ESBE SYSTEM UNITS

# CIRCULATION UNIT
# MIXING FUNCTION, SERIES GRA300



GRA311

## PRODUCT DESCRIPTION

The mixing groups are used for the temperature control, mixing function, in heating systems. This means that the heating water prepared in the heating source is mixed down to the desired set temperature, which is then delivered to the heating receiver, e.g. underfloor heating. The units GRxx00 are equipped with rotating mixing valves and actuators. The temperature control, mixing function, is performed based on a signal from an external controller. The mixed temperature is then a result of the controller parameters setting. For example, if the external controller is a weather compensated controller, the mixed temperature will be calculated based on the controller's heating curve settings. The groups are used in systems with controllers, and it depends on the controller type and functions which level of comfort that will be delivered.

Products are equipped with two shut-off valves with colour coded thermometers, a check valve placed on the return line from the heating circuit and an insulation shell. All circulation units are equipped with 3-way rotary mixing valves with progressive characteristic for smooth and precise temperature control, and actuators series ARA600.

When designing the circulation unit product line ESBE focused on performance, design, user friendly usage and environment. This applies to everything from manufacturing, materials to packaging.

### SERIES GRA300

The ESBE series GRA300 is a compact but powerful circulation unit design for applications where space matters, however there is no room for compromises. The GRA300 is a DN20 circulation unit with performance equals the corresponding DN25 groups. This could be possible by adjusting the pump curves and consider the pressure losses in the group. By putting focus on performance, we achived the smallest circulation unit with unique pump curves which are covering low and high demands.

The GRA300 is equipped with a Wilo pump which can be set to variable or constant pressure, and iPWM1/2. It is also equipped with 3-way rotary mixing valve with progressive characteristic and an assembled 3-point 230V AC actuator series ARA661. Series GRA300 also has an ESBE QuickFIT interface between actuator and valve that allows for assembly or disassembly of the actuator from the valve without any tools.

## SERVICE AND MAINTENANCE

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

## KEY BENEFITS

- High class insulation of hydronic parts
- Compact design
- Pre tested and ready to use
- Designed to last and perform
- High-end product finish

## RELATED ACCESSORIES

### ESBE Manifold

Manifold for Series GRA300 without integrated hydraulic separation function. See separate data sheet for further detailed information.

Art. No.

66000500 _____ GMA321- for 2 units

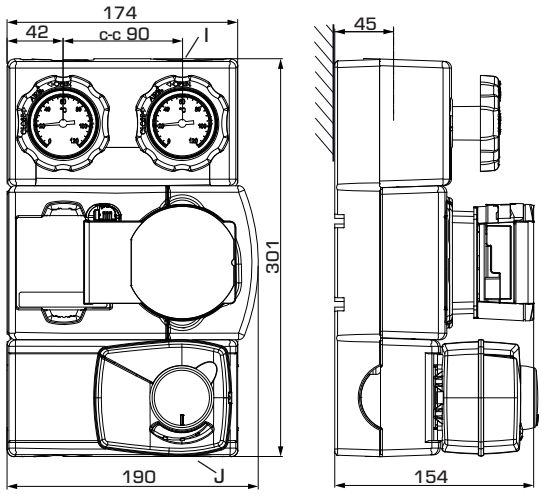
66000600 _____ GMA331 - for 3 units




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# CIRCULATION UNIT
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### PRODUCT ASSORTMENT




GRA311

### SERIES GRA300

| Art. No. | Reference | DN | Pump | Connections | | Weight [kg] | Note |
|---|---|---|---|---|---|---|---|
| | | | | I | J | | |
| 61043602 | GRA311 | 20 | Wilo PARA STG 15/8 | G 1" | G 1" | 4,5 | Campaign 2023 |




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# CIRCULATION UNIT
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**TECHNICAL DATA** Visit esbe.eu for further detailed information.

**The Circulation unit, in general**

Pressure class: PN 10
Working pressure: 1,0 MPa (10 bar)
Connections, Internal thread (G), ISO 228/1
External thread (G), ISO 228/1
Insulation: EPP λ 0,036 W/mK
EnEV2014

Media: Heating water (in accordance with VDI2035)
Water / Glycol mixtures, max. 50%.
Water / glycol mixtures are affecting the pump performance. In case of Applications where water / glycol mixtures are used, pump performance should be considered.

**Series GRA300**

Media temperature: max. +100°C
min. +5°C
Ambient temperature: max. +55°C
min. 0°C
Pump type, DN20: Wilo PARA STG 15-130/8-60/0
Power supply: 230 ± 10% V AC, 50/60 Hz
Power consumption: 2-60 W
Enclosure rating: IP X4D
Insulation class: F
EEI (Energy Efficiency Index): <0,20
Valve type: Mixing valve VRG438
Max. differential pressure drop: 100kPa (1bar)
Close off pressure: 200 kPa (2 bar)
Leakrate in % of flow*: < 0,05%
* Differential pressure 100kPa (1 bar)

Actuator type: ARA661
Control signal: 3-point
Power supply: 230 ± 10% V AC, 50 Hz
Power consumption: 5 VA
Running time 90°: 120s
Enclosure rating: IP41
Protection class: II

**Material, in contact with water**

Components: Brass, Cast iron, Steel
Sealing material: PTFE, Aramid fibre, EPDM

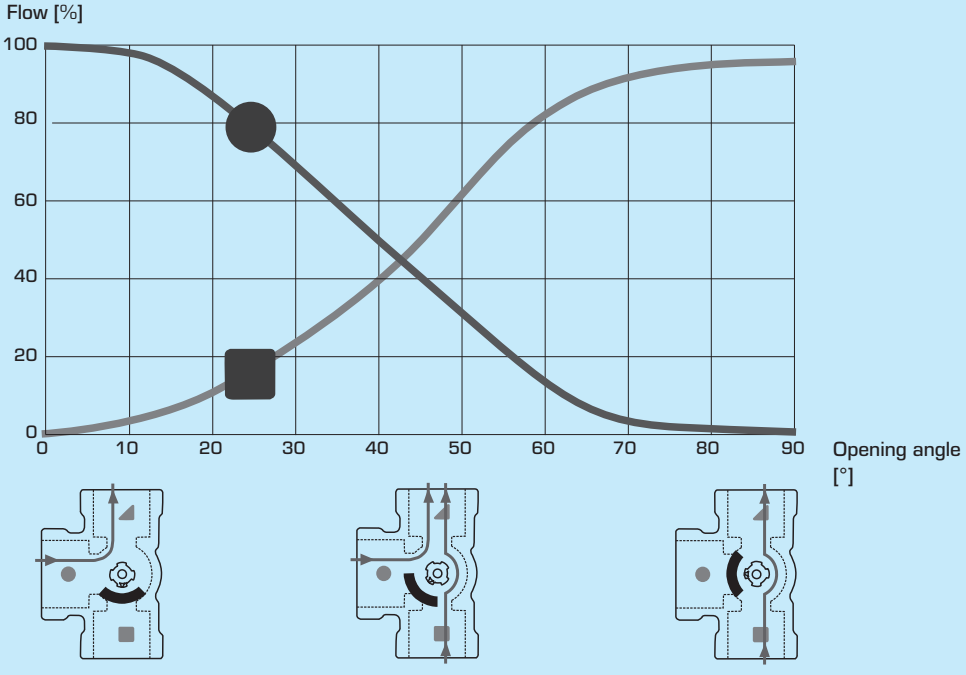
**Conformities and certificates**

LVD 2014/35/EU
EMC 2014/30/EU
RoHS3 2015/863/EU
ErP 2009/125/EU

SI 2016 Nr. 1101
SI 2016 Nr. 1091
SI 2012 Nr. 3032
SI 2010 Nr. 2617

PED 2014/68/EU, artikel 4.3 / SI 2016 Nr. 1105 (UK)

## VALVE CHARACTERISTICS, MIXING VALVE VRG430




## WIRING

Please see the Installation Instruction




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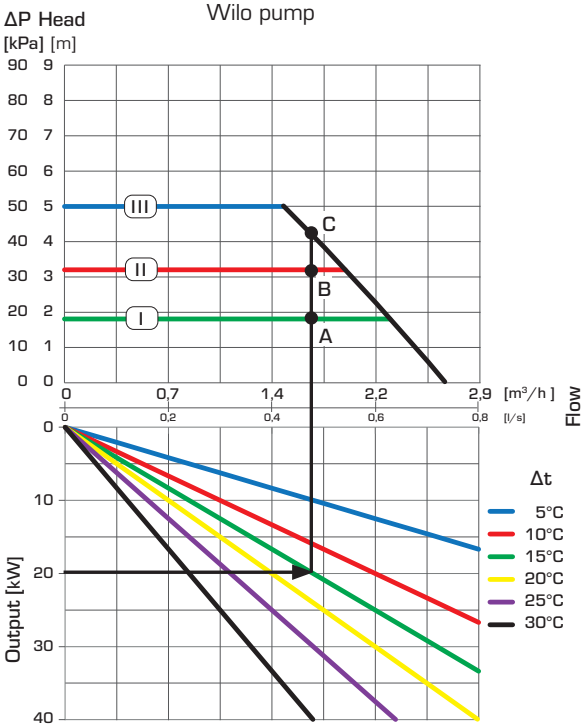
# CIRCULATION UNIT
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## DIMENSIONING, PUMP CAPACITY DIAGRAM

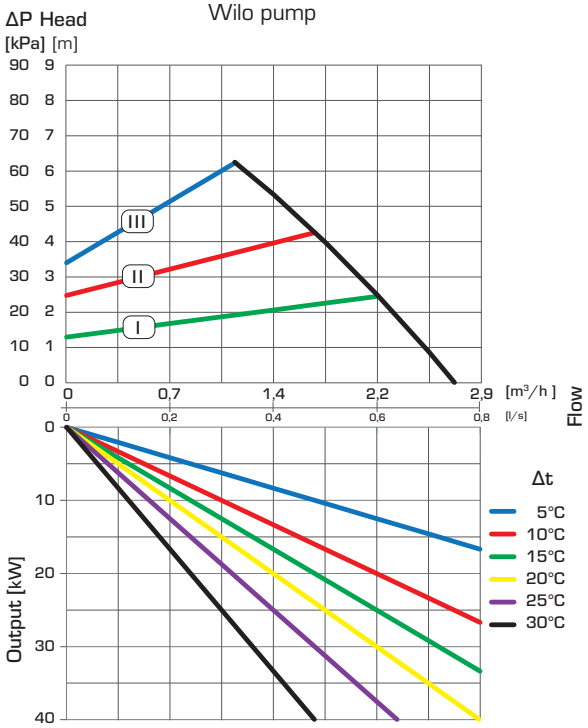
**Example:** Start with the heat demand of the heating circuit (e.g. 20 kW) and move horizontally to the right in the diagram to the choosen Δt, which is the temperature difference between flow and return of the heating circuit (e.g. 15°C). Next go up and find the possible duty points.

Setting I gives duty point A with a residual head of 18 kPa. Setting II gives duty point B with a residual head of 32 kPA and III gives duty point C with a residual head of 43 kPa.

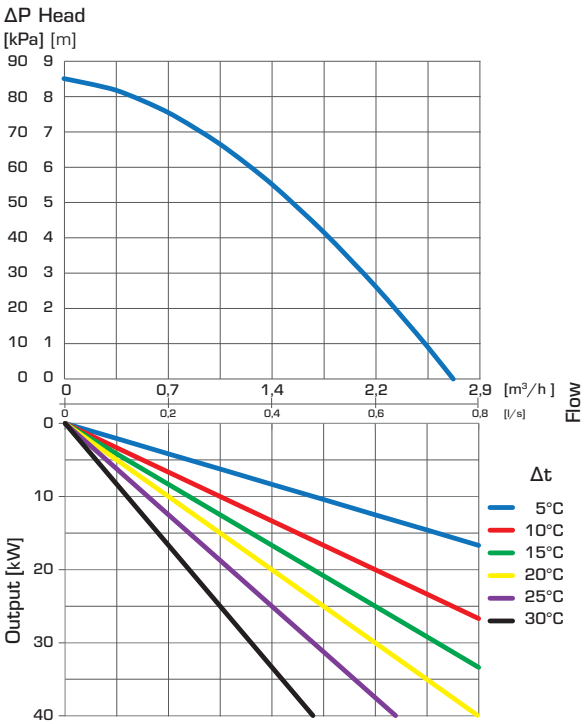
**SERIES GRA311** – Constant differential pressure, Wilo pump




**SERIES GRA311** – Variable differential pressure, Wilo pump




**SERIES GRA311** – Ext iPWM 1/ iPWM 2, Wilo pump





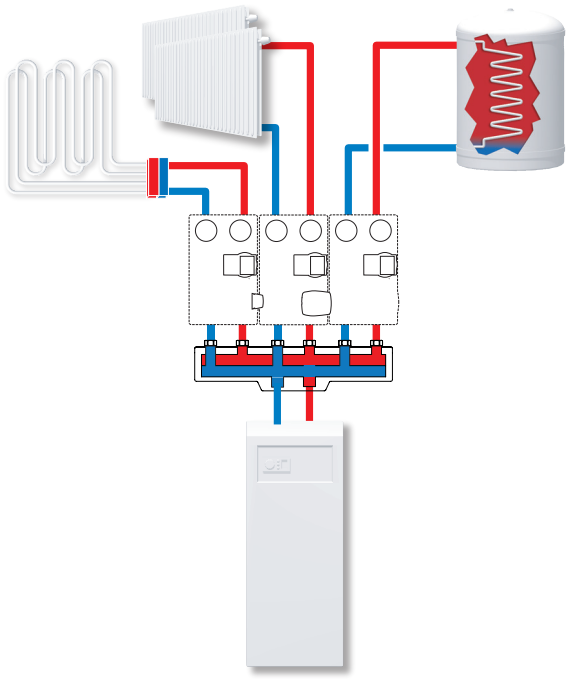


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# CIRCULATION UNIT
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### INSTALLATION EXAMPLES

1



The primary function of the motorized mixing unit (GRx) is flow temperature control, mixing function. The Series GRx are used in heating systems with controllers. The motorized mixing units need an external controller which will measure the flow temperature and control the actuator according to the system needs. The circulation units series GRx are the perfect choice for applications where mixing function is required, and the temperature comfort is set by an external controller.

*The shown applications are only examples of product use!*
*Before using the product in any application, the regional and national regulations need to be checked.*




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