CONTENTS

ROTARY MOTORIZED VALVES

INTRODUCTION AND SELECTION GUIDES 22–33

MIXING VALVE
Series VRG130
DN 15–50, Kvs 0.4–40, PN 10

MIXING VALVE
Series VRG140
DN 15–50, Kvs 2.5–40, PN 10

CHANGE-OVER/DIVERTING VALVE
Series VRG230
DN 20–50, Kvs 4–40, PN 10

MIXING VALVE
Series VRG330
DN 20–50, Kvs 13–65, PN 10

BIVALENT MIXING VALVE
Series VRB140
DN 15–50, Kvs 2.5–35, PN 10

MIXING VALVE
Series 3MG, 5MG
DN 15–32, Kvs 2.5–18, PN 10

MIXING VALVE
Series 3F, 4F
DN 20–150, Kvs 12–400, PN 6

MIXING VALVE
Series T, TM
DN 20–25, Kvs 5.5–10, PN 6/10

MIXING VALVE
Series HG, H
DN 20–50, Kvs 6.3–35, PN 10

ACTUATOR
Series ARA600
Operating range 90°, torque up to 6Nm
2-point, 3-point or proportional signal

ACTUATOR
Series 90
Operating range 30–355°, torque up to 15Nm
2-point, 3-point or proportional signal
HOW DO YOU CREATE A NEW STANDARD?
OF COURSE BY INTERVIEWING INSTALLATION ENGINEERS,
OEM PARTNERS AND WHOLESALERS.

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

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

Thanks also for your contribution to our development. You’re a hero!
TIME IS IMPORTANT TO ME. IS IT POSSIBLE TO FURTHER SIMPLIFY INSTALLATION?

FIVE IMPROVEMENTS FOR EVEN SIMPLER AND QUICKER INSTALLATION.

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

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

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

4. MORE SECURE INSTALLATION FOR INTERNAL THREADED VALVE. The key handle is wider and has two, instead of six, edges. This provides a better grip with less risk of slipping with the pipe wrench or box wrench.

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

GREATER CONTROL PRECISION IS ALWAYS IN DEMAND.

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

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

The diagram above shows how much hot water valves allow through relative to the valve position. This is as close to ideal regulation as you can get, providing increased comfort and lower energy consumption. You’ll notice the difference immediately. You can be sure of that.
"LOOSELY FITTED ACTUATOR SEEMS TO AFFECT REGULATION. AT WORST IT CAN CAUSE UNNECESSARY REPEAT VISITS TO THE CUSTOMER."

MORE STABLE INSTALLATION PROVIDES CONSIDERABLY BETTER REGULATION.

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

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

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

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

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

For installation purposes, 15 millimetres is invaluable. Particularly if you want to integrate a valve and actuator into a heat pump, boiler, pump group or other finished product.

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

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

As simple as it is clever.
ESBE'S VALVES ARE KNOWN FOR MINIMAL INTERNAL LEAKAGE. BUT IS IT POSSIBLE TO REDUCE IT EVEN FURTHER?
WE ARE NOW AS CLOSE TO FULLY LEAKPROOF AS IS POSSIBLE.

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

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

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

A more fully leakproof valve is difficult to achieve for a rotary valve. It’s time to replace all those old valves leaking valuable energy.

I REALLY MISS BRASS FOR MANY APPLICATIONS.
ALL VALVES – FROM DN 15 RIGHT UP TO DN 50 – ARE NOW MADE OF DZR.

Brass is an excellent material. It is suitable for most applications such as radiator heating systems, floor heating, tap water, cooling systems and other oxygenated systems. The suitability of brass also reduces the need for keeping different types of valves in stock.

All our rotary valves – from DN 15 right up to DN 50 – are now made of brass, but not just any old brass. We use a special alloy known as DZR (Dezincification Resistant Brass, CW 602N) in valve housings and slides. It provides several functional benefits that you don’t get with a valve construction that combines cast iron with brass.

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

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

It doesn’t get much better than this.
SELECT THE MOST SUITABLE MIXING VALVE

HOW TO SELECT A ROTARY MIXING VALVE
ESBE 3-way mixing valves are usually connected as a mixing valve, but it may also be used as a change-over valve or diverting valve.

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

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

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

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

SELECTION OF MIXING VALVE SIZE
Each size of mixing valve has a Kvs-value (capacity in 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 at page 32-33.

For a radiator system $\Delta t = 20^\circ$C is usually chosen and for under floor heating $\Delta t = 5^\circ$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 Kvs-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.
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.
SELECT THE MOST SUITABLE MIXING VALVE

- Recommended
- Secondary alternative
- Not applicable

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

APPLICATION EXAMPLES ARE VALID FOR

- VRG130
- VRG140
- VRG230
- VRG330
- VRB140
- 5MG
- 3F
- 4F
ROTARY MOTORIZED VALVES

ESBE GUIDE
SELECT THE MOST SUITABLE MIXING VALVE

APPLICATION EXAMPLES ARE VALID FOR
- VRG130
- VRG140
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ROTARY MOTORIZED VALVES

ESBE GUIDE

SELECT THE MOST SUITABLE MIXING VALVE

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- VRG330
- VRB140
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- VRG230
- VRG330
- VRB140
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- 4F
SELECT THE MOST SUITABLE MIXING VALVE

APPLICATION EXAMPLES ARE VALID FOR

- VRG130
- VRG140
- VRG230
- VRG330
- VRB140
- 5MG
- 3F
- 4F
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).

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100 kPa = 1 bar = 10 mWC
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.

Flow
m³/h l/s

Power kW

Pressure drop ΔP [kPa]

Δt = 5°C

C max ΔP Series F, DN 65 – 150
D max ΔP Series F, DN 20 – 50, T/TM, H/HG
E max ΔP Series MG

100 kPa = 1 bar = 10 mWC
OPERATION
The ESBE series VRG130 is a range of compact low leakage mixing valves made of a special brass alloy (DZR) allowing use in both heating, cooling and tap water installations.

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

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

SERVICE AND MAINTENANCE
The slender and compact design of the valve allows for easy tool access when assembling and disassembling the valve. Repair kits are available for key components. An extra O-ring can also be installed as additional shaft seal without any need for draining the system or dismantling the valve, as long as the system is depressurized.

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

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

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
Flow [%] vs. Opening angle [°]
## ROTARY MOTORIZED VALVES

### MIXING VALVE

#### SERIES VRG130

![Diagram of VRG131, VRG132, VRG133](image)

![Diagram of VRG138](image)

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

#### SERIES VRG131, INTERNAL THREAD

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#### SERIES VRG132, EXTERNAL THREAD

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#### SERIES VRG133, COMPRESSION FITTING

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<th>D</th>
<th>Weight [kg]</th>
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<td>41</td>
<td>82</td>
<td>34</td>
<td>52</td>
<td>0.45</td>
<td></td>
</tr>
</tbody>
</table>

#### SERIES VRG138, ROTATING NUT AND EXTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1160 38 00</td>
<td>VRG138</td>
<td>20</td>
<td>4</td>
<td>2x RN 1&quot; + G 1&quot;</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>1160 39 00</td>
<td></td>
<td></td>
<td>4</td>
<td>3x RN 1&quot;</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>0.59</td>
</tr>
<tr>
<td>1160 40 00</td>
<td></td>
<td></td>
<td>6.3</td>
<td>2x RN 1&quot; + G 1&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.56</td>
</tr>
<tr>
<td>1160 41 00</td>
<td></td>
<td></td>
<td>6.3</td>
<td>3x RN 1&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.59</td>
</tr>
</tbody>
</table>

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 32. CPF = compression fitting RN = Rotating Nut.
OPERATION
The ESBE series VRG140 is a range of compact low leakage mixing valves made of a special brass alloy (DZR) allowing use in heating, cooling and tap water installations.

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

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

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

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

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

VALVE VRG140 DESIGNED FOR
- Heating
- Comfort cooling
- Potable water
- Floor heating
- Solar heating
- Ventilation
- Zone
- District hot water
- District heating
- District cooling

SUITABLE ACTUATORS
The valve series VRG140 may most easily be fitted with ESBE actuators:
- Series ARA600
- Series 90*
- Series 90C
- Series 90K
  * Adaptor kit necessary, see product page

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

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

PED 97/23/EC, article 3.3

VALVE CHARACTERISTICS

Flow [%] vs. Opening angle [°]
## ROTARY MOTORIZED VALVES

### MIXING VALVE

#### SERIES VRG140

![Diagram of VRG140 Mixing Valve]

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

#### SERIES VRG141, INTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1164 01 00</td>
<td>VRG141</td>
<td>15</td>
<td>2.5</td>
<td>Rp ½”</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>1164 02 00</td>
<td>VRG141</td>
<td>20</td>
<td>4</td>
<td>Rp ⅜”</td>
<td>38</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>1164 03 00</td>
<td>VRG141</td>
<td>25</td>
<td>10</td>
<td>Rp ⅛”</td>
<td>41</td>
<td>82</td>
<td>34</td>
<td>52</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>1164 04 00</td>
<td>VRG141</td>
<td>32</td>
<td>16</td>
<td>Rp 1¼”</td>
<td>47</td>
<td>94</td>
<td>37</td>
<td>55</td>
<td>1.08</td>
<td></td>
</tr>
<tr>
<td>1164 05 00</td>
<td>VRG141</td>
<td>40</td>
<td>25</td>
<td>Rp 1½”</td>
<td>51</td>
<td>106</td>
<td>44</td>
<td>60</td>
<td>1.80</td>
<td></td>
</tr>
<tr>
<td>1164 06 00</td>
<td>VRG141</td>
<td>50</td>
<td>40</td>
<td>Rp 2”</td>
<td>60</td>
<td>120</td>
<td>46</td>
<td>64</td>
<td>2.55</td>
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</table>

#### SERIES VRG142, EXTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1164 08 00</td>
<td>VRG142</td>
<td>15</td>
<td>2.5</td>
<td>G ¾”</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>1164 09 00</td>
<td>VRG142</td>
<td>20</td>
<td>4</td>
<td>G 1”</td>
<td>38</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>1164 10 00</td>
<td>VRG142</td>
<td>25</td>
<td>10</td>
<td>G 1¼”</td>
<td>41</td>
<td>82</td>
<td>34</td>
<td>52</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>1164 11 00</td>
<td>VRG142</td>
<td>32</td>
<td>16</td>
<td>G 1½”</td>
<td>47</td>
<td>94</td>
<td>37</td>
<td>55</td>
<td>1.08</td>
<td></td>
</tr>
<tr>
<td>1164 12 00</td>
<td>VRG142</td>
<td>40</td>
<td>25</td>
<td>G 2”</td>
<td>53</td>
<td>106</td>
<td>44</td>
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<tr>
<td>1164 13 00</td>
<td>VRG142</td>
<td>50</td>
<td>40</td>
<td>G 2¼”</td>
<td>60</td>
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<td>46</td>
<td>64</td>
<td>2.55</td>
<td></td>
</tr>
</tbody>
</table>

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 32.
OPERATION
The ESBE series VRG230 is a range of low leakage rotary valves made of a special brass alloy (DZR) suitable for mid-port change-over / diverting operation.
For easy manual operation, the valves are equipped with non-slip knobs and end stops. The valve position scale can be turned over and rotated, allowing a wide choice of mounting positions. Together with actuator series ESBE ARA600 equipped with auxiliary switch the VRG230 valves are also easily automated thanks to the unique valve-to-actuator interface.

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

SERVICE AND MAINTENANCE
The slender and compact design of the valve allows for easy tool access when assembling and disassembling the valve.
Repair kits are available for key components. An extra O-ring can also be installed as additional shaft seal without any need for draining the system or dismantling the valve, as long as the system is depressurized.

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

TECHNICAL DATA
Pressure class: __________________________________ PN 10
Media temperature: ____________ max. (continuously) +110ºC
______________________________ max. (temporarily) +130ºC
______________________________ min. -10ºC
Torque (at nominal pressure): _________________________ < 5 Nm
Leakrate in % of flow*: ____________________________ < 0.5%
Working pressure: ____________________________ 1 MPa (10 bar)
Max. differential pressure drop: ____________ Diverting, 200 kPa (2 bar)
_________________________________ Mixing, 100 kPa (1 bar)
Close off pressure: ________________________ 200 kPa (2 bar)
Rangeability Kv/Kvmin, A-AB: __________________________ 100
Connections: ____________________________ Internal thread, EN 10226-1
__________________________ External thread, ISO 228/1
__________________________ Compression fitting, EN 1254-1
* 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
Flow [%]
## ROTARY MOTORIZED VALVES

### CHANGE-OVER / DIVERTING VALVE

**SERIES VRG230**

![VRG231, VRG232, VRG233](image)

![VRG238](image)

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

### SERIES VRG231, INTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1162 01 00</td>
<td>VRG231</td>
<td>20</td>
<td>6.3</td>
<td>Rp ¾&quot;</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.43</td>
<td></td>
</tr>
<tr>
<td>1162 02 00</td>
<td>VRG231</td>
<td>25</td>
<td>10</td>
<td>Rp 1&quot;</td>
<td>41</td>
<td>82</td>
<td>34</td>
<td>52</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>1162 03 00</td>
<td>VRG231</td>
<td>32</td>
<td>16</td>
<td>Rp 1¼&quot;</td>
<td>47</td>
<td>94</td>
<td>37</td>
<td>55</td>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td>1162 14 00</td>
<td>VRG231</td>
<td>40</td>
<td>30</td>
<td>Rp 1½&quot;</td>
<td>53</td>
<td>106</td>
<td>44</td>
<td>60</td>
<td>1.72</td>
<td></td>
</tr>
<tr>
<td>1162 16 00</td>
<td>VRG231</td>
<td>50</td>
<td>40</td>
<td>Rp 2&quot;</td>
<td>60</td>
<td>120</td>
<td>46</td>
<td>64</td>
<td>2.39</td>
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### SERIES VRG232, EXTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1162 06 00</td>
<td>VRG232</td>
<td>20</td>
<td>6.3</td>
<td>G 1&quot;</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.43</td>
<td></td>
</tr>
<tr>
<td>1162 07 00</td>
<td>VRG232</td>
<td>25</td>
<td>10</td>
<td>G 1¼&quot;</td>
<td>41</td>
<td>82</td>
<td>34</td>
<td>52</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>1162 08 00</td>
<td>VRG232</td>
<td>32</td>
<td>16</td>
<td>G 1½&quot;</td>
<td>47</td>
<td>94</td>
<td>37</td>
<td>55</td>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td>1162 15 00</td>
<td>VRG232</td>
<td>40</td>
<td>30</td>
<td>G 2&quot;</td>
<td>53</td>
<td>106</td>
<td>44</td>
<td>60</td>
<td>1.73</td>
<td></td>
</tr>
<tr>
<td>1162 17 00</td>
<td>VRG232</td>
<td>50</td>
<td>40</td>
<td>G 2¼&quot;</td>
<td>60</td>
<td>120</td>
<td>46</td>
<td>64</td>
<td>2.39</td>
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### SERIES VRG233, COMPRESSION FITTING

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td>1162 11 00</td>
<td>VRG233</td>
<td>20</td>
<td>4</td>
<td>CPF 22 mm</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>1162 12 00</td>
<td>VRG233</td>
<td>25</td>
<td>10</td>
<td>CPF 28 mm</td>
<td>41</td>
<td>82</td>
<td>34</td>
<td>52</td>
<td>0.45</td>
<td></td>
</tr>
</tbody>
</table>

### SERIES VRG238, ROTATING NUT

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1162 18 00</td>
<td>VRG238</td>
<td>20</td>
<td>4</td>
<td>3x RN 1&quot;</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td>1162 19 00</td>
<td>VRG238</td>
<td>20</td>
<td>6.3</td>
<td>3x RN 1&quot;</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.59</td>
<td></td>
</tr>
</tbody>
</table>

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 32. CPF = compression fitting RN = Rotating Nut
ROTARY MOTORIZED VALVES

MIXING VALVE
SERIES VRG330

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

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

For easy manual operation the valves are equipped with non-slip knobs and end stops for an operation angle of 90°. Together with actuator series ESBE ARA600 the VRG330 valves are also easily automated.

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

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

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure class:</td>
<td>PN 10</td>
</tr>
<tr>
<td>Media temperature:</td>
<td>max. (continuously) +110°C</td>
</tr>
<tr>
<td></td>
<td>max. (temporarily) +130°C</td>
</tr>
<tr>
<td></td>
<td>min. -10°C</td>
</tr>
<tr>
<td>Torque (at nominal pressure):</td>
<td>&lt; 5 Nm</td>
</tr>
<tr>
<td>Leaktite in % of flow*:</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Working pressure:</td>
<td>1 MPa (10 bar)</td>
</tr>
<tr>
<td>Max. differential pressure drop:</td>
<td>Mixing, 100 kPa (1 bar)</td>
</tr>
<tr>
<td></td>
<td>Diverting, 200 kPa (2 bar)</td>
</tr>
<tr>
<td>Close off pressure:</td>
<td>200 kPa (2 bar)</td>
</tr>
<tr>
<td>Rangeability Kv/Kv***, A-AB:</td>
<td>100</td>
</tr>
<tr>
<td>Connections:</td>
<td>Internal thread, EN 10226-1</td>
</tr>
<tr>
<td></td>
<td>External thread, ISO 228/1</td>
</tr>
</tbody>
</table>

* 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

Flow [%]

<table>
<thead>
<tr>
<th>Opening angle [°]</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
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</thead>
<tbody>
<tr>
<td>Flow [%]</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
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</table>

ESBE 2010/11 VALVES AND ACTUATORS
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**SERIES VRG331, INTERNAL THREAD**

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
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</thead>
<tbody>
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<td>13</td>
<td>8</td>
<td>Rp ¾”</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.43</td>
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<tr>
<td>1170 02 00</td>
<td>VRG331</td>
<td>25</td>
<td>17</td>
<td>10</td>
<td>Rp 1”</td>
<td>41</td>
<td>82</td>
<td>34</td>
<td>52</td>
<td>0.70</td>
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<tr>
<td>1170 03 00</td>
<td>VRG331</td>
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<td>32</td>
<td>20</td>
<td>Rp 1½”</td>
<td>47</td>
<td>94</td>
<td>37</td>
<td>55</td>
<td>0.95</td>
</tr>
<tr>
<td>1170 11 00</td>
<td>VRG331</td>
<td>40</td>
<td>45</td>
<td>30</td>
<td>Rp 1¾”</td>
<td>53</td>
<td>106</td>
<td>44</td>
<td>60</td>
<td>1.65</td>
</tr>
<tr>
<td>1170 13 00</td>
<td>VRG331</td>
<td>50</td>
<td>65</td>
<td>40</td>
<td>Rp 2”</td>
<td>60</td>
<td>120</td>
<td>46</td>
<td>64</td>
<td>2.28</td>
</tr>
</tbody>
</table>

**SERIES VRG332, EXTERNAL THREAD**

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

**SERIES VRG338, ROTATING NUT**

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1170 15 00</td>
<td>VRG338</td>
<td>20</td>
<td>13</td>
<td>8</td>
<td>3x RN 1”</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.57</td>
</tr>
</tbody>
</table>

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 32. RN = Rotating Nut
THE COMPACT ROTARY 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 90C controllers allows even more applications.

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

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

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

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

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

VALVE VRB140 DESIGNED FOR

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

SUITABLE ACTUATORS

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

- Series ARA600
- Series 90C
- Series 90K

* Adaptor kit necessary, see product page

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Pressure class:</th>
<th>PN 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media temperature:</td>
<td>max. (continuously) +110°C</td>
</tr>
<tr>
<td></td>
<td>max. (temporarily) +130°C</td>
</tr>
<tr>
<td></td>
<td>min. -10°C</td>
</tr>
<tr>
<td>Torque (at nominal pressure):</td>
<td>&lt; 5 Nm</td>
</tr>
<tr>
<td>Leakrate in % of flow*:</td>
<td>&lt; 0.5%</td>
</tr>
<tr>
<td>Working pressure:</td>
<td>1 MPa (10 bar)</td>
</tr>
<tr>
<td>Max. differential pressure drop:</td>
<td>Mixing, 100 kPa (1 bar)</td>
</tr>
<tr>
<td></td>
<td>Diverting, 200 kPa (2 bar)</td>
</tr>
<tr>
<td>Close off pressure:</td>
<td>200 kPa</td>
</tr>
<tr>
<td>Rangeability Ks/Kv*:</td>
<td>100</td>
</tr>
<tr>
<td>Connections:</td>
<td>Internal thread, EN 10226-1</td>
</tr>
<tr>
<td></td>
<td>External thread, ISO 228/1</td>
</tr>
<tr>
<td></td>
<td>Compression fitting, EN 1254-2</td>
</tr>
</tbody>
</table>

* 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

Flow [%]

<table>
<thead>
<tr>
<th>Opening angle [°]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>70</td>
</tr>
<tr>
<td>80</td>
</tr>
<tr>
<td>90</td>
</tr>
</tbody>
</table>

PED 2010/11 VALVES AND ACTUATORS

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

Storage tank mixing

Storage tank loading

Parallel heat sources

Serial heat sources

Storage tank loading
**MIXING VALVE**

**SERIES VRB140**

### SERIES VRB141, INTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1166 01 00</td>
<td>VRB141</td>
<td>15</td>
<td>2.5</td>
<td>Rp ½”</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>1166 02 00</td>
<td>VRB141</td>
<td>20</td>
<td>4</td>
<td>Rp ¾”</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>1166 03 00</td>
<td>VRB141</td>
<td>25</td>
<td>10</td>
<td>Rp 1”</td>
<td>41</td>
<td>82</td>
<td>34</td>
<td>52</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>1166 04 00</td>
<td>VRB141</td>
<td>32</td>
<td>16</td>
<td>Rp 1¼”</td>
<td>47</td>
<td>94</td>
<td>37</td>
<td>55</td>
<td>1.08</td>
<td></td>
</tr>
<tr>
<td>1166 11 00</td>
<td>VRB141</td>
<td>40</td>
<td>25</td>
<td>Rp 1½”</td>
<td>53</td>
<td>106</td>
<td>44</td>
<td>60</td>
<td>1.98</td>
<td></td>
</tr>
<tr>
<td>1166 22 00</td>
<td>VRB141</td>
<td>50</td>
<td>35</td>
<td>Rp 2”</td>
<td>60</td>
<td>120</td>
<td>46</td>
<td>64</td>
<td>2.65</td>
<td></td>
</tr>
</tbody>
</table>

### SERIES VRB142, EXTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1166 08 00</td>
<td>VRB142</td>
<td>15</td>
<td>2.5</td>
<td>G ¼”</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>1166 24 00</td>
<td>VRB142</td>
<td>20</td>
<td>4</td>
<td>G ½”</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>1166 09 00</td>
<td>VRB142</td>
<td>25</td>
<td>10</td>
<td>G 1”</td>
<td>41</td>
<td>82</td>
<td>34</td>
<td>52</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>1166 10 00</td>
<td>VRB142</td>
<td>32</td>
<td>16</td>
<td>G 1¼”</td>
<td>47</td>
<td>94</td>
<td>37</td>
<td>55</td>
<td>1.08</td>
<td></td>
</tr>
<tr>
<td>1166 11 00</td>
<td>VRB142</td>
<td>40</td>
<td>25</td>
<td>G 1½”</td>
<td>53</td>
<td>106</td>
<td>44</td>
<td>60</td>
<td>1.98</td>
<td></td>
</tr>
<tr>
<td>1166 12 00</td>
<td>VRB142</td>
<td>50</td>
<td>35</td>
<td>G 2”</td>
<td>60</td>
<td>120</td>
<td>46</td>
<td>64</td>
<td>2.65</td>
<td></td>
</tr>
</tbody>
</table>

### SERIES VRB143, COMPRESSION FITTING

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Weight [kg]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1166 15 00</td>
<td>VRB143</td>
<td>20</td>
<td>4</td>
<td>CPF 22 mm</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>50</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>1166 16 00</td>
<td>VRB143</td>
<td>25</td>
<td>6.3</td>
<td>CPF 28 mm</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>52</td>
<td>0.45</td>
<td></td>
</tr>
</tbody>
</table>

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 32. CPF = compression fitting.
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.

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

ABC123

[C] Subseries

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

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

VRG123

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

2 = 2-way
3 = 3-way
4 = 4-way

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

ARA123

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

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

[1] Version
6 = version

ROTARY ACTUATORS [AR_]

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

<table>
<thead>
<tr>
<th>VALVE 3MG DESIGNED FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Heating</td>
</tr>
<tr>
<td>• Comfort cooling</td>
</tr>
<tr>
<td>• Potable water</td>
</tr>
<tr>
<td>• Floor heating</td>
</tr>
<tr>
<td>• Solar heating</td>
</tr>
<tr>
<td>• Ventilation</td>
</tr>
<tr>
<td>• Zone</td>
</tr>
<tr>
<td>• District hot water</td>
</tr>
<tr>
<td>• District heating</td>
</tr>
<tr>
<td>• District cooling</td>
</tr>
</tbody>
</table>

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

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

TECHNICAL DATA
Pressure class: _______________________________ PN 10
Media temperature: ________________________ max. +130°C
[min. –10°C]
Differential pressure drop: __________________ max. 100 kPa
Torque: _____________________________________ max. 3Nm
Leakrate in % of flow: ______________________ see table
Rangeability Kv/Kvmin: ______________________ 100
Connections: __________________________________ External thread, ISO 228/1

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

VALVE CHARACTERISTICS

<table>
<thead>
<tr>
<th>% hot water</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 3 5 7 9 10</td>
</tr>
</tbody>
</table>

Valve position
### ROTARY MOTORIZED VALVES

### MIXING VALVE

#### SERIES 3MG

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Weight [kg]</th>
<th>Leakrate in % of flow**</th>
<th>Mixing</th>
<th>Diverting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100 55 00</td>
<td>3MGP 15</td>
<td>15</td>
<td>2.5</td>
<td>G 1&quot; / G 1½&quot; / PF 1½&quot;</td>
<td>48</td>
<td>112</td>
<td>32</td>
<td>70</td>
<td>51</td>
<td>1.0</td>
<td>0.1</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>1100 56 00</td>
<td>3MGP 20</td>
<td>20</td>
<td>6.3</td>
<td>G 1½&quot; / G 1¾&quot; / PF 2&quot;</td>
<td>48</td>
<td>105</td>
<td>38</td>
<td>76</td>
<td>50</td>
<td>1.1</td>
<td>0.1</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>1100 57 00</td>
<td>3MGP 32</td>
<td>32</td>
<td>18</td>
<td>G 1¾&quot; / G 2&quot; / PF 2½&quot;</td>
<td>48</td>
<td>105</td>
<td>38</td>
<td>76</td>
<td>50</td>
<td>1.1</td>
<td>0.1</td>
<td>0.05</td>
<td></td>
</tr>
</tbody>
</table>

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 33. ** Differential pressure 50 kPa. PF = Pump Flange

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

#### SERIES 3MGP, PUMP FLANGE AND EXTERNAL THREAD
ROTARY MOTORIZED VALVES

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

SUITABLE ACTUATORS
The valve series 5MG may most easily be fitted with ESBE actuators:
- Series 90, type 92P4 and 95-270M

TECHNICAL DATA
Pressure class: _______________________________ PN 10
Media temperature: ______________________ max. +130°C
min. –10°C
Differential pressure drop: __________________max. 100 kPa
Torque: ___________________________ max. 3Nm
Leakrate in % of flow: ___________________ see table
Rangeability Kv/Kvmin: _________________ 100
Connections: _____________________________ Internal thread, EN 10226-1

Material
Valve body, spindle and slide: ______________ Brass CW 614N
Bush: ______________ Plastic
Cover plate: ______________ Zinc
O-rings: ______________ EPDM
The flat-sided spindle top (as well as the indicator of the knob) points towards the opening in the sleeve.

### SERIES 5MG, INTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Weight [kg]</th>
<th>Leakrate in % of flow* *</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100 52 00</td>
<td>5MG 25</td>
<td>25</td>
<td>8</td>
<td>Rp 1&quot;</td>
<td>36</td>
<td>72</td>
<td>32</td>
<td>70</td>
<td>41</td>
<td>0.9</td>
<td>0.3</td>
</tr>
<tr>
<td>1100 53 00</td>
<td>5MG 32</td>
<td>32</td>
<td>18</td>
<td>Rp 1¼&quot;</td>
<td>44</td>
<td>88</td>
<td>38</td>
<td>77</td>
<td>47</td>
<td>1.2</td>
<td>0.2</td>
</tr>
</tbody>
</table>

* Kvs-value in m³/h at a pressure drop of 1 bar. See also flow chart on page 33. ** Differential pressure 50 kPa
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.

VALVE 3F DESIGNED FOR

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/Kvmin: 100
Connection: Flange according to DIN 2531
Material: DN 20–25 Cast iron EN–JL 1030
DN 32–150 Cast iron EN–JL 1030
Material: brass CW 614N, 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

0 1 3 5 7 9 10

0 10 20 30 40 50 60 70 80 90 100

Valve position
## ROTARY MOTORIZED VALVES

### MIXING VALVE

**SERIES 3F**

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs* (m³/h)</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>F (mm)</th>
<th>G (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1110 01 00</td>
<td>3F 20</td>
<td>20</td>
<td>12</td>
<td>70</td>
<td>140</td>
<td>40</td>
<td>82</td>
<td>65</td>
<td>90</td>
<td>4x11.5</td>
<td>3.5</td>
</tr>
<tr>
<td>1110 02 00</td>
<td>3F 25</td>
<td>25</td>
<td>18</td>
<td>75</td>
<td>150</td>
<td>40</td>
<td>82</td>
<td>75</td>
<td>100</td>
<td>4x11.5</td>
<td>4.0</td>
</tr>
<tr>
<td>1110 03 00</td>
<td>3F 32</td>
<td>32</td>
<td>28</td>
<td>80</td>
<td>160</td>
<td>40</td>
<td>82</td>
<td>90</td>
<td>120</td>
<td>4x15</td>
<td>5.9</td>
</tr>
<tr>
<td>1110 04 00</td>
<td>3F 40</td>
<td>40</td>
<td>44</td>
<td>88</td>
<td>175</td>
<td>40</td>
<td>82</td>
<td>100</td>
<td>130</td>
<td>4x15</td>
<td>6.8</td>
</tr>
<tr>
<td>1110 06 00</td>
<td>3F 50</td>
<td>50</td>
<td>60</td>
<td>98</td>
<td>195</td>
<td>50</td>
<td>92</td>
<td>110</td>
<td>140</td>
<td>4x15</td>
<td>9.1</td>
</tr>
<tr>
<td>1110 08 00</td>
<td>3F 65</td>
<td>65</td>
<td>90</td>
<td>100</td>
<td>200</td>
<td>52</td>
<td>95</td>
<td>130</td>
<td>160</td>
<td>4x15</td>
<td>10.0</td>
</tr>
<tr>
<td>1110 10 00</td>
<td>3F 80</td>
<td>80</td>
<td>150</td>
<td>120</td>
<td>240</td>
<td>63</td>
<td>106</td>
<td>150</td>
<td>190</td>
<td>4x18</td>
<td>16.2</td>
</tr>
<tr>
<td>1110 12 00</td>
<td>3F 100</td>
<td>100</td>
<td>225</td>
<td>132</td>
<td>265</td>
<td>73</td>
<td>116</td>
<td>170</td>
<td>210</td>
<td>4x18</td>
<td>21.0</td>
</tr>
<tr>
<td>1110 14 00</td>
<td>3F 125</td>
<td>125</td>
<td>280</td>
<td>150</td>
<td>300</td>
<td>80</td>
<td>123</td>
<td>200</td>
<td>240</td>
<td>8x18</td>
<td>27.0</td>
</tr>
<tr>
<td>1110 16 00</td>
<td>3F 150</td>
<td>150</td>
<td>400</td>
<td>175</td>
<td>350</td>
<td>88</td>
<td>130</td>
<td>225</td>
<td>265</td>
<td>8x18</td>
<td>37.0</td>
</tr>
</tbody>
</table>

* Kvs-value in m³/h at a pressure drop of 1 bar. See flow chart on page 33.

---

**Flanged connection PN6, standard DIN 2531**

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

---

**Diagram:**

- **Mixing**
- **Diverting**
**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.
ROTARY MOTORIZED VALVES

MIXING VALVE
SERIES 4F

Flanged connection PN6, standard DIN 2531

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

* Kvs value in m³/h at a pressure drop of 1 bar. See flow chart on page 33.
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.

VALVE T/TM DESIGNED FOR

<table>
<thead>
<tr>
<th>Heating</th>
<th>Ventilation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort cooling</td>
<td>Zone</td>
</tr>
<tr>
<td>Potable water</td>
<td>District hot water</td>
</tr>
<tr>
<td>Floor heating</td>
<td>District heating</td>
</tr>
<tr>
<td>Solar heating</td>
<td>District cooling</td>
</tr>
</tbody>
</table>

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: _________________________Series T, 5 Nm
______________________________________Series TM, 3 Nm

Leakrate in % of flow: ________________________max. 1.5%

Connections: ____________________________Internal thread, EN 10226-1
______________________________________External thread, ISO 228/1
______________________________________Compression fitting, EN 1254-2

Material
Body: Series T _________________________Cast iron EN–JL 1030
Series TM _________________________Brass CW 614N
Slide/Spindle: _________________________Brass CW 614N
Bushing: ____________________________Plastic
Cover plate: ____________________________Zinc
O-rings: ____________________________EPDM

VALVE CHARACTERISTICS

% hot water

![Graph of Valve Characteristics]
ROTARY MOTORIZED VALVES

MIXING VALVE

SERIES T AND TM

SERIES T, INTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1130 09 00</td>
<td>T 20</td>
<td>20</td>
<td>8</td>
<td>Rp ¾&quot;</td>
<td>80</td>
<td>115</td>
<td>39</td>
<td>76</td>
<td>20</td>
<td>35</td>
<td>88</td>
<td>2.7</td>
</tr>
<tr>
<td>1130 10 00</td>
<td>T 25</td>
<td>25</td>
<td>10</td>
<td>Rp 1&quot;</td>
<td>80</td>
<td>115</td>
<td>39</td>
<td>76</td>
<td>25</td>
<td>35</td>
<td>88</td>
<td>2.7</td>
</tr>
</tbody>
</table>
* Kvs-value in m³/h at a pressure drop of 1 bar. See flow chart on page 33.

SERIES TM, EXTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>G</th>
<th>Note</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1130 04 00</td>
<td>TM 20</td>
<td>20</td>
<td>5.5</td>
<td>G ¾&quot;</td>
<td>64</td>
<td>85</td>
<td>39</td>
<td>76</td>
<td>75</td>
<td>Flange</td>
<td>0.90</td>
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</table>

SERIES TM, COMPRESSION FITTING

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>G</th>
<th>Note</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1130 07 00</td>
<td>TM 20</td>
<td>20</td>
<td>5.5</td>
<td>CPF 22 mm</td>
<td>64</td>
<td>85</td>
<td>39</td>
<td>76</td>
<td>75</td>
<td>with leakflow</td>
<td>1.14</td>
</tr>
<tr>
<td>1130 15 00</td>
<td>TM 20</td>
<td>20</td>
<td>5.5</td>
<td>CPF 22 mm</td>
<td>64</td>
<td>85</td>
<td>39</td>
<td>76</td>
<td>75</td>
<td>G ½&quot; in base connection</td>
<td>1.14</td>
</tr>
<tr>
<td>1130 06 00</td>
<td>TM 20</td>
<td>20</td>
<td>5.5</td>
<td>CPF 22 mm</td>
<td>64</td>
<td>85</td>
<td>39</td>
<td>76</td>
<td>75</td>
<td>G ½&quot; + O-ring groove in base connection</td>
<td>1.14</td>
</tr>
</tbody>
</table>

SERIES TM, ROTATING NUT

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>G</th>
<th>Note</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1130 05 00</td>
<td>TM 20</td>
<td>20</td>
<td>5.5</td>
<td>RN 1&quot;</td>
<td>64</td>
<td>87</td>
<td>39</td>
<td>76</td>
<td>75</td>
<td></td>
<td>0.95</td>
</tr>
</tbody>
</table>
* Kvs-value in m³/h at a pressure drop of 1 bar. Flow chart, see page 33. CPF = compression fitting RN = Rotating Nut
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

Heating
Comfort cooling
Potable water
Floor heating
Solar heating

SUITEABLE ACTUATORS

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

- Series ARA600
- Series 90

TECHNICAL DATA

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

Heating
Comfort cooling
Potable water
Floor heating
Solar heating
Ventilation
Zone
District hot water
District heating
District cooling
## SERIES 3H, INTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection E</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Note</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1135 15 00</td>
<td>3H25</td>
<td>25</td>
<td>12</td>
<td>Rp 1&quot;*</td>
<td>160</td>
<td>100</td>
<td>39</td>
<td>76</td>
<td></td>
<td>3.0</td>
</tr>
<tr>
<td>1135 17 00</td>
<td>3H32</td>
<td>32</td>
<td>22</td>
<td>Rp 1 ¼&quot;*</td>
<td>160</td>
<td>140</td>
<td>41</td>
<td>83</td>
<td></td>
<td>5.3</td>
</tr>
<tr>
<td>1135 19 00</td>
<td>3H40</td>
<td>40</td>
<td>30</td>
<td>Rp 1½&quot;*</td>
<td>160</td>
<td>140</td>
<td>41</td>
<td>83</td>
<td></td>
<td>5.6</td>
</tr>
</tbody>
</table>

## SERIES 4H, INTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection E</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Note</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1135 13 00</td>
<td>4H20</td>
<td>20</td>
<td>10</td>
<td>Rp ¾&quot;*</td>
<td>160</td>
<td>100</td>
<td>39</td>
<td>76</td>
<td></td>
<td>3.0</td>
</tr>
<tr>
<td>1135 14 00</td>
<td>4H25</td>
<td>25</td>
<td>12</td>
<td>Rp 1&quot;*</td>
<td>160</td>
<td>100</td>
<td>39</td>
<td>76</td>
<td></td>
<td>3.0</td>
</tr>
<tr>
<td>1135 18 00</td>
<td>4H32</td>
<td>32</td>
<td>22</td>
<td>Rp 1 ¼&quot;*</td>
<td>160</td>
<td>140</td>
<td>41</td>
<td>83</td>
<td></td>
<td>5.6</td>
</tr>
<tr>
<td>1135 20 00</td>
<td>4H40</td>
<td>40</td>
<td>30</td>
<td>Rp 1½&quot;*</td>
<td>160</td>
<td>140</td>
<td>41</td>
<td>83</td>
<td></td>
<td>6.3</td>
</tr>
<tr>
<td>1135 16 00</td>
<td>4H50</td>
<td>50</td>
<td>35</td>
<td>Rp 2&quot;*</td>
<td>200</td>
<td>140</td>
<td>41</td>
<td>83</td>
<td></td>
<td>6.8</td>
</tr>
</tbody>
</table>

## SERIES 3HG, EXTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection E</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Note</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1135 01 00</td>
<td>3HG25–125</td>
<td>25</td>
<td>10</td>
<td>G 1½&quot;*</td>
<td>125</td>
<td>110</td>
<td>38</td>
<td>76</td>
<td>1)</td>
<td>2.0</td>
</tr>
<tr>
<td>1135 02 00</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1, 2)</td>
<td>2.2</td>
</tr>
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</table>

## SERIES 4HG, EXTERNAL THREAD

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>DN</th>
<th>Kvs*</th>
<th>Connection E</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Note</th>
<th>Weight [kg]</th>
</tr>
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<tbody>
<tr>
<td>1135 03 00</td>
<td>4HG25–90</td>
<td>25</td>
<td>8</td>
<td>G 1½&quot;*</td>
<td>90</td>
<td>110</td>
<td>38</td>
<td>76</td>
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<tr>
<td>1135 04 00</td>
<td>4HG25–125</td>
<td>25</td>
<td>10</td>
<td>G 1½&quot;*</td>
<td>125</td>
<td>110</td>
<td>38</td>
<td>76</td>
<td>1, 2)</td>
<td>2.0</td>
</tr>
</tbody>
</table>

*Kvs-value in m³/h at a pressure drop of 1 bar. Flow chart, see page 33.
Note 1) Male thread for union connections  2) With Bypass
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 V AC, 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.

LINKAGE KITS

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

Art. No. 1600 04 00 ___________ ESBE valve series G, MG
1600 05 00 (= supplied with actuator)
___________ ESBE valve series VRG, VRB, G, MG

Adaptor kits for other mixing valves are available as follows:

Art. No. 1600 06 00 _________________________________ Meibes
1600 07 00 __________________________________ Watts
1600 08 00 _______________________ Honeywell Corona

TECHNICAL DATA

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

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.
### INSTALLATION DIMENSIONS FOR ACTUATOR SERIES ARA600 WITH ESBE VRG100, VRG200, VRG300 AND VRB100 MIXING VALVES

<table>
<thead>
<tr>
<th></th>
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<tr>
<td>1210 01 00</td>
<td>ARA643</td>
<td>24</td>
<td>30</td>
<td>3-point SPDT</td>
<td>6</td>
<td>1)</td>
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<tr>
<td>1210 02 00</td>
<td>ARA653</td>
<td>24</td>
<td>60</td>
<td>3-point SPDT</td>
<td>6</td>
<td>1)</td>
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<tr>
<td>1210 03 00</td>
<td>ARA663</td>
<td>24</td>
<td>120</td>
<td>3-point SPDT</td>
<td>6</td>
<td>1)</td>
</tr>
<tr>
<td>1210 04 00</td>
<td>ARA673</td>
<td>24</td>
<td>240</td>
<td>3-point SPDT</td>
<td>6</td>
<td>1)</td>
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<tr>
<td>1210 05 00</td>
<td>ARA683</td>
<td>24</td>
<td>120/240/480/1200</td>
<td>3-point SPDT</td>
<td>6</td>
<td>1)</td>
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</tbody>
</table>

**SERIES ARA600, 3-POINT 230 V AC**

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<thead>
<tr>
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<tr>
<td>1210 11 00</td>
<td>ARA641</td>
<td>230</td>
<td>30</td>
<td>3-point SPDT</td>
<td>6</td>
<td>1)</td>
</tr>
<tr>
<td>1210 12 00</td>
<td>ARA651</td>
<td>230</td>
<td>60</td>
<td>3-point SPDT</td>
<td>6</td>
<td>1)</td>
</tr>
<tr>
<td>1210 13 00</td>
<td>ARA661</td>
<td>230</td>
<td>120</td>
<td>3-point SPDT</td>
<td>6</td>
<td>1)</td>
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<tr>
<td>1210 14 00</td>
<td>ARA671</td>
<td>230</td>
<td>240</td>
<td>3-point SPDT</td>
<td>6</td>
<td>1)</td>
</tr>
<tr>
<td>1210 15 00</td>
<td>ARA681</td>
<td>230</td>
<td>120/240/480/1200</td>
<td>3-point SPDT</td>
<td>6</td>
<td>1)</td>
</tr>
</tbody>
</table>

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

### OPTION

**Auxiliary switch kit** 
Art. No. 1620 07 00

**Cable hatch** 
Art. No. 1620 08 00
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 V AC, 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.

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.

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1600 04 00</td>
<td>ESBE valve series G, MG</td>
</tr>
<tr>
<td>1600 05 00</td>
<td>(= supplied with actuator)</td>
</tr>
<tr>
<td>1600 06 00</td>
<td>Meibes</td>
</tr>
<tr>
<td>1600 07 00</td>
<td>Watts</td>
</tr>
<tr>
<td>1600 08 00</td>
<td>Honeywell Corona</td>
</tr>
</tbody>
</table>

TECHNICAL DATA
Ambient temperature: max. +55°C min. -5°C
Enclosure rating: IP41
Protection class: II
Power supply: 24 ± 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

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 with auxiliary switch, series:
ARA635 — ARA638, ARA645 — ARA648, ARA655 — 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.
### Series ARA600, 2-Point 24 V AC

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1212 01 00</td>
<td>ARA637</td>
<td>24</td>
<td>15</td>
<td>2-point SPST</td>
<td>3</td>
<td>2)</td>
</tr>
<tr>
<td>1212 04 00</td>
<td>ARA638</td>
<td>24</td>
<td>30</td>
<td>2-point SPST</td>
<td>6</td>
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<tr>
<td>1212 05 00</td>
<td>ARA647</td>
<td>24</td>
<td>60</td>
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<tr>
<td>1212 06 00</td>
<td>ARA648</td>
<td>24</td>
<td>15</td>
<td>2-point SPST</td>
<td>3</td>
<td>2)</td>
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<tr>
<td>1212 07 00</td>
<td>ARA657</td>
<td>230</td>
<td>15</td>
<td>2-point SPST</td>
<td>3</td>
<td>2)</td>
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<tr>
<td>1212 10 00</td>
<td>ARA658</td>
<td>230</td>
<td>30</td>
<td>2-point SPST</td>
<td>6</td>
<td>1)</td>
</tr>
<tr>
<td>1212 11 00</td>
<td>ARA659</td>
<td>230</td>
<td>60</td>
<td>2-point SPST</td>
<td>6</td>
<td>1)</td>
</tr>
</tbody>
</table>

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

### Series ARA600, 2-Point 230 V AC

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1212 01 00</td>
<td>ARA635</td>
<td>230</td>
<td>15</td>
<td>2-point SPST</td>
<td>3</td>
<td>2)</td>
</tr>
<tr>
<td>1212 04 00</td>
<td>ARA636</td>
<td>230</td>
<td>30</td>
<td>2-point SPST</td>
<td>6</td>
<td>1)</td>
</tr>
<tr>
<td>1212 05 00</td>
<td>ARA645</td>
<td>230</td>
<td>60</td>
<td>2-point SPST</td>
<td>6</td>
<td>1)</td>
</tr>
<tr>
<td>1212 06 00</td>
<td>ARA646</td>
<td>230</td>
<td>15</td>
<td>2-point SPST</td>
<td>3</td>
<td>2)</td>
</tr>
<tr>
<td>1212 07 00</td>
<td>ARA655</td>
<td>230</td>
<td>30</td>
<td>2-point SPST</td>
<td>6</td>
<td>1)</td>
</tr>
<tr>
<td>1212 10 00</td>
<td>ARA656</td>
<td>230</td>
<td>60</td>
<td>2-point SPST</td>
<td>6</td>
<td>1)</td>
</tr>
</tbody>
</table>

### Option

- Auxiliary switch kit ____________  Art. No. 1620 07 00
- Cable hatch _________________  Art. No. 1620 08 00
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.

LINKAGE KITS

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

Art. No. 1600 04 00 _______________ ESBE valve series G, MG 1600 05 00 (= supplied with actuator) _______________ ESBE valve series VRG, VRB, G, MG

Adaptor kits for other mixing valves are available as follows:

Art. No. 1600 06 00 _______________ Melbes 1600 07 00 _______________ Watts 1600 08 00 _______________ Honeywell Corona

TECHNICAL DATA

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

WIRING

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

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

LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC
### ROTARY MOTORIZED VALVES

#### ACTUATOR

**SERIES ARA600 PROPORTIONAL**

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Reference</th>
<th>Voltage [V]</th>
<th>Running time 90° [s]</th>
<th>Control signal</th>
<th>Torque [Nm]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1252 01 00</td>
<td>ARA639</td>
<td>24</td>
<td>15/30/60/120</td>
<td>0.10 V, 2.10 V, 0.20mA, 4.20mA</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>1252 02 00</td>
<td>ARA659</td>
<td>24</td>
<td>45/120</td>
<td>0.10 V, 2.10 V, 0.20mA, 4.20mA</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

#### OPTION

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

---

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

![Installation diagrams](image-url)
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 **

---

SUITEABLE MIXING VALVES
The actuator is supplied complete with an adapator 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 35 00 BRV
1605 16 00 Centra ZR, DR, DRU
1605 17 00 Centra Kompakt DRK/ZRK
1605 19 00 CTC, linear movement
1605 36 00 Meibes / Oventrop
1605 13 00 Sauter MH32…H42…
1605 25 00 Siemens VBG31, VBI31, VB21, 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

<table>
<thead>
<tr>
<th>Ambient temperature:</th>
<th>max. +55°C</th>
<th>min. -15°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply:</td>
<td>24 ± 10% VAC, 50 Hz</td>
<td>230 ± 10% VAC, 50 Hz</td>
</tr>
<tr>
<td>Power consumption:</td>
<td>Actuator 24 VAC, 2 VA</td>
<td>Actuator 230 VAC, 5 VA</td>
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<tr>
<td>Enclosure rating:</td>
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<tr>
<td>Protection class:</td>
<td>II</td>
<td></td>
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<tr>
<td>Torque:</td>
<td>See table</td>
<td></td>
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<tr>
<td>Rating auxiliary switch:</td>
<td>6(3)A 250 VAC</td>
<td></td>
</tr>
<tr>
<td>Weight:</td>
<td>0.8 kg</td>
<td></td>
</tr>
</tbody>
</table>

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ESBE 2010/11 VALVES AND ACTUATORS
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WIRING

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

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

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.

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)
1605 33 00 _______ ESBE valve series MG, G, F, BIV, H, HG
1605 34 00 (= supplied with Art. No. 1205 33 00)
1605 35 00 _______ ESBE valve series MG, G, F, BIV, H, HG

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

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

TECHNICAL DATA

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

LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2002/95/EC
### SERIES 90, 2-POINT 230 V AC

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<tbody>
<tr>
<td>1205 25 00</td>
<td>97</td>
<td>230</td>
<td>15</td>
<td>5</td>
<td>2-point SPST</td>
<td>With built-in relay</td>
</tr>
<tr>
<td>1205 26 00</td>
<td>98</td>
<td>230</td>
<td>60</td>
<td>15</td>
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</table>

*2-point SPST = Single Pole Single Throw

### Wiring

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

```
N       N

L       Y

L       L
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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.
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.

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

- **Series VIRG100**
- **Series VIRG200**
- **Series VIRG300**
- **Series VIRB100**
- **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.

<table>
<thead>
<tr>
<th>1605 13 00 (= supplied with actuator)</th>
<th>1605 33 00</th>
<th>1605 34 00 (= supplied with Art. No. 1205 33 00)</th>
</tr>
</thead>
</table>

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

Art. No.

<table>
<thead>
<tr>
<th>1605 35 00</th>
<th>BRV</th>
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<tbody>
<tr>
<td>1605 16 00</td>
<td>Centra ZR, DR, DRU</td>
</tr>
<tr>
<td>1605 17 00</td>
<td>Centra Kompakt DRK/ZRK</td>
</tr>
<tr>
<td>1605 19 00</td>
<td>CTC, linear movement</td>
</tr>
<tr>
<td>1605 36 00</td>
<td>Melbes / Oventrop</td>
</tr>
<tr>
<td>1605 13 00</td>
<td>Sauter MH32…H42…</td>
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<tr>
<td>1605 25 00</td>
<td>Siemens VBG31, VBI31, VBF21, VCI31</td>
</tr>
<tr>
<td>1605 14 00</td>
<td>TA–VTR, TA–STM</td>
</tr>
<tr>
<td>1605 26 00</td>
<td>_TAC–TRV</td>
</tr>
<tr>
<td>1605 15 00</td>
<td>Viessmann (all nominal diameters)</td>
</tr>
<tr>
<td>1605 18 00</td>
<td>WITA</td>
</tr>
<tr>
<td>1605 20–24 00</td>
<td>Various adaptor kits for built-in mixing valves</td>
</tr>
</tbody>
</table>

**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

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Rotary Motorized Valves

Actuator Series 90 Proportional

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<tbody>
<tr>
<td>1255 03 00</td>
<td>91P</td>
<td>24</td>
<td>15/30/45</td>
<td>4</td>
<td>0–10 V, 2–10 V, 0–20 mA, 4–20 mA</td>
<td>Operating range 90°</td>
</tr>
<tr>
<td>1255 01 00</td>
<td>92P</td>
<td>24</td>
<td>60/90/120</td>
<td>15</td>
<td></td>
<td>Operating range 90°</td>
</tr>
<tr>
<td>1255 02 00</td>
<td>92P2</td>
<td>24</td>
<td>120/180/240</td>
<td>15</td>
<td></td>
<td>Operating range 180°</td>
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<tr>
<td>1255 04 00</td>
<td>92P4</td>
<td>24</td>
<td>120/240/360</td>
<td>15</td>
<td></td>
<td>Operating range 355°</td>
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</tbody>
</table>

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

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