

ROTARY MOTORIZED VALVES





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

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HOW DO YOU CREATE A NEW STANDARD?

YOU BEGIN BY INTERVIEWING INSTALLATION ENGINEERS, OEM PARTNERS AND WHOLESALERS.

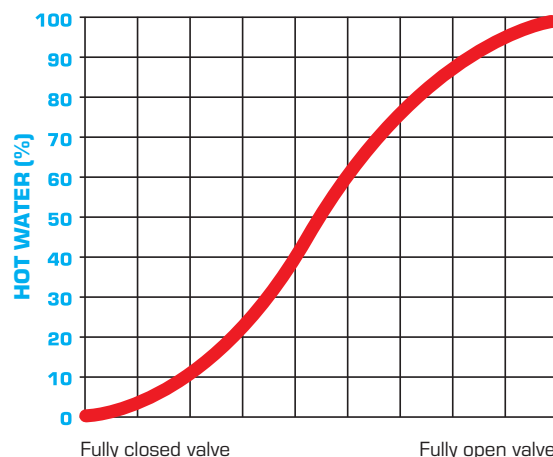
Who are the best people to suggest product improvements? Those who use the products, of course.

That's why we began our development project for our new generation of rotary valves and actuators by interviewing installation engineers, OEM partners and wholesalers. People like you, in other words.

The new generation of rotary valves and actuators will make your job easier. They save energy and provide improved levels of comfort. Not to mention all the benefits resulting from the innovations and the new areas of application.

There are many new features, but also much that is familiar: a wide range of valves for regulation of heating and cooling in a number of different designs. Add to that many different actuators for simple and quick installation on the valve. Giving you a complete motorized valve that guarantees simple installation and reliable, energy-efficient operation for many years to come.

Thanks for the help. You're a hero!



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

FIVE IMPROVEMENTS FOR EVEN SIMPLER AND QUICKER INSTALLATION.

- **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, screw in a screw and fit the actuator's adjusting knob. Done!
- **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.
- **Simpler to install valves.** The previous mounting plate on the valve is now gone. This allows you more room to tighten valves in cramped spaces and close to walls.
- **More secure valve installation with internal threads.** 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.
- **More flexible cable connection.** Just as before, the actuators are supplied complete with connection cable. But now there is also an extra cable port. The advantage is that you can now run a separate cable direct to a circulation pump, for instance, without going via a central controller.

“GREATER CONTROL PRECISION IS ALWAYS IN DEMAND.”

NOW 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 new valves make use of the valve's entire angle of rotation. So the diagram above is as close to ideal regulation as you can get. It shows how much hot water valves allow through relative to the valve position.

The precision level for regulation has been improved by two things: a new design and new, refined production. So you can now make use of the valve's entire angle of rotation from 0 to 90 degrees. Regulation is also much smoother – offering 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 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 SUITABLE MIXING VALVE

ESBE 3-way or 4-way mixing valves, sizes DN 15–150, for heating and cooling systems in buildings.

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. ESBE 4-way mixing valves are used when a higher return water temperature to the boiler is required.

HOW TO SELECT A ROTARY MIXING 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 m³/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 to the right.

For a radiator system $\Delta t = 20^{\circ}\text{C}$ is usually chosen and for under floor heating $\Delta t = 5^{\circ}\text{C}$.

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.

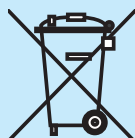
ESBE's other series of mixing valves may only be used in closed systems where the water is not oxygenated.

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.



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.

ROTARY MOTORIZED VALVES

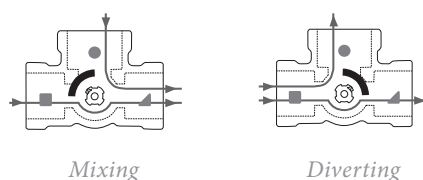
ESBE GUIDE

SELECT THE SUITABLE MIXING VALVE

OPERATION 3-WAY VALVES

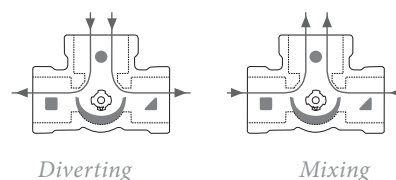
VRG130, 330

The required system temperature is obtained by adding a suitable proportion of return water to the boiler flow.



VRG230

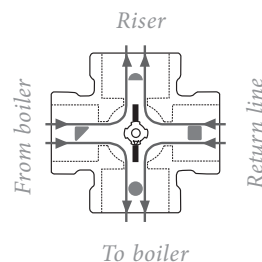
Valves with special design of the inner parts, suitable for applications which requires mid-port changeover operation. Can be placed in both diverting and mixing positions.



OPERATION 4-WAY VALVES

VRG140

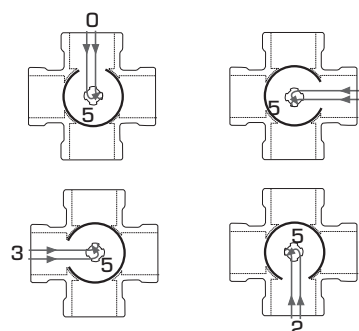
The valves have a double mixing function, i.e. a proportion of the hot water supplied from the boiler is mixed with the return water. This results in a higher return water temperature, reducing the risk of corrosion and assuring a longer life for the boiler.



OPERATION 5-WAY VALVES

5MG

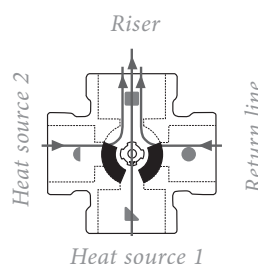
Mixing valve with 4 inlets for use in systems with three heat sources or three layers in a storage tank.



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 VALVE SIZE, SERIES VRG AND VRB

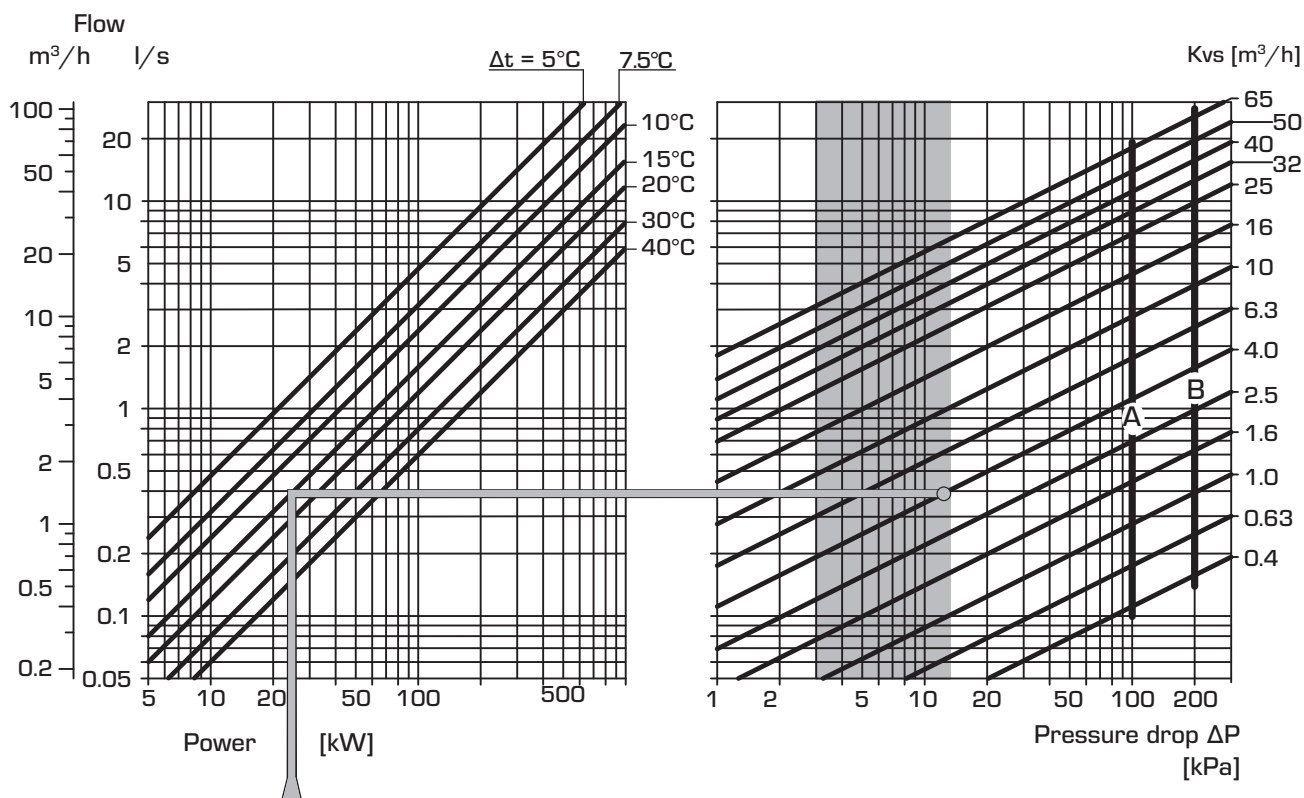
HEATING SYSTEMS (RADIATOR OR UNDERFLOOR HEATING SYSTEMS)

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

$$100 \text{ kPa} = 1 \text{ bar} \approx 10 \text{ mWC}$$

ESBE GUIDE

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

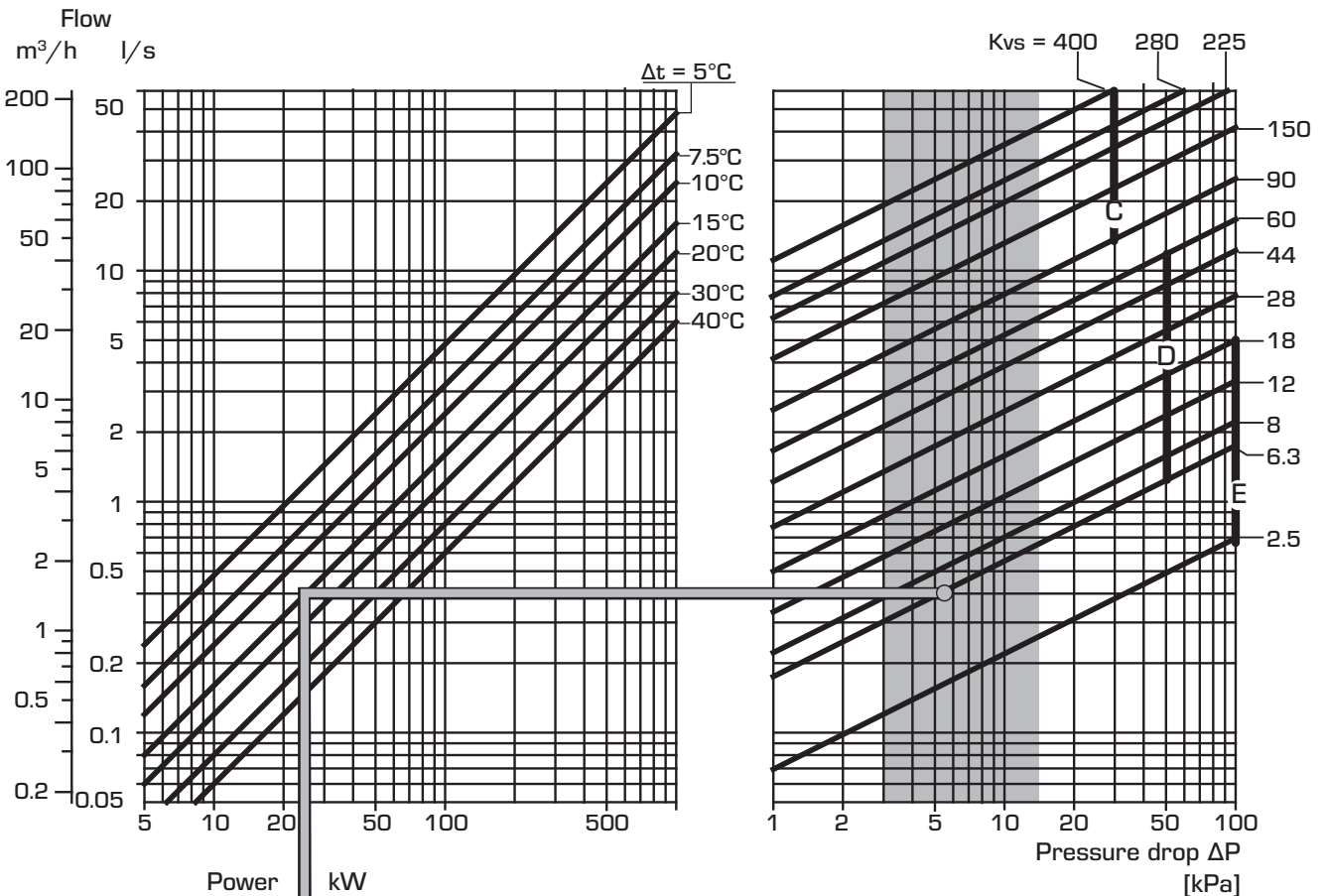
HEATING SYSTEMS (RADIATOR OR UNDERFLOOR HEATING SYSTEMS)

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 \approx 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. Three types of connections are available; internal thread, external thread and compression fittings.

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 90 controllers allows even more applications.

ESBE VRG130 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.

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

SUITABLE ACTUATORS

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

- Series ARA600
 - Series 90C
 - Series 90*
 - 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
 Leakage 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, ISO 7/1
 _____ External thread, ISO 228/1

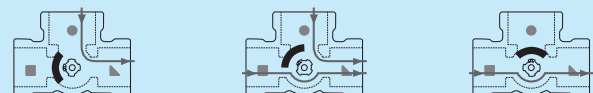
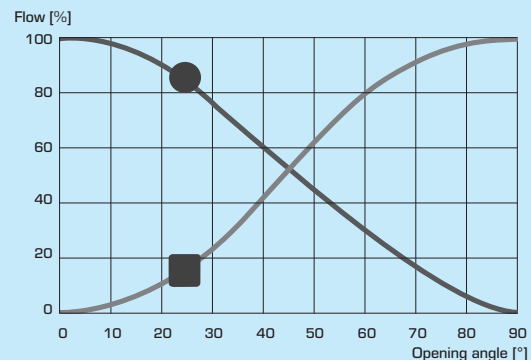
* Differential pressure 100kPa (1 bar)

Material

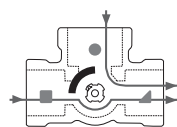
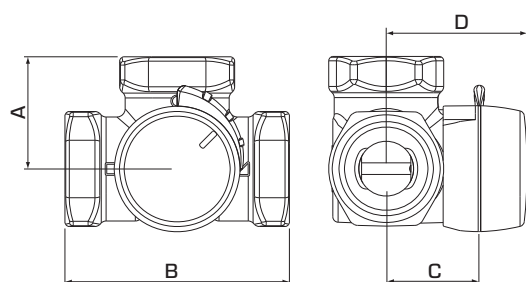
Valve body and slide: _____ Brass DZR, CW 602N
 Shaft and bushing: _____ PPS composite
 O-rings: _____ EPDM

PED 97/23/EC, article 3.3

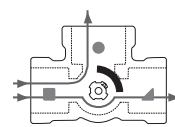
VALVE CHARACTERISTICS



MIXING VALVE SERIES VRG130



Mixing



Diverting

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

3-WAY MIXING VALVE SERIES VRG131, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Replaces	Note
1160 01 00	VRG131	15	0.4	Rp 1/2"	36	72	32	50	0.40	—	
1160 02 00	VRG131	15	0.63	Rp 1/2"	36	72	32	50	0.40	3 MG 15-0.6	
1160 03 00	VRG131	15	1	Rp 1/2"	36	72	32	50	0.40	3 MG 15-1.0	
1160 04 00	VRG131	15	1.6	Rp 1/2"	36	72	32	50	0.40	3 MG 15-1.6	
1160 05 00	VRG131	15	2.5	Rp 1/2"	36	72	32	50	0.40	3 MG 15-2.5	
1160 06 00	VRG131	15	4	Rp 1/2"	36	72	32	50	0.40	—	
1160 07 00	VRG131	20	2.5	Rp 3/4"	36	72	32	50	0.43	—	
1160 08 00	VRG131	20	4	Rp 3/4"	36	72	32	50	0.43	3 MG 20-4	
1160 09 00	VRG131	20	6.3	Rp 3/4"	36	72	32	50	0.43	3 MG 20-6.3	
1160 10 00	VRG131	25	6.3	Rp 1"	41	82	34	52	0.70	3 MG 25-8	
1160 11 00	VRG131	25	10	Rp 1"	41	82	34	52	0.70	3 MG 25-12	
1160 12 00	VRG131	32	16	Rp 1 1/4"	47	94	37	55	0.95	3 MG 32-18	
1160 34 00	VRG131	40	25	Rp 1 1/2"	53	106	44	60	1.68	3 G 40-28	2)
1160 13 00	VRG131	40	25	Rp 1 1/2"	58	116	44	62	1.75	—	1)
1160 36 00	VRG131	50	40	Rp 2"	60	120	46	64	2.30	3 G 50-44	3)
1160 14 00	VRG131	50	40	Rp 2"	62	125	44	62	2.05	—	1)

3-WAY MIXING VALVE SERIES VRG132, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Replaces	Note
1160 15 00	VRG132	15	0.4	G 3/4"	36	72	32	50	0.40	—	
1160 16 00	VRG132	15	0.63	G 3/4"	36	72	32	50	0.40	—	
1160 17 00	VRG132	15	1	G 3/4"	36	72	32	50	0.40	—	
1160 18 00	VRG132	15	1.6	G 3/4"	36	72	32	50	0.40	—	
1160 19 00	VRG132	15	2.5	G 3/4"	36	72	32	50	0.40	—	
1160 20 00	VRG132	15	4	G 3/4"	36	72	32	50	0.40	—	
1160 21 00	VRG132	20	2.5	G 1"	36	72	32	50	0.43	—	
1160 22 00	VRG132	20	4	G 1"	36	72	32	50	0.43	—	
1160 23 00	VRG132	20	6.3	G 1"	36	72	32	50	0.43	3 MGA 20-6.3	
1160 24 00	VRG132	25	6.3	G 1 1/4"	41	82	34	52	0.70	—	
1160 25 00	VRG132	25	10	G 1 1/4"	41	82	34	52	0.70	3 MGA 25-12	
1160 26 00	VRG132	32	16	G 1 1/2"	47	94	37	55	0.95	3 MGA 32-18	
1160 35 00	VRG132	40	25	G 2"	53	106	44	60	1.69	—	4)
1160 27 00	VRG132	40	25	G 2"	58	116	44	62	1.75	—	1)
1160 37 00	VRG132	50	40	G 2 1/4"	60	120	46	64	2.30	—	5)
1160 28 00	VRG132	50	40	G 2 1/4"	62	125	44	62	2.05	—	1)

3-WAY MIXING VALVE SERIES VRG133, COMPRESSION FITTING

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Replaces	Note
1160 29 00	VRG133	20	4	CPF 22 mm	36	72	32	50	0.40	—	
1160 30 00	VRG133	20	6.3	CPF 22 mm	36	72	32	50	0.40	3 MG 22-6.3	
1160 31 00	VRG133	25	10	CPF 28 mm	41	82	34	52	0.45	3 MG 28-8	

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 34. CPF = compression fitting

Note 1) Cancellation 2009-09 2) Replaces 1160 13 00 3) Replaces 1160 14 00 4) Replaces 1160 27 00 5) Replaces 1160 28 00

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.

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 90 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.

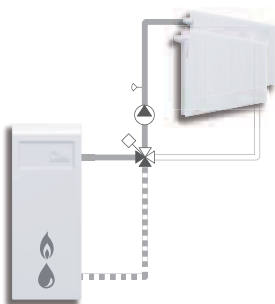
SERVICE AND MAINTENANCE

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

- | | |
|--|--|
| <input checked="" type="radio"/> Heating | <input type="radio"/> Ventilation |
| <input type="radio"/> Comfort cooling | <input type="radio"/> Zone |
| <input type="radio"/> Potable water | <input type="radio"/> District hot water |
| <input type="radio"/> Floor heating | <input type="radio"/> District heating |
| <input checked="" type="radio"/> Solar heating | <input type="radio"/> District cooling |

SUITABLE ACTUATORS

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

- | | |
|--|---|
| <input checked="" type="radio"/> Series ARA600 | <input checked="" type="radio"/> Series 90C |
| <input checked="" type="radio"/> Series 90* | <input checked="" type="radio"/> 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, ISO 7/1
 _____ External thread, ISO 228/1

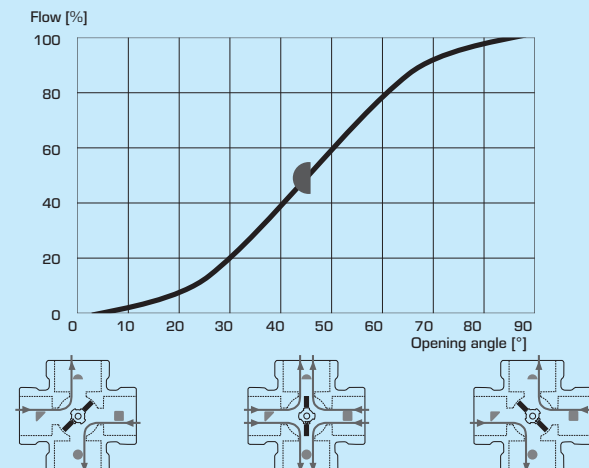
* Differential pressure 100kPa (1 bar)

Material

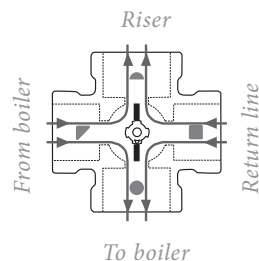
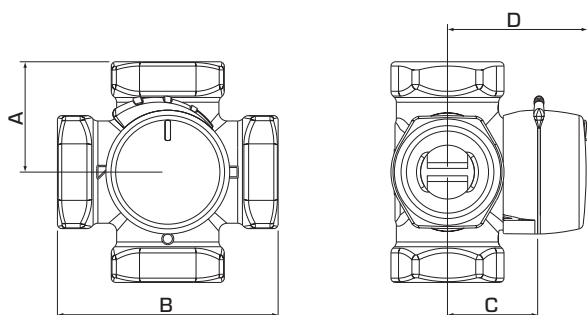
Valve body and slide: _____ Brass DZR, CW 602N
 Shaft and bushing: _____ PPS composite
 O-rings: _____ EPDM

PED 97/23/EC, article 3.3

VALVE CHARACTERISTICS



MIXING VALVE SERIES VRG140



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

4-WAY MIXING VALVE SERIES VRG141, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Replaces	Note
1164 01 00	VRG141	15	2.5	Rp 1/2"	36	72	32	50	0.40	4 MG 15-2.5	
1164 02 00	VRG141	20	4	Rp 3/4"	36	72	32	50	0.52	4 MG 20-4	
1164 03 00	VRG141	20	6.3	Rp 3/4"	36	72	32	50	0.52	4 MG 20-6.3	
1164 04 00	VRG141	25	10	Rp 1"	41	82	34	52	0.80	4 MG 25-12	
1164 05 00	VRG141	32	16	Rp 1 1/4"	47	94	37	55	1.08	4 MG 32-18	
1164 15 00	VRG141	40	25	Rp 1 1/2"	53	106	44	60	1.89	4 G 40-28	2)
1164 06 00	VRG141	40	25	Rp 1 1/2"	58	116	44	62	2.25	—	1)
1164 17 00	VRG141	50	40	Rp 2"	60	120	46	64	2.55	4 G 50-44	3)
1164 07 00	VRG141	50	40	Rp 2"	62	125	44	62	2.30	—	1)

4-WAY MIXING VALVE SERIES VRG142, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Replaces	Note
1164 08 00	VRG142	15	2.5	G 3/4"	36	72	32	50	0.40	—	
1164 09 00	VRG142	20	4	G 1"	36	72	32	50	0.52	—	
1164 10 00	VRG142	20	6.3	G 1"	36	72	32	50	0.52	4 MGA 20-6.3	
1164 11 00	VRG142	25	10	G 1 1/4"	41	82	34	52	0.80	—	
1164 12 00	VRG142	32	16	G 1 1/2"	47	94	37	55	1.08	—	
1164 16 00	VRG142	40	25	G 2"	53	106	44	60	1.90	—	4)
1164 13 00	VRG142	40	25	G 2"	58	116	44	62	2.25	—	1)
1164 18 00	VRG142	50	40	G 2 1/4"	60	120	46	64	2.55	—	5)
1164 14 00	VRG142	50	40	G 2 1/4"	62	125	44	62	2.30	—	1)

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 34.

Note 1) Cancellation 2009-09 2) Replaces 1164 06 00 3) Replaces 1164 07 00 4) Replaces 1164 13 00 5) Replaces 1164 14 00

ROTARY MOTORIZED VALVES

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.

Three types of connections; internal thread, external thread or with compression fittings.

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 thread, in DN 20 – 50 with external thread and with compression fittings for pipe O.D. 22 and 28 mm.

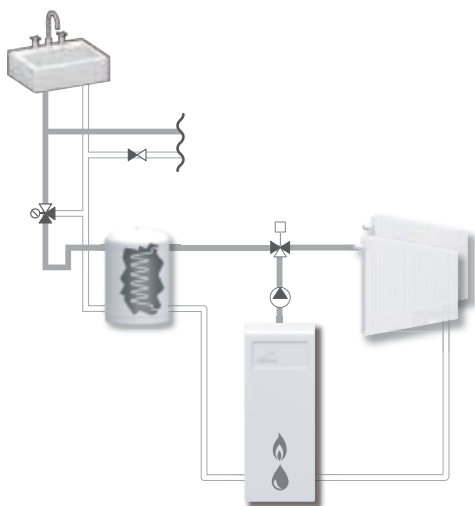
SERVICE AND MAINTENANCE

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

SUITABLE ACTUATORS

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

- | | |
|-----------------|--------------|
| ● Series ARA600 | ● Series 90C |
| ● Series 90* | ● 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
 Leakage in % of flow*: _____ < 0.05%
 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, ISO 7/1
 _____ External thread, ISO 228/1

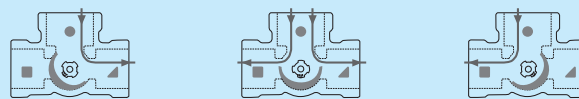
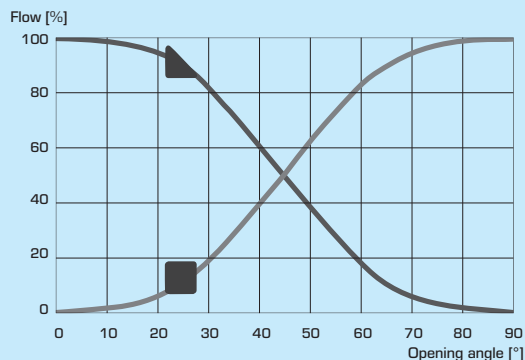
* Differential pressure 100kPa [1 bar]

Material

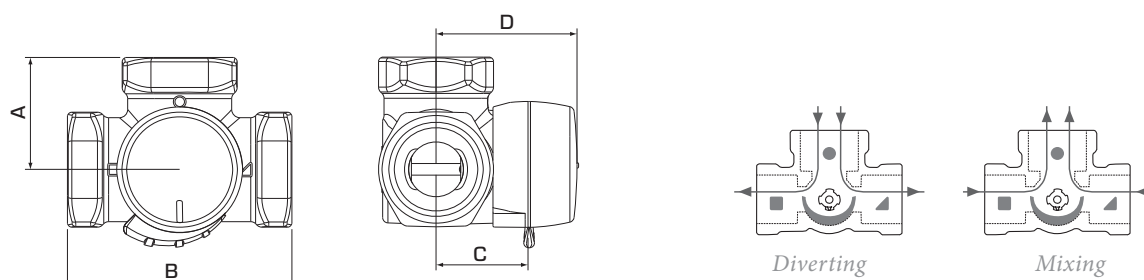
Valve body and slide: _____ Brass DZR, CW 602N
 Shaft and bushing: _____ PPS composite
 O-rings: _____ EPDM

PED 97/23/EC, article 3.3

VALVE CHARACTERISTICS



CHANGE-OVER / DIVERTING VALVE SERIES VRG230



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

3-WAY CHANGE-OVER VALVE SERIES VRG231, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Replaces	Note
1162 01 00	VRG231	20	6.3	Rp 3/4"	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 1 1/4"	47	94	37	55	0.95	—	
1162 14 00	VRG231	40	30	Rp 1 1/2"	53	106	44	60	1.72	—	2)
1162 04 00	VRG231	40	25	Rp 1 1/2"	58	116	44	62	1.75	—	1)
1162 16 00	VRG231	50	40	Rp 2"	60	120	46	64	2.39	—	3)
1162 05 00	VRG231	50	40	Rp 2"	62	125	44	62	2.05	—	1)

3-WAY CHANGE-OVER VALVE SERIES VRG232, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Replaces	Note
1162 06 00	VRG232	20	6.3	G 1"	36	72	32	50	0.43	—	
1162 07 00	VRG232	25	10	G 1 1/4"	41	82	34	52	0.70	—	
1162 08 00	VRG232	32	16	G 1 1/2"	47	94	37	55	0.95	—	
1162 15 00	VRG232	40	30	G 2"	53	106	44	60	1.73	—	4)
1162 09 00	VRG232	40	25	G 2"	58	116	44	62	1.75	—	1)
1162 17 00	VRG232	50	40	G 2 1/4"	60	120	46	64	2.39	—	5)
1162 10 00	VRG232	50	40	G 2 1/4"	62	125	44	62	2.05	—	1)

3-WAY CHANGE-OVER VALVE SERIES VRG233, COMPRESSION FITTING

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

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 34. CPF = compression fitting.

Note 1) Cancellation 2009-09 2) Replaces 1162 04 00 3) Replaces 1162 16 00 4) Replaces 1162 09 00 5) Replaces 1162 10 00

MIXING VALVE SERIES VRG330

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.

Two types of connections are available; internal thread and external thread.

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 and in DN 20–50 with external thread.

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 (■ - ▲).

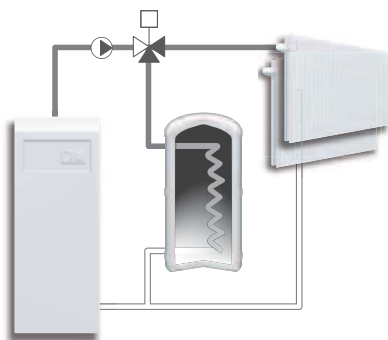
SERVICE AND MAINTENANCE

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
 Leakage 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, ISO 7/1
 _____ External thread, ISO 228/1

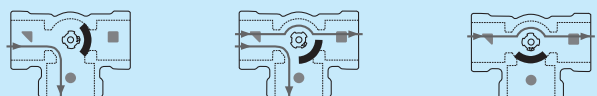
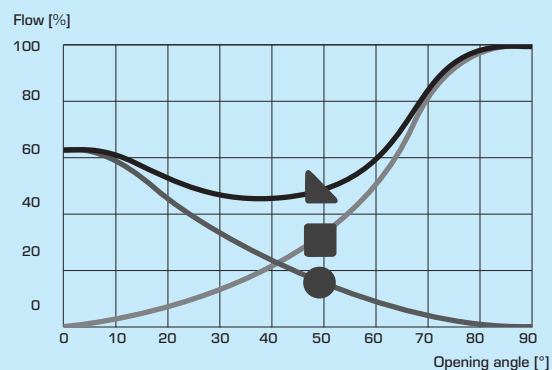
* Differential pressure 100kPa [1 bar]

Material

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

PED 97/23/EC, article 3.3

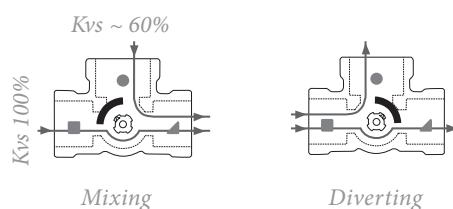
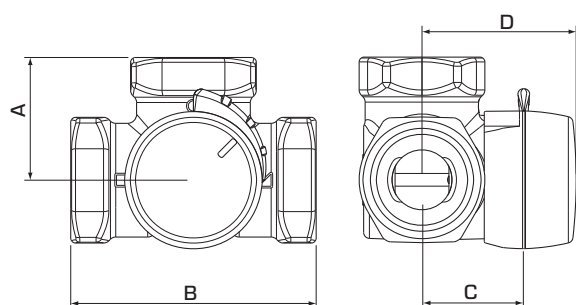
VALVE CHARACTERISTICS



ROTARY MOTORIZED VALVES

MIXING VALVE

SERIES VRG330



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

3-WAY MIXING VALVE 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 3/4"	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 1 1/4"	47	94	37	55	0.95	
1170 11 00	VRG331	40	50	30	Rp 1 1/2"	53	106	44	60	1.65	2)
1170 04 00	VRG331	40	65	37	Rp 1 1/2"	58	116	44	62	1.75	1)
1170 13 00	VRG331	50	65	40	Rp 2"	60	120	46	64	2.28	3)
1170 05 00	VRG331	50	70	40	Rp 2"	62	125	44	62	2.05	1)

3-WAY MIXING VALVE 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 1 1/4"	41	82	34	52	0.70	
1170 08 00	VRG332	32	32	20	G 1 1/2"	47	94	37	55	0.95	
1170 12 00	VRG332	40	50	30	G 2"	53	106	44	60	1.66	4)
1170 09 00	VRG332	40	65	37	G 2"	58	116	44	62	1.75	1)
1170 14 00	VRG332	50	65	40	G 2 1/4"	60	120	46	64	2.28	5)
1170 10 00	VRG332	50	70	40	G 2 1/4"	62	125	44	62	2.05	1)

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 34.

Note 1) Cancellation 2009-09 2) Replaces 1170 04 00 3) Replaces 1170 05 00 4) Replaces 1170 09 00 5) Replaces 1170 10 00

MIXING VALVE SERIES VRB140

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 90 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, ISO 7/1
_____ External thread, ISO 228/1

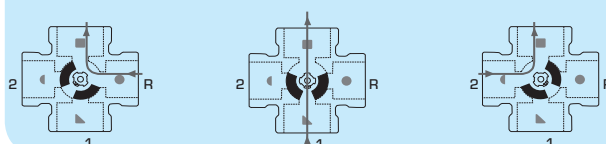
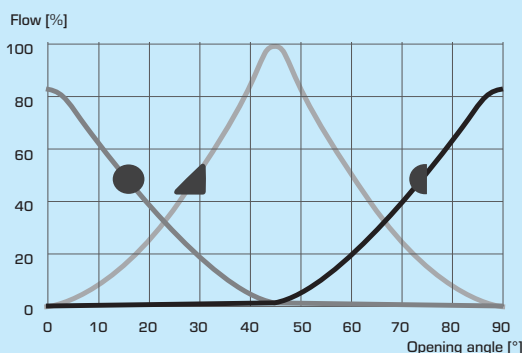
* Differential pressure 100kPa (1 bar)

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

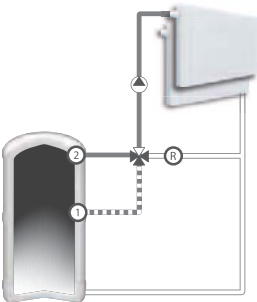


ROTARY MOTORIZED VALVES

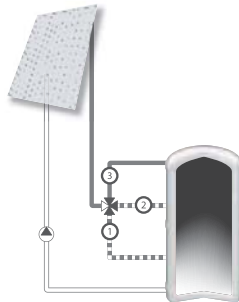
MIXING VALVE SERIES VRB140

INSTALLATION EXAMPLES

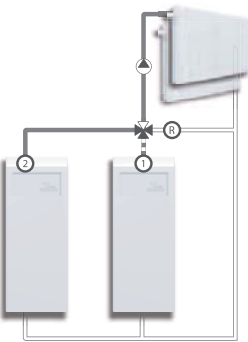
All the examples of installation can be mirrored. The valve position scale can be turned over and rotated to fit a number of installation layouts and shall at the installation be fitted in the correct position as shown in the instruction for installation. The symbol markings of the valve ports (■●▲)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



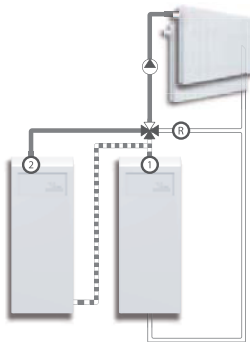
Storage tank mixing



Storage tank loading



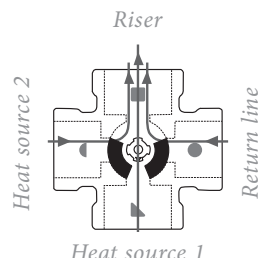
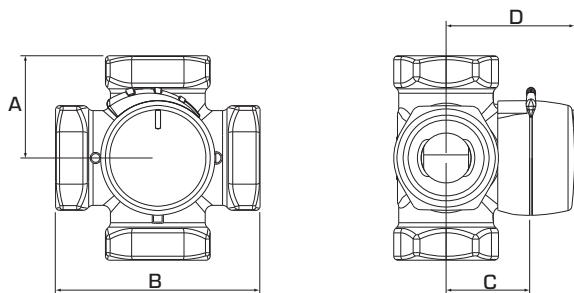
Parallel heat sources



Serial heat sources

MIXING VALVE

SERIES VRB140



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

4-WAY MIXING VALVE SERIES VRB141, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Replaces	Note
1166 01 00	VRB141	15	2.5	Rp 1/2"	36	72	32	50	0.40	—	
1166 02 00	VRB141	20	4	Rp 3/4"	36	72	32	50	0.52	—	
1166 03 00	VRB141	20	6.3	Rp 3/4"	36	72	32	50	0.52	—	
1166 04 00	VRB141	25	10	Rp 1"	41	82	34	52	0.80	BIV 25 Rp1	
1166 05 00	VRB141	32	16	Rp 1 1/4"	47	94	37	55	1.08	—	
1166 20 00	VRB141	40	25	Rp 1 1/2"	53	106	44	60	1.98	—	2)
1166 06 00	VRB141	40	25	Rp 1 1/2"	58	116	44	62	2.25	—	1)
1166 22 00	VRB141	50	35	Rp 2"	60	120	46	64	2.65	—	3)
1166 07 00	VRB141	50	40	Rp 2"	62	125	44	62	2.30	—	1)

4-WAY MIXING VALVE SERIES VRB142, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Replaces	Note
1166 08 00	VRB142	15	2.5	G 3/4"	36	72	32	50	0.40	—	
1166 09 00	VRB142	20	4	G 1"	36	72	32	50	0.52	BIV 20 G 3/4	
1166 10 00	VRB142	20	6.3	G 1"	36	72	32	50	0.52	—	
1166 11 00	VRB142	25	10	G 1 1/4"	41	82	34	52	0.80	—	
1166 12 00	VRB142	32	16	G 1 1/2"	47	94	37	55	1.08	—	
1166 21 00	VRB142	40	25	G 2"	53	106	44	60	1.99	—	4)
1166 13 00	VRB142	40	25	G 2"	58	116	44	62	2.25	—	1)
1166 23 00	VRB142	50	35	G 2 1/4"	60	120	46	64	2.65	—	5)
1166 14 00	VRB142	50	40	G 2 1/4"	62	125	44	62	2.30	—	1)

4-WAY MIXING VALVE SERIES VRB143, COMPRESSION FITTING

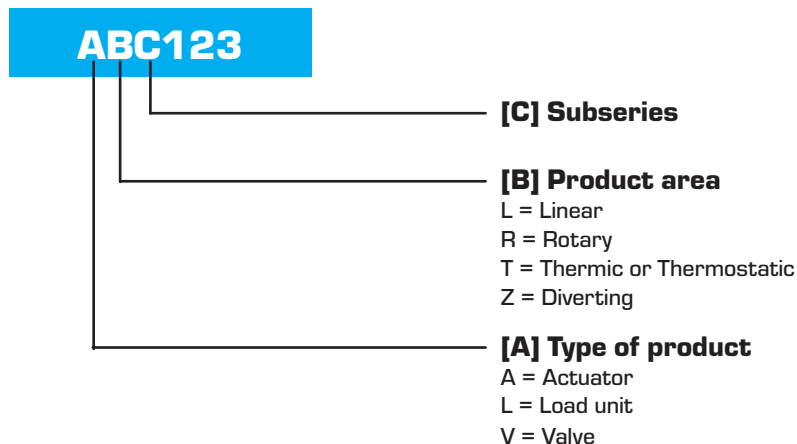
Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]	Replaces	Note
1166 15 00	VRB143	20	4	CPF 22 mm	36	72	32	50	0.40	BIV 20 CPF 22 mm	
1166 16 00	VRB143	20	6.3	CPF 22 mm	36	72	32	50	0.40	—	
1166 17 00	VRB143	25	6.3	CPF 28 mm	36	72	32	52	0.45	—	

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 34. CPF = compression fitting.

Note 1) Cancellation 2009-09 2) Replaces 1166 06 00 3) Replaces 1166 07 00 4) Replaces 1166 13 00 5) Replaces 1166 14 00

DESIGNATION CODE SYSTEM FOR NEW PRODUCTS

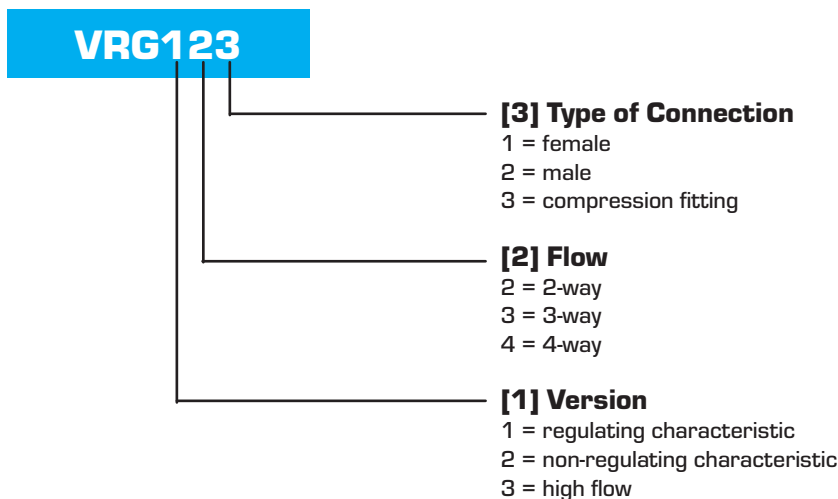
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DESIGNATION CODE SYSTEM FOR ROTARY MOTORIZED VALVES

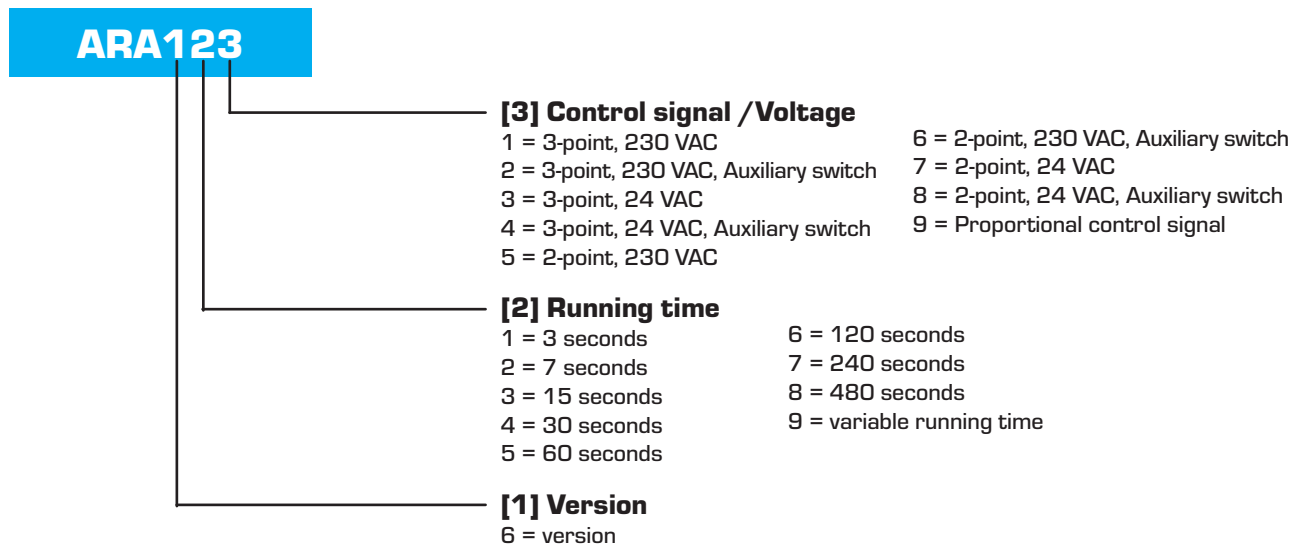
ROTARY VALVES [VR_]

Rotary valves are available as series VRG which replaces series G and MG, and series VRB which replaces series BIV.



ROTARY ACTUATORS [AR_]

Rotary Actuators are available as series ARA which replaces series 60.



ROTARY MOTORIZED VALVES

MIXING VALVE SERIES 3MG AND 4MG

3MG, DN 15–32, DZR brass and 4MG, brass, DN 20–25. PN 10.
Two types of connections; pump flange or rotating nut.



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°.

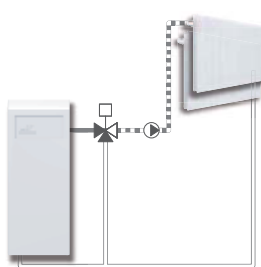
Valves series 3MG are made of a special brass alloy (DZR) and are therefore also suitable for domestic water installations.

SERVICE AND MAINTENANCE

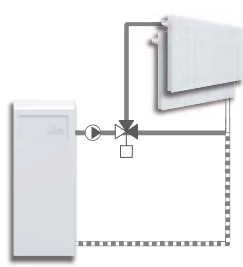
All major parts are replaceable. The shaft seal consist of two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. However, before doing so, the system must be depressurized.

INSTALLATION EXAMPLES

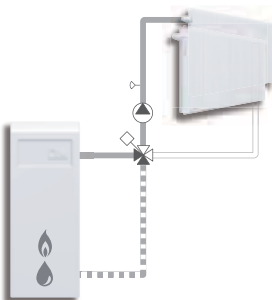
All the examples of installations can be reversed. The valve position plate is graded on both sides and should at the installation be fitted in the correct position as shown in the instruction for installation.



3MG, Mixing



3MG, Diverting



4MG

VALVE 3MG DESIGNED FOR

- ☒ Heating
- ☒ Comfort cooling
- ☒ Potable water
- ☒ Floor heating
- ☒ Solar heating
- ☒ Ventilation
- ☒ Zone
- ☐ District hot water
- ☐ District heating
- ☐ District cooling

VALVE 4MG 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 and 4MG may most easily be fitted with ESBE actuators:

- ☒ Series ARA600
- ☒ Series 60
- ☒ Series 90
- ☒ Series 90C
- ☒ Series 90K

TECHNICAL DATA

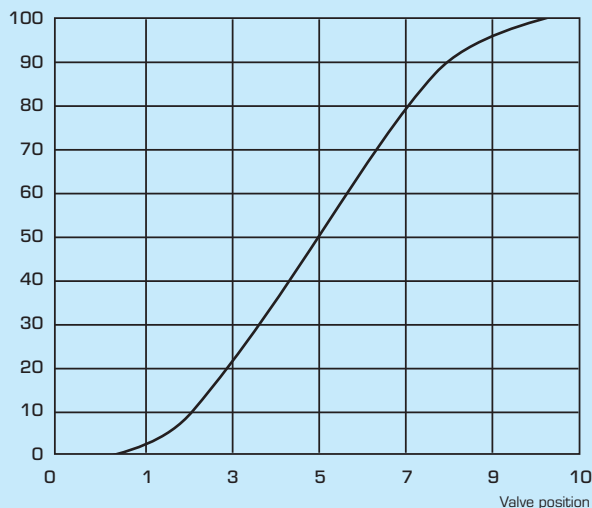
Pressure class: _____ PN 10
Media temperature: _____ max. +130°C
_____ min. -10°C
Differential pressure drop: _____ max. 100 kPa
Torque: _____ max. 3Nm
Leakrate in % of flow: _____ see table
Rangeability Kv/Kv^{min}: _____ 100
Connections: _____ External thread, ISO 228/1

Material

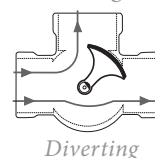
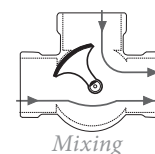
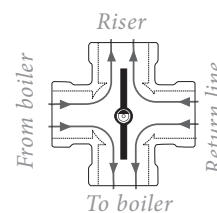
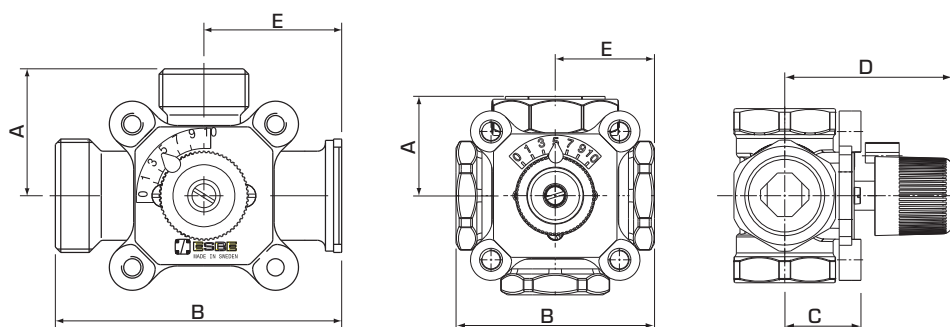
Valve body, spindle and slide: _ Series 3MG, Brass DZR, CW 602N
_____ Series 4MG, Brass CW 614N
Bushing: _____ Plastic
Cover plate: _____ Zinc
O-rings: _____ EPDM

VALVE CHARACTERISTICS

% hot water



MIXING VALVE SERIES 3MG AND 4MG



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

3-WAY MIXING VALVE 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	3 MGP 15	15	2.5	G1" / G1 1/2" / PF 1 1/2"	48	112	32	70	51	1.0	0.1	0.05
1100 56 00	3 MGP 20	20	6.3	G1" / G1 1/2" / PF 1 1/2"	48	112	32	70	51	1.0	0.1	0.05
1100 20 00	3 MGP 25	25	8	G1" / G1 1/2" / PF 1 1/2"	48	112	32	70	51	1.0	0.1	0.05

3-WAY MIXING VALVE SERIES 3MGR, ROTATING NUT

Art. No.	Reference	DN	Kvs *	Connection	A	B	C	D	E	Weight [kg]	Leakrate in % of flow**	
											mixing	diverting
1100 57 00	3 MGP 32	32	18	G1 1/4" / G1 1/2" / PF 2"	48	105	38	76	50	1.1	0.1	0.05
1100 15 00	3 MGR 20	20	6.3	RN 1"	40	80	32	70	40	0.8	0.1	0.05

4-WAY MIXING VALVE SERIES 4MGP, PUMP FLANGE AND INTERNAL THREAD

Art. No.	Reference	DN	Kvs *	Connection	A	B	C	D	E	Weight [kg]	Leakrate in % of flow**
1100 45 00	4 MGP 25	25	6.3	Rp 1" / PF 1 1/2"	41	82	32	70	41	0.8	1

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 35. ** Differential pressure 50 kPa.
PF = Pump Flange, RN = Rotating Nut

MIXING VALVE SERIES 5MG

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



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

- | | |
|--|--|
| <input checked="" type="radio"/> Heating | <input type="radio"/> Ventilation |
| <input type="radio"/> Comfort cooling | <input type="radio"/> Zone |
| <input type="radio"/> Potable water | <input type="radio"/> District hot water |
| <input type="radio"/> Floor heating | <input type="radio"/> District heating |
| <input checked="" type="radio"/> Solar heating | <input type="radio"/> District cooling |

SUITABLE ACTUATORS

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

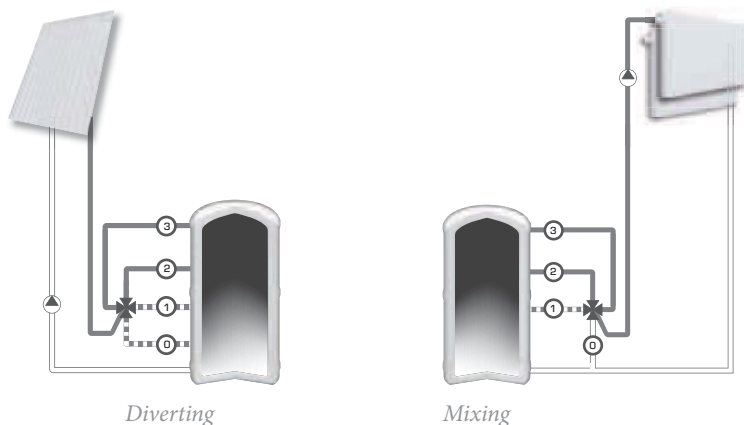
- ☒ Series 90, type 92P4 and 95-270M

TECHNICAL DATA

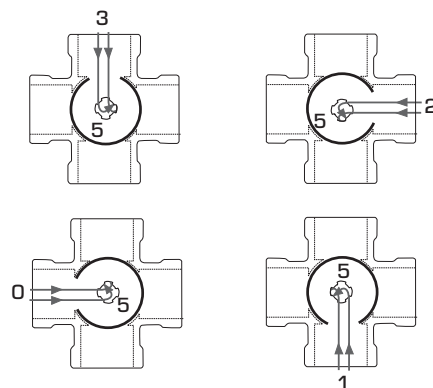
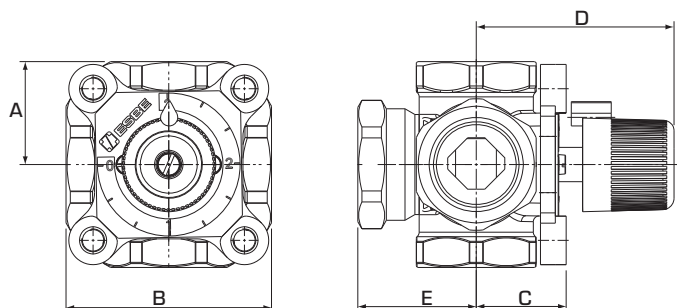
Pressure class: _____ PN 10
 Media temperature: _____ max. +130°C
 _____ min. -10°C
 Differential pressure drop: _____ max. 100 kPa
 Torque: _____ max. 3Nm
 Leakage in % of flow: _____ see table
 Rangeability Kv/Kv^{min}: _____ 100
 Connections: _____ Internal thread, ISO 7/1

Material

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



MIXING VALVE SERIES 5MG



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

5-WAY MIXING VALVE SERIES 5MG, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	E	Weight [kg]	Leakrate in % of flow**
1100 52 00	5 MG 25	25	8	Rp 1"	36	72	32	70	41	0.9	0.3
1100 53 00	5 MG 32	32	18	Rp 1 1/4"	44	88	38	77	47	1.2	0.2

* Kvs-value in m³/h at a pressure drop of 1 bar: See also flow chart on page 35. ** Differential pressure 50 kPa

MIXING VALVE SERIES 3F

3F, DN 20–150, cast iron, PN 6. 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.

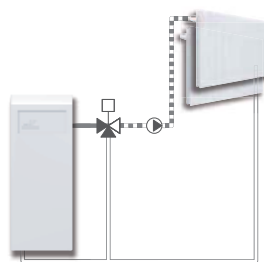
The scale is graded on both sides and can be turned, allowing a choice of mounting positions. Operation angle = 90°.

SERVICE AND MAINTENANCE

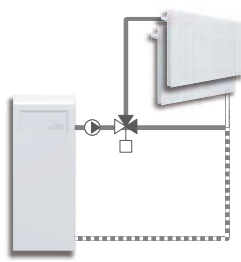
All major parts are replaceable. The shaft seal consist two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. However, before doing so, the system must be depressurized.

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

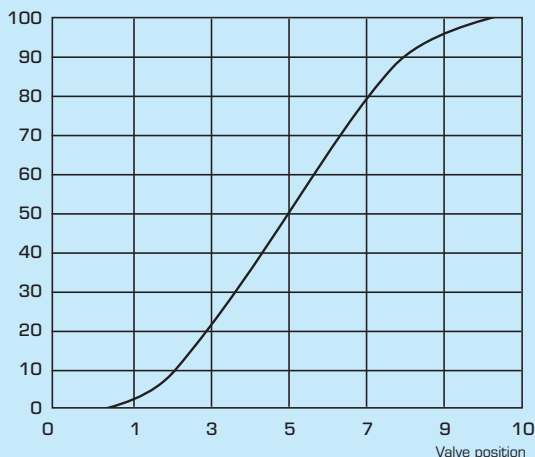
REQUIRED ACTUATOR TORQUE

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

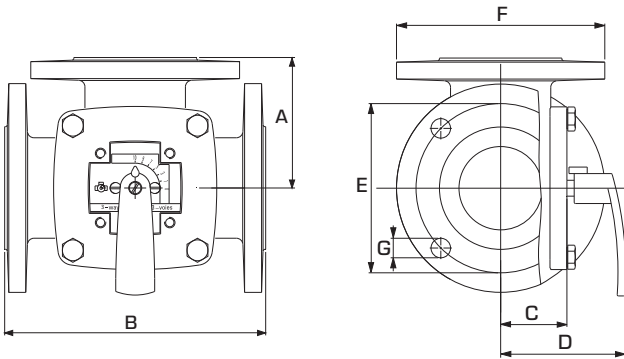
Valve size up to _____ DN 25 _____ actuator torque 3 Nm
_____ DN 50 _____ 5 Nm
_____ DN 80 _____ 10 Nm
_____ DN 150 _____ 15 Nm

VALVE CHARACTERISTICS

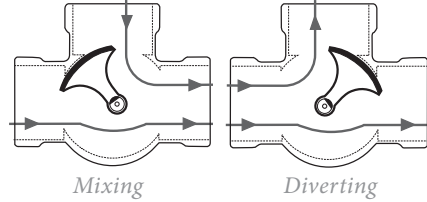
% hot water



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.

3-WAY MIXING VALVE 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 m³/h at a pressure drop of 1 bar. See flow chart on page 35.

MIXING VALVE SERIES 4F

4F, DN 32–150, cast iron, PN 6. 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.

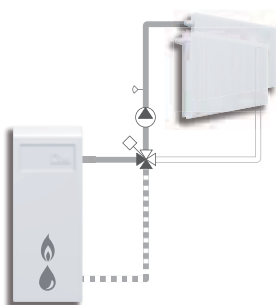
The scale is graded on both sides and can be turned, allowing a choice of mounting positions. Operation angle = 90°.

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

- | | |
|--|--|
| <input checked="" type="radio"/> Heating | <input type="radio"/> Ventilation |
| <input checked="" type="radio"/> Comfort cooling | <input type="radio"/> Zone |
| <input type="radio"/> Potable water | <input type="radio"/> District hot water |
| <input type="radio"/> Floor heating | <input type="radio"/> District heating |
| <input type="radio"/> Solar heating | <input type="radio"/> District cooling |

SUITABLE ACTUATORS

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

- | | |
|---|---|
| <input checked="" type="radio"/> Series ARA600 < DN50 | <input checked="" type="radio"/> Series 90C |
| <input checked="" type="radio"/> Series 90 | <input checked="" type="radio"/> 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

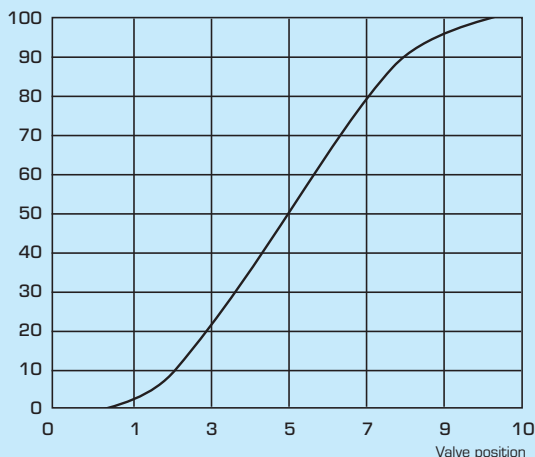
REQUIRED ACTUATOR TORQUE

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

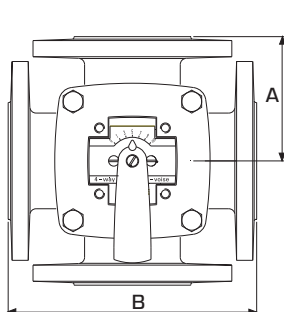
Valve size up to _____ DN 25 _____ actuator torque 3 Nm
 _____ DN 50 _____ 5 Nm
 _____ DN 80 _____ 10 Nm
 _____ DN 150 _____ 15 Nm

VALVE CHARACTERISTICS

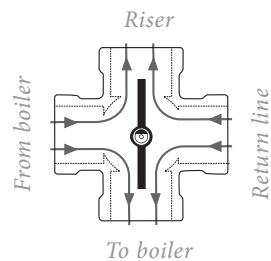
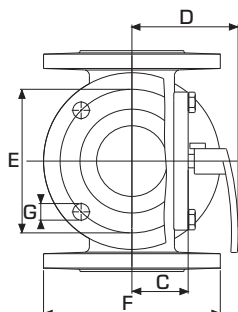
% hot water



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.

4-WAY MIXING VALVE SERIES 4F

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

* Kvs-value in m³/h at a pressure drop of 1 bar. See flow chart on page 35.

ROTARY MOTORIZED VALVES

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.

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.

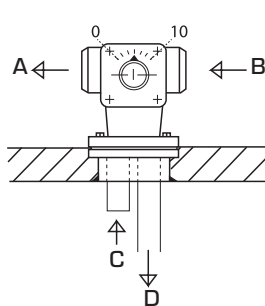
SERVICE AND MAINTENANCE

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.

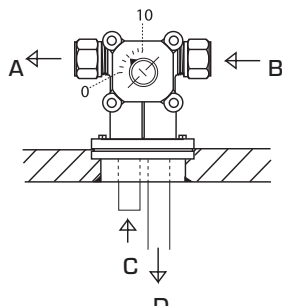
TYPICAL INSTALLATION

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

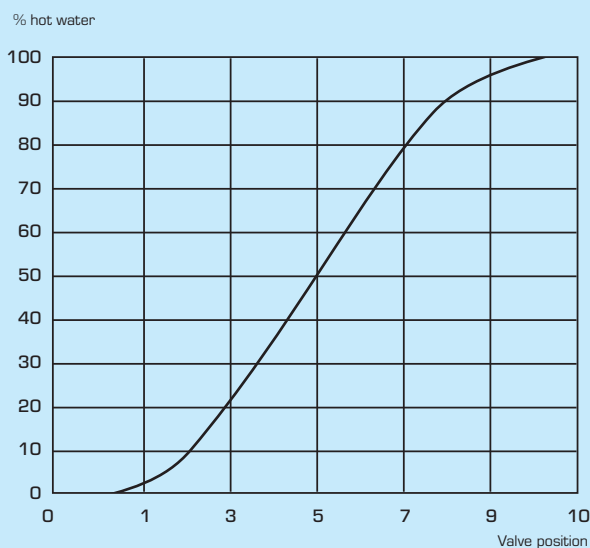
TECHNICAL DATA

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, ISO 7/1
 _____ External thread, ISO 228/1

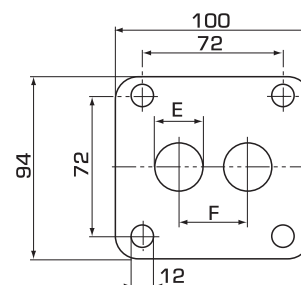
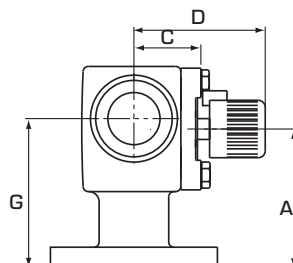
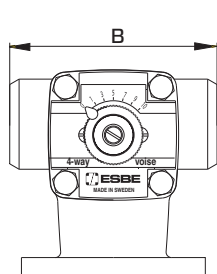
Material

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



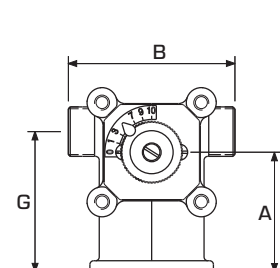
MIXING VALVE SERIES T AND TM



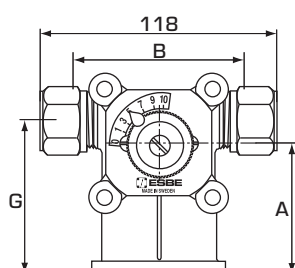
4-WAY MIXING VALVE SERIES T, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	E	F	G	Weight [kg]
1130 09 00	T 20	20	8	Rp 3/4"	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

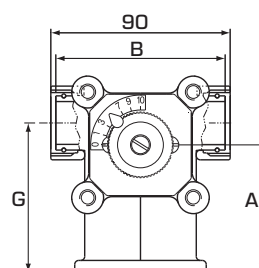
* Kvs-value in m³/h at a pressure drop of 1 bar. See flow chart on page 35.



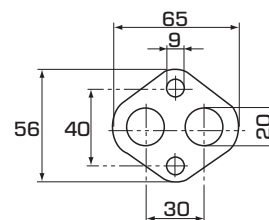
Art. No. 1130 04 00



Art. No. 1130 07 00



Art. No. 1130 05 00



Flange

4-WAY MIXING VALVE 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 3/4"	64	85	39	76	75		0.90

4-WAY MIXING VALVE 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	TM 20	20	5.5	CPF 22 mm	64	85	39	76	75	with leakflow	1.14
1130 06 00	TM 20	20	5.5	CPF 22 mm	64	85	39	76	75	G 1/2" in base connection	1.14
1130 08 00	TM 20	20	5.5	CPF 22 mm	64	85	39	76	75	G 1/2" + O-ring groove in base connection	1.14

4-WAY MIXING VALVE 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 m³/h at a pressure drop of 1 bar. Flow chart, see page 35. 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.

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

- | | |
|--|--|
| <input checked="" type="radio"/> Heating | <input type="radio"/> Ventilation |
| <input type="radio"/> Comfort cooling | <input type="radio"/> Zone |
| <input type="radio"/> Potable water | <input type="radio"/> District hot water |
| <input type="radio"/> Floor heating | <input type="radio"/> District heating |
| <input type="radio"/> Solar heating | <input type="radio"/> District cooling |

SUITABLE ACTUATORS

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

- | | |
|--|---|
| <input checked="" type="radio"/> Series ARA600 | <input checked="" type="radio"/> Series 90C |
| <input checked="" type="radio"/> Series 90 | <input checked="" type="radio"/> Series 90K |

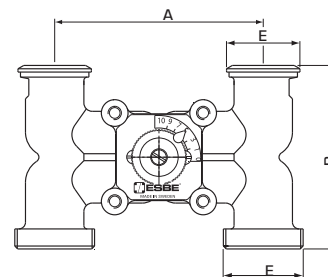
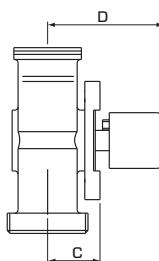
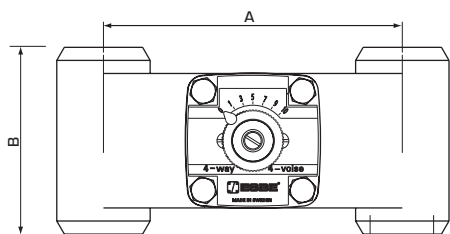
TECHNICAL DATA

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, ISO 7/1
 _____ 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



3-WAY MIXING VALVE SERIES 3H, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	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 1 1/4"	160	140	41	83		5.3
1135 19 00	3H40	40	30	Rp 1 1/2"	160	140	41	83		5.6

4-WAY MIXING VALVE SERIES 4H, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Note	Weight [kg]
1135 13 00	4H20	20	10	Rp 3/4"	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 1 1/4"	160	140	41	83		5.6
1135 20 00	4H40	40	30	Rp 1 1/2"	160	140	41	83		6.3
1135 16 00	4H50	50	35	Rp 2"	200	140	41	83		6.8

3-WAY MIXING VALVE SERIES 3HG, EXTERNAL THREAD

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

4-WAY MIXING VALVE SERIES 4HG, EXTERNAL THREAD

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

*Kvs-value in m³/h at a pressure drop of 1 bar. Flow chart, see page 35.
Note 1) Male thread for union connections 2) With By-pass

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.



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 MG |
| ● Series VRG200 | ● Series G |
| ● Series VRG300 | ● Series F ≤ DN50 |
| ● Series VRB100 | ● 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

OPTION

Auxiliary switch kit _____ Art. No. 1620 07 00

Cable hatch _____ Art. No. 1620 08 00

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

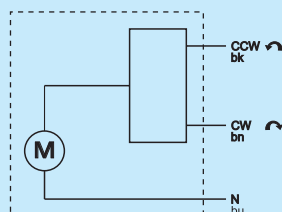
Rating auxiliary switch: _____ 6(3)A 250 VAC

Weight: _____ 0.4 kg

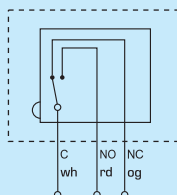
CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

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

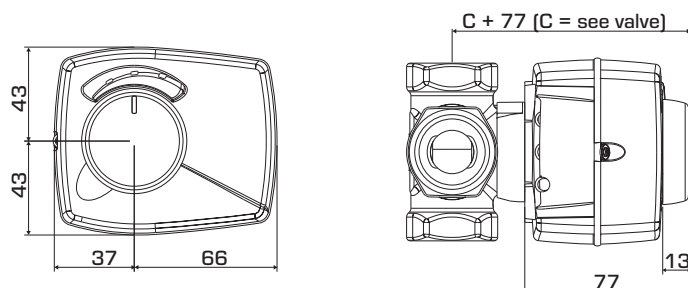


Actuator with premounted auxiliary switch, series:
ARA642, ARA644, ARA652, ARA654, ARA662, ARA664,
ARA672, ARA674, ARA692, ARA694

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

ACTUATOR SERIES ARA600, 3-POINT 24 VAC

Art. No.	Reference	Voltage [VAC]	Running time 90° [s]	Control signal *	Torque [Nm]	Replaces	Note
1210 01 00	ARA643	24	30	3-point SPDT	6	—	
1210 02 00	ARA653	24	60	3-point SPDT	6	—	
1210 03 00	ARA663	24	120	3-point SPDT	6	62	
1210 04 00	ARA673	24	240	3-point SPDT	6	63	
1210 05 00	ARA693	24	120/240/480/1200	3-point SPDT	6	—	
1210 06 00	ARA644	24	30	3-point SPDT	6	—	1)
1210 07 00	ARA654	24	60	3-point SPDT	6	—	1)
1210 08 00	ARA664	24	120	3-point SPDT	6	62M	1)
1210 09 00	ARA674	24	240	3-point SPDT	6	63M	1)
1210 10 00	ARA694	24	120/240/480/1200	3-point SPDT	6	—	1)

ACTUATOR SERIES ARA600, 3-POINT 230 VAC

Art. No.	Reference	Voltage [VAC]	Running time 90° [s]	Control signal *	Torque [Nm]	Replaces	Note
1210 11 00	ARA641	230	30	3-point SPDT	6	—	
1210 12 00	ARA651	230	60	3-point SPDT	6	65	
1210 13 00	ARA661	230	120	3-point SPDT	6	66	
1210 14 00	ARA671	230	240	3-point SPDT	6	67	
1210 15 00	ARA691	230	120/240/480/1200	3-point SPDT	6	67-20	
1210 16 00	ARA642	230	30	3-point SPDT	6	—	1)
1210 17 00	ARA652	230	60	3-point SPDT	6	65M	1)
1210 18 00	ARA662	230	120	3-point SPDT	6	66M	1)
1210 19 00	ARA672	230	240	3-point SPDT	6	67M	1)
1210 20 00	ARA692	230	120/240/480/1200	3-point SPDT	6	67-20M	1)

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

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.



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

OPTION

Auxiliary switch kit _____ Art. No. 1620 07 00

Cable hatch _____ Art. No. 1620 08 00

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

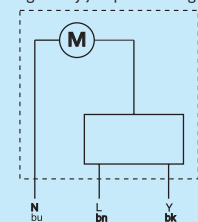
CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC

WIRING

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

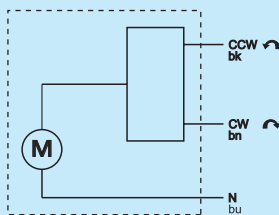
2-point control signal

*The direction of rotation is eligible by jumper setting.

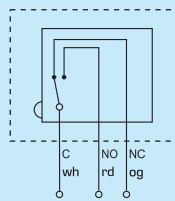


Actuator, series:
ARA635 – ARA638, ARA645 – ARA648, ARA655 – ARA658

3-point control signal



Auxiliary switch

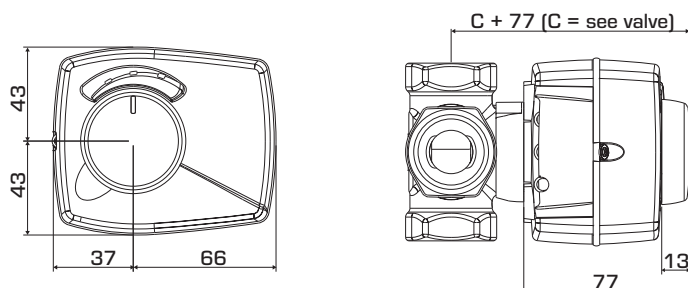


Actuator with auxiliary switch, series:
ARA636, ARA638, ARA646, ARA648, ARA656, ARA658
The actuators are fitted with two separate cables, one cable for actuator regulation and one for the auxiliary switch.
To set the switch position, remove the actuator knob and turn the green cam sleeve to the desired position.

ROTARY MOTORIZED VALVES

ACTUATOR

SERIES ARA600 2-POINT



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

ACTUATOR SERIES ARA600, 2-POINT 24 VAC

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

ACTUATOR SERIES ARA600, 2-POINT 230 VAC

Art. No.	Reference	Voltage [VAC]	Running time 90° [s]	Control signal*	Torque [Nm]	Replaces	Note
1212 07 00	ARA635	230	15	2-point SPST	3	—	2)
1212 08 00	ARA645	230	30	2-point SPST	6	—	
1212 09 00	ARA655	230	60	2-point SPST	6	68	
1212 10 00	ARA636	230	15	2-point SPST	3	—	1), 2)
1212 11 00	ARA646	230	30	2-point SPST	6	—	1)
1212 12 00	ARA656	230	60	2-point SPST	6	68M	1)

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

ACTUATOR SERIES ARA600 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

OPTION

Auxiliary switch kit _____ Art. No. 1620 07 00

Cable hatch _____ Art. No. 1620 08 00

TECHNICAL DATA

Ambient temperature: _____ max. +55°C

_____ min. -5°C

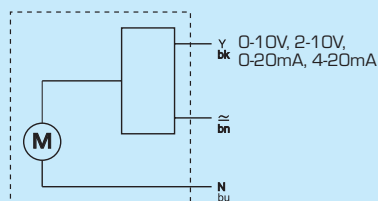
Enclosure rating: _____ IP41

Protection class: _____ II

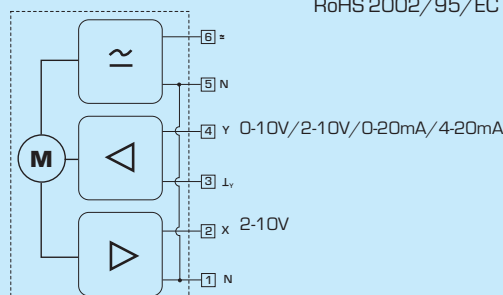
Power supply: _____ 24 ± 10% VAC/DC, 50/60 Hz

WIRING

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



Actuator series ARA659



Actuator series ARA639

Power consumption - Operation, AC: _____ 5 W

DC: _____ 2.5 W

Power consumption - Dimensioning, AC: _____ ARA639, 11 VA

_____ ARA659, 8 VA

DC: _____ ARA639, 6 VA

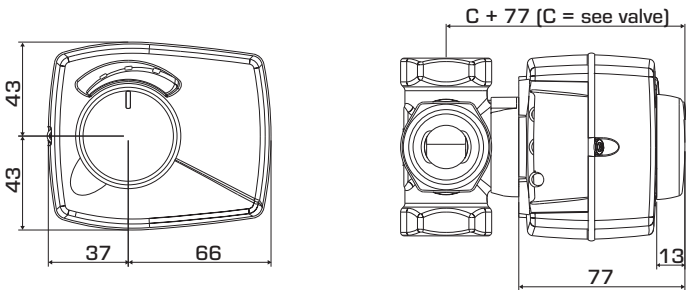
_____ ARA659, 4 VA

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

ACTUATOR
SERIES ARA600 PROPORTIONAL



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

ACTUATOR SERIES ARA600, PROPORTIONAL 24 V AC/DC

Art. No.	Reference	Voltage [V]	Running time 90° [s]	Control signal	Torque [Nm]	Replaces	Note
1252 01 00	ARA639	24	15/30/60/120	0..10 V, 2..10V, 0..20mA, 4..20mA	6	—	
1252 02 00	ARA659	24	45/120	0..10 V, 2..10V, 0..20mA, 4..20mA	6	62P	

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.

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



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.

Turn the valve to the desired position.



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 separately.

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 16 00 Centra ZR, DR, DRU

1605 17 00 Centra Kompakt DRK/ZRK

1605 19 00 CTC, linear movement

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

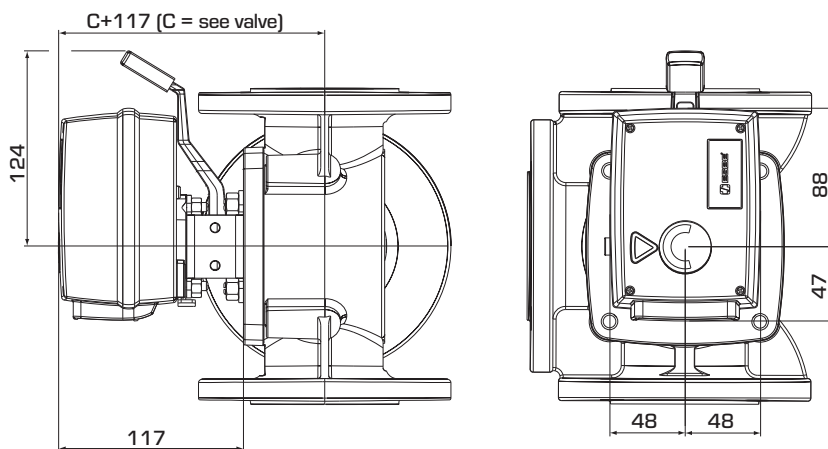
Weight: _____ 0.8 kg

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

ROTARY MOTORIZED VALVES

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

ACTUATOR SERIES 90, 3-POINT 24 VAC

Art. No.	Reference	Voltage [VAC]	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 06 00	92	24	60	15	3-point SPDT	Separate auxiliary switch as option**
1205 07 00	92-2	24	120	15	3-point SPDT	Separate auxiliary switch as option**
1205 13 00	93	24	240	15	3-point SPDT	Separate auxiliary switch as option**
1205 04 00	91M	24	15	5	3-point SPDT	With premounted auxiliary switch
1205 11 00	92M	24	60	15	3-point SPDT	With premounted auxiliary switch
1205 09 00	92-2M	24	120	15	3-point SPDT	With premounted auxiliary switch
1205 15 00	93M	24	240	15	3-point SPDT	With premounted auxiliary switch

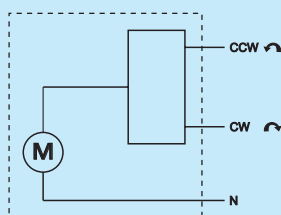
ACTUATOR SERIES 90, 3-POINT 230 VAC

Art. No.	Reference	Voltage [VAC]	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 19 00	95	230	60	15	3-point SPDT	Separate auxiliary switch as option**
1205 20 00	95-2	230	120	15	3-point SPDT	Separate auxiliary switch as option**
1205 23 00	96	230	240	15	3-point SPDT	Separate auxiliary switch as option**
1205 18 00	94M	230	15	5	3-point SPDT	With premounted auxiliary switch
1205 22 00	95M	230	60	15	3-point SPDT	With premounted auxiliary switch
1205 21 00	95-2M	230	120	15	3-point SPDT	With premounted auxiliary switch
1205 33 00	95-270M	230	150	5	3-point SPDT	With premounted auxiliary switch
1205 24 00	96M	230	240	15	3-point SPDT	With premounted auxiliary switch

* 3-point SPDT = Single Pole Double Throw

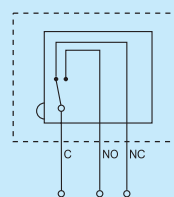
WIRING

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.

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.



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.

Turn the valve to the desired position.



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 separately.

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 16 00 _____ Centra ZR, DR, DRU

1605 17 00 _____ Centra Kompakt DRK/ZRK

1605 19 00 _____ CTC, linear movement

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

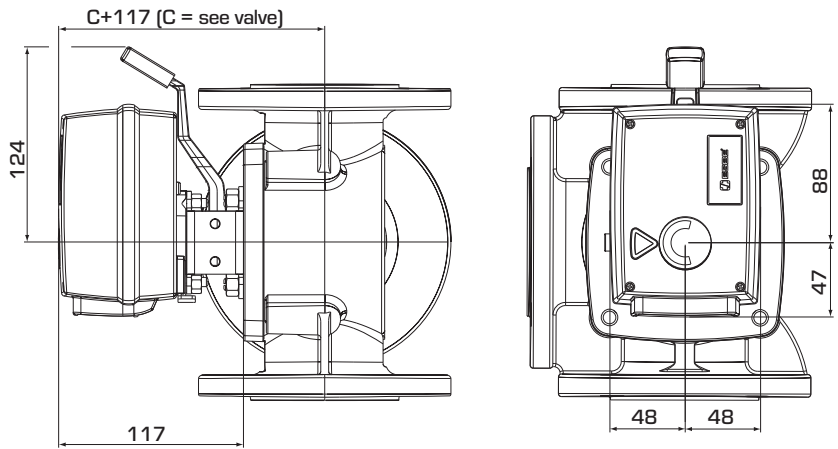
Rating auxiliary switch: _____ 6(3)A 250 VAC

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

ACTUATOR SERIES 90, 2-POINT 230 VAC

Art. No.	Reference	Voltage [VAC]	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	230	60	15	2-point SPST	With built-in relay

*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.

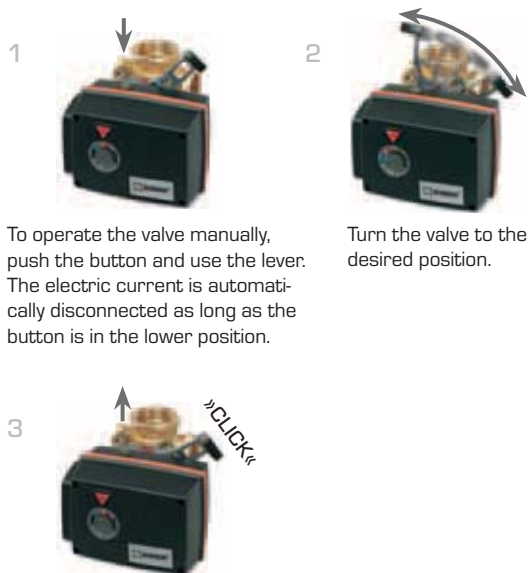
ACTUATOR SERIES 90 PROPORTIONAL

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.



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.

Turn the valve to the desired position.

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 separately.

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 16 00 _____ Centra ZR, DR, DRU

1605 17 00 _____ Centra Kompakt DRK/ZRK

1605 19 00 _____ CTC, linear movement

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

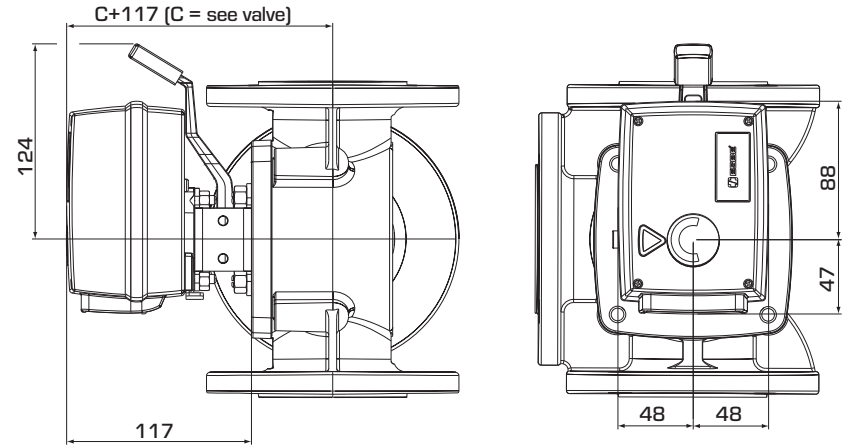
Rating auxiliary switch: _____ 6(3)A 250 VAC

Weight: _____ 0.8 kg

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

ACTUATOR

SERIES 90 PROPORTIONAL



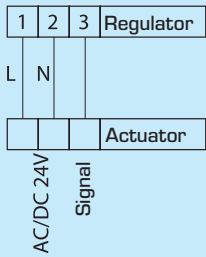
Installation dimensions for Actuator Series 90 with ESBE series MG, G, F, T/TM, H/HG and BIV mixing valves

ACTUATOR SERIES 90, PROPORTIONAL 24 V AC/DC

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