ROTARY MOTORIZED VALVES


DN25 PN10

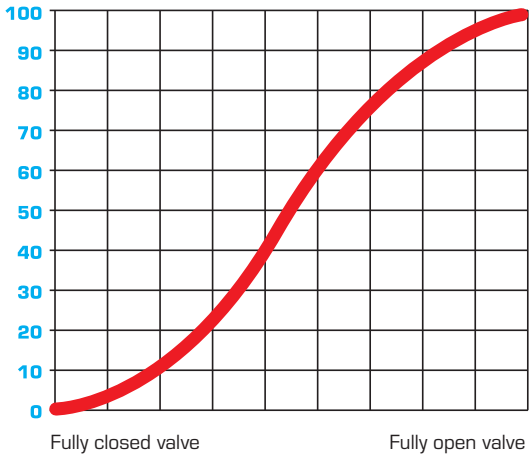
CONTENTS ROTARY MOTORIZED VALVES

HOW DO YOU CREATE A NEW STANDARD?
OF COURSE BY INTERVIEWING INSTALLATION ENGINEERS, OEM PARTNERS AND WHOLESALERS.

Our rotary valves and actuators are developed by you. We began our development project by interviewing installation engineers, OEM partners and wholesalers and asked them to think about product improvements. The result was the new generation – the new standard of rotary valves and actuators – which we released some years ago. Excellent products which make your job easier, increase energy savings and provide improved levels of comfort. Not to mention all the benefits resulting from the innovations which benefits additional areas of applications.

Now we have a wide range of valves for regulation of heating and cooling in a number of different designs. Also many different actuators to choose between which all have one thing in common: a simple and quick installation on the valve. And regardless if you would like us to mount valve and actuator together or if you would like to do that work yourself, you will have a well suited and combined unit – a complete motorized valve – that guarantees reliable, energy-efficient operation for many years to come.

Thanks also for your contribution to our development. You're a hero!



"TIME IS IMPORTANT TO ME. IS IT POSSIBLE TO FURTHER SIMPLIFY INSTALLATION?"

FIVE IMPROVEMENTS FOR EVEN SIMPLER AND QUICKER INSTALLATION.

1. SIMPLER INSTALLATION OF ACTUATORS. Fitting an actuator is simpler than ever: remove the valve knob and scale, push on the shaft coupling followed by the actuator, put a screw in place and fit the actuator's adjusting knob. Done!

2. FEWER PARTS, FEWER TOOLS. The scale is simple to replace and adapt to suit how you connect the hot and cold water. Two screws and a scale plate were previously needed. Now you simply pull the adjusting knob straight out instead, turn the scale and push the knob in again – no tools required. The actuator is just as simple. Choose between the two scales supplied depending on the valve connection.

3. SIMPLER TO INSTALL VALVES. The valve without mounting plate allows you more room to tighten valves in cramped spaces and close to walls.

4. MORE SECURE INSTALLATION FOR INTERNAL THREADED VALVE. The key handle is wider 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. MORE FLEXIBLE CABLE CONNECTION. The actuators are supplied complete with connection cable but also with an extra cable port. The advantage is that you can run a separate cable direct to a circulation pump, for instance, without going via a central controller.

"GREATER CONTROL PRECISION IS ALWAYS IN DEMAND."

THE WHOLE OF THE VALVE'S ANGLE OF ROTATION CAN BE UTILISED.

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 above 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.

PREVIOUS MOTORIZED VALVE

NEW MOTORIZED VALVE

"LOOSELY FITTED ACTUATOR SEEMS TO AFFECT REGULATION. AT WORST IT CAN CAUSE UNNECESSARY REPEAT VISITS TO THE CUSTOMER."

MORE STABLE INSTALLATION PROVIDES CONSIDERABLY BETTER 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.

"OUR CUSTOMERS ARE DEMANDING SMALLER PRODUCTS. IS IT POSSIBLE TO MAKE THE MOTORIZED VALVE EVEN MORE COMPACT?"

YES, OF COURSE WE CAN. 12% OR 15 MM TO BE EXACT.

For installation purposes, 15 millimetres is 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.

Another ingenious aspect we have discussed with our customers is the operational position. The operational position of the actuator knob was previously the pulled-out position. The operational position is now the pushed-in position instead. Consequently, the motorized valve takes up less space during normal operation.

As simple as it is clever.

"ESBE'S VALVES ARE KNOWN FOR MINIMAL INTERNAL LEAKAGE. BUT IS IT POSSIBLE TO REDUCE IT EVEN FURTHER?"

WE ARE NOW AS CLOSE TO FULLY LEAKPROOF 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 leakproof valve is difficult to achieve for a rotary valve. It's time to replace all those old valves leaking valuable energy.

"I REALLY MISS BRASS FOR MANY APPLICATIONS."

ALL VALVES – FROM DN 15 RIGHT UP TO DN 50 – ARE NOW MADE OF DZR.

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. The suitability of brass also reduces the need for keeping different types of valves in stock.

All our rotary valves – from DN 15 right up to DN 50 – are now made of brass, but not just any old 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.

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

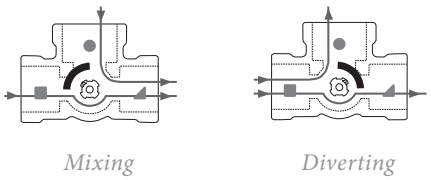
The products must not be disposed of together with domestic waste, but should be treated as metal scrap. Local and currently valid legislation must be observed.

DISPOSAL OF ACTUATORS AND REGULATORS

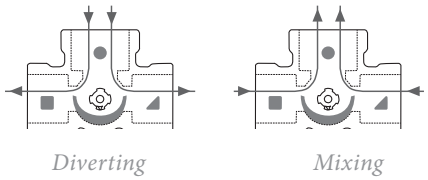
The device must not be disposed of together with domestic waste. This applies in particular to the printed circuit card. Legislation may demand special handling of certain components, or it may be desirable from an ecological point of view. Local and currently valid legislation must be observed.

ESBE GUIDE
SELECT THE MOST SUITABLE MIXING VALVE

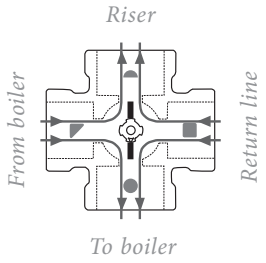
OPERATION 3-WAY VALVES
VRG130, 330
The required system temperature is obtained by adding a suitable proportion of return water to the boiler flow.



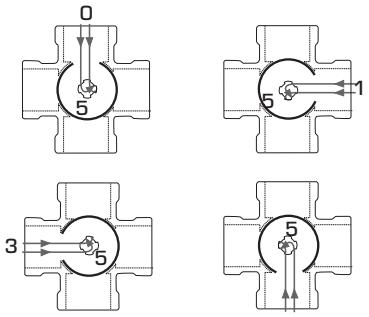
VRG230
Valves with special design of the inner parts, suitable for applications which requires mid-port changeover operation. Can be placed in both diverting and mixing positions.



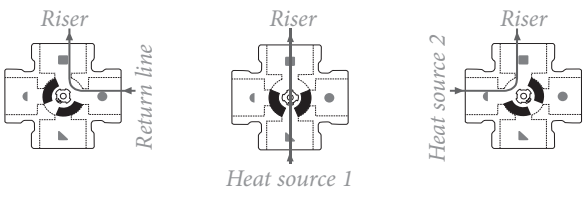
OPERATION 4-WAY VALVES
VRG140
The valves have a double mixing function, i.e. a proportion of the hot water supplied from the boiler is mixed with the return water. This results in a higher return water temperature, reducing the risk of corrosion and assuring a longer life for the boiler.



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.



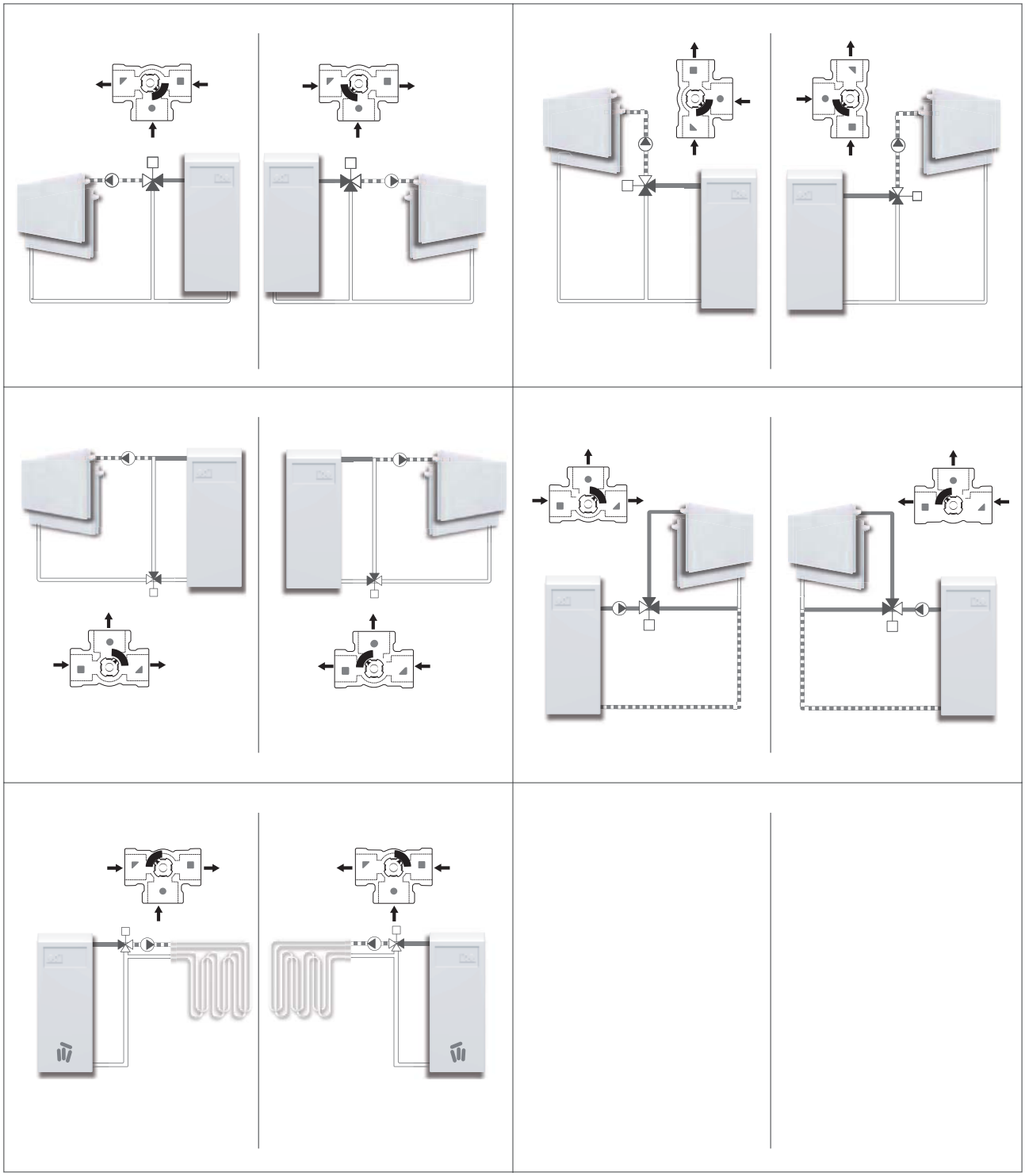
ESBE GUIDE
SELECT THE MOST SUITABLE MIXING VALVE

● Recommended ◍ Secondary alternative ○ Not applicable

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

APPLICATION EXAMPLES ARE VALID FOR

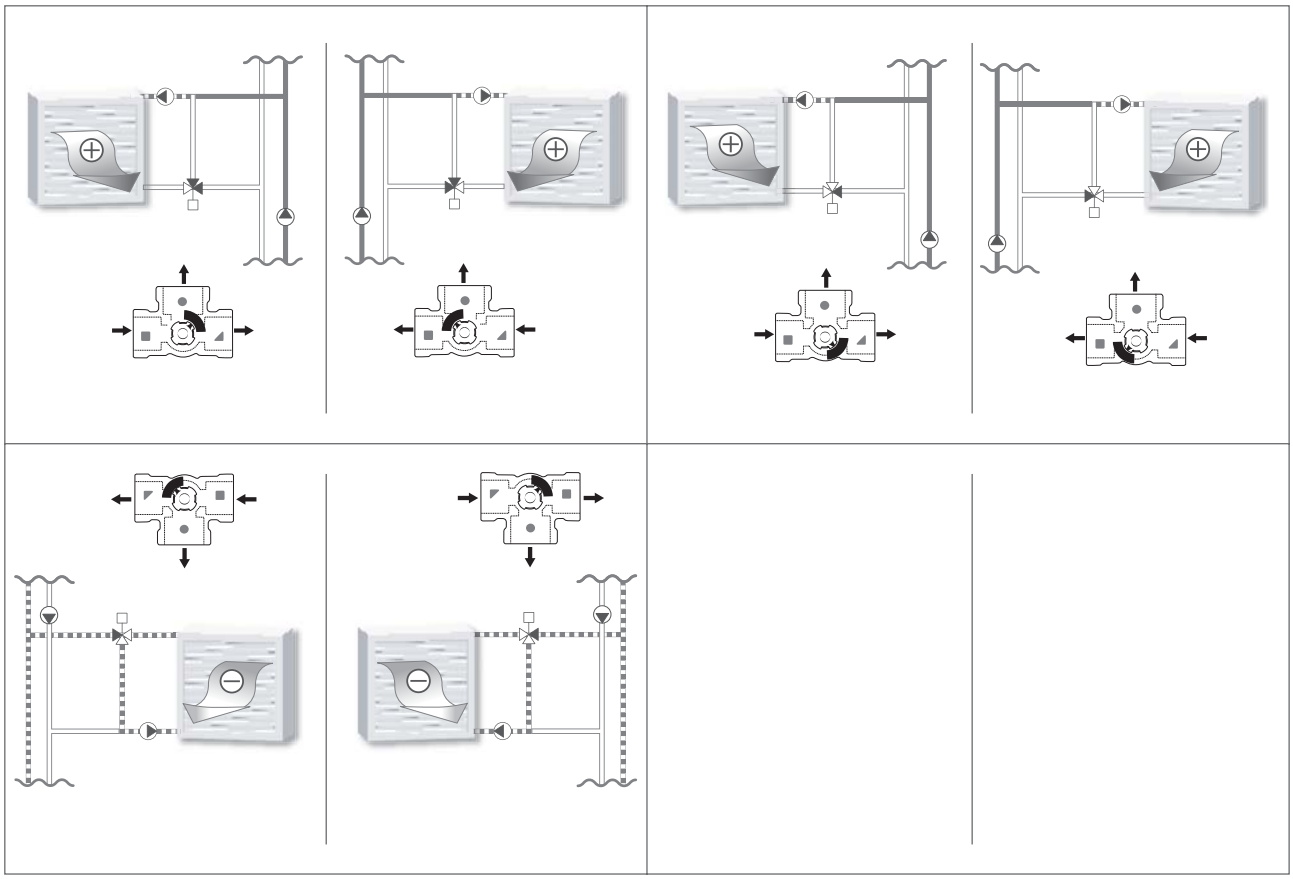
● VRG130 ○ VRG140 ○ VRG230 ◍ VRG330 ○ VRB140 ○ 5MG ● 3F ○ 4F



ESBE GUIDE
SELECT THE MOST SUITABLE MIXING VALVE

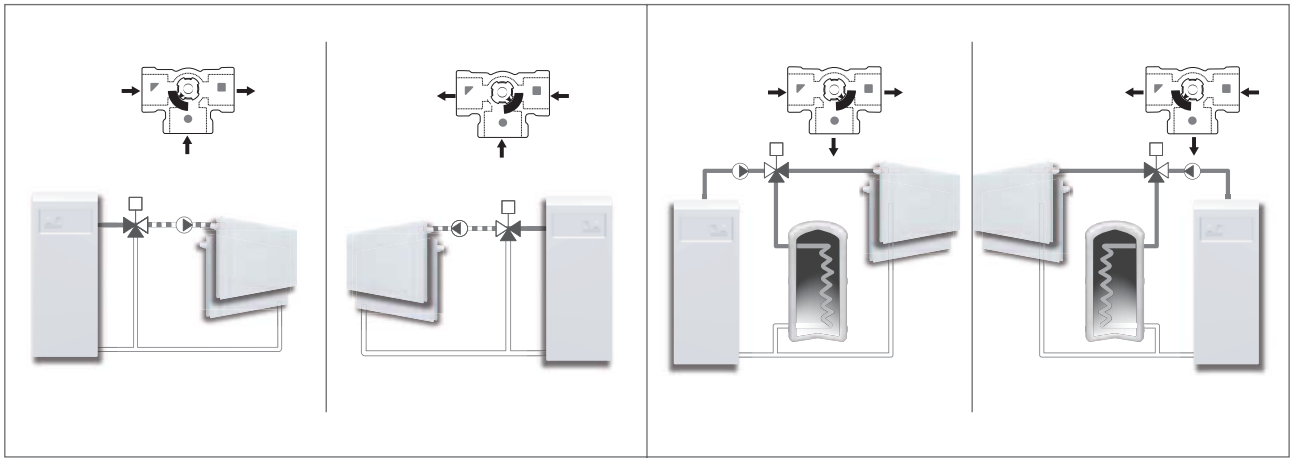
APPLICATION EXAMPLES ARE VALID FOR

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



APPLICATION EXAMPLES ARE VALID FOR

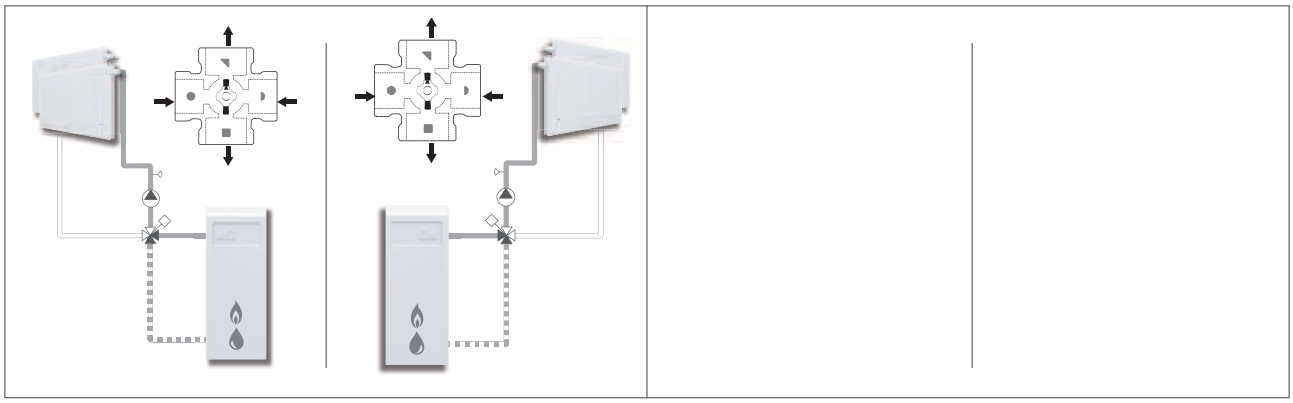
● VRG130 ○ VRG140 ○ VRG230 ● VRG330 ○ VRB140 ○ 5MG ● 3F ○ 4F



ESBE GUIDE
SELECT THE MOST SUITABLE MIXING VALVE

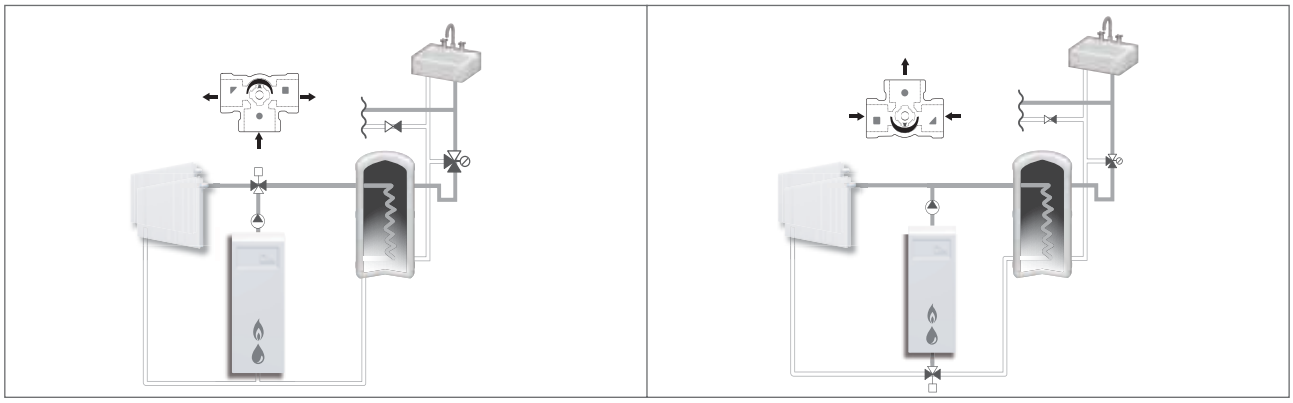
APPLICATION EXAMPLES ARE VALID FOR

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



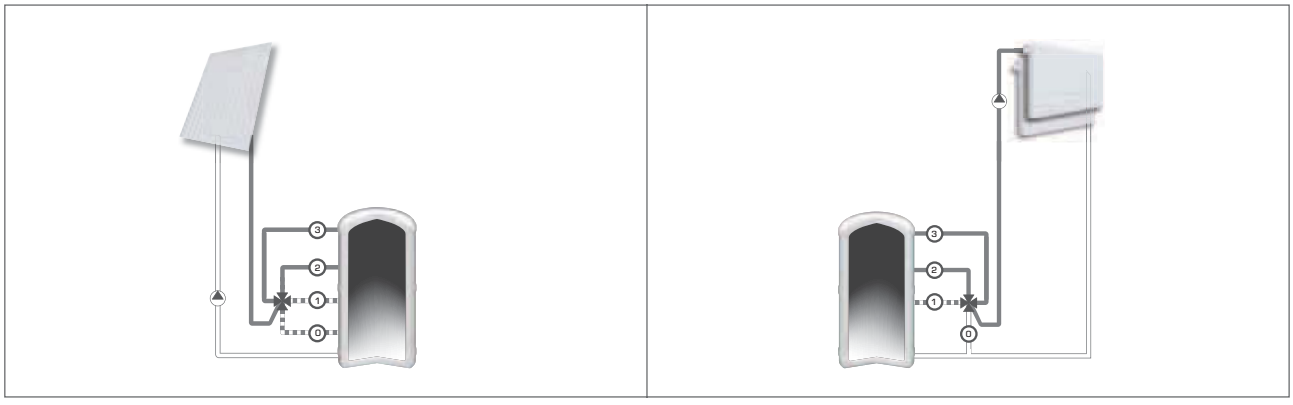
APPLICATION EXAMPLES ARE VALID FOR

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



APPLICATION EXAMPLES ARE VALID FOR

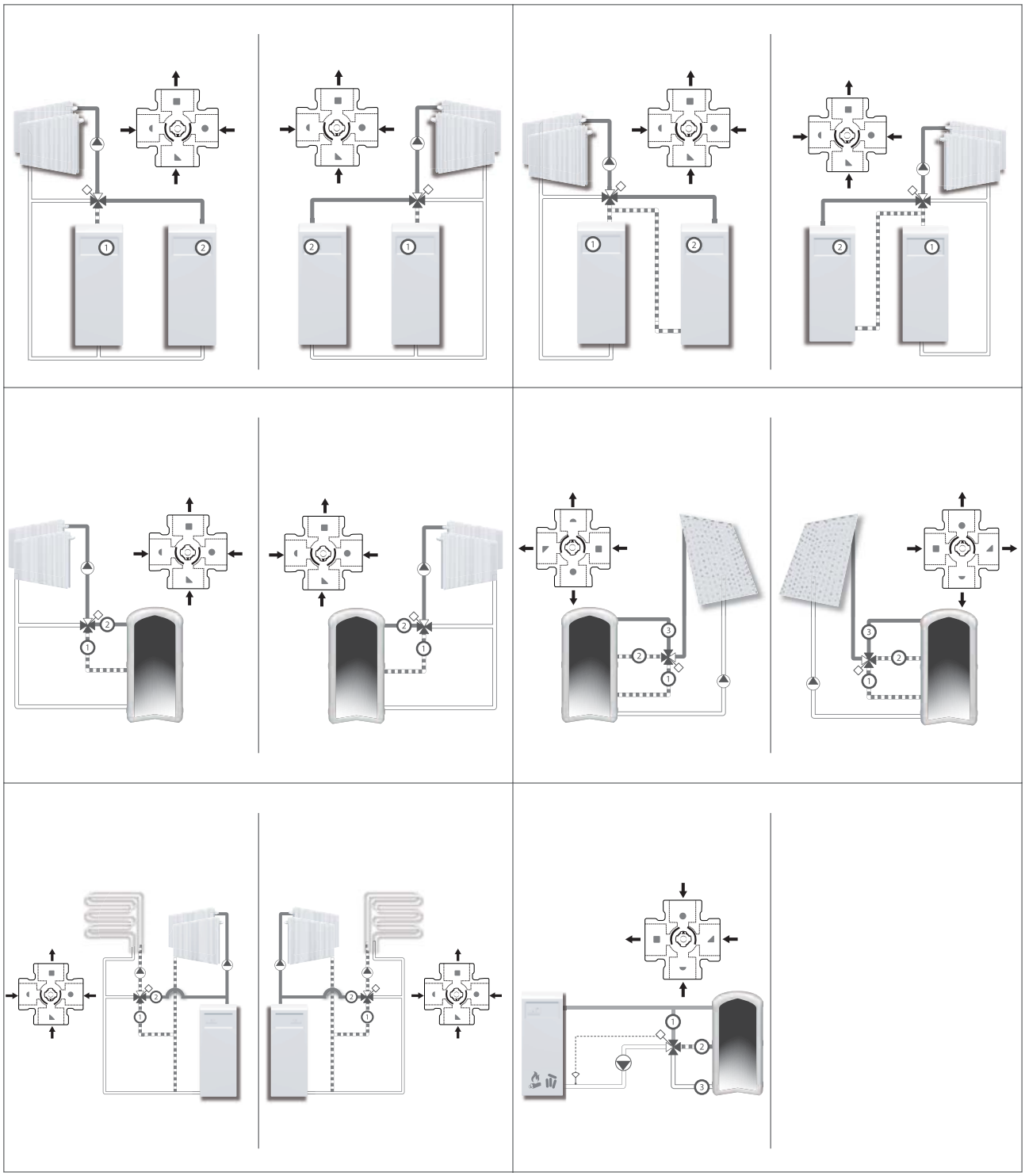
○ VRG130 ○ VRG140 ○ VRG230 ● VRG330 ○ VRB140 ● 5MG ○ 3F ○ 4F



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 VRG AND VRB

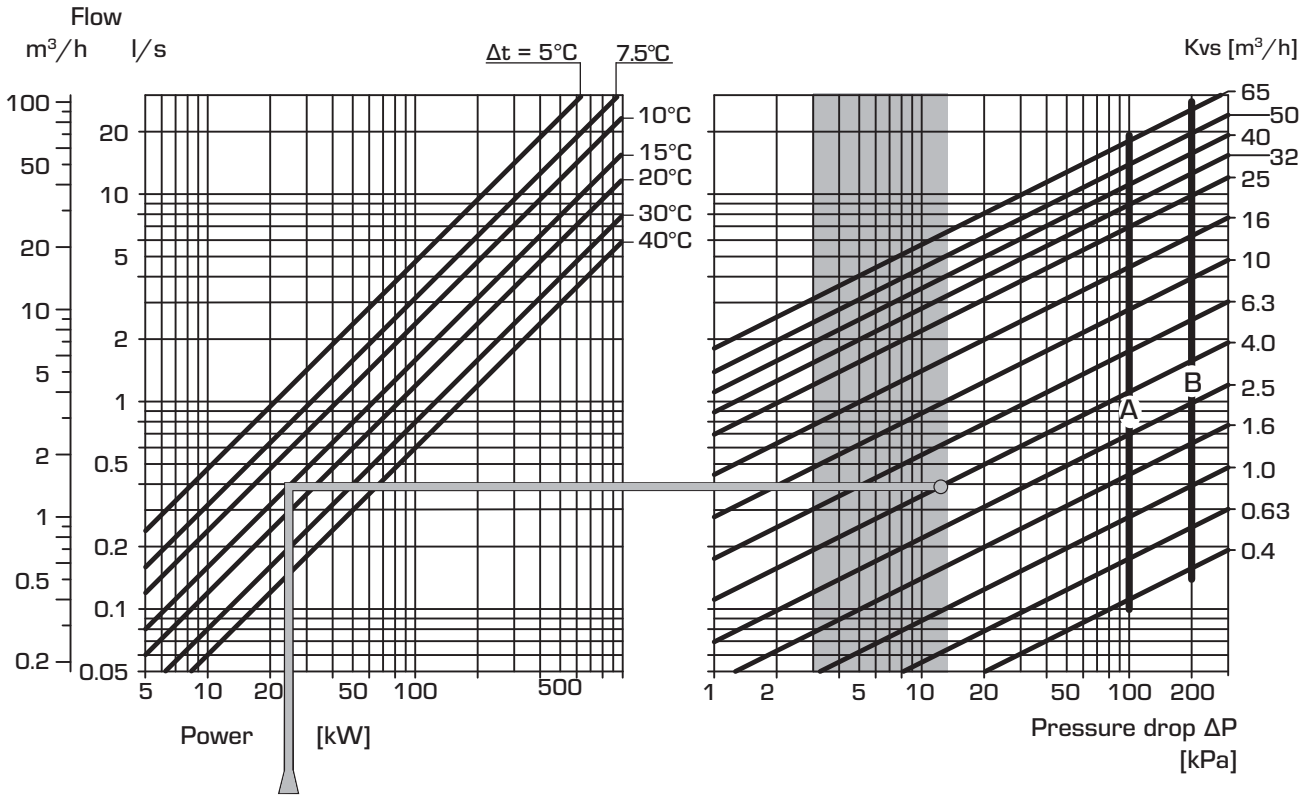
HEATING SYSTEMS (RADIATOR OR UNDERFLOOR HEATING SYSTEMS)

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

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

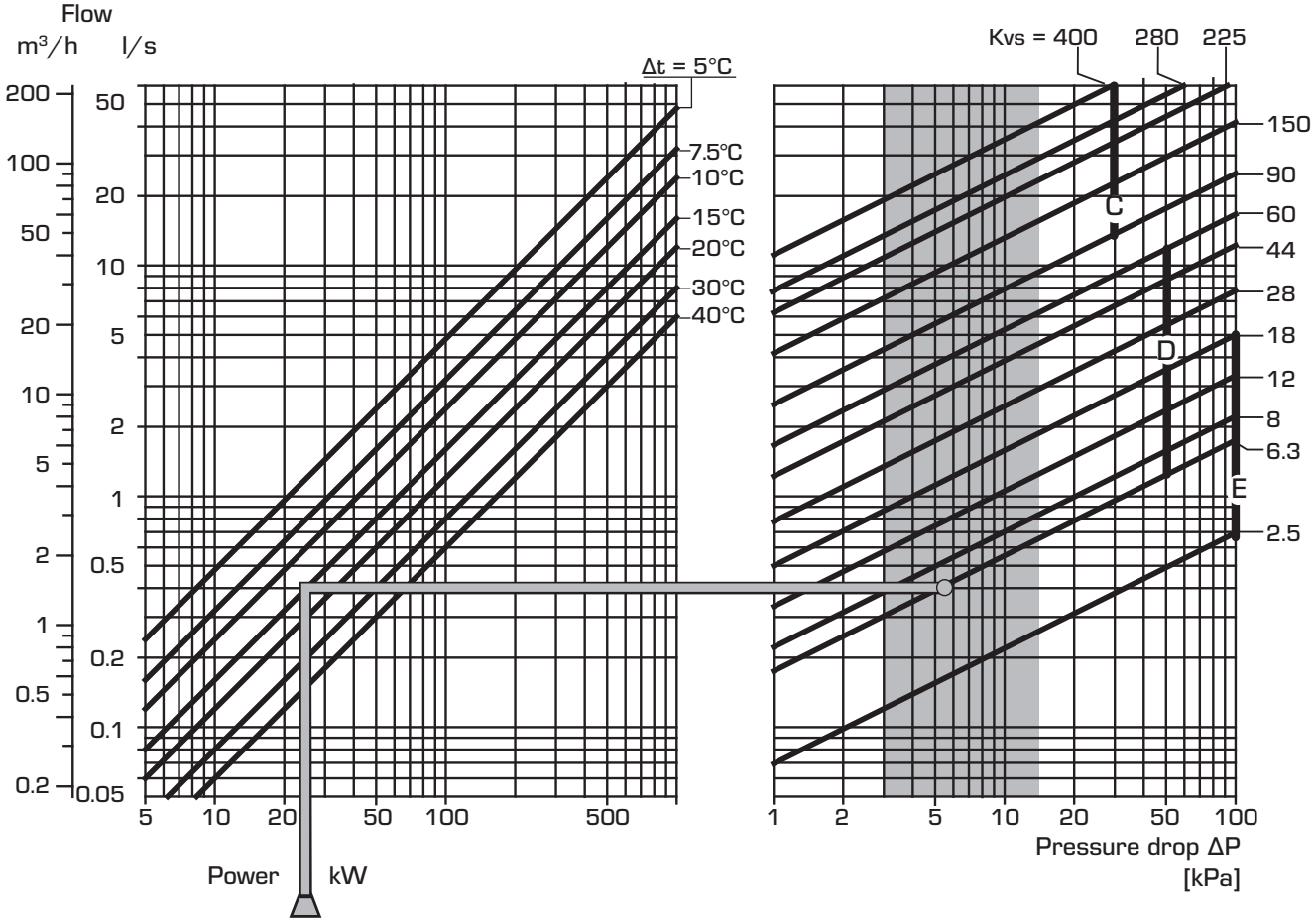
HEATING SYSTEMS (RADIATOR OR UNDERFLOOR HEATING SYSTEMS)

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. 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.



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

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.


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 series 90C 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.

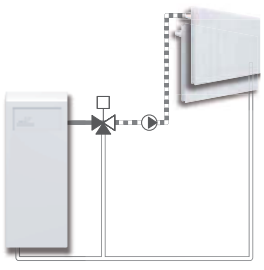
SERVICE AND MAINTENANCE

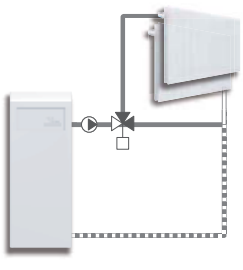
The slender and compact design of the valve allows for easy tool access when assembling and disassembling the valve.

Repair kits are available for key components. An extra O-ring can also be installed as additional shaft seal without any need for draining the system or dismantling the valve, as long as the system is depressurized.

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 90K

*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):	< 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

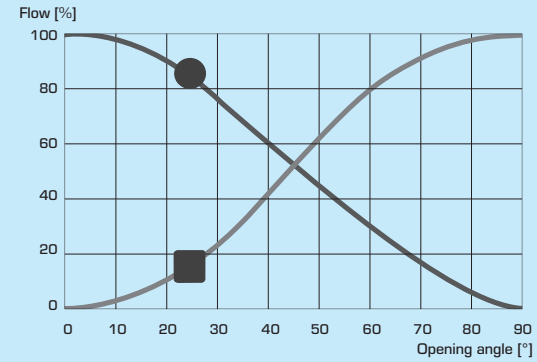
* Differential pressure 100kPa (1 bar)

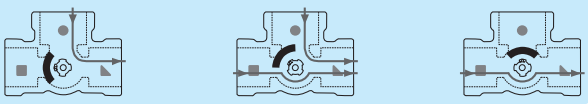
Material

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

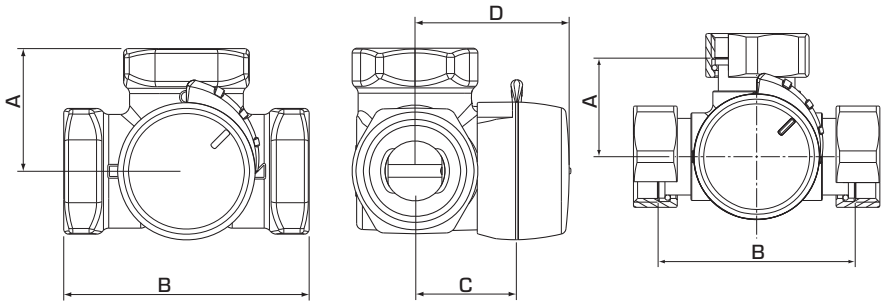
PED 97/23/EC, article 3.3

VALVE CHARACTERISTICS



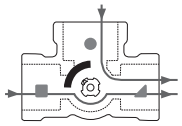


MIXING VALVE
SERIES VRG130

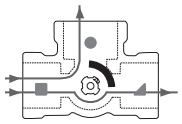


VRG131, VRG132, VRG133

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 32. 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.

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 series 90C 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.

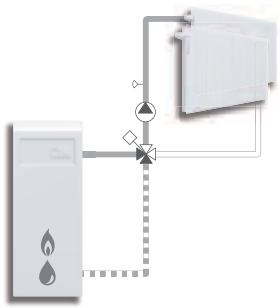
SERVICE AND MAINTENANCE

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. An extra O-ring can also be installed as additional shaft seal without any need for draining the system or dismantling the valve, as long as the system is depressurized.

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 90K

*Adaptor kit necessary, see product page

TECHNICAL DATA

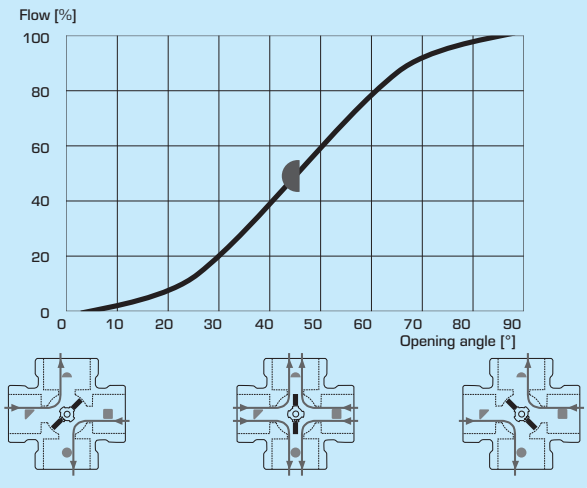
Pressure class: PN 10
Media temperature: max. (continuously) +110°C
max. (temporarily) +130°C
min. -10°C
Torque (at nominal pressure): < 5 Nm
Leakrate in % of flow*: < 1.0%
Working pressure: 1 MPa (10 bar)
Max. differential pressure drop: 100 kPa (1 bar)
Close off pressure: 100 kPa (1 bar)
Rangeability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

* Differential pressure 100kPa (1 bar)

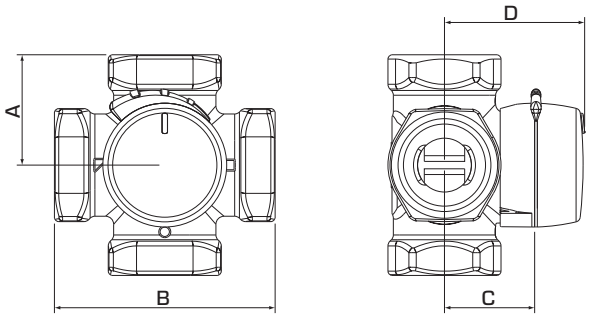
Material
Valve body and slide: Brass DZR, CW 602N
Shaft and bushing: PPS composite
O-rings: EPDM

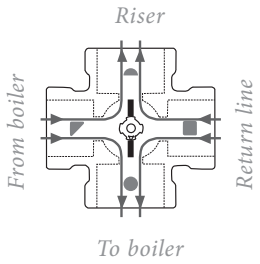
PED 97/23/EC, article 3.3

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 32.

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.

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 equipped with auxiliary switch 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.

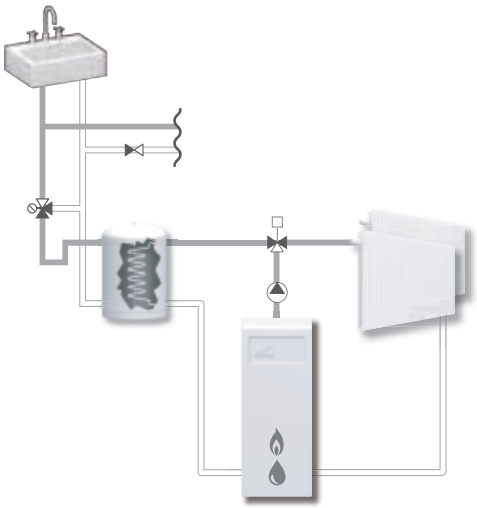
SERVICE AND MAINTENANCE

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. An extra O-ring can also be installed as additional shaft seal without any need for draining the system or dismantling the valve, as long as the system is depressurized.

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 90K

*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):	< 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

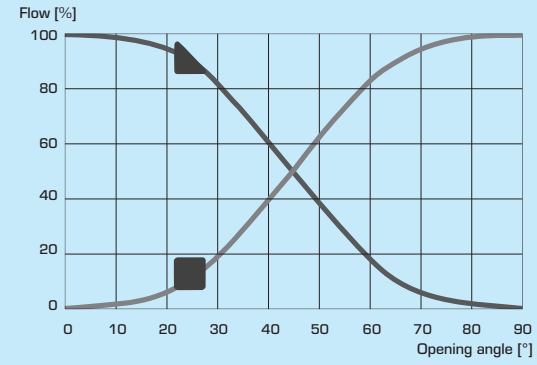
* Differential pressure 100kPa (1 bar)

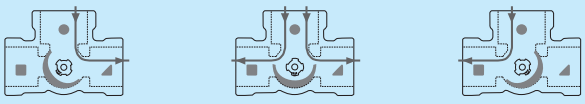
Material

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

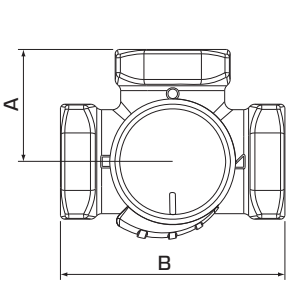
PED 97/23/EC, article 3.3

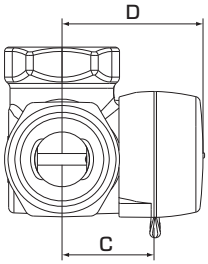
VALVE CHARACTERISTICS



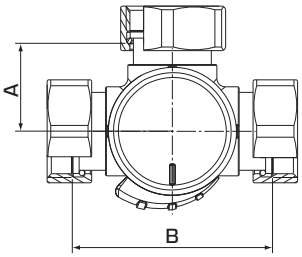


CHANGE-OVER / DIVERTING VALVE
SERIES VRG230

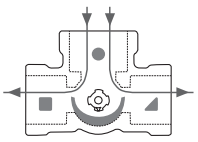




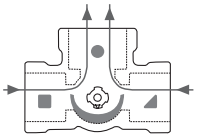
VRG231, VRG232, VRG233



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 32. 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.

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 the VRG330 valves are also easily automated.

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 (■ - ▲).

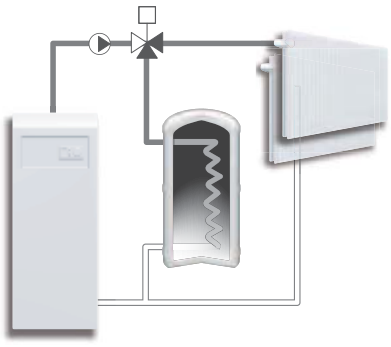
SERVICE AND MAINTENANCE

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. An extra O-ring can also be installed as additional shaft seal without any need for draining the system or dismantling the valve, as long as the system is depressurized.

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

TECHNICAL DATA

Pressure class:	PN 10
Media temperature:	max. (continuously) +110°C
	max. (temporarily) +130°C
	min. -10°C
Torque (at nominal pressure):	< 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

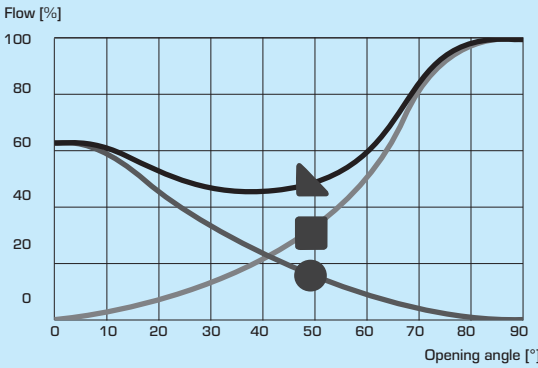
* Differential pressure 100kPa (1 bar)

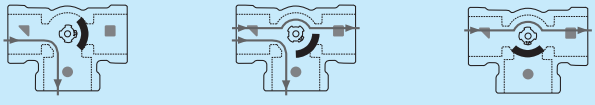
Material

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

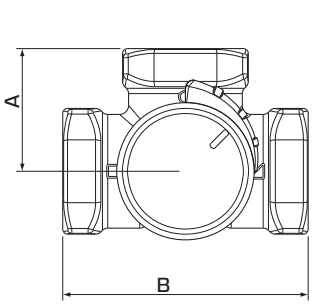
PED 97/23/EC, article 3.3

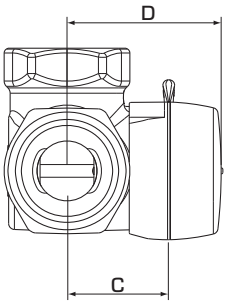
VALVE CHARACTERISTICS



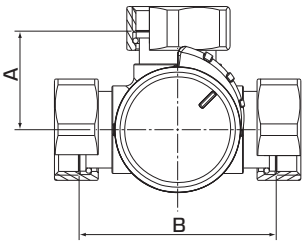


MIXING VALVE
SERIES VRG330

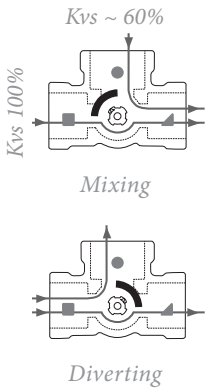




VRG331, VRG332



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 32. 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.

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 series 90C 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. An extra O-ring can also be installed as additional shaft seal without any need for draining the system or dismantling the valve, as long as the system is depressurized.

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 90K

*Adaptor kit necessary, see product page

TECHNICAL DATA

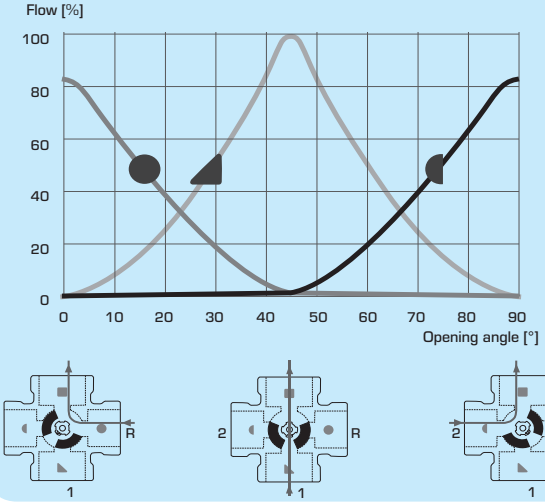
Pressure class: PN 10
Media temperature: max. (continuously) +110°C
max. (temporarily) +130°C
min. -10°C
Torque (at nominal pressure): < 5 Nm
Leakrate in % of flow*: < 0.5%
Working pressure: 1 MPa (10 bar)
Max. differential pressure drop: Mixing, 100 kPa (1 bar)
Diverting, 200 kPa (2 bar)
Close off pressure: 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

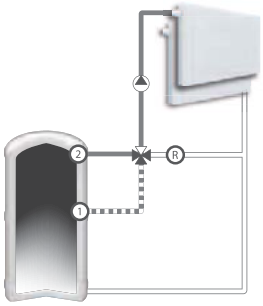
VALVE CHARACTERISTICS



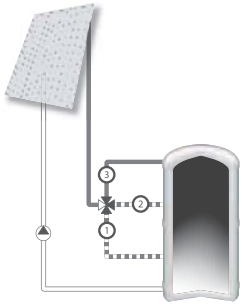
MIXING VALVE
SERIES VRB140

INSTALLATION EXAMPLES

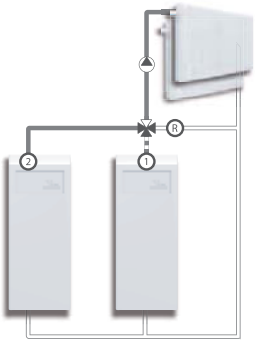
All the examples of installation can be mirrored. The valve position scale can be turned over and rotated to fit a number of installation layouts and shall at the installation be fitted in the correct position as shown in the instruction for installation. The symbol markings of the valve ports (■●▲◗)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



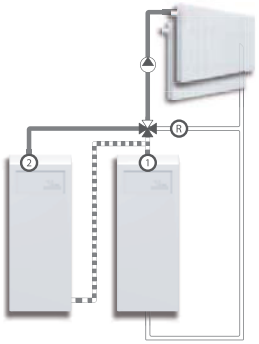
Storage tank mixing



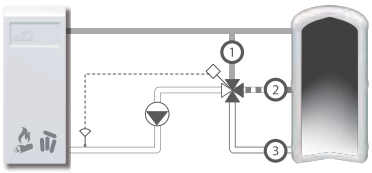
Storage tank loading



Parallel heat sources

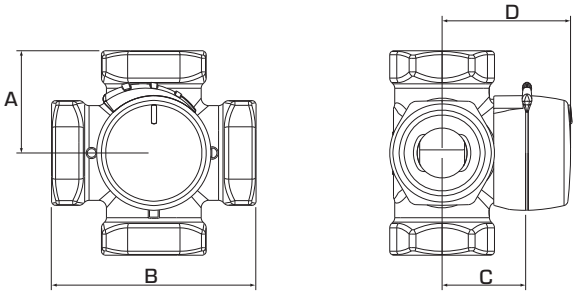


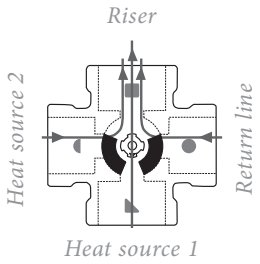
Serial heat sources



Storage tank loading

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 32. 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 or series 90.

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

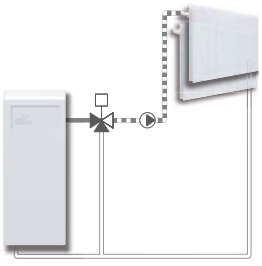
Valves series 3MG are made of a special brass alloy (DZR) and are therefore also suitable for domestic water installations.

SERVICE AND MAINTENANCE

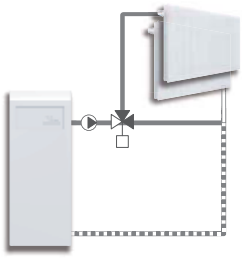
All major parts are replaceable. The shaft seal consist of two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. However, before doing so, the system must be depressurized.

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 60
- ● Series 90
- ● Series 90C
- ● Series 90K

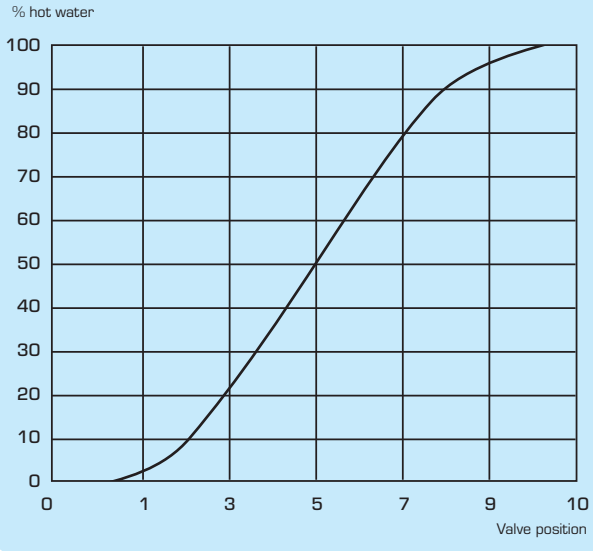
TECHNICAL DATA

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

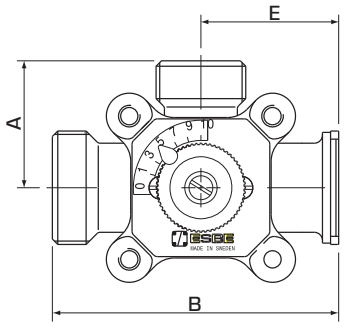
Material

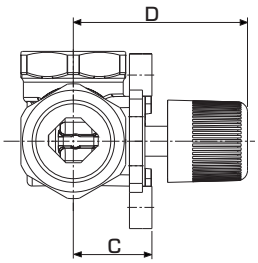
Valve body, spindle and slide:	Brass DZR, CW 602N
Bushing:	Plastic
Cover plate:	Zinc
O-rings:	EPDM

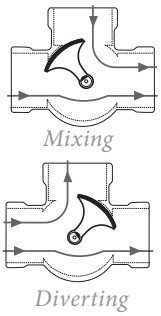
VALVE CHARACTERISTICS



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).

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:

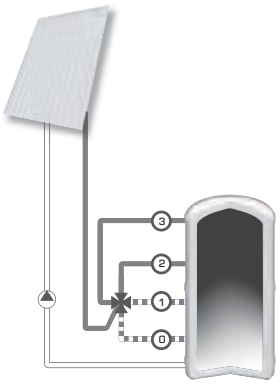
- ● Series 90, type 92P4 and 95-270M

TECHNICAL DATA

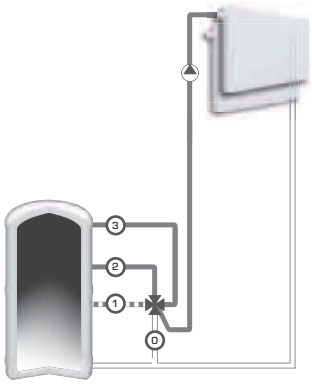
Pressure class:	PN 10
Media temperature:	max. +130°C
	min. –10°C
Differential pressure drop:	max. 100 kPa
Torque:	max. 3Nm
Leakrate in % of flow:	see table
Rangeability Kv/Kv^{min}:	100
Connections:	Internal thread, EN 10226-1

Material

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

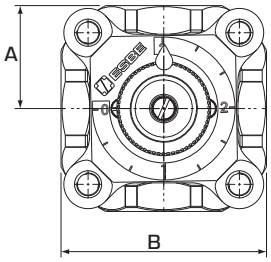


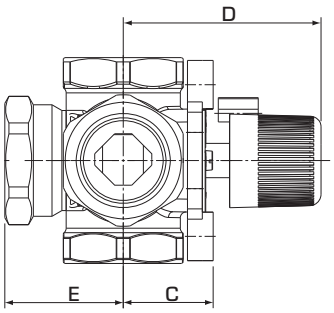
Diverting

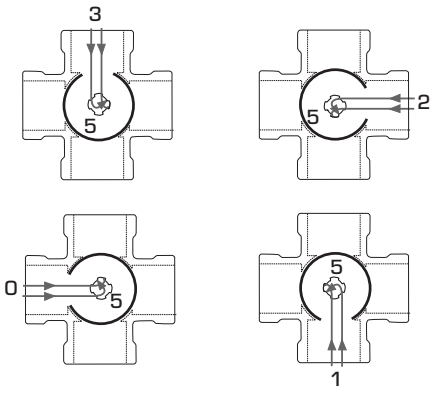


Mixing

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 33. ** 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 <50 or series 90.

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

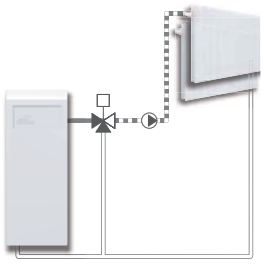
The scale is graded on both sides and can be turned, allowing a choice of mounting positions. Operation angle = 90°.

SERVICE AND MAINTENANCE

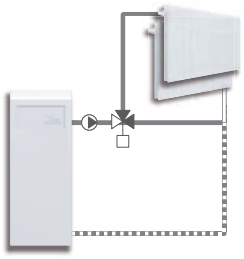
All major parts are replaceable. The shaft seal consist two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. However, before doing so, the system must be depressurized.

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 < DN50
- ● Series 90
- ● Series 90C
- ● Series 90K

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

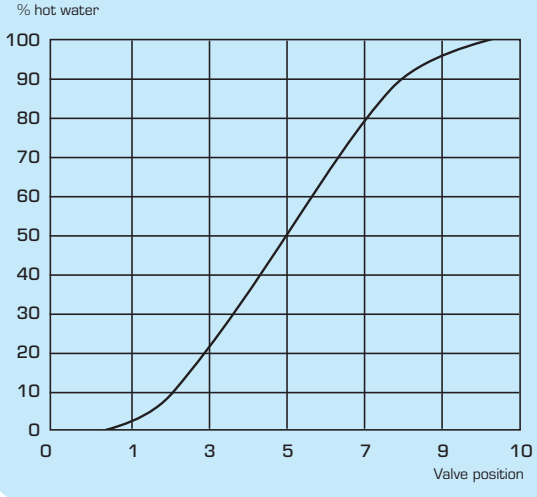
Material	DN 20–25	DN 32-150
Valve body:		Cast iron EN-JL 1030
Slide:	brass CW 614N	brass CW 614N and stainless steel
Bushing:	plastic	brass CW 602N
Cover plate:	zinc	cast iron
O-rings:		EPDM

REQUIRED ACTUATOR TORQUE

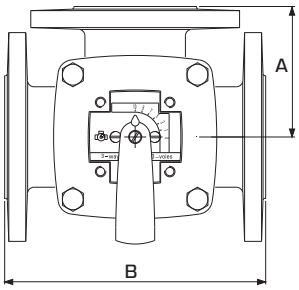
The figures below are intended only as a recommendation for ordinary installations. In some applications the valve may require even more actuator torque.

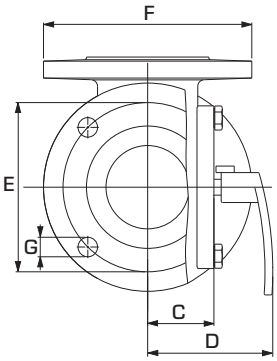
Valve size up to	actuator torque
DN 25	3 Nm
DN 50	5 Nm
DN 80	10 Nm
DN 150	15 Nm

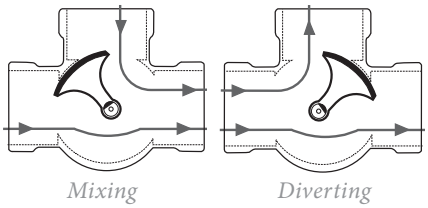
VALVE CHARACTERISTICS



MIXING VALVE
SERIES 3F







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 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 33.

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 <50 or series 90.

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

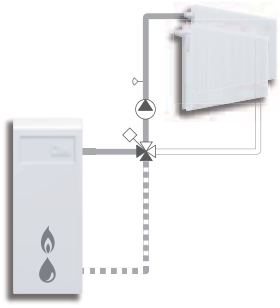
The scale is graded on both sides and can be turned, allowing a choice of mounting positions. Operation angle = 90°.

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 < DN50
- ● Series 90
- ● Series 90C
- ● Series 90K

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

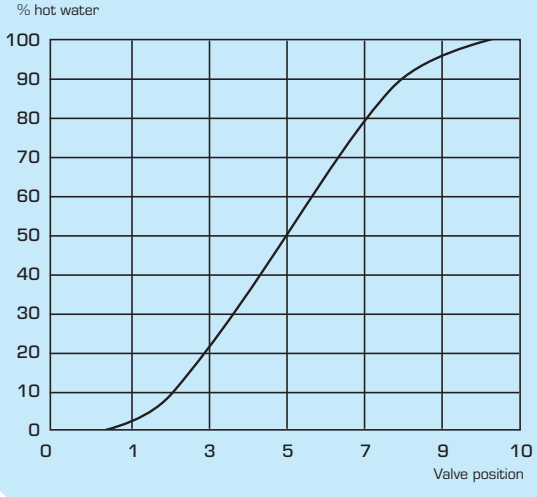
Material	DN 20–25	DN 32-150
Valve body:	Cast iron EN-JL 1030	
Slide:	brass CW 614N	brass CW 614N and stainless steel
Bushing:	plastic	brass CW 602N
Cover plate:	zinc	cast iron
O-rings:	EPDM	

REQUIRED ACTUATOR TORQUE

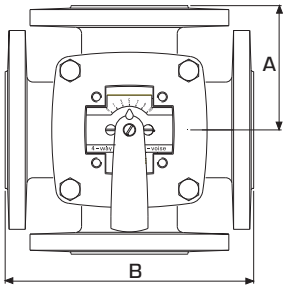
The figures below are intended only as a recommendation for ordinary installations. In some applications the valve may require even more actuator torque.

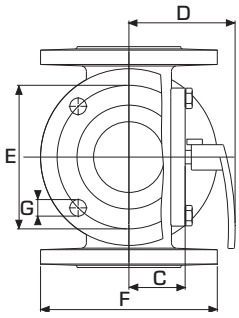
Valve size up to DN 25 actuator torque 3 Nm
DN 50 5 Nm
DN 80 10 Nm
DN 150 15 Nm

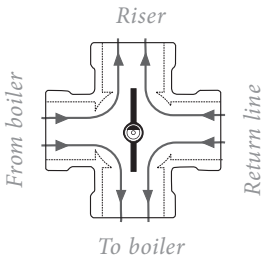
VALVE CHARACTERISTICS



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 33.

MIXING VALVE
SERIES T AND TM

ESBE 4-way valves Series T and TM are specially designed for factory fitting to boilers. 4T, DN 20–32, 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.

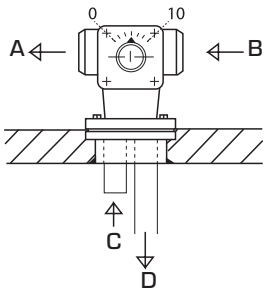
For automatic control ESBE actuator series ARA600 or series 90 is recommended.

SERVICE AND MAINTENANCE

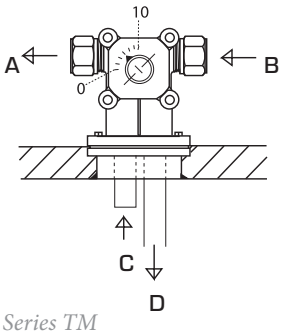
All major parts are replaceable. The shaft seal consist of two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. However, before doing so, the system must be depressurized.

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:

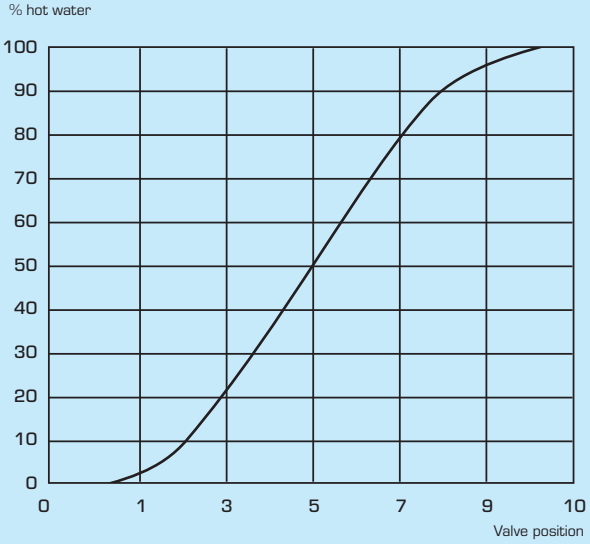
- ● Series ARA600
- ● Series 90
- ● Series 90C
- ● Series 90K

TECHNICAL DATA

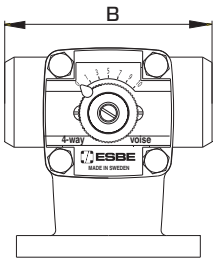
Pressure class: Series T, PN 6
Series TM, PN 10
Temperature: max. 110°C
min. –10°C
Operation angle: 90°
Torque: Series T, 5 Nm
Series TM, 3 Nm
Leakrate in % of flow: max. 1.5%
Connections: Internal thread, EN 10226-1
External thread, ISO 228/1
Compression fitting, EN 1254-2

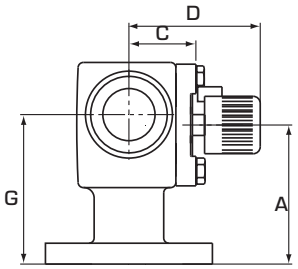
Material
Body: Series T Cast iron EN-JL 1030
Series TM Brass CW 614N
Slide/Spindle: Brass CW 614N
Bushing: Plastic
Cover plate: Zinc
O-rings: EPDM

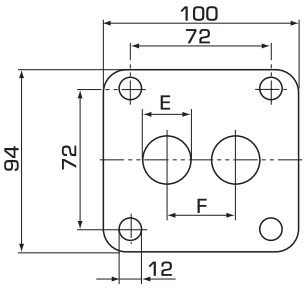
VALVE CHARACTERISTICS



MIXING VALVE
SERIES T AND TM



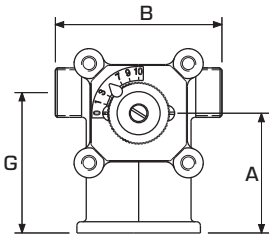




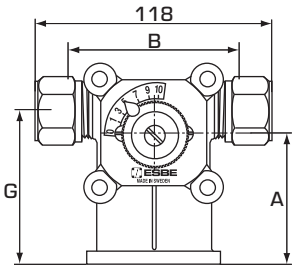
SERIES T, INTERNAL THREAD

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

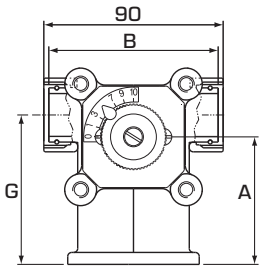
* Kvs-value in m^3/h at a pressure drop of 1 bar. See flow chart on page 33.



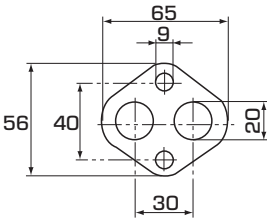
Art. No. 1130 04 00



Art. No. 1130 07 00



Art. No. 1130 05 00



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 33. 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.

For automatic control ESBE actuator series ARA600 or series 90 is recommended.

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

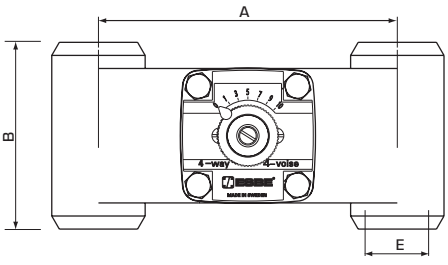
The valve series H and HG may most easily be fitted with ESBE actuators:

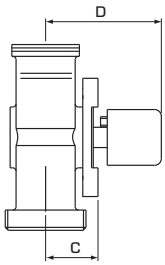
- ● Series ARA600
- ● Series 90
- ● Series 90C
- ● Series 90K

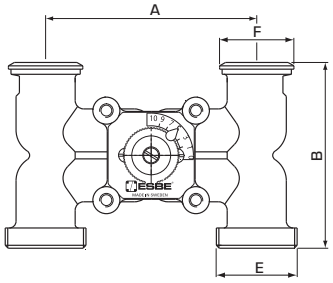
TECHNICAL DATA

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 33.
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.

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 VRG100, VRG200 and VRB100, 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, H and HG.

- Series VRG100
- Series VRG200
- Series VRG300
- Series VRB100
- Series MG
- Series G
- Series F ≤ DN50
- Series BIV
- 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
1600 05 00 (= supplied with actuator)
_____ESBE valve series VRG, VRB, G, MG

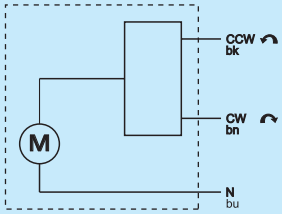
Adaptor kits for other mixing valves are available as follows:

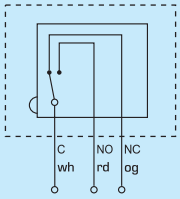
Art. No.
1600 06 00_____ Meibes
1600 07 00_____ Watts
1600 08 00_____ Honeywell Corona

TECHNICAL DATA
Ambient temperature: _____ max. +55°C
_____min. -5°C
Enclosure rating:_____ IP41
Protection class:_____ II
Power supply: _____24 ± 10% VAC, 50 Hz
_____ 230 ± 10% VAC, 50 Hz
Power consumption: 24 V_____ 2 VA
230 V _____ 5 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.



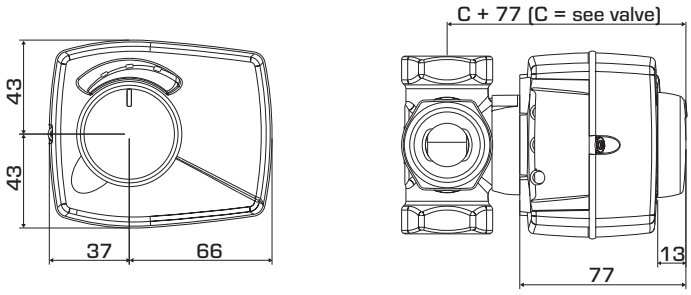


Actuator, series:
ARA641 — ARA644,
ARA651 — ARA654,
ARA661 — ARA664,
ARA671 — ARA674

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

OPTION

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

ROTARY MOTORIZED VALVES

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.

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 built-in relay and 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 VRG100, VRG200 and VRB100, 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, H and HG.

- Series VRG100
- Series VRG200
- Series VRG300
- Series VRB100
- Series MG
- Series G
- Series F ≤ DN50
- Series BIV
- 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
1600 05 00 (= supplied with actuator)
_____ESBE valve series VRG, VRB, G, MG

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

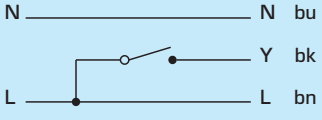
TECHNICAL DATA
Ambient temperature: _____ max. +55°C
_____min. -5°C
Enclosure rating:_____ IP41
Protection class:_____ II
Power supply: _____24 ± 10% VAC, 50 Hz
_____ 230 ± 10% VAC, 50 Hz
Power consumption: 24 V _____ 2 VA
230 V _____ 5 VA

Rating auxiliary switch: _____ 6(3)A 250 VAC
Weight: _____ 0.4 kg

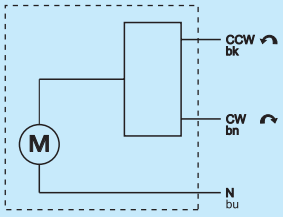
CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

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

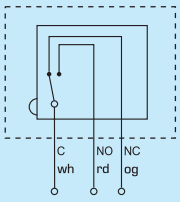
2-point control signal
*The direction of rotation is eligible by jumper setting.



3-point control signal



Auxiliary switch

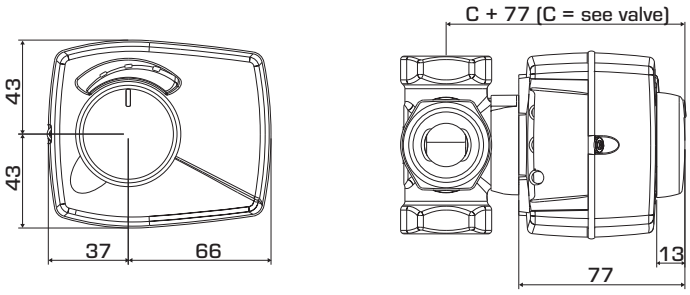


Actuator, series:
ARA635 — ARA638, ARA645 — ARA648, ARA655 — ARA658

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.

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.

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 VRG100, VRG200 and VRB100, 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, H and HG.

- Series VRG100
- Series VRG200
- Series VRG300
- Series VRB100
- Series MG
- Series G
- Series F ≤ DN50
- Series BIV
- 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

1600 05 00 (= supplied with actuator)

_____ESBE valve series VRG, VRB, G, MG

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

TECHNICAL DATA

Ambient temperature: _____ max. +55°C

_____ min. -5°C

Enclosure rating: _____ IP41

Protection class: _____ II

Power supply: _____ 24 ± 10% VAC/DC, 50/60 Hz

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

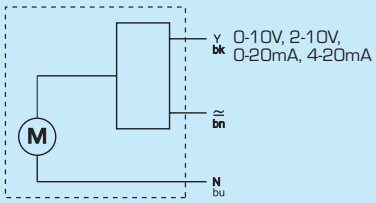
Rating auxiliary switch: _____ 6(3)A 250 VAC

Weight: _____ 0.4 kg

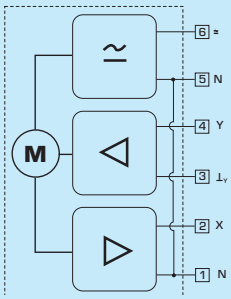
CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

WIRING

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

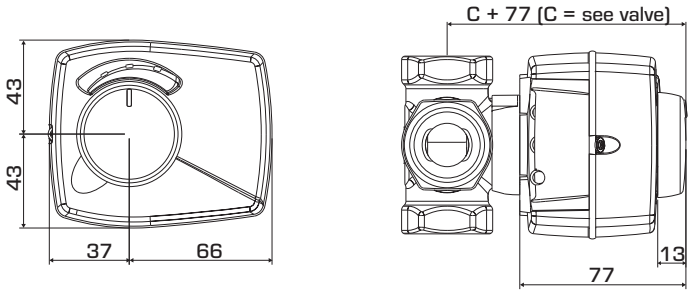


Actuator series ARA659



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	

OPTION

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

ROTARY MOTORIZED VALVES

ACTUATOR
SERIES 90 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° which make the series very flexible.

3-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 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 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, H, HG
1605 33 00 _____ ESBE valve series VRG, VRB
1605 34 00 (= supplied with Art. No. 1205 33 00)
_____ESBE valve series MG, G, F, BIV, H, HG

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

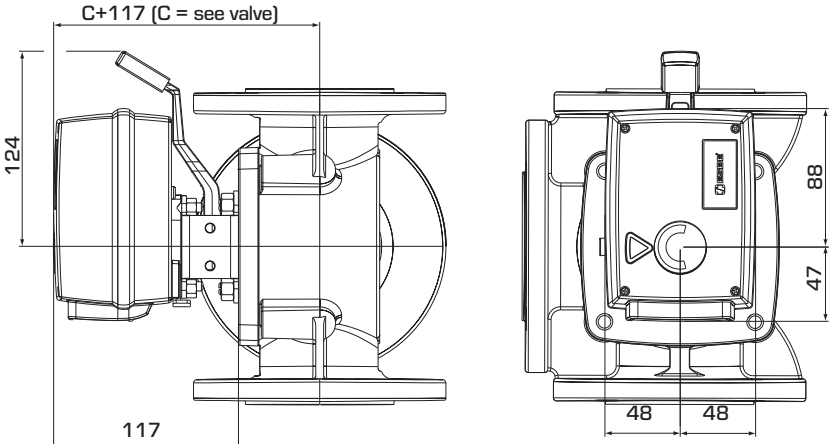
Art. No.
1605 35 00 _____ BRV
1605 16 00 _____Centra ZR, DR, DRU
1605 17 00 _____ Centra Kompakt DRK/ZRK
1605 19 00 _____ CTC, linear movement
1605 36 00 _____Meibes / Oventrop
1605 13 00 _____Sauter MH32…H42…
1605 25 00 _____ Siemens VBG31, VBI31, VBF21, VCI31
1605 14 00 _____ TA–VTR, TA–STM
1605 26 00 _____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

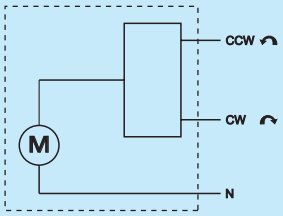
SERIES 90, 3-POINT 230 V AC

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

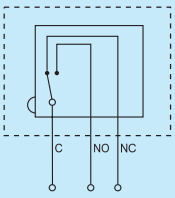
* 3-point SPDT = Single Pole Double Throw *** Running time 270° - 150s (preset)

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

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

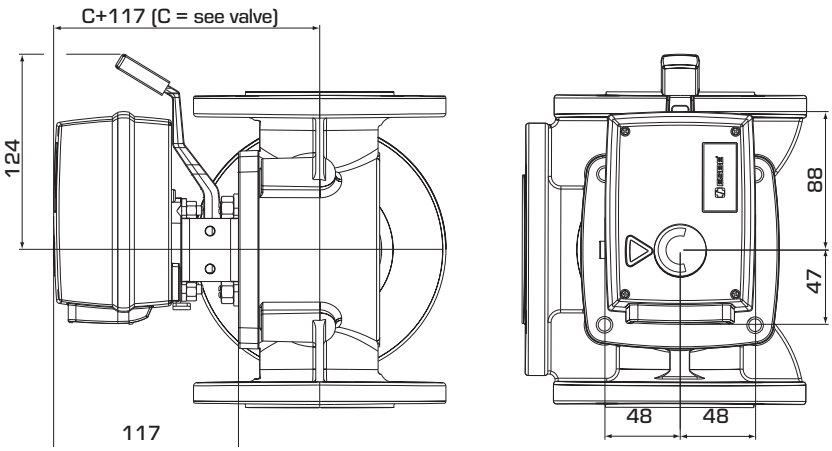
Art. No.
1605 35 00 _____ BRV
1605 16 00 _____ Centra ZR, DR, DRU
1605 17 00 _____ Centra Kompakt DRK/ZRK
1605 19 00 _____ CTC, linear movement
1605 36 00 _____ Meibes / Oventrop
1605 13 00 _____ Sauter MH32…H42…
1605 25 00 _____ Siemens VBG31, VBI31, VBF21, VCI31
1605 14 00 _____ TA–VTR, TA–STM
1605 26 00 _____ 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



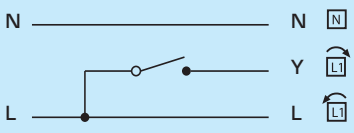
Installation dimensions for Actuator Series 90 with ESBE series MG, G, F, T/TM, H/HG and BIV mixing valves

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

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

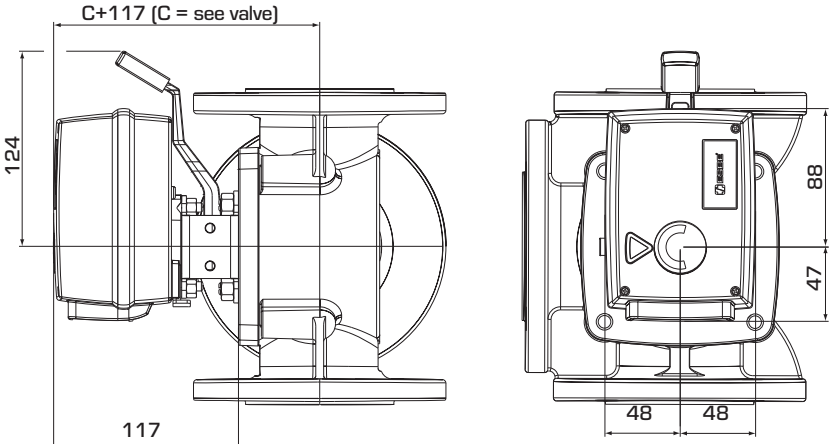
Art. No.
1605 35 00 _____ BRV
1605 16 00 _____ Centra ZR, DR, DRU
1605 17 00 _____ Centra Kompakt DRK/ZRK
1605 19 00 _____ CTC, linear movement
1605 36 00 _____ Meibes / Oventrop
1605 13 00 _____ Sauter MH32…H42…
1605 25 00 _____ Siemens VBG31, VBI31, VBF21, VCI31
1605 14 00 _____ TA–VTR, TA–STM
1605 26 00 _____ 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



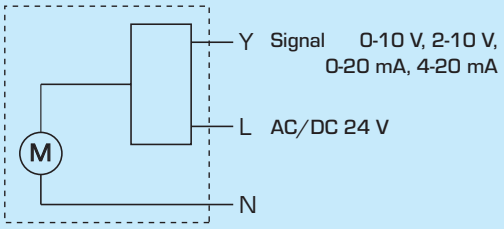
Installation dimensions for Actuator Series 90 with ESBE series MG, G, F, T/TM, H/HG and BIV mixing valves

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