPDM



SERIES VCA100

Art. No.	Reference	DN	Kvs*	A	B	C	D	E	Opening pressure [kPa] ↑	→	↓	Weight [kg]
3650 01 00	VCA100	15	1.5	8.0	12.8	27.0	14.5	2.0	4.0	3.8	3.5	0.01
3650 04 00		20	4.0	12.0	19.8	30.0	21.5		2.5	2.3	2.0	0.02
3650 05 00		25	6.0	15.5	25.3	34.0	27.7		2.6	2.0	1.4	0.06

*Kvs-value m^3/h at a pressure drop of 1 bar.

VACUUM VALVE
SERIES VVA100

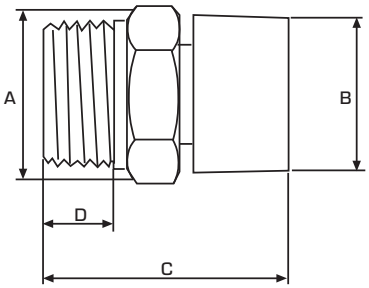
ESBE vacuum valves are intended as anti-siphonage devices.

OPERATION
ESBE's vacuum valve is intended as an anti-siphonage device for e.g. hot water tanks.

MEDIA
Maximum 50% glycol for freezing protection and oxygen absorbing compounds are allowed as additives.

TECHNICAL DATA
Pressure class: PN 10
Max. working temperature: 90°C
Connection: External thread, ISO 228/1

Material
Body: Brass CW 602N
Plug: Plastic
Spring: Stainless steel
O-ring: EPDM



SERIES VVA100

Art. No.	Reference	DN	Connection A	B	C	D	Weight [kg]
3610 01 00	VVA102	15	G ½"	22.0	33.0	9.0	0.03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06
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