ESBE SYSTEM UNITS

CIRCULATION UNIT
MIXING FUNCTION

INSULATION
With all electrical components on the outside and the plumbing parts on the inside the insulation can truly work as intended, fulfilling the German Energy Saving Ordinance EnEV2014.

UNIQUE TECHNOLOGY INSIDE
Meets all energy demands within its rangeability with the same precision. No risk of over dimensioning or lost authority. Dimensioning will not only be perfect for the highest need but at every installation at every point in time. Patent pending.

MADE IN SWEDEN
ESBE design and quality always assures our customers to expect only the best. Pre-assembled and leak proof tested.

HIGH EFFICIENCY CIRCULATION PUMP
The circulation unit is always delivered with ErP ready circulation pump, already today meeting the higher demands of the second step taking effect across Europe 2015.

OPERATION

The ESBE series GRC and GRA is a circulation unit series with mixing function for heating and cooling applications. A new innovative solution has made it possible to optimize the mixing precision, all to be able to deliver the correct and optimal amount of energy the system require at every situation. The circulation units has a high capacity and are designed to work perfectly regardless of the system energy need.

Equipped with High Efficiency circulation pump and a tailor-made insulation you can be sure that ESBE delivers the best circulation unit for both your economy as well as for the environment.

When designing the circulation unit product line the focus at ESBE has been to simplify assembly. This goes through the whole product from mounting brackets, insulation to packaging design.

The ESBE series GRC is an weather compensation controlled circulation unit intended to deliver the right amount of energy to the system at every situation.

The ESBE GRA units are controlled by a 3-point signal.

KEY BENEFITS

- Unique technology to reduce the risk of over dimensioning and lost authority. Patent pending.
- Easy installation; everything is ready and assembled out of the box. All connections have been leak proof tested. Just connect the four pipes and connect the power to the circulation pump and you are ready.
- Easy commissioning; all groups are equipped with an A-class pump which is easy to set at the right mode and include a venting function to push air out to the venting valve of the system.
- Easy maintenance; shut off valves for all service and maintenance without draining the heating system.
- Reliable function and elegant look; ESBE Quality and ESBE Design behind. Made in Sweden.
- Pre-assembled, tightness-tested and heat-insulated assembly.
- ErP-Ready high efficiency circulation pump and insulation that truly work as intended, fulfilling the German Energy Saving Ordinance EnEV2014. Taking our green footprint seriously.
- Integrated gravity brake.

VERSIONS

ESBE Series GRC200
With Controller 90C-1 ready and mounted on the Circulation unit.

ESBE Series GRC100
With Controller CRC100 ready and mounted on the Circulation unit

ESBE Series GRA100
With Actuator ARA600 ready and mounted on the Circulation unit

CIRCULATION UNIT
MIXING FUNCTION

PRODUCT ASSORTMENT

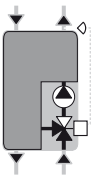
ESBE Circulation unit with Controller 90C-1A

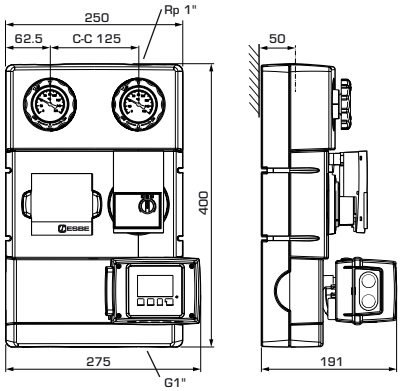
Art. No. 6104 03 00
Reference GRC211
DN 25

Power range
at 2400 l/h with Δt 20 K 55 kW [1]
with Δt 10 K 28 kW [1]
with Δt 5 K 14 kW [1]
[1] system pressure loses: 0 kPa

at 2000 l/h with Δt 20 K 46 kW [2]
with Δt 10 K 23 kW [2]
with Δt 5 K 12 kW [2]
[2] system pressure loses: 15 kPa

Weight 7.1 kg





GRC211 is controlled by ESBE 90C-1A, a complete weather-compensating control unit with integrated actuator. The 90C-1A is equipped with full graphic display for easy handling and instant set-up. It can handle up to 5 different sources of data input and has 1 possibility of output control. This makes the GRC211 circulation unit versatile and able to control a number of heat circuits and system components with high accuracy. Potential energy savings with the 90C is 17%, compared to a manually operated valve.

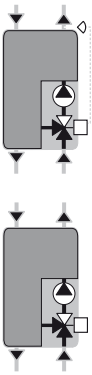
ESBE Circulation unit with Controller CRC111

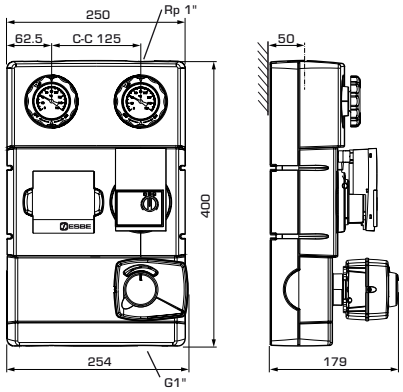
Art. No. 6104 02 00
Reference GRC111
DN 25

Power range
at 2400 l/h with Δt 20 K 55 kW [1]
with Δt 10 K 28 kW [1]
with Δt 5 K 14 kW [1]
[1] system pressure loses: 0 kPa

at 2000 l/h with Δt 20 K 46 kW [2]
with Δt 10 K 23 kW [2]
with Δt 5 K 12 kW [2]
[2] system pressure loses: 15 kPa

Weight 6.2 kg





ESBE Circulation unit with Actuator ARA661

Art. No. 6104 01 00
Reference GRA111
DN 25

Power range
at 2400 l/h with Δt 20 K 55 kW [1]
with Δt 10 K 28 kW [1]
with Δt 5 K 14 kW [1]
[1] system pressure loses: 0 kPa

at 2000 l/h with Δt 20 K 46 kW [2]
with Δt 10 K 23 kW [2]
with Δt 5 K 12 kW [2]
[2] system pressure loses: 15 kPa

Weight 5.6 kg

GRC111 is controlled by ESBE CRC111, a complete weather-compensating control unit with integrated actuator. The controller is designed to provide a high level of comfort thanks to the possibility to set a perfect characteristic heating curve and at the same time provide energy savings for the house owner. Potential energy savings with the CRC is 17%, compared to a manually operated valve.

The regulation is based on outdoor sensor feedback and an adjustable characteristic heating curve. An offset/parallel adjustment of the characteristic heating curve may be activated by an external signal for example night settings. For applications with well insulated building and quick heating systems such as radiator circuit can a temperature filter be activated to delay an outdoor temperature change to avoid an imbalance between estimated and actual heating demand.

GRA111 is controlled by ESBE ARA661 (230V, 90° operating range, 120s running time), an actuator with 3-point (open/close) signal is a perfect match for mixing operations together with an external controller. The compact actuator has an operating range of 90° and can easily be manually operated by the pull-and-turn knob on the front of the cover.

ESBE SYSTEM UNITS

CIRCULATION UNIT
MIXING FUNCTION

RELATED ACCESSORIES

See separate data sheet for further detailed information.

ESBE Manifold
Manifold for 2 or 3 circulation units. With or without integrated separator function.

Ref. GMA121 _____ Art. No. 6600 01 00
Ref. GMA131 _____ Art. No. 6600 02 00
Ref. GMA221 _____ Art. No. 6600 03 00
Ref. GMA231 _____ Art. No. 6600 04 00

ESBE Manifold connection
Connections between manifold and circulation unit (2 connections/package).

Ref. KGR111 _____ Art. No. 6610 02 00

TECHNICAL DATA

Visit esbe.eu for further detailed information.

The circulation unit, in general:

Pressure class: _____ PN 6
Media temperature: _____ max. (continuously) +110°C
_____ when ambient temperature is max. 50°C
_____ min. 0°C
Working pressure: _____ 0.6 MPa (6 bar)
Connections: _____ External thread, ISO 228/1
_____ Internal thread, EN 10226-1
Insulation: _____ EPP λ 0.036 W/mK

Material, in contact with water:

Components of: _____ Brass, Iron
Sealings material of _____ PTFE, Aramid fibre, EPDM

Conformities and certificates:

PED 97/23/EC, article 3.3
CE LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2011/65/EC
ErP READY 2015 ErP 2009/125/EC
ErP 2015
EnEV2014 EnEV2014

The integrated mixing valve:

Max. differential pressure drop: _____ 100 kPa (1 bar)
Close off pressure: _____ 200 kPa (2 bar)
Rangeability Kv^{max}/Kv^{min}, A-AB: _____ > 1000

Leakrate in % of flow*: _____ < 0.05%
Characteristics: _____ See diagram below

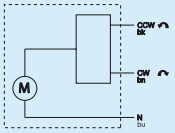
* Differential pressure 100kPa (1 bar)

The integrated controller/actuator:

Ambient temperature, CRC/ARA: _____ -5°C to +55°C max.
90C: _____ 0°C to +40°C max.
Power supply, CRC/ARA: _____ 230 ± 10% VAC, 50 Hz
90C: _____ 230 ± 10% VAC, 50/60 Hz
Power consumption: _____ 5 VA

Enclosure rating, CRC/ARA: _____ IP41
90C: _____ IP54
Protection class: _____ II

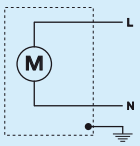
Actuator wiring:
The actuator should be preceded by a multi-pole contact breaker in the fixed installation.



The integrated circulation pump:

Power supply: _____ 230 ± 10% VAC, 50/60 Hz
Power consumption: _____ 3–45 W
Enclosure rating: _____ IP X4D
Protection class: _____ F
Characteristics: _____ See diagram below

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



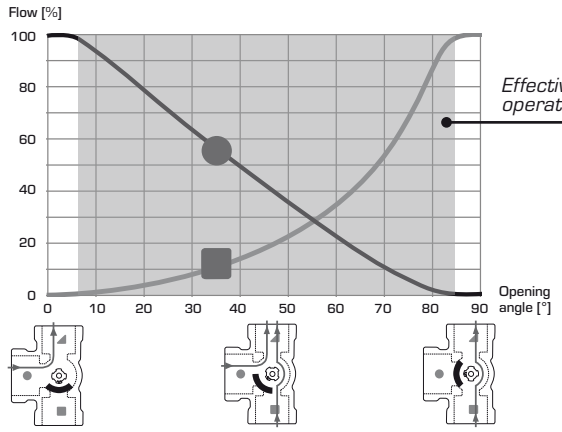
SERVICE AND MAINTENANCE

The circulation unit does not require any specific maintenance under normal conditions.

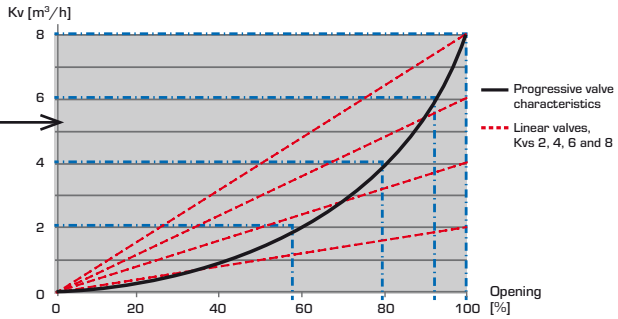
CIRCULATION UNIT
MIXING FUNCTION

CHARACTERISTICS

The integrated progressive valve has unique characteristics since it is extremely soft-opening in combination with really high rangeability .

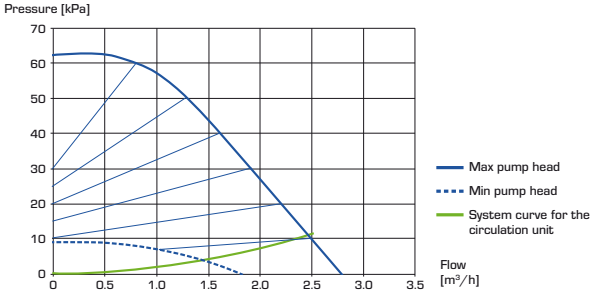


A comparison between the integrated progressive valve and linear valves with different capacitys.



ESBE's unique progressive valve will act like a small valve when there is a small heat demand and when there is a bigger demand for heating the valve will act like a bigger valve.

The flowrate for the integrated circulation pump and system curve for the circulation unit.



INSTALLATION EXAMPLES