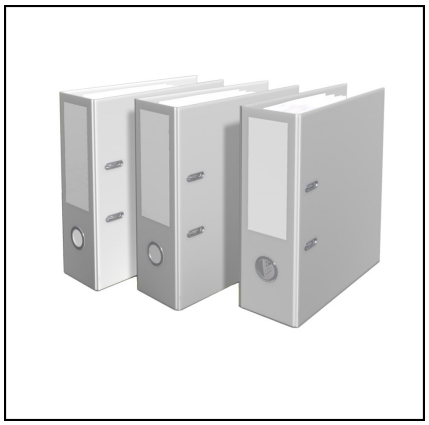
# Planner Documentation

## R600 EVO



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# Gas condensing boiler R600 EVO

## Models and output
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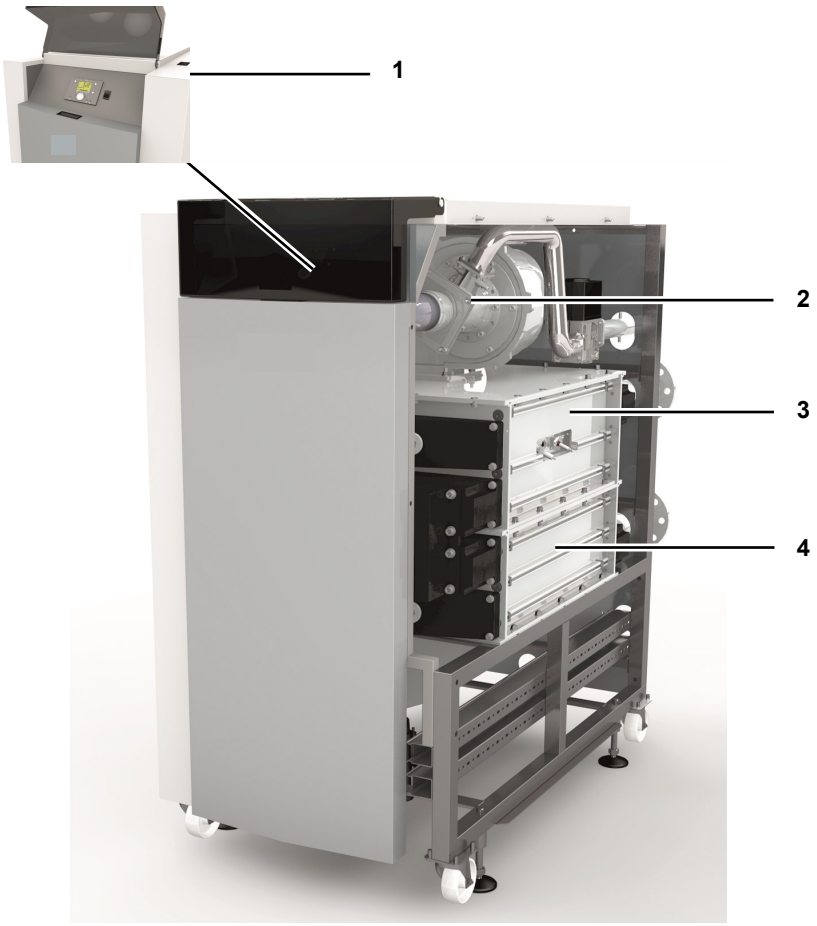
**Models and output**
The floor standing gas condensing boiler R600 EVO is available in 7 types within an output range from 142 until 540 kW.

**Application possibilities**
The gas condensing boiler R600 EVO is applicable for all central heating systems built according to EN12828. In cascade applications (max. 8 boilers with LMS14 master/slave cascade control) the R600 EVO can cover installations up to 4300kW. Preferred applications are central heating and sanitary hot water production in multi-family buildings, municipal and industrial buildings.

**Value propositions**
- Unique reliability
  proven technology with exceptional high quality
- Highest system flexibility
  easy planning and Plug & Play installation with pre-assembled system kits
- Easy maintenance
  boiler design optimised for easy access on servicing
- Unequalled lifetime high efficiency
  corrosion resistant stainless steel heat exchanger
- Environmental friendly
  lowest emission values




1 LMS14 boiler management unit
2 Speed controlled Venturi gas/air mixing system
3 Water cooled premix burner
4 Water cooled stainless steel heat exchanger (3 levels)

**Description**
The R600 EVO is a fully modulating boiler. The control unit of the boiler adapts the modulation ratio automatically to the heat demand requested by the system. This is done by controlling the speed of the fan. As a result, the Whirlwind mixing system will adapt the gas ratio to the chosen fan speed, in order to maintain the best possible combustion figures and therewith the best efficiency. The flue gases created by the combustion are transported downwards through the boiler and leave at the back side into the chimney connection.

The return water from the system enters the boiler in the lower section, where is the lowest flue gas temperature in the boiler. In this section condensation takes place. The water is being transported upwards through the boiler, in order to leave the boiler at the top (burner) section. The cross flow working principle (water up, flue gas down) ensures the most efficient combustion results.

# Technical description

## Technical data

| | | R601 EVO | R602 EVO | R603 EVO |
|---|---|---|---|---|
| Nominal heat output at 80/60ºC max/min | kW | 142,3/31,3 | 190,4/42,0 | 237,6/47,0 |
| Nominal heat output at 40/30ºC max/min | kW | 151,2/35,4 | 202,3/47,4 | 252,3/53,4 |
| Nominal heat input Hi max/min | kW | 145,0/32,2 | 194,0/43,1 | 242,0/48,4 |
| Efficiency at 80/60ºC | % | 98,2 | 98,2 | 98,2 |
| Efficiency at 40/30ºC | % | 104,3 | 104,3 | 104,2 |
| RAL 40/30 average | % | 110,4 | 110,4 | 110,4 |
| Max. condensate flow | l/h | 9,2 | 12,4 | 15,4 |
| Gas consumption G20 max/min (10,9 kWh/$m^3$) | $m^3$/h | 13,3/3,0 | 17,8/4,0 | 22,2/4,4 |
| Gas consumption G25 max/min (8,34 kWh/$m^3$) | $m^3$/h | 17,4/3,9 | 23,3/5,2 | 29,0/5,8 |
| Gas consumption G31 max/min (12,8 kWh/kg) | kg/h | 11,3/2,5 | 15,2/3,4 | 18,9/3,8 |
| Gas pressure G20 | mbar | 20 | | |
| Gas pressure G25 | mbar | 25 | | |
| Gas pressure G31 | mbar | 30/50 | | |
| Maximum gas pressure | mbar | 50 | | |
| Max. temperature flue gas (high limit) | °C | 90 | | |
| Flue gas temperature at 80/60ºC max/min | ºC | 75/58 | 75/58 | 75/58 |
| Flue gas temperature at 40/30ºC max/min | ºC | 54/30 | 54/30 | 55/30 |
| Flue gas quantity max/min | $m^3$/h | 188/43 | 251/57 | 313/64 |
| CO2 level G20-G25 max/min | % | 10,2/9,4 ± 0,2 (Limitation type 570 delta max/min ≥0,8) | | |
| CO2 level G31 max/min | % | 11,9/10,0 ± 0,2 | | |
| NOx level at 80/60 °C max/min | mg/kWh | 38/19 | 38/19 | 36/18 |
| CO level at 80/60 °C max/min | mg/kWh | 14/3 | 14/3 | 14/5 |
| Max. permissible flue resistance max/min | Pa | 200/10 | 200/10 | 200/10 |
| Water volume | l | 26 | 31 | 33 |
| Water pressure max/min | bar | 8/1 | | |
| Max. water temperature (High limit thermostat) | ºC | 100 | | |
| Maximum temperature setpoint | ºC | 90 | | |
| Nominal water flow at dT=20K | $m^3$/h | 6,1 | 8,1 | 10,1 |
| Hydraulic resistance at nominal flow rate | kPa | 11 | 27 | 31 |
| Electrical connection | V | 230/400 | | |
| Frequency | Hz | 50 | | |
| Mains connection fuse | A | 16 | | |
| IP class | - | IP20 | | |
| Electrical consumption boiler max/min (without pump) | W | 176/48 | 267/48 | 286/53 |
| Electrical consumption speed controlled pump | W | 190/9 | 190/9 | 310/12 |
| Weight (empty) | kg | 290 | 332 | 366 |
| Sound Power Level (LWA) | dB | 70,3 | 70,3 | 70,3 |
| Ionisation current max/min | µA | 10,0/4,5 | | |
| PH value condensate | - | 3,2 | | |
| CE certification code | - | CE - 0063CQ3970 | | |
| Water connections | - | R2" | R2" | R2" |
| Gas connection | - | R1.1/2" | R1.1/2" | R1.1/2" |
| Flue gas connection (DN) | mm | 150 | 150 | 200 |
| Air intake connect. (room sealed use) (DN) | mm | 130 | 130 | 130 |
| Condensate connection | mm | 32 | 32 | 32 |

# Technical description

## Technical data

| | | R604 EVO | R605 EVO | R606 EVO | R607 EVO |
|---|---|---|---|---|---|
| Nominal heat output at 80/60ºC max/min | kW | 285,7/56,5 | 381,3/75,2 | 476,7/94,6 | 540,2/120,0 |
| Nominal heat output at 40/30ºC max/min | kW | 303,3/64,2 | 404,3/85,6 | 505,2/106,9 | 572,8/135,1 |
| Nominal heat input Hi max/min | kW | 291,0/58,2 | 388,0/77,6 | 485,0/97,0 | 550,0/122,2 |
| Efficiency at 80/60ºC | % | 98,2 | 98,3 | 98,3 | 98,2 |
| Efficiency at 40/30ºC | % | 104,2 | 104,2 | 104,2 | 104,2 |
| RAL 40/30 average | % | 110,4 | 110,4 | 110,4 | 110,3 |
| Max. condensate flow | l/h | 18,5 | 24,7 | 30,7 | 34,8 |
| Gas consumption G20 max/min (10,9 kWh/$m^3$) | $m^3$/h | 26,7/5,3 | 35,6/7,1 | 44,5/8,9 | 50,5/11,2 |
| Gas consumption G25 max/min (8,34 kWh/$m^3$) | $m^3$/h | 34,9/7,0 | 46,5/9,3 | 58,2/11,6 | 65,9/14,7 |
| Gas consumption G31 max/min (12,8 kWh/kg) | kg/h | 22,7/4,5 | 30,3/6,1 | 37,9/7,6 | 43,0/9,5 |
| Gas pressure G20 | mbar | 20 | | | |
| Gas pressure G25 | mbar | 25 | | | |
| Gas pressure G31 | mbar | 30/50 | | | |
| Maximum gas pressure | mbar | 50 | | | |
| Max. temperature flue gas (high limit) | °C | 90 | | | |
| Flue gas temperature at 80/60ºC max/min | ºC | 75/58 | 75/59 | 75/59 | 76/58 |
| Flue gas temperature at 40/30ºC max/min | ºC | 55/30 | 56/30 | 56/30 | 56/30 |
| Flue gas quantity max/min | $m^3$/h | 377/77 | 502/102 | 628/128 | 712/161 |
| CO2 level G20-G25 max/min | % | 10,2/9,4 ± 0,2 (Limitation type 570 delta max/min ≥0,8) | | | |
| CO2 level G31 max/min | % | 11,9/10,0 ± 0,2 | | | |
| NOx level at 80/60 °C max/min | mg/kWh | 36/18 | 34/17 | 37/18 | 40/19 |
| CO level at 80/60 °C max/min | mg/kWh | 14/5 | 14/8 | 16/5 | 18/1 |
| Max. permissible flue resistance max/min | Pa | 160/10 | 400/10 | 300/10 | 400/10 |
| Water volume | l | 60 | 63 | 71 | 77 |
| Water pressure max/min | bar | 8/1 | | | |
| Max. water temperature (High limit thermostat) | ºC | 100 | | | |
| Maximum temperature setpoint | ºC | 90 | | | |
| Nominal water flow at dT=20K | $m^3$/h | 12,2 | 16,3 | 20,3 | 23,1 |
| Hydraulic resistance at nominal flow rate | kPa | 12 | 32 | 34 | 57 |
| Electrical connection | V | 230/400 | | | |
| Frequency | Hz | 50 | | | |
| Mains connection fuse | A | 16 | | | |
| IP class | - | IP20 | | | |
| Electrical consumption boiler max/min (without pump) | W | 230/50 | 504/54 | 620/64 | 676/61 |
| Electrical consumption speed controlled pump | W | 310/12 | 470/25 | 590/25 | 800/38 |
| Weight (empty) | kg | 434 | 496 | 540 | 595 |
| Sound Power Level (LWA) | dB | 70,3 | 77,3 | 77,3 | 77,3 |
| Ionisation current max/min | µA | 10,0/4,5 | | | |
| PH value condensate | - | 3,2 | | | |
| CE certification code | - | CE - 0063CQ3970 | | | |
| Water connections | - | DN65 PN16 | DN65 PN16 | DN65 PN16 | DN65 PN16 |
| Gas connection | - | R1.1/2" | R1.1/2" | R2" | R2" |
| Flue gas connection (DN) | mm | 200 | 250 | 250 | 250 |
| Air intake connect. (room sealed use) (DN) | mm | 130 | 130 | 150 | 150 |
| Condensate connection | mm | 32 | 32 | 32 | 32 |

# Technical description

## Technical data

| | | R600 EVO (Italy only) | |
|---|---|---|---|
| | | **115** | **350** |
| Nominal heat output at 80/60ºC max/min | kW | 113,7/31,3 | 343,0/75,2 |
| Nominal heat output at 40/30ºC max/min | kW | 120,8/35,4 | 363,6/85,6 |
| Nominal heat input Hi max/min | kW | 115,8/32,2 | 349,0/77,6 |
| Efficiency at 80/60ºC | % | 98,2 | 98,3 |
| Efficiency at 40/30ºC | % | 104,3 | 104,2 |
| RAL 40/30 average | % | 110,4 | 110,4 |
| Max. condensate flow | l/h | 7,4 | 22,2 |
| Gas consumption G20 max/min (10,9 kWh/$m^3$) | $m^3$/h | 10,6/3,0 | 32,0/7,1 |
| Gas consumption G25 max/min (8,34 kWh/$m^3$) | $m^3$/h | 13,9/3,9 | 41,8/9,3 |
| Gas consumption G31 max/min (12,8 kWh/kg) | kg/h | 9,0/2,5 | 27,3/6,1 |
| Gas pressure G20 | mbar | 20 | |
| Gas pressure G25 | mbar | 25 | |
| Gas pressure G31 | mbar | 30/50 | |
| Maximum gas pressure | mbar | 50 | |
| Max. temperature flue gas (high limit) | °C | 90 | |
| Flue gas temperature at 80/60ºC max/min | ºC | 75/58 | 75/59 |
| Flue gas temperature at 40/30ºC max/min | ºC | 54/30 | 56/30 |
| Flue gas quantity max/min | $m^3$/h | 150/43 | 452/102 |
| CO2 level G20-G25 max/min | % | 10,2/9,4 ± 0,2 (Limitation type 570 delta max/min ≥0,8) | |
| CO2 level G31 max/min | % | 11,9/10,0 ± 0,2 | |
| NOx level at 80/60 °C max/min | mg/kWh | 38/19 | 34/17 |
| CO level at 80/60 °C max/min | mg/kWh | 14/3 | 14/8 |
| Max. permissible flue resistance max/min | Pa | 200/10 | 400/10 |
| Water volume | l | 26 | 63 |
| Water pressure max/min | bar | 8/1 | |
| Max. water temperature (High limit thermostat) | ºC | 100 | |
| Maximum temperature setpoint | ºC | 90 | |
| Nominal water flow at dT=20K | $m^3$/h | 4,8 | 14,6 |
| Hydraulic resistance at nominal flow rate | kPa | 7,0 | 26,0 |
| Electrical connection | V | 230/400 | |
| Frequency | Hz | 50 | |
| Mains connection fuse | A | 16 | |
| IP class | - | IP20 | |
| Electrical consumption boiler max/min (without pump) | W | 176/48 | 504/54 |
| Electrical consumption speed controlled pump | W | 190/9 | 470/25 |
| Weight (empty) | kg | 290 | 496 |
| Sound Power Level (LWA) | dB | 70,3 | 77,3 |
| Ionisation current max/min | µA | 10,0/4,5 | |
| PH value condensate | - | 3,2 | |
| CE certification code | - | CE - 0063CQ3970 | |
| Water connections | - | DN65 PN16 | DN65 PN16 |
| Gas connection | - | R1.1/2" | R1.1/2" |
| Flue gas connection (DN) | - | 150 | 250 |
| Air intake connect. (room sealed use) (DN) | - | 130 | 130 |
| Condensate connection | Mm | 32 | 32 |

# Product information E.r.P.

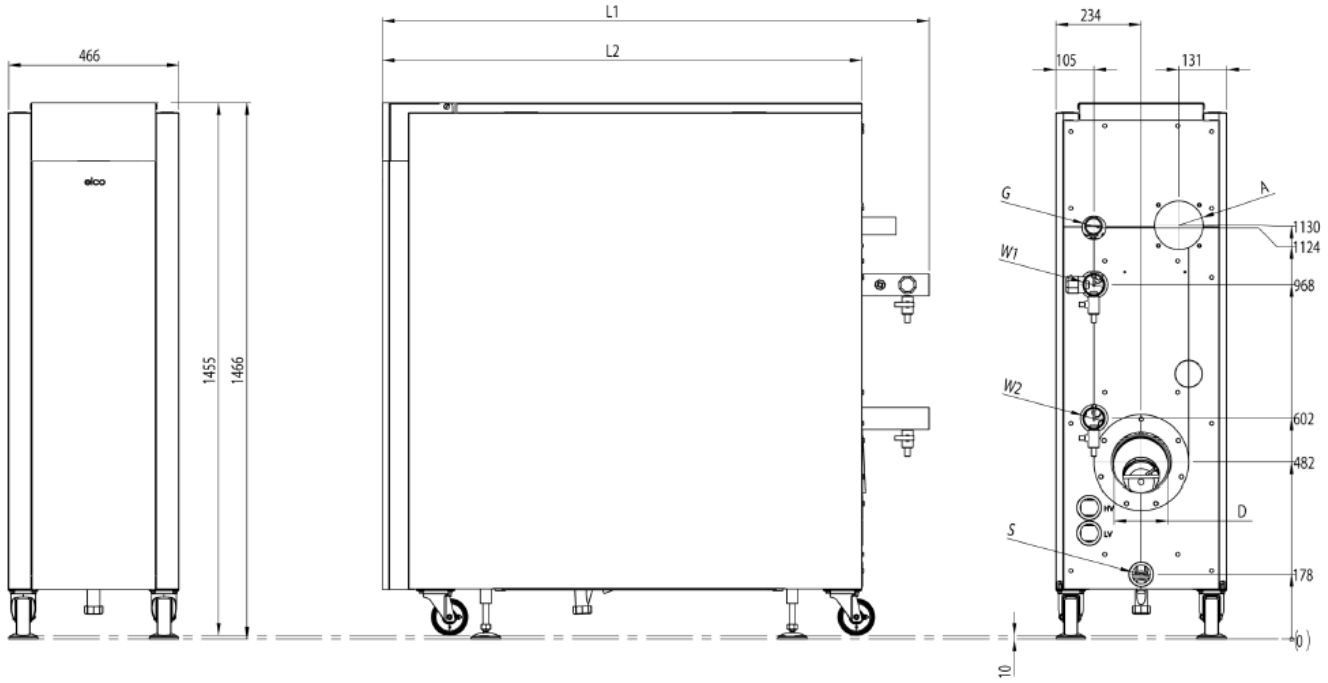
**Product information about the directive 2009/125/EG and regulation (EU) 811-813/2013**

| | Symbol | Unit | 115 * | R601 EVO | R602 EVO | R603 EVO | R604 EVO | 350 * | R605 EVO |
|---|---|---|---|---|---|---|---|---|---|
| Condensing boiler | - | - | YES | YES | YES | YES | YES | YES | YES |
| Low-temperature boiler | - | - | NO | NO | NO | NO | NO | NO | NO |
| B1 boiler | - | - | NO | NO | NO | NO | NO | NO | NO |
| Cogeneration space heater | - | - | NO | NO | NO | NO | NO | NO | NO |
| Combination heater | - | - | NO | NO | NO | NO | NO | NO | NO |
| **ErP HEATING** 1) by return temperature 30°C 2) by return temperature and feed temperature (60-80°C) | | | | | | | | | |
| Rated heat boiler | $P_{rated}$ | kW | 140 | 140 | 190 | 237 | 286 | 381 | 381 |
| At rated heat output and high-temperature regime | $P_4$ | kW | 142,3 | 142,3 | 190,4 | 237,6 | 285,7 | 381,3 | 381,3 |
| At 30 % of rated heat output and low-temperature regime 1) | $P_1$ | kW | 47,5 | 47,5 | 63,5 | 79,3 | 95,3 | 127,1 | 127,1 |
| Seasonal space heating energy efficiency | $\eta_s$ | % | 93,4 | 93,4 | 93,5 | 93,6 | 93,6 | 93,6 | 93,6 |
| At rated heat output and high-temperature regime 2) | $\eta_4$ | % | 88,4 | 88,4 | 88,4 | 88,5 | 88,5 | 88,5 | 88,5 |
| At 30 % of rated heat output and low temperature regime 1) | $\eta_1$ | % | 98,3 | 98,3 | 98,3 | 98,3 | 98,3 | 98,4 | 98,4 |
| **AUXILIARY ELECTRICITY CONSUMPTION** | | | | | | | | | |
| At full load | elmax | kW | 0,176 | 0,176 | 0,267 | 0,286 | 0,230 | 0,504 | 0,504 |
| At 30% load | elmin | kW | 0,053 | 0,053 | 0,053 | 0,053 | 0,070 | 0,070 | 0,070 |
| In stand-by mode | $P_{SB}$ | kW | 0,008 | 0,008 | 0,008 | 0,008 | 0,008 | 0,008 | 0,008 |
| **SUPPLEMENTARY HEATER** | | | | | | | | | |
| Standby heat loss | $P_{stby}$ | kW | 0,286 | 0,286 | 0,286 | 0,286 | 0,309 | 0,309 | 0,309 |
| Ignition burner power consumption | $P_{ign}$ | kW | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Emissions of nitrogen oxides | $NO_x$ | mg/kWh | 38 | 38 | 38 | 36 | 36 | 34 | 34 |

# Technical description

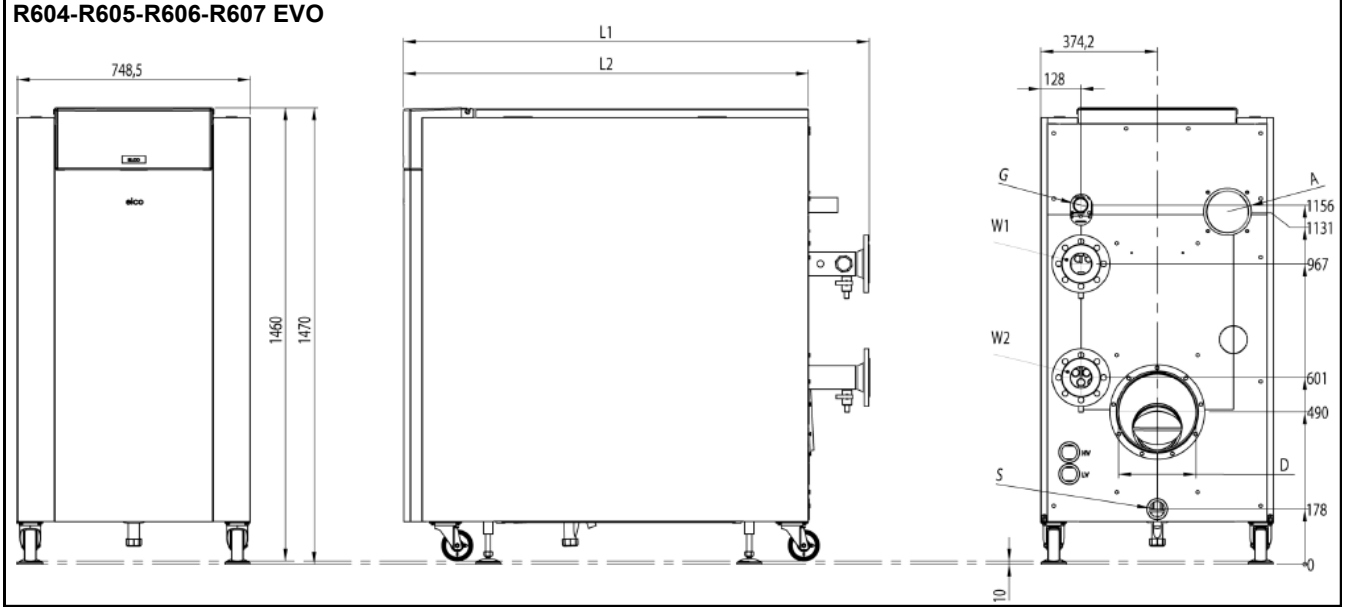
## Dimensions

**R601-R602-R603 EVO**




| | | R601 EVO | R602 EVO | R603 EVO | R604 EVO | R605 EVO | R606 EVO | R607 EVO |
|---|---|---|---|---|---|---|---|---|
| L1 | [mm] | 1349 | 1499 | 1649 | 1348 | 1496 | 1646 | 1769 |
| L2 | [mm] | 1165 | 1315 | 1465 | 1152 | 1302 | 1452 | 1602 |
| A | [mm] | 130 | | | | | 150 | |
| G | | 1.1/2" | | | | 2" | | |
| D | [mm] | 150 | | 200 | | 250 | | |
| S | [mm] | 32 | | | | | | |
| W1 | | R2" | | | DN65 PN16 | | | |
| W2 | | R2" | | | DN65 PN16 | | | |

**R604-R605-R606-R607 EVO**



## Declaration of conformity

# Declaration of Conformity

ELCO BV, Hamstraat 76, 6465 AG Kerkrade (NL),
Declares that the product

# R600 EVO

Is in conformity with the following standards:

EN 15502-1
EN 15502-2-1
EN 55014-1 / -2
EN 61000-3-2 /-3
EN 60 335-1/ -2

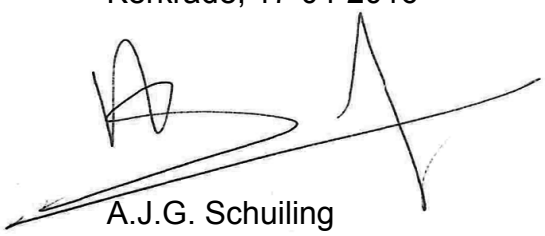
And in accordance with the guidelines of directives:

92 / 42 / EEC (boiler efficiency directive)
2009 / 142 / EEC (gas appliance directive)
2014 / 35 / EU (low voltage directive)
2014 / 30 / EU (EMC directive)
2009 / 125 / CE Energy related Products
811-813-814 / 2013 EU regulation

This product is designated with CE number:

# CE – 0063CQ3970

Kerkrade, 17-04-2016



A.J.G. Schuiling
Plant Manager

# Technical description

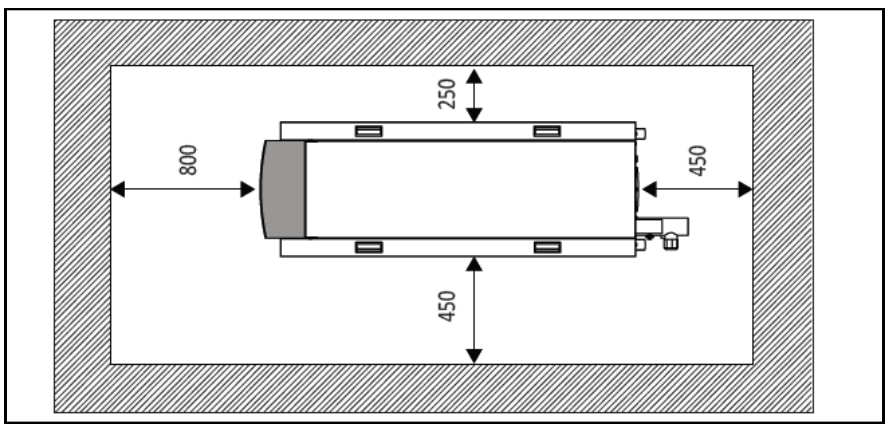
## Extent of delivery
## Boiler transport
## Boiler installation

**Standard boiler**
A boiler delivery package contains the following components:

| Component | Pcs. | Package |
|---|---|---|
| Boiler fully assembled and tested | 1 | On wooden pallet, sealed in PE foil |
| Syphon for condensate connection | 1 | In plastic bag on back of boiler |
| Conversion kit for propane incl. instruction | 1 | On inside of front panel |
| Operation and Installation manual | 1 | On inside of front panel |

**Boiler transport**
Whenever necessary, the boiler can be dismantled into smaller parts for easier transport inside the building. The table below shows the main dismantled parts with their weight and dimensions.

| Component | | R601 EVO | R602 EVO | R603 EVO | R604 EVO | R605 EVO | R606 EVO | R607 EVO |
|---|---|---|---|---|---|---|---|---|
| Burner/1st HE assembly | Weight [kg] | 90 | 110 | 120 | 140 | 160 | 190 | 200 |
| | Length [mm] | 735 | 885 | 1035 | 735 | 885 | 1035 | 1185 |
| | Width [mm] | 400 | 400 | 400 | 680 | 680 | 680 | 680 |
| | Height [mm] | 321 | 321 | 321 | 321 | 321 | 321 | 321 |
| 2nd/3rd HE assembly | Weight [kg] | 100 | 110 | 120 | 160 | 170 | 200 | 220 |
| | Length [mm] | 735 | 885 | 1035 | 735 | 885 | 1035 | 1185 |
| | Width [mm] | 400 | 400 | 400 | 680 | 680 | 680 | 680 |
| | Height [mm] | 244 | 244 | 244 | 244 | 244 | 244 | 244 |
| Condensate receptacle | Length [mm] | 589 | 739 | 889 | 589 | 739 | 889 | 1039 |
| | Width [mm] | 385 | 385 | 385 | 665 | 665 | 665 | 665 |
| | Height [mm] | 225 | 225 | 225 | 225 | 225 | 225 | 225 |
| Frame | Length [mm] | 990 | 1140 | 1350 | 1100 | 1320 | 1470 | 1620 |
| | Width [mm] | 624 | 624 | 624 | 724 | 724 | 724 | 724 |
| | Height [mm] | 335 | 335 | 335 | 335 | 335 | 335 | 335 |




**Boiler installation**
The boiler should be positioned in a frost-proof boiler room. If the boiler room is on the roof, the boiler itself may never be the highest point of the installation.
When positioning the boiler, please note the recommended minimum clearance in the picture. When the boiler is positioned with less free space, maintenance activities will be more difficult.

To optimize the position of the boiler in the room it is possible to exchange the position of the electrodes from the right side of the boiler to the left side of the boiler.
This also means that the required space as indicated in the picture will be mirrored.
Normal: Left 250mm / Right 450mm
Modified: Left 450mm / Right 250mm
Once the boiler is in the correct position, the adjustable feet (2) (with vibration absorption dampers) should be adjusted to the right height and the boiler should be horizontal. Ensure that the wheels are not in contact with the floor!
Water and gas connections should be done after adjusting the feet, as they affect the exact height of all connections.

The (inter)national and local norms for the installation of heating systems should be respected at all times.

# Norms and regulations

This documentation contains important information, which is a base for safe and reliable installation, commissioning and operation of the boiler. All activities described in this document may only be excecuted by authorized companies.

Changes to this document may be effected without prior notice. We accept no obligation to adapt previously delivered products to incorporate such changes.

Only original spare parts may be used when replacing components on the boiler, otherwise warranty will be void.

**Application**
The boiler may be used for heating and hot water production purposes only. The boiler should be connected to closed systems with a maximum temperature of 100 °C (high limit temperature), maximum setpoint temperature is 90 °C.

**Norms and regulations**
When installing and operating the boiler, all applicable norms (European and local) should be fulfilled:
Local building regulations for installing combustion air and flue gas systems;
Regulation for connecting the boiler to the electrical appliance;
Regulations for connecting the boiler to the local gas network;
Norms and regulations according to safety equipment for heating systems;
Any additional local laws/regulations with regard to installing and operating heating systems.

This boiler is CE approved and applies to the following European standards:
- **1992 / 42 / EEC** Boiler efficiency directive.
- **2009 / 142 / EEC** Gas appliance directive.
- **2009/125/EC** Directive of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products
- **811-813-814/2013 EU** regulation
- **2014 / 30 / EU** The Electromagnetic Compatibility (EMC) Directive
- **2014 / 35 / EU** Low Voltage Directive
- **EN 13203-2: 2015** (Gas-fired domestic appliances producing hot water - Part 2: Assessment of energy consumption)
- **EN 15036-1: 2006** Heating boilers - Test regulations for airborne noise emissions from heat generators - Part 1: Airborne noise emissions from heat generators
- **EN-ISO 3743-1: 2010** Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for small movable sources in reverberant fields - Part 1: Comparison method for a hard-walled test room.
- **EN 15502-1: 2012 +A1:2015** (Gas-fired heating boilers - Part 1: General requirements and tests)
- **EN 15502-2-1: 2012** (Gas-fired central heating boilers - Part 2-1: Specific standard for type C appliances and type B2, B3 and B5 appliances of a nominal heat input not exceeding 1000 kW)
- **EN 60335-1** Household and similar electrical appliances - Safety- Part 1: General requirements
- **EN 60335-2-102: 2016** Household and similar appliances - Safety - Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections.
- **EN 55014-1: 2006** Electromagnetic compatibility- Requirements for household appliances, electric tools and similar apparatus Part 1: Emission A1:2009, A2:2011
- **EN 55014-2: 2015** Electromagnetic compatibility- Requirements for household appliances, electric tools and similar apparatus Part 2: Immunity - Product family standard.
- **EN 61000-3-2: 2014** Electromagnetic compatibility (EMC) Part 3-2: Limits — Limits for harmonic current emissions equipment input current <= 16 A per phase.
- **EN 61000-3-3: 2013** Electromagnetic compatibility (EMC) Part 3-3: Limits — Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection.

**Additional national standards**

**Germany:**
– RAL - UZ 61 / DIN 4702-8

**Switzerland:**
– SVGW

# Norms and regulations

## Maintenance
## Fuel
## Combustion air
## Water quality

**Maintenance**
Regular maintenance is necessary to secure a safe and economical operation of the installation. For the R600 EVO, one annual maintenance visit is recommended. During this visit, the proper functioning of the complete heating system should be checked as well.

**Fuel**
The gas condensing boiler R600 EVO is applicable for gases G20, G25, G30 and G31. Factory settings are always done for G20. For other types of natural gas, a correction can be made on the gas valve. For LPG, it's necessary to fit a restriction plate (included in delivery) before operating the boiler.

The R600 EVO can work with gas pressures up to 50 mbar. In case of a gas pressure above 50 mbar, a pressure regulator should be fitted in the gas line (available as accessory).

The gas consumption and gas pressures of the different gases can be found in the chapter „Technical data".

**Combustion air**
The gas condensing boiler R600 EVO can be used in both non-room sealed and room sealed applications. The combustion air to the boiler shouldn't contain high concentrations of dust and/or halogen, as they can damage the heat exchanger surface. Especially in buildings, where chemicals are used, the combustion air facility should prevent these chemicals to enter the boiler.

The different room sealed connection possibilities the R600 EVO is approved for, can be found in the chapter „Flue gas system".

**Water quality**
The lifetime of the complete heating system is affected by the water quality. Additional costs for water treatment of an installation are always lower than repairing costs for damage created by poor water quality.

The following water quality levels must be respected at all times for warranty claiming. Damage to the boiler due to poor water quality will not be taken under warranty.

The system should be filled with water with a PH value between 7,0 and 9,5. The chloride value of the water should not exceed 50 mg/l. Entry of oxygene by diffusion should be prevented at all times. Damage to the heat exchanger because of oxygene diffusion will not be taken under warranty.

| Boiler output | Max. sum of alkaline earths | Max. total hardness | |
|---|---|---|---|
| [kW] | [mol/m$^3$] | [ºdH] | [ºf] |
| 50 - 200 | 2.0 | 11.2 | 20 |
| 200 - 600 | 1.5 | 8.4 | 15 |

In installations with higher water volumes, it's necessary to respect the maximum filling and additional volumes with corresponding hardness values as stated in the german VDI2035 standard. In the table you can find the nominal values for filling and additional water for the R600 EVO according to the VDI2035.

| Concentrate $Ca(HCO_3)_2$ | | Capacity of installation Q (kW) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 150 | 200 | 250 | 300 | 400 | 500 | 600 |
| mol/m$^3$ | dºH | Maximum water (re)fill volume $V_{max}$ [m$^3$] | | | | | | |
| ≤0.5 | ≤2.8 | - | - | - | - | - | - | - |
| 1.0 | 5.6 | - | - | - | - | - | - | - |
| 1.5 | 8.4 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
| 2.0 | 11.2 | 3 | 4 | 5 | 6 | 6.3 | 7.8 | 9.4 |
| 2.5 | 14.0 | 1.9 | 2.5 | 3.1 | 3.8 | 5.0 | 6.3 | 7.5 |
| ≥3.0 | ≥16.8 | 1.6 | 2.1 | 2.6 | 3.1 | 4.2 | 5.2 | 6.3 |

The table at the left gives an indication of the relation between the water quality and the maximum water filling volume during the lifetime of the boiler. Consult the original text of the VDI2035 for more detailed information.

Constant entry of oxygene in the installation should be avoided. The system water pressure should be higher than the atmospheric pressure in all parts of the installation. Underfloor heating components without oxygen diffusion barrier should never be used. When they're used anyway, a system separation (f.e. with plate heat exchanger) is compulsory.

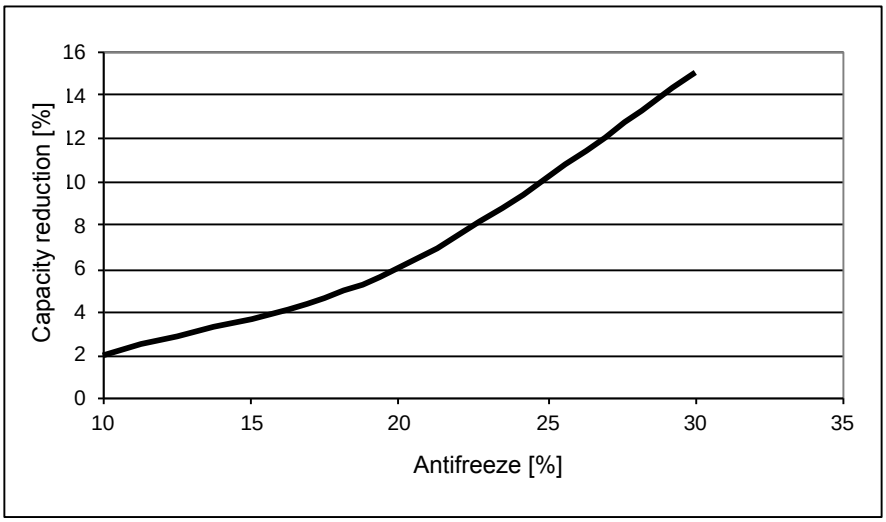
# Norms and regulations

## Noise protection
## Antifreeze

**Noise protection**
The gas condensing boiler R600 EVO is equipped with a patented premix burner. The noise level of this very quiet premix burner is extremely low in comparison to conventional gas burners. Therefore no further measures have to be taken for noise protection in the boiler room.

The R600 EVO is supplied with adjustable feet, which also prevent the transmission of vibration noise from the boiler into the building.

Noise created by system components (f.e. pumps) should be taken care of with external measures, in case of higher noise level requirements.




**Antifreeze**
The R600 EVO can be used with the antifreeze type Shell Antifreeze Concentrate. The concentration of the antifreeze in the system affects the maximum capacity the boiler can work on. The relation between antifreeze concentration and capacity reduction of the boiler can be found in the graph. The maximum percentage of antifreeze should not exceed 30%.

# Flue gas system

## Requirements and regulations
## Materials
## Flue gas data

**Requirements and regulations**
Regulations for the construction of flue gas systems are very different for each country. It should be ensured that all national regulations with regard to flue gas systems are respected. The most important national norms can be found in the chapter „Norms“.

Pay attention to the following recommendations when dimensioning a flue gas system:
- Only approved flue gas material may be used.
- The flue gas system must be properly calculated to ensure a safe functioning of the system.
- Flue gas system components should be removable for maintenance purposes.
- Horizontal flue gas ways must be mounted under an angle of 3º minimum.

A separate condensate drain for the chimney is not necessary, as the condensate can enter the drain via the syphon connection of the boiler.

The R600 EVO is certified for the flue gas systems B23 and C63.

**Materials**
Exclusively materials, which are heat resistant and resistant to flue gases and aggressive condensate, may be used.

The R600 EVO has an integrated high limit thermostat function for the flue gases. When the flue gas temperature exceeds 100ºC, the burner is switched off. With this function, an additional (external) safety device is not necessary.

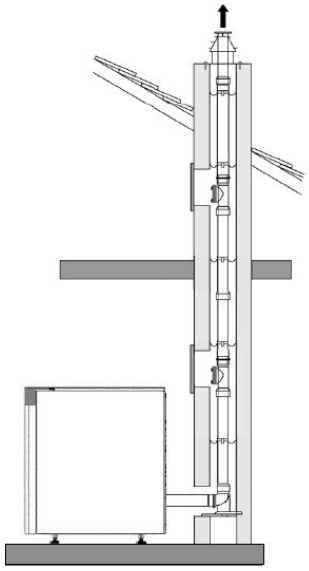
| | Plastic PP | Stainless steel |
|---|---|---|
| Temperature class | T120 | T250 |
| Pressure class | P1 | P1 |
| Corrosion class | W1 | W1 |

**Flue gas data**

| Boiler type | Nominal heat output | | Nominal heat input | | Flue gas connection | $CO_2$ level | | Flue gas temperature | | Flue gas quantity | | Max. permissible flue resistance | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kW | | kW | | mm | % | | ºC | | g/s | | Pa | |
| | max | min | max | min | | max | min | max | min | max | min | max | Min |
| R601 EVO | 142.3 | 31.3 | 145.0 | 32.2 | 150 | 10.2 ± 0.2 | 9.4 ± 0.2 | 75 ± 2 | 60 ± 2 | 53.7 | 12.8 | 200 | 10 |
| R602 EVO | 190.4 | 42.0 | 194.0 | 43.1 | 150 | | | | | 71.9 | 17.1 | 200 | 10 |
| R603 EVO | 237.6 | 47.0 | 242.0 | 48.4 | 200 | | | | | 89.6 | 19.2 | 200 | 10 |
| R604 EVO | 285.7 | 56.5 | 291.0 | 58.2 | 200 | | | | | 107.8 | 23.0 | 160 | 10 |
| R605 EVO | 381.3 | 79.6 | 388.0 | 80.5 | 250 | | | | | 143.7 | 30.7 | 400 | 10 |
| R606 EVO | 476.7 | 94.6 | 485.0 | 97.0 | 250 | | | | | 179.7 | 38.4 | 300 | 10 |
| R607 EVO | 540.2 | 120.0 | 550.0 | 122.2 | 250 | | | | | 203.7 | 48.4 | 484 | 10 |

# Flue gas system

## Dimensioning



Calculation base:
Total connection length in boiler room ≤ 1.5 m;
2x 87°-bend

**Maximum permissible height (h) of flue gas system in m**

| | Ø 130 [mm] | Ø 150 [mm] | Ø 200 [mm] | Ø 250 [mm] | Ø 300 [mm] |
|---|---|---|---|---|---|
| R601 EVO | 50 | 50 | 50 | | |
| R602 EVO | 42 | 50 | 50 | | |
| R603 EVO | | 48 | 50 | 50 | |
| R604 EVO | | 25 | 50 | 50 | |
| R605 EVO | | | 50 | 50 | 50 |
| R606 EVO | | | 39 | 50 | 50 |
| R607 EVO | | | 29 | 50 | 50 |

**Dimensioning**
When dimensioning a flue gas system, it's necessary to perform a calculation check of the flue gas system in order to verify if the choosen system is applicable.

The following table shows example of possible flue gas systems, including the maximum possible height of the system. These examples only give an indication of the possible heights, but they can not be used for official flue gas layout calculation. Each flue gas system must be calculated by an authorized company.

The maximum negative flue gas pressure, which doesn't affect the burner modulation ratio, is 30 Pa. Higher negative pressure will lead to limitation of the burner modulation ratio.

The maximum horizontal flue gas way is 20m. With horizontal ways longer than 20m, a faultless burner start in cold condition can not be guaranteed.

# Neutralisation

## General
## Neutralisation systems
## Standard neutralisation system (DN)
## Neutralisation system with pump (HN)

**General**
Condensate, created by the R600 EVO, should be drained into the public draining system. The condensate PH is between 3.0 and 3.5. National and/or local regulations have to be checked, in order to find out whether the condensate should be neutralised before entering the public draining

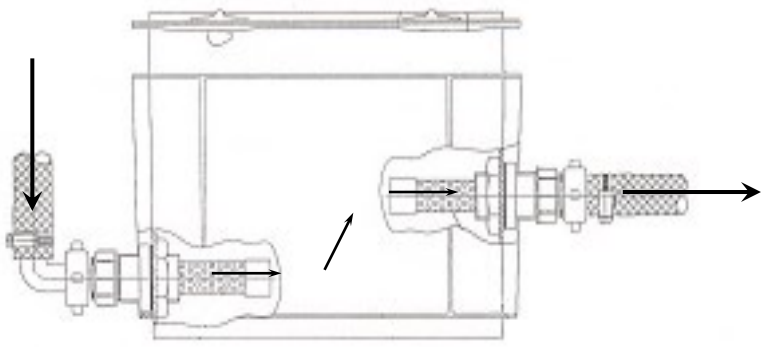
The maximum amount of condensate for each boiler type can be found in the chapter „Technical data“.

**Neutralisation systems**
The neutralisation systems can be placed in the bottom section of the boiler. The delivery of the system contains the following components:

- Granulate for first filling
- Connection hoses for inlet and outlet connection
- Boiler connection adapter

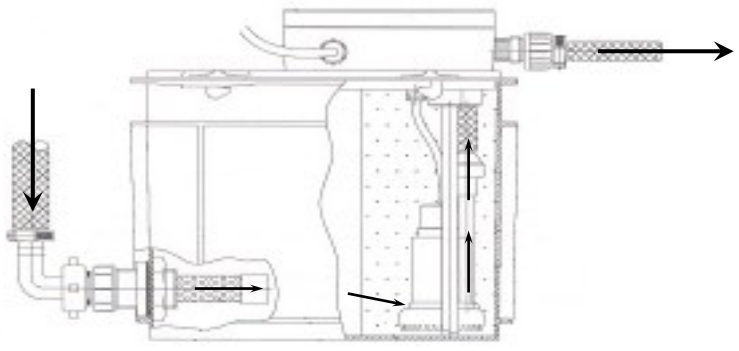
For the neutralisation two different systems are available:

**Standard neutralisation system (DN)**
The standard neutralisation system is used, when the public draining connection is at lower level than the boiler syphon connection.



| Type | | DN2 | DN3 |
|---|---|---|---|
| Applicable for | [kW] | 450 | 1500 |
| Length | [mm] | 420 | 640 |
| Width | [mm] | 300 | 400 |
| Height | [mm] | 240 | 240 |

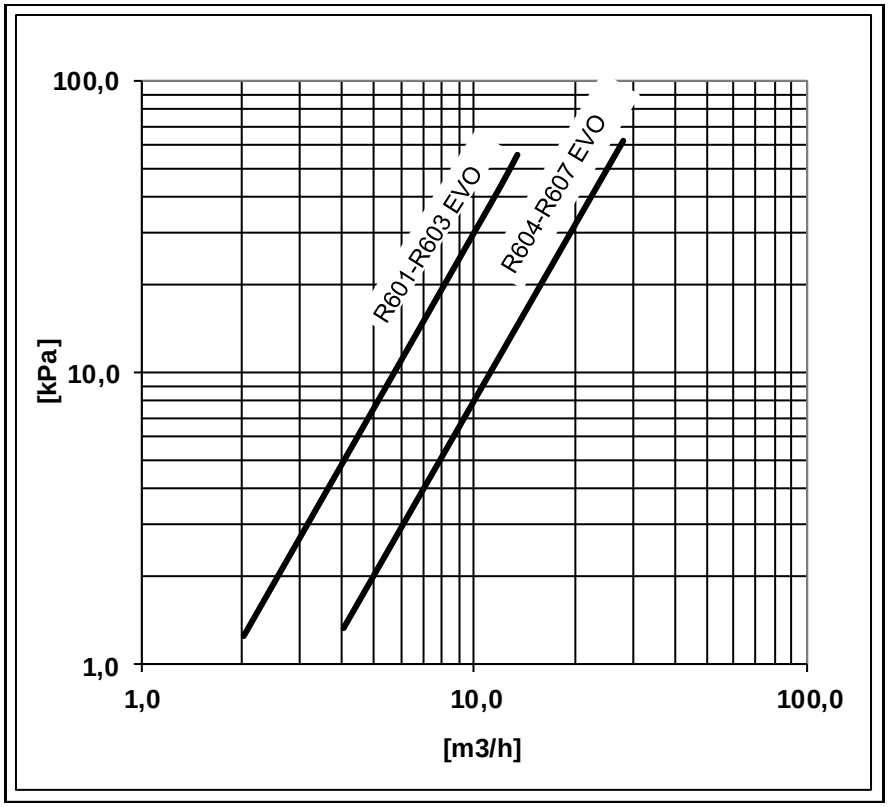
**Neutralisation system with pump (HN)**
The neutralisation system with pump is used, when the public draining system is at higher level than the boiler syphon connection and the condensate needs to be transported to a higher level before draining is possible. The built-in pump of the neutralisation system takes care of the transport of the condensate.



| Type | | HN1.5 | HN2.5 |
|---|---|---|---|
| Applicable for | [kW] | 280 | 540 |
| Length | [mm] | 410 | 640 |
| Width | [mm] | 300 | 400 |
| Height | [mm] | 290 | 240 |
| Power consumption pump | [W] | 40 | 150 |
| Pump head | [m] | 6 | 3 |

# Hydraulic connection

## Hydraulic resistance
## ΔT-measurement
## Δp-measurement
## Water flow data




**Hydraulic resistance**
The hydraulic resistance depends on the flow rate through the boiler and the boiler type. In the graph the resistance for a specific flow rate can be found.

The R600 EVO is able to control a speed controlled pump via PWM or a 0-10VDC signal. It makes the flow rate modulate in parallel with the burner load. The minimum flow rate, to which the pump is allowed to modulate with the burner load, is 30% of the nominal flow rate through the boiler.

The flow rate through the boiler can also be checked by calculation. This can be done with a ΔT as well as a Δp measurement.

| Water flow data | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **R601 EVO** | **R602 EVO** | **R603 EVO** | **R604 EVO** | **R605 EVO** | **R606 EVO** | **R607 EVO** |
| Nominal flow rate | $m^3/h$ | 6,1 | 8,1 | 10,1 | 12,2 | 16,3 | 20,4 | 23,1 |
| ΔT at nominal flow rate | K | 20 | | | | | | |
| Δp at nominal flow rate | kPa | 11,2 | 26,8 | 31,2 | 11,9 | 32,3 | 34,3 | 57,1 |
| Min. flow rate (at min. boiler power) | $m^3/h$ | 1,8 | 2,4 | 3,1 | 3,7 | 4,9 | 6,1 | 6,9 |
| ΔT at min. flow rate (at min. boiler power) | K | 11 | 14 | 11 | 10 | 14 | 11 | 10 |
| Δp at min. flow rate (at min. boiler power) | kPa | 0,9 | 1,6 | 2,6 | 1,4 | 2,4 | 3,8 | 4,9 |

**ΔT-measurement**
Check the temperature difference over the boiler (ΔT flow-return) when the boiler is running on 100% load. The nominal ΔT is 20K and must be at least between 10K and 30K for secure boiler operation. An indication of the actual flow rate can be found with the following calculation (see table below for nominal data):

$q_{actual} = (\Delta T_{nominal} / \Delta T_{measured}) * q_{nominal}$

**Δp-measurement**
Check the pressure difference over the boiler (Δp flow-return) when the boiler pump is running (burner on is not required). The nominal Δp for each boiler type can be found in the table below, actual Δp must be within: $0.45*\Delta p_{nom} \leq \Delta p \leq 4*\Delta p_{nom.}$ An indication of the actual flow rate can be found with the following calculation (see table below for nominal data):

$q_{actual} = \sqrt{(\Delta p_{measured} / \Delta p_{nominal})} * q_{nominal}$

# Hydraulic connection

## Hydraulic connection into a system
## Standard
## Bypass

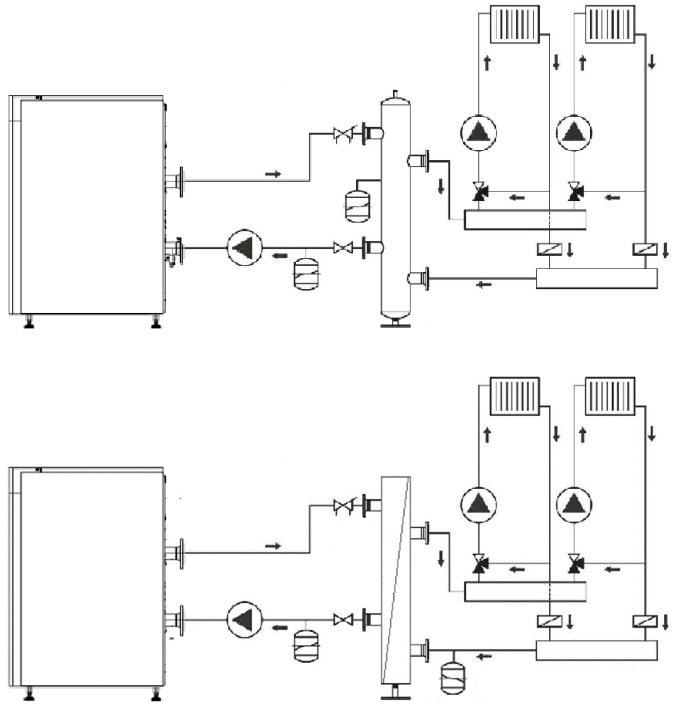
**Hydraulic connection into a system**
The R600 EVO must be connected in such a way, that a minimum flow rate of 30% of the nominal flow rate can be ensured at all times, independent from the flow rate in the secondary system. This can be achieved by using one of the following 3 possibilities:

- Standard, with low loss header or plate heat exchanger
- Bypass, with integrated minimum flow rate by Bypass pump*
- Split System, with 2 return connections for best possible efficiency (warm and cold return)

* only applicable in single boiler installations

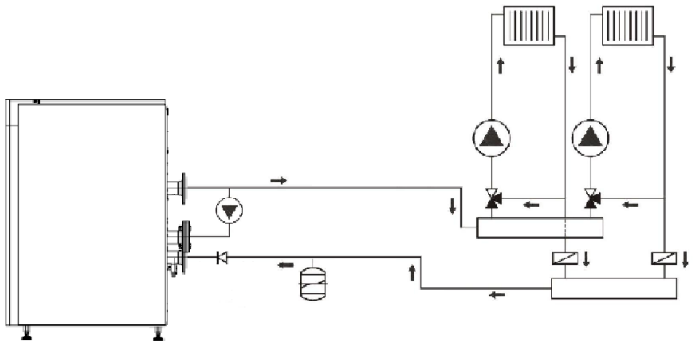
Details to the 3 possibilities mentioned above, can be found in the next sections.

**Standard**



**Standard**
This is the most common way to connect the boiler to the system. By using a low loss header or plate heat exchanger a minimum flow rate can be ensured at all times, independent from the flow rate in the secondary system. The boiler pump is available as a speed controlled version. The speed controlled pump mudulates the flow rate in the primary system in parallel with the burner load. This ensures the lowest possible return temperature to the boiler for high efficiency usage. Details of the available pump kits can be found in the chapter „Accessories“.

**Bypass**

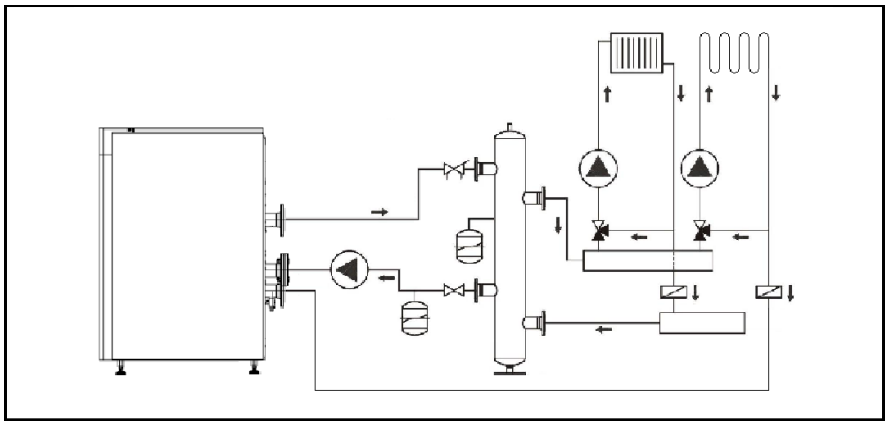


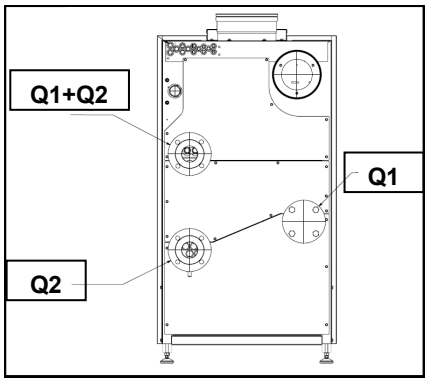
**Bypass**
In single boiler installations, the R600 EVO can also be used without low loss header or plate heat exchanger. For this solution a bypass kit is available as accessory to the standard boiler. The bypass is connected between the flow connection and the second return connection of the boiler.
The performance of the bypass pump is very low when the system flow rate is high. As soon as the system flow rate decreases, the bypass pump performance increases to ensure a minimum flow rate through the boiler.

**The bypass pump does not transport the water from the boiler into the system. The system pump should overcome the boiler resistance at nominal flow rate to transport the water from the boiler into the system and vice versa.**
Details of the available pump kits can be found in the chapter „Accessories“.

# Hydraulic connection

## Split System





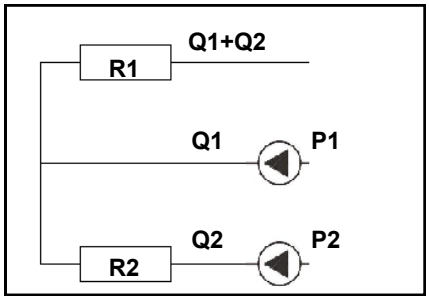

**Split System**
The split system boiler enables the connection of two returns with different water temperatures. By evading the low loss header the cold return water enters the condenser of the boiler directly, without mixing with the high temperature return water (f.e. from an air heater circuit). This hydraulic separation increases the efficiency of the system.

The primary boiler pump, controlled by the boiler management unit, ensures a minimum water flow through the boiler except for the bottom heat exchanger (condensor). The system pump of the low temperature circuit must be dimensioned in such a way, that it can overcome the boiler resistance.

**The nominal flow rate in the (warm) boiler circuit must be minimum 50% of the total nominal flow rate through the boiler.**

More info about the 2nd return connection can be found in the chapter "Accessories".

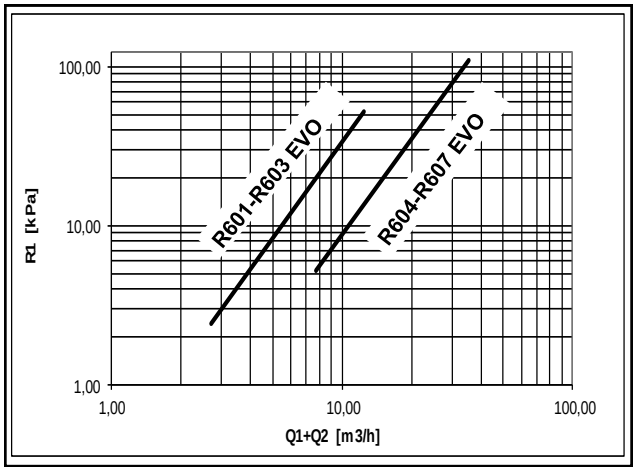
The following data can be used for the dimensioning of the pumps in a split system.

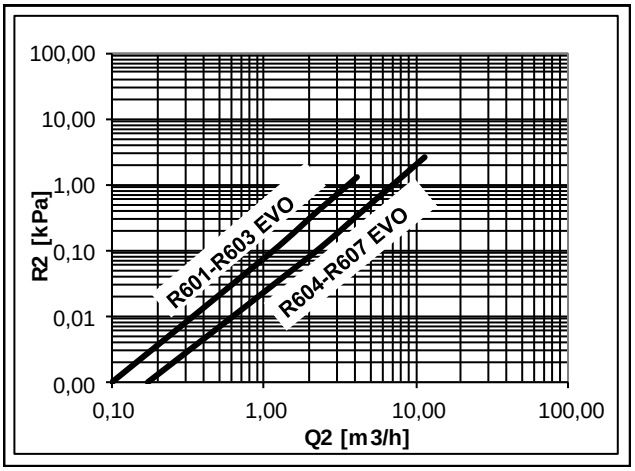



| Min. and max. flow rate Q1-Q2 | | | | |
|---|---|---|---|---|
| | $Q_{2,min}$ [m³/h] | $Q_{2,max}$ [m³/h] | $(Q_1+Q_2)_{min}$ [m³/h] | $(Q_1+Q_2)_{max}$ [m³/h] |
| R601 EVO | 0 | 3,0 | 4,1 | 12,2 |
| R602 EVO | | 4,0 | 5,4 | 16,2 |
| R603 EVO | | 5,1 | 6,8 | 20,2 |
| R604 EVO | | 6,1 | 8,2 | 24,4 |
| R605 EVO | | 8,1 | 10,9 | 32,6 |
| R606 EVO | | 10,2 | 13,6 | 40,8 |
| R607 EVO | | 11,5 | 15,5 | 46,2 |

**Necessary head pump P2:** $R_{P2} = R2_{at\ Q2} + R1_{at\ (Q1+Q2)} + R_{System}$

**Necessary head pump P1:** $R1_{at\ (Q1+Q2)}$



# Controls

## Basic controls and connections
## Control by building management system
## Boiler enable signal
## Temperature or capacity setpoint

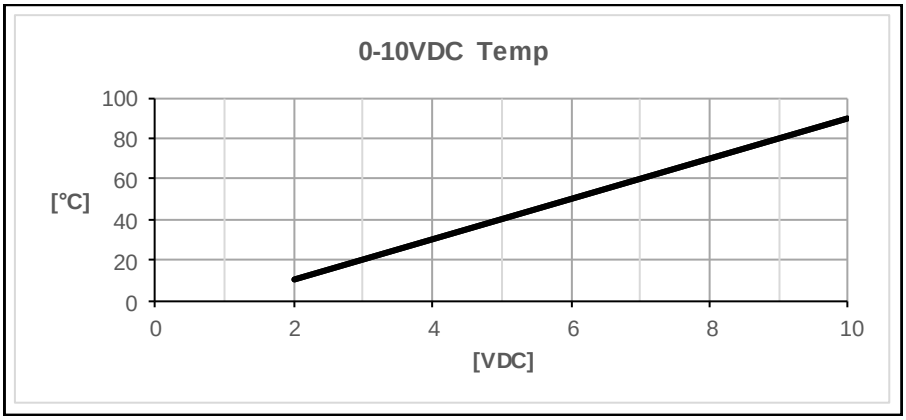
**Basic controls and connections**
The standard version of the R600 EVO is equipped with a LMS14 boiler management unit. This controller controls both the burner safety operation and the temperature regulation of the boiler. The LMS14 includes the following functions:

- Electronic high limit thermostat
- Electronic flue gas temperature limiter
- Primary boiler pump control (via relay)
- Primary sanitary hot water pump control
  (use of relay necessary when > 1A)
- Interlock input
- Lockout input
- Alarm output signal
- Boiler enable signal
- 0-10VDC temperature or capacity setpoint (programmable)
- 0-10VDC capacity feedback or 10V contact for external gas valve (programmable)
- Temperature control central heating via PID controller
- Temperature control sanitary hot water (hot water priority)
- Weather compensation (with optional outdoor sensor)
- Connection possibility for external gas valve and/or room fan. See chapter "Accessories" for combinations with an OK/Alarm contact
- Master/Slave cascade control (with optional BUS communication modules).

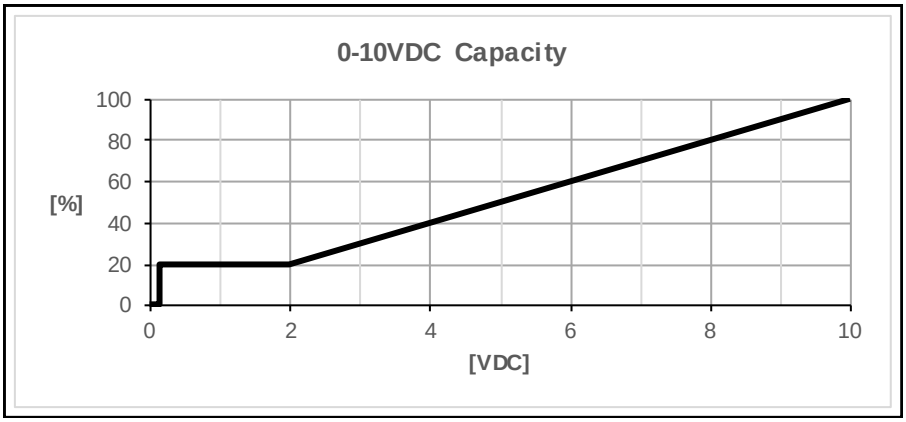
When additional control of secondary heating zones or cascade systems are required, the R600 EVO can be extended with different additional controls. Explanation of these controls can be found in the next sections.

**Control by building management system**
The R600 EVO can be connected to a building management system. This can be done by using (one of) the following connections:

**Boiler enable signal, terminals 116-117 (volt free)**
The boiler enable signal is provided with a jumper from the factory. When connecting a (volt free!!!) external signal, the jumper must be removed.



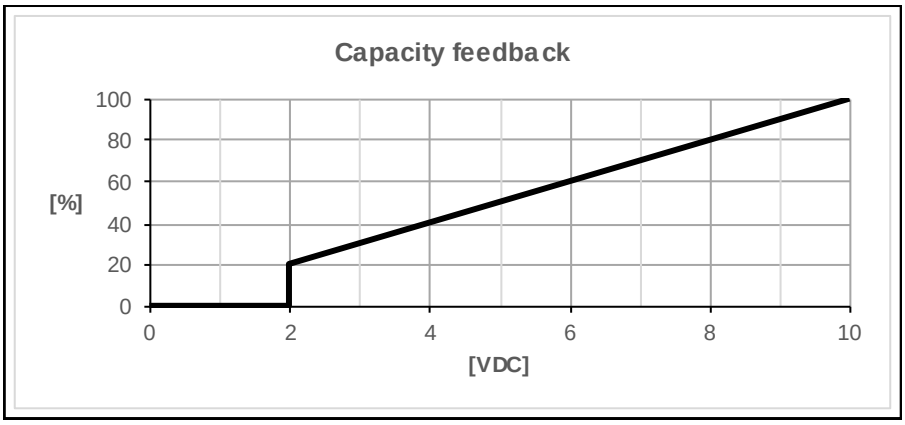

**Temperature or capacity setpoint, terminals 112-113 (0-10VDC)**
The R600 EVO can be controlled via a temperature or capacity setpoint.
The signal values are programmable, from the factory the contact is programmed for temperature setpoint with settings as shown in the graphic.




When controlling the boiler via a capacity setpoint, it's highly recommended to control the primary boiler pump with the internal pump control of the LMS14 boiler controller. The minimum flow rate through the boiler must be respected at all times. The nominal $\Delta T$ is 20K and should be at least within 15K-30K at full load to secure a safe boiler operation.

Attention: from 0,15V the burner will work on minimum load.

## Capacity feedback signal
## OK/Alarm output signal




**Capacity feedback signal, terminals 120-121 (0-10VDC)**
This signal is available at the mentioned terminals, when the burner is active. The following graph shows the value of the signal.

**Alarm output signal, terminals 9 (L) - 10 (N) (230VAC) or extension module AVS75 (contact QX21) when combined with external gas valve and/or room fan or gas leakage tester.**
The boiler provides an alarm signal at terminal 9 (or QX21).

# Controls

## Heating zone control
## Cascade control

**Heating zone control**
The R600 EVO can be extended with an AVS75 controller for extended heating zone control. The AVS75 enables weather compensated operation of one mixed heating zone.

For room temperature optimisation of each heating zone, an additional roomunit QAA75 can be connected via bus connection. The values for the specific heating zone can then be displayed and changed on the room unit.

In case of heating systems with more than three heating zones, an additonal kit with Logon B G2Z2 controller in a wall hung box is available. These kits can be used in a modular way up to a maximum of 8 heating zones.

See chapter "Installation examples" for more details regarding connections of pumps, sensors, etc.

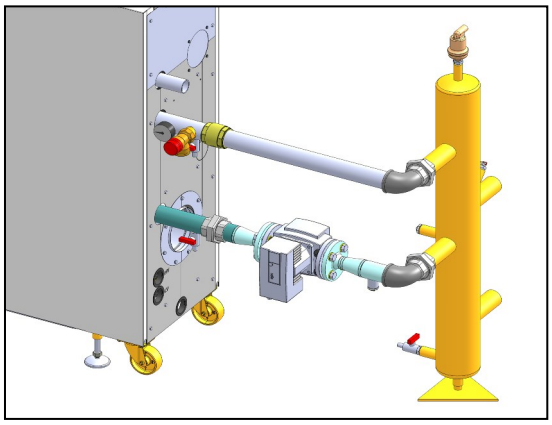
**Cascade control**
The R600 EVO can be controlled in a cascade system of maximum 8 boilers. This can be done by using the integrated Master/Slave cascade functionality in combination with an optional BUS communication device OCI345 (see chapter "Accessories" for more details).

The LMS14 includes an intelligent cascade control, which allows free programming of boiler sequence after certain hours of operation.

See chapter "Installation examples" for more details regarding connections of pumps, sensors, etc.

# Accessories

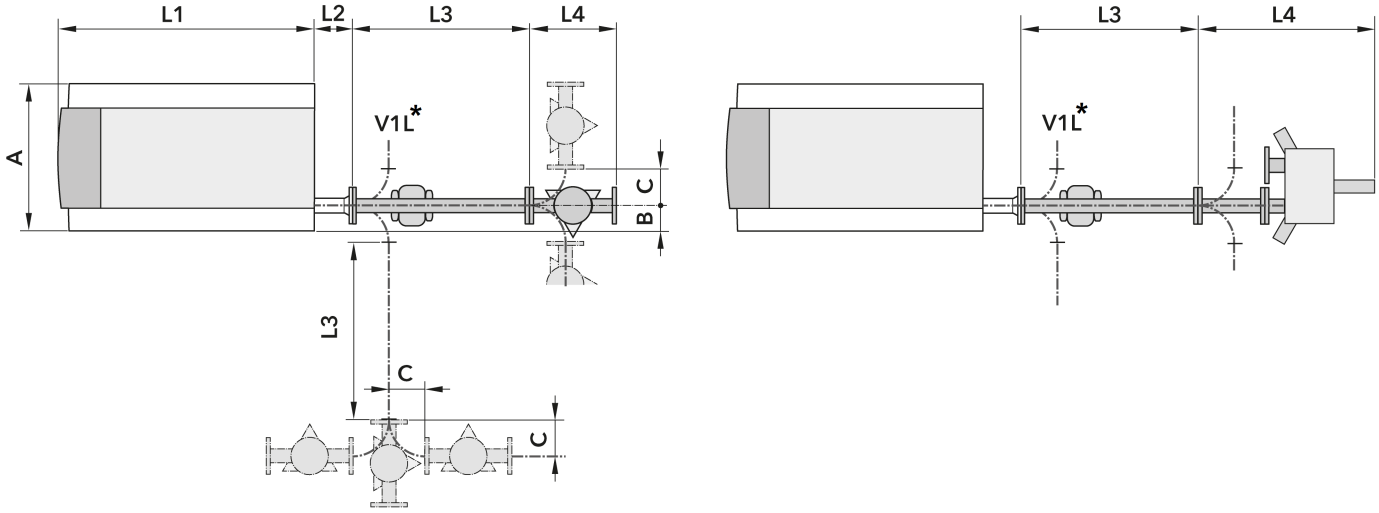
## System selection



The R600 EVO is supplied from the factory with LMS14 boiler management unit. Additional a wide variation of accessory kits is available. The accessory kits are specially designed for the R600 EVO and are very easy to combine with the boiler to create a complete system solution.

**System selection**
The plug & play accessory kits enable a very easy selection and assembly of a complete system solution. As the kits can be combined very easily, a wide variation of solutions can be made by just picking the right kits from the selection table. The accessory kits are pre-assembled and can be mounted to the boiler very quickly.
The accessory kits are built in a modular way. The kits are listed on the next pages.

**Possible installation of low loss header or plate heat exchanger**

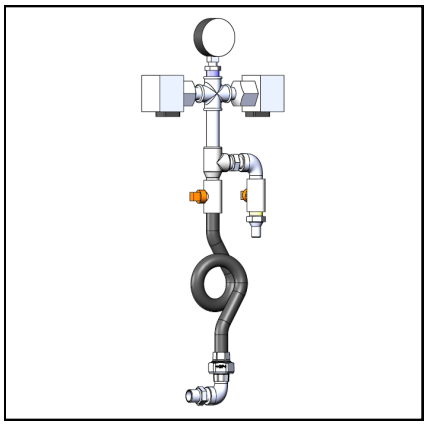



* **V1L** only possible for R601 EVO and R602 EVO

| Dimensions | R600 EVO | | R601 EVO | R602 EVO | R603 EVO | R604 EVO | R605 EVO | R606 EVO | R607 EVO |
|---|---|---|---|---|---|---|---|---|---|
| Boiler | **A** | mm | 466 | 466 | 466 | 746 | 746 | 746 | 746 |
| | **B** | mm | 105 | 105 | 105 | 129 | 129 | 129 | 129 |
| | **L1** | mm | 1165 | 1315 | 1465 | 1152 | 1302 | 1452 | 1602 |
| | **L2** | mm | 184 | 184 | 184 | 196 | 194 | 194 | 163 |
| Low loss header | **L3** | mm | 659 | 659 | 659 | 712 | 712 | 712 | 712 |
| | **L4** | mm | 440 | 440 | 440 | 468 | 468 | 468 | 468 |
| Plate heat exchanger | **L3** | mm | 659 | 659 | 659 | 712 | 712 | 712 | 712 |
| | **L4** | mm | 661 | 723 | 723 | 707/726 | 707/726 | 707/726 | 707/726 |
| 90° bend | **C** | mm | 70 | 70 | 70 | 144 | 144 | 144 | 144 |

# Accessories

## Safety devices



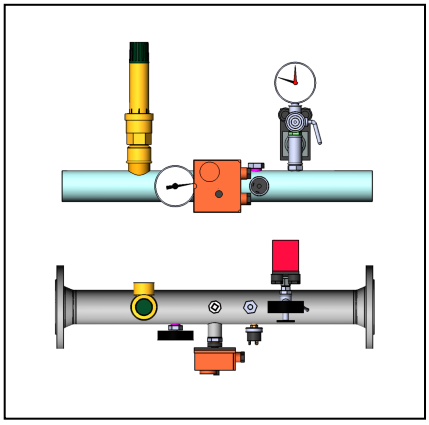
**2x max. Water pressure switch + pressure gauge**
The pre-assembled kit can be connected with a 90° bend to the flow connection of the boiler.

All components are electrically wired, and can be connected directly to the terminals in the boiler. Consult the supplied instructions for more details.

**Max. gas pressure switch**
The kit includes a gas pressure switch, which can be connected directly to the gas line inside the boiler. The gas pressure switch is electrically wired, and can be connected directly to the terminals in the boiler. Consult the wiring diagram for more details.

**External high limit thermostat**
There is a connection point for the high limit thermostat on the boiler flow pipe. The high limit thermostat is electrically wired, and can be connected directly to the terminals in the boiler. Consult the supplied instructions for more details.

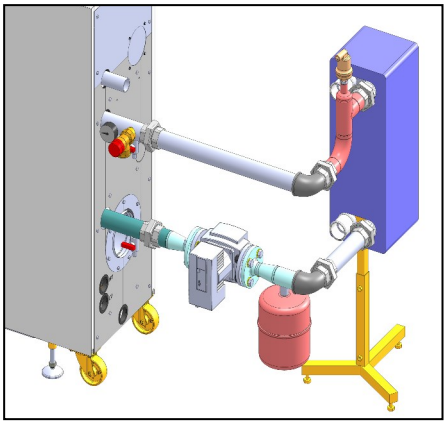
**Gas valve leakage tester**
The kit includes a gas valve leakage tester, which can be connected directly to the gas valve in the boiler. The gas valve leakage tester is electrically wired, and can be connected directly to the terminals in the boiler. Consult the wiring diagram for more details.



**INAIL-Set (Italy only)**
The kit includes a pipe with safety valve, pressure gauge, thermometer, thermostat and pressure switches.
2" (R601-R603 EVO)
DN65 (R604-R607 EVO)

# Accessories

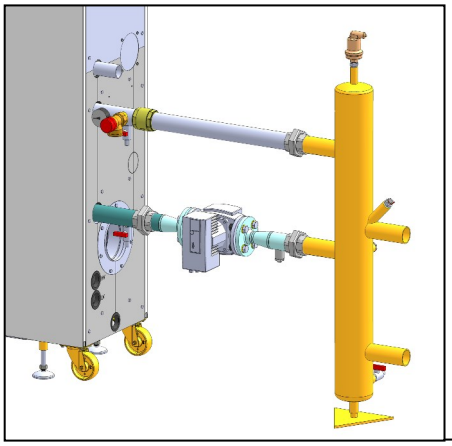
## Hydraulics



| Data secondary circuit PHE | | | | | | |
|---|---|---|---|---|---|---|
| Typ | ΔT=10K | | ΔT=15K | | ΔT=20K | |
| | [m³/h] | [kPa] | [m³/h] | [kPa] | [m³/h] | [kPa] |
| R601 EVO | 12,3 | 28,7 | 8,2 | 13,1 | 6,1 | 7,6 |
| R602 EVO | 16,4 | 27,8 | 10,9 | 12,7 | 8,1 | 7,4 |
| R603 EVO | 20,5 | 42,6 | 13,7 | 19,5 | 10,1 | 11,2 |
| R604 EVO | 24,6 | 18,9 | 16,4 | 27,8 | 12,2 | 15,9 |
| R605 EVO | 32,9 | 21,1 | 21,9 | 15,3 | 16,3 | 27,9 |
| R606 EVO | 41,1 | 31,8 | 27,4 | 15,1 | 20,3 | 13,6 |
| R607 EVO | 46,6 | 40,2 | 31,1 | 19,0 | 23,1 | 17,2 |

**Plate heat exchanger + connection kit**
The kit contains a plate heat exchanger including connection material, automatic de-aerator, expansion vessel and flow pipe.

The following data can be used for the dimensioning of the secondary system.



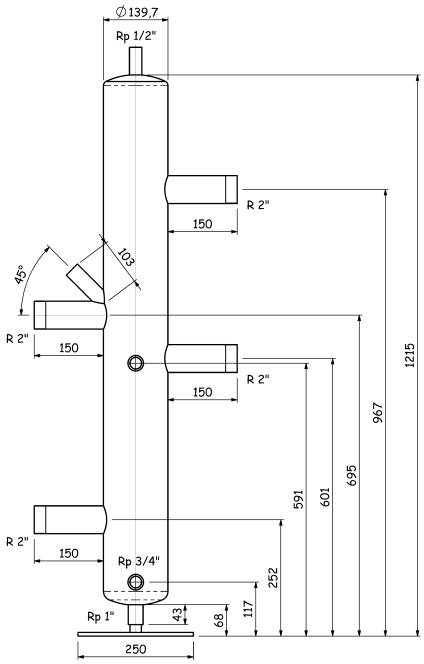
**Low loss header + connection kit**

**Mono header**
The kit contains a low loss header including connection material, automatic de-aerator, plunge (for header sensor) and fill/drain valve on the bottom connection.

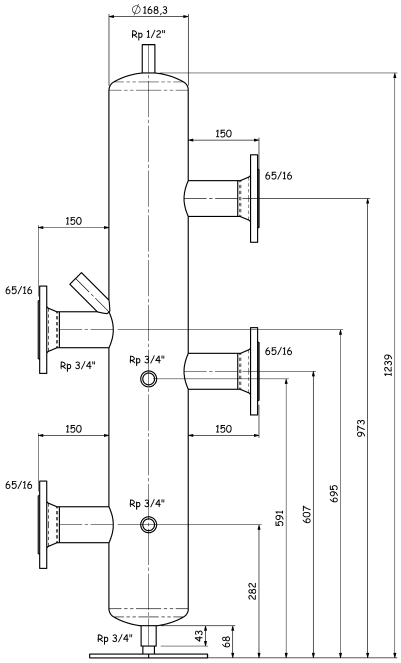
**Duo header**
The kit contains a duo header including automatic de-aerator, plunge (for header sensor) and fill/drain valve on the bottom connection. The duo header kit doesn't contain connection material, because of the wide variation of positioning possibilities. The connections have to be made on site.

Insulation for the mono and duo headers is available as accessory.

**R601-R603 EVO**
**MONO Weiche**
**(DN125)**



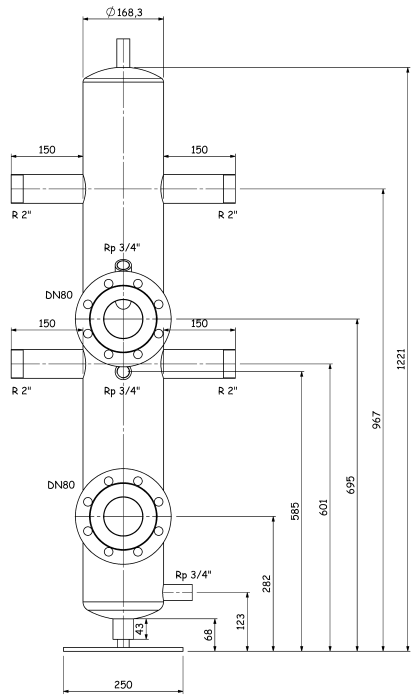

**R604-R607 EVO**
**MONO Weiche**
**(DN150)**



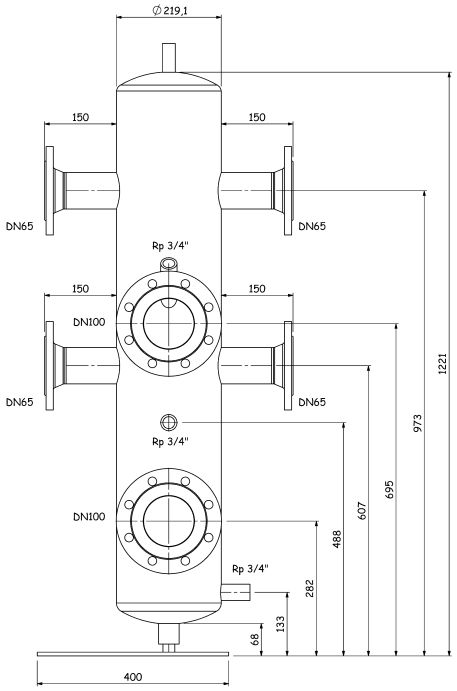
# Accessories

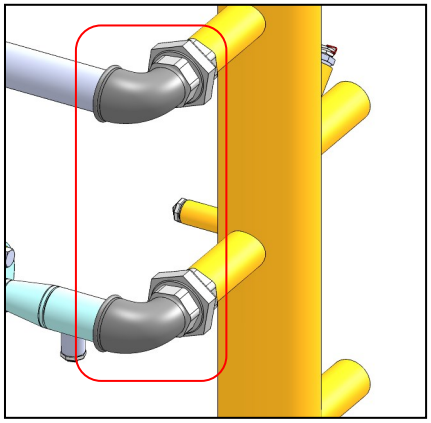
## Hydraulics

**R601-R603 EVO**
**DUO Weiche**
**(DN150)**

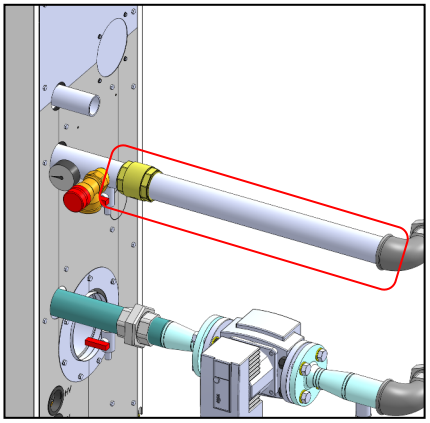



**R604-R607 EVO**
**DUO Weiche**
**(DN200)**

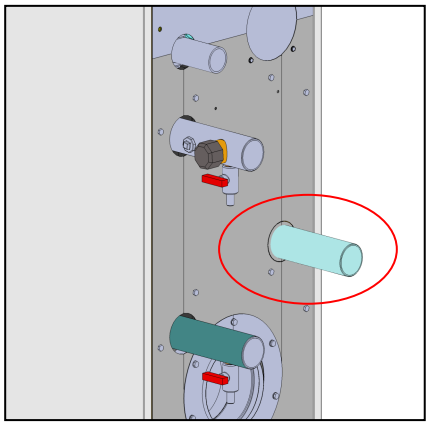


**2x Bends 90°**
The kit contains 2 90° bends to allow a flexible set up.
2" (R601-R603 EVO)
DN65 (R604-R607 EVO)



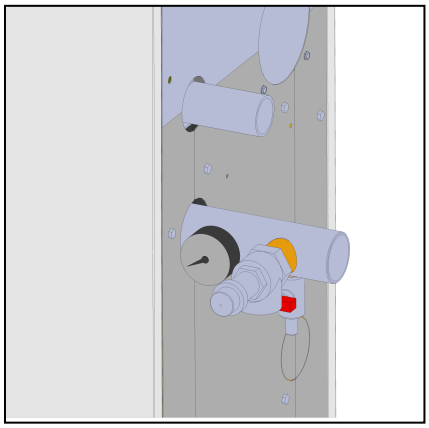
**Flow adapter + NRV**
The kit contains a flow adapter (extension part for the flow pipe) and a non-return valve. The total length is the same as the length of the pump kit.
2" (R601-R603 EVO)
DN65 (R604-R607 EVO)



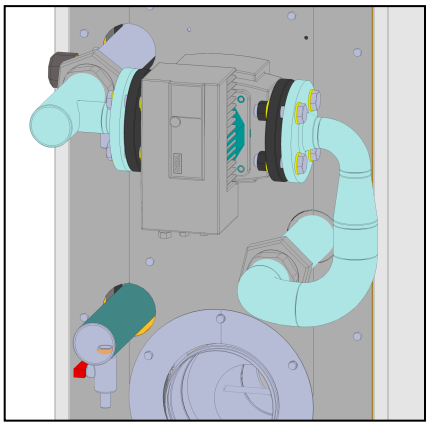
**2nd Return connection**
The kit contains a pipe which can be used as 2nd (hot) return connection on the boiler. See chapter (Hydraulic system) for calculation of the system.

# Accessories

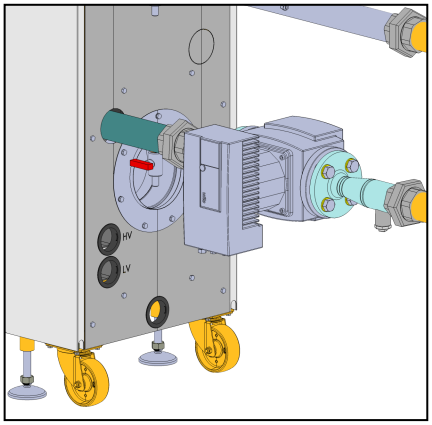
## Hydraulics



**Safety valve (3-6 bar) + pressure gauge**
The kit includes a safety valve (3 or 6 bar) and a pressure gauge.



**Bypass**
The kit includes a bypass pump including connection material. The kit is to be connected between the flow and 2nd return connection of the boiler.
The bypass pump is electrically wired, and can be connected directly to the terminals in the boiler. Consult the supplied instructions for more details.



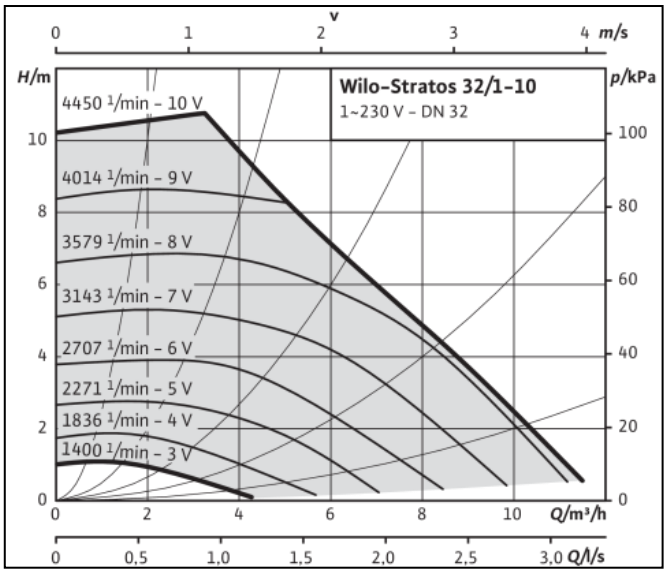

**Speed controlled pump**
The kit includes a speed controlled pump including connection material with connection possibility for an expansion vessel.
The following table shows the hydraulic data of the boiler and the boiler pump.

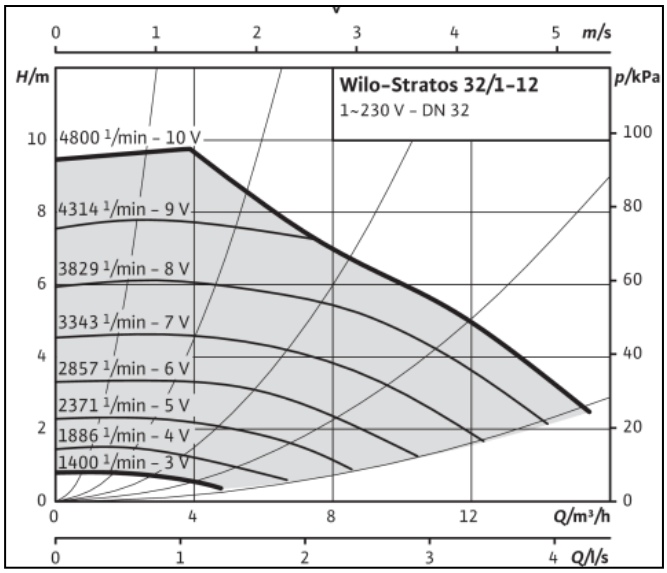
The pump is electrically wired, and can be connected directly to the terminals in the boiler. Consult the supplied instructions for more details.
See next page for the pump curves.

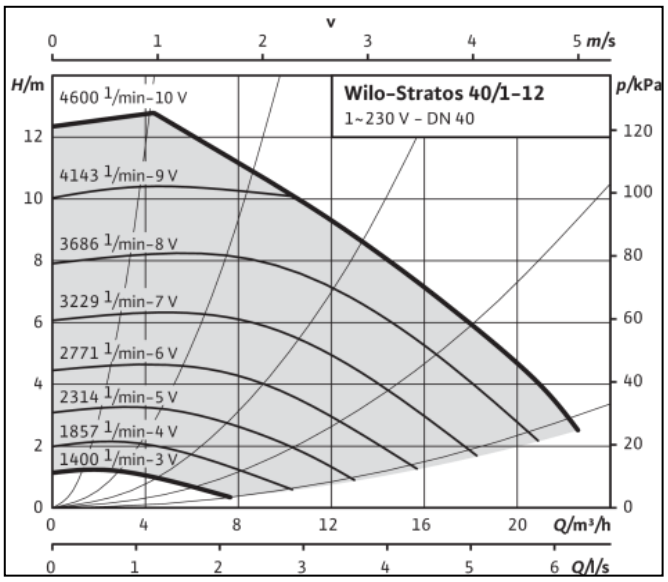
| Boiler type | ΔT 20 K | | Pump data | | | | |
|---|---|---|---|---|---|---|---|
| | Nominal flow rate $Q_{nenn}$ | Boiler resistance | Pump type WILO | Pump head at $Q_{nenn}$ | Available head for system at $Q_{nenn}$ | Voltage | Power consumption max/min |
| | $m^3/h$ | kPa | - | kPa | kPa | V | W |
| R601 EVO | 6,1 | 11,2 | Stratos 32/1-10 | 70 | 58,8 | 230 | 190 |
| R602 EVO | 8,1 | 26,8 | Stratos 32/1-10 | 47 | 10,2 | 230 | 190 |
| R603 EVO | 10,1 | 31,2 | Stratos 32/1-12 | 58 | 26,8 | 230 | 280 |
| R604 EVO | 12,2 | 11,9 | Stratos 40/1-12 | 90 | 78,1 | 230 | 495 |
| R605 EVO | 16,3 | 32,3 | Stratos 40/1-12 | 70 | 37,7 | 230 | 530 |
| R606 EVO | 20,4 | 34,3 | Stratos 50/1-12 | 62 | 27,7 | 230 | 580 |
| R607 EVO | 23,1 | 57,1 | Stratos 65/1-12 | 82 | 24,9 | 230 | 800 |

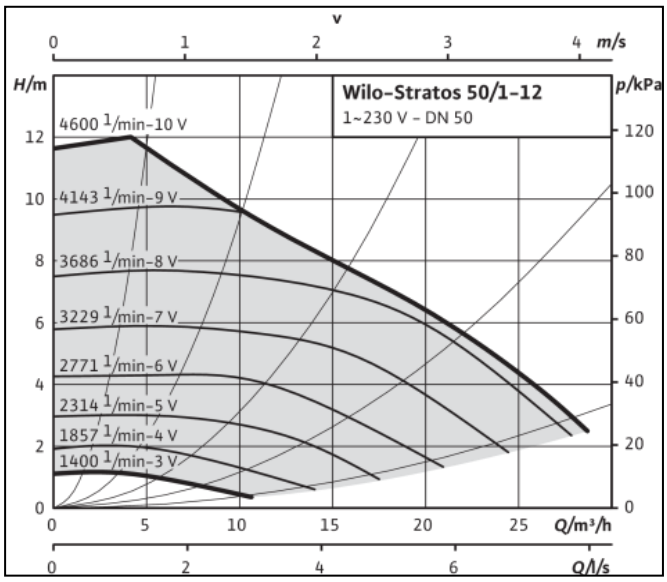
# Accessories

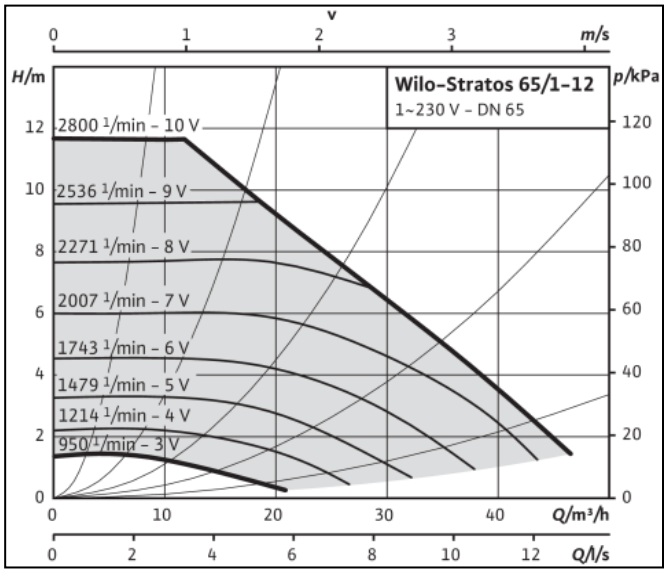
## Hydraulics



# Accessories

## Controls

**Receiver wireless AVS71**
The kit contains an AVS71 wireless receiver. When connected to the boiler, it can transmit data between wireless room units QAA78 and/or wireless outdoor sensors (QAC34 + AVS13).

**Outdoor sensor wireless AVS13**
The kit contains an outdoor sensor QAC34 and a wireless transmitter AVS13. The kit can be used in combination with a wireless receiver AVS71 to enable wireless communication between the outdoor sensor and the boiler.

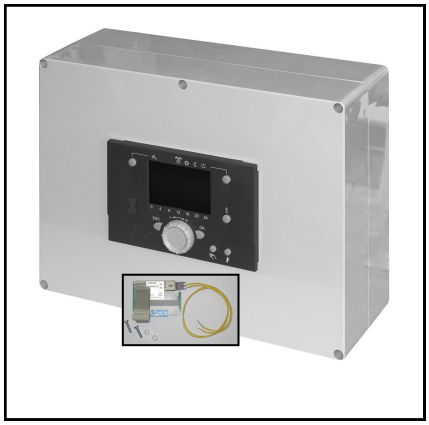
**Room unit QAA75**
The kit contains a QAA75 room unit, which communicates with the boiler via BUS communication. For each heating zone a QAA75 can be connected.

**Room unit QAA78 wireless**
The kit contains a QAA78 wireless room unit, which communicates with the boiler via wireless BUS communication. For each heating zone a QAA78 can be connected.

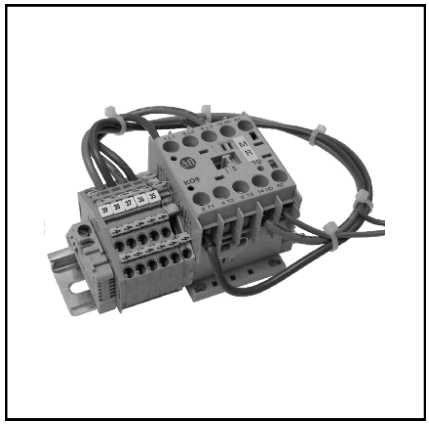
**Attention:** the mounting position should be chosen as such that uninterrrupted transmitting can be
secured. Following information should be noted:
- Not near electrical wiring, strong magnetic fields or devices such as PC's,TV's, microwaves, etc,
- Not near big steel structures or building materials containing wire netting such as safety glass or concrete.
- Distance to receiver not more than 30 m or 2 floors


**Cascade kit MASTER**
The kit includes an OCI345 communication module and header sensor (incl. pocket).

**Cascade kit SLAVE**
The kit includes an OCI345 communication module for the connection of slave boilers.



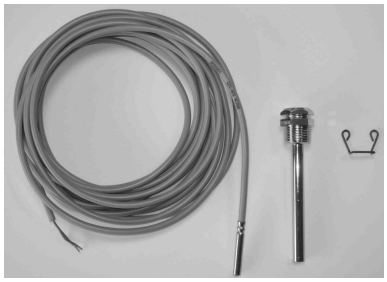
**LOGON B with wall hung box**
For control of additional 2 heating zones it's possible to connect a LOGON B controller with wall hung box.
The LOGON B enables the control of 2 heating zones and the control of a DHW recirculation pump.
The kit includes a LOGON B controller, incl. wall hung box and communication cable.



**Wiring for room fan and external gas valve**
The kit contains a terminal block including wiring.
When using this functionality in combination with an OK/alarm signal, an additional AVS75 extension module is necessary.

# Accessories

## Controls



**Header/hot water sensor QAZ36**
The kit contains a header/hot water sensor QAZ36 with 6m cable and a 1/2" pocket.


**Heating zone sensor QAD36**
The kit contains a clamp sensor QAD36 with 4m cable.

**Outdoor sensor QAC34**
The kit contains an outdoor sensor QAC34.

**Extension module AVS75**
The kit contains an **AVS75** extension module incl. communication cable to the LMS14 boiler management unit. Maximum 3 **AVS75** modules can be connected to one boiler (module 1 and 2 for heating zone control, module 3 for other functions).

**Commercial Gateway**
The kit contains an interface to connect the boiler to a BMS.

There are 4 kits:
- 1 boiler via KNX BACnet Modbus;
- max 4 boilers via KNX BACnet Modbus;
- 1 boiler via LON;
- max 4 boilers via LON.

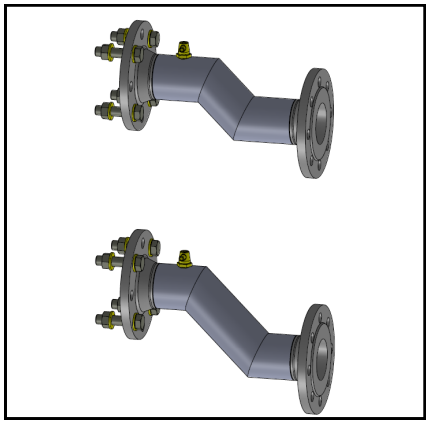
# Accessories

## Other

**Gas filter**
The kit contains a gas filter which can be connected directly to the gas pipe of the boiler.

**Gas pressure regulator 100mbar + connection kit**
The kit contains a gas pressure regulator which can be connected directly to the gas pipe of the boiler.

**Air filter**
The kit contains an air filter which can be connected directly to the air intake connection of the boiler.



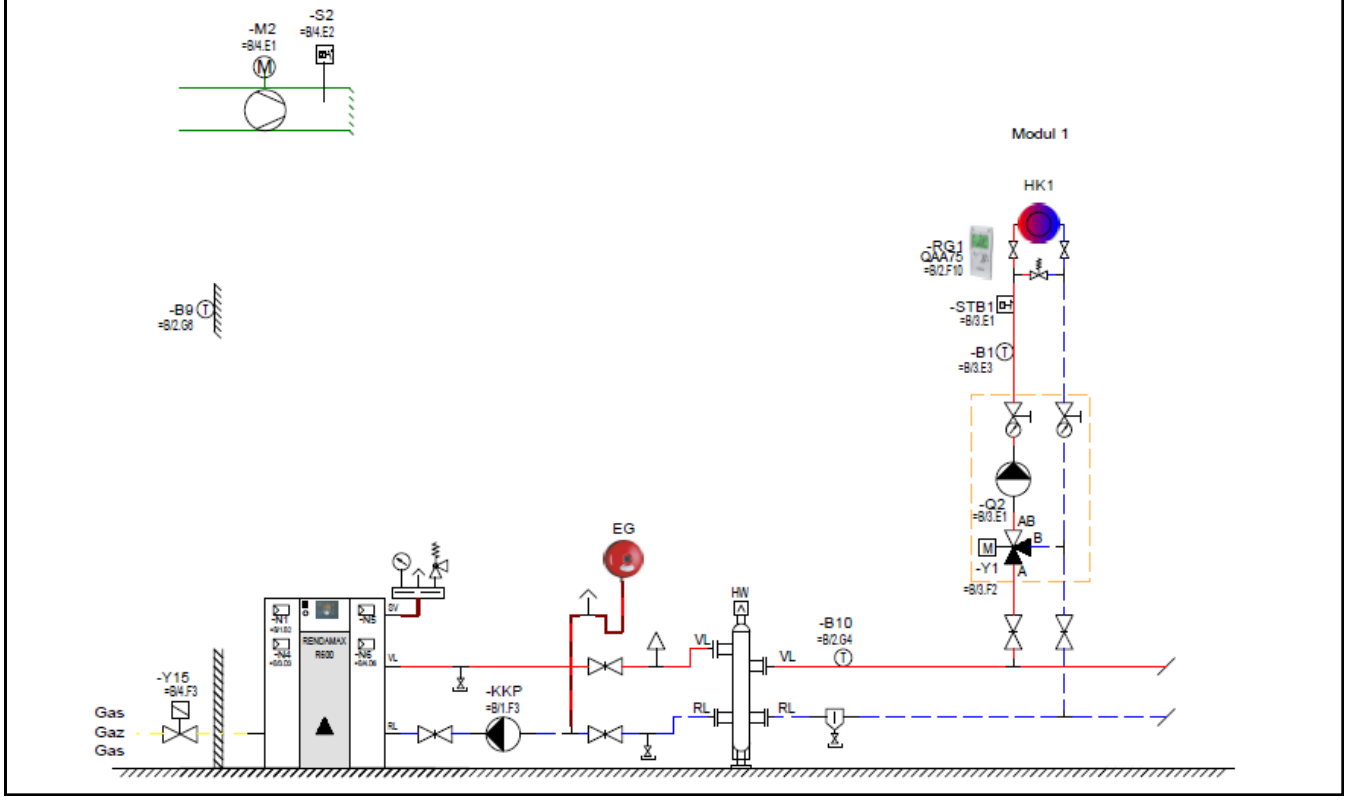
**Adapter Set R600 for R600 EVO**
The kit contains 2 adapter pieces which allow for a replacement of R600 by R600 EVO without modifying the hydraulic connections.
2" (R601-R603 EVO)
DN65 (R604-R607 EVO)

**Disassembly Set**
The kit contains all gaskets which have to be replaced when dis– and reassembling a boiler.

# Installation examples

## 2-A-C: 1 heating zone + low loss header

**2-A-C: 1 heating zone + low loss header**




**Description**

- R600 EVO with low loss header
- Weather compensated control
- 1 mixed heating zone

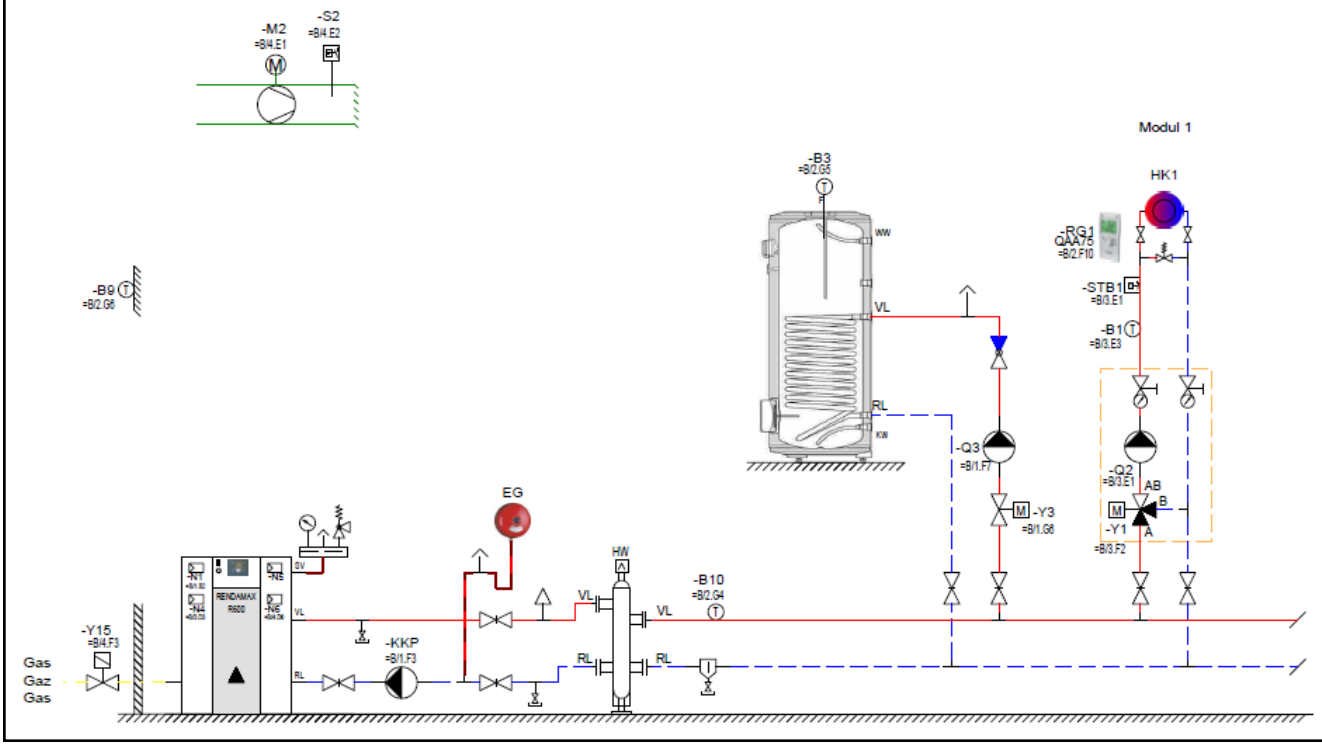
**Tips**

- Complete accessory kits with low loss header are available for ΔT=10-20K (see chapter „Accessories“).
- The primary circuit should be designed for ΔT=20K, this guarantees a high boiler efficiency.
- When the secondary circuit is designed for a ΔT smaller than 20K, the flow temperature in the header will be lower than the flow temperature of the boiler. This should be taken into consideration during the design stage.
- The header should be positioned close to the boiler, to avoid a negative influence on the temperature control quality.
- In case of a boiler room installed on the roof, the boiler may never be hydraulically connected at the highest point of the installation.

# Installation examples

## 2-5-A-C: 1 heating zone and sanitary hot water + low loss header

**2-5-A-C: 1 heating zone and sanitary hot water + low loss header**




**Description**

- R600 EVO with low loss header
- Weather compensated control
- 1 mixed heating zone
- Sanitary hot water

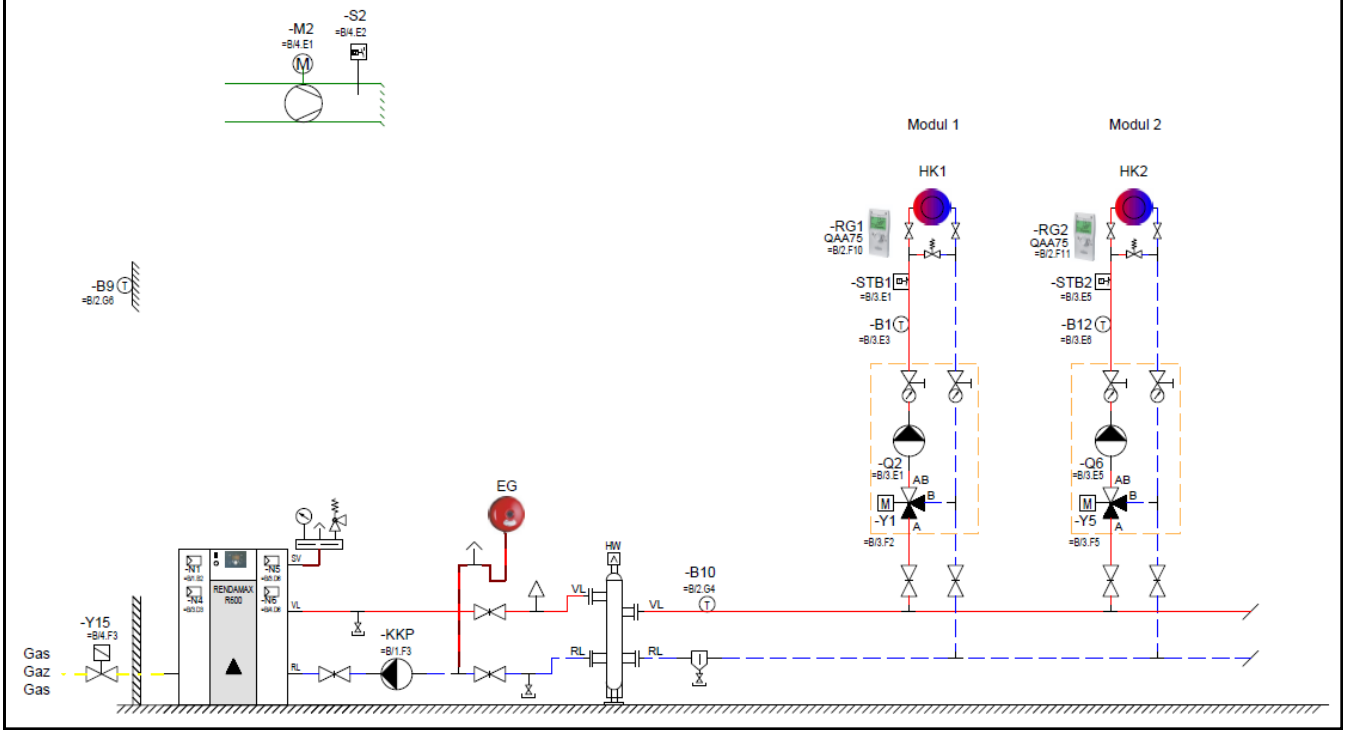
**Tips**

- Complete accessory kits with low loss header are available for ΔT=10-20K (see chapter „Accessories“).
- The primary circuit should be designed for ΔT=20K, this guarantees a high boiler efficiency.
- When the secondary circuit is designed for a ΔT smaller than 20K, the flow temperature in the header will be lower than the flow temperature of the boiler. This should be taken into consideration during the design stage.
- The header should be positioned close to the boiler, to avoid a negative influence on the temperature control quality.
- In case of a boiler room installed on the roof, the boiler may never be hydraulically connected at the highest point of the installation.

# Installation examples

## 4-A-C: 2 heating zones + low loss header

**4-A-C: 2 heating zones + low loss header**




**Description**

- R600 EVO with low loss header
- Weather compensated control
- 2 mixed heating zones

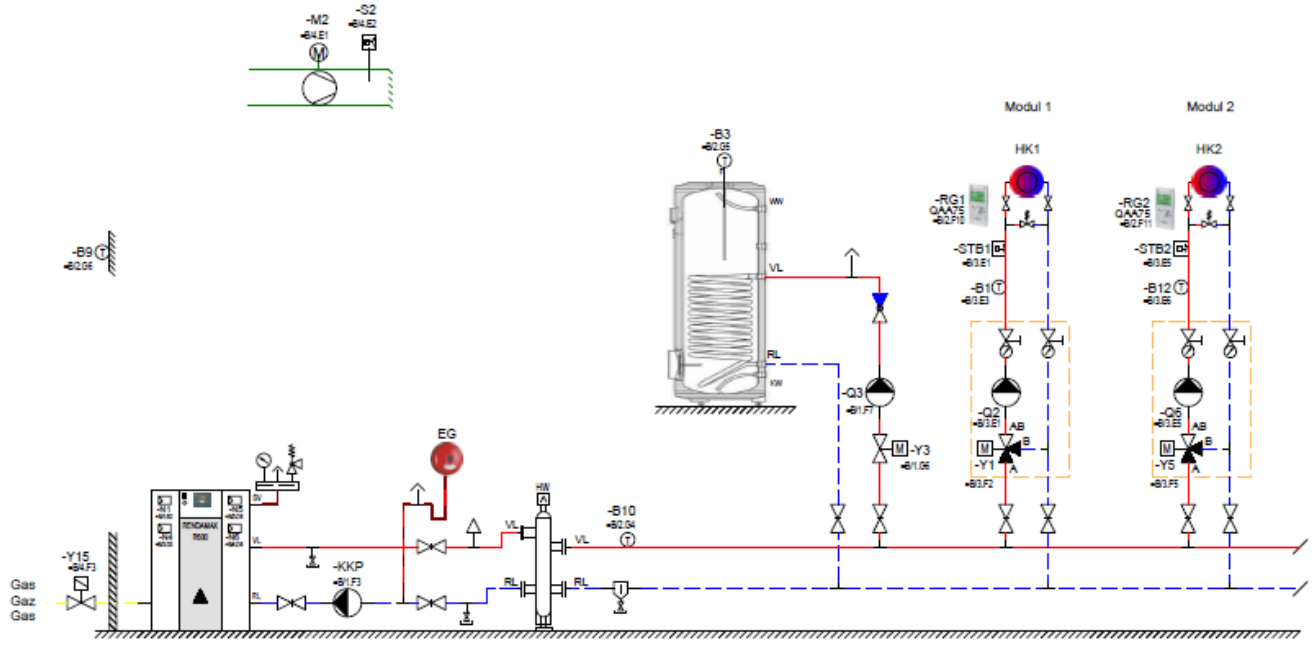
**Tips**

- Complete accessory kits with low loss header are available for ΔT=10-20K (see chapter „Accessories“).
- The primary circuit should be designed for ΔT=20K, this guarantees a high boiler efficiency.
- When the secondary circuit is designed for a ΔT smaller than 20K, the flow temperature in the header will be lower than the flow temperature of the boiler. This should be taken into consideration during the design stage.
- The header should be positioned close to the boiler, to avoid a negative influence on the temperature control quality.
- In case of a boiler room installed on the roof, the boiler may never be hydraulically connected at the highest point of the installation.

# Installation examples

## 4-5-A-C: 2 heating zones and sanitary hot water + low loss header

**4-5-A-C: 2 heating zones and sanitary hot water + low loss header**




**Description**

- R600 EVO with low loss header
- Weather compensated control
- 2 mixed heating zones
- Sanitary hot water

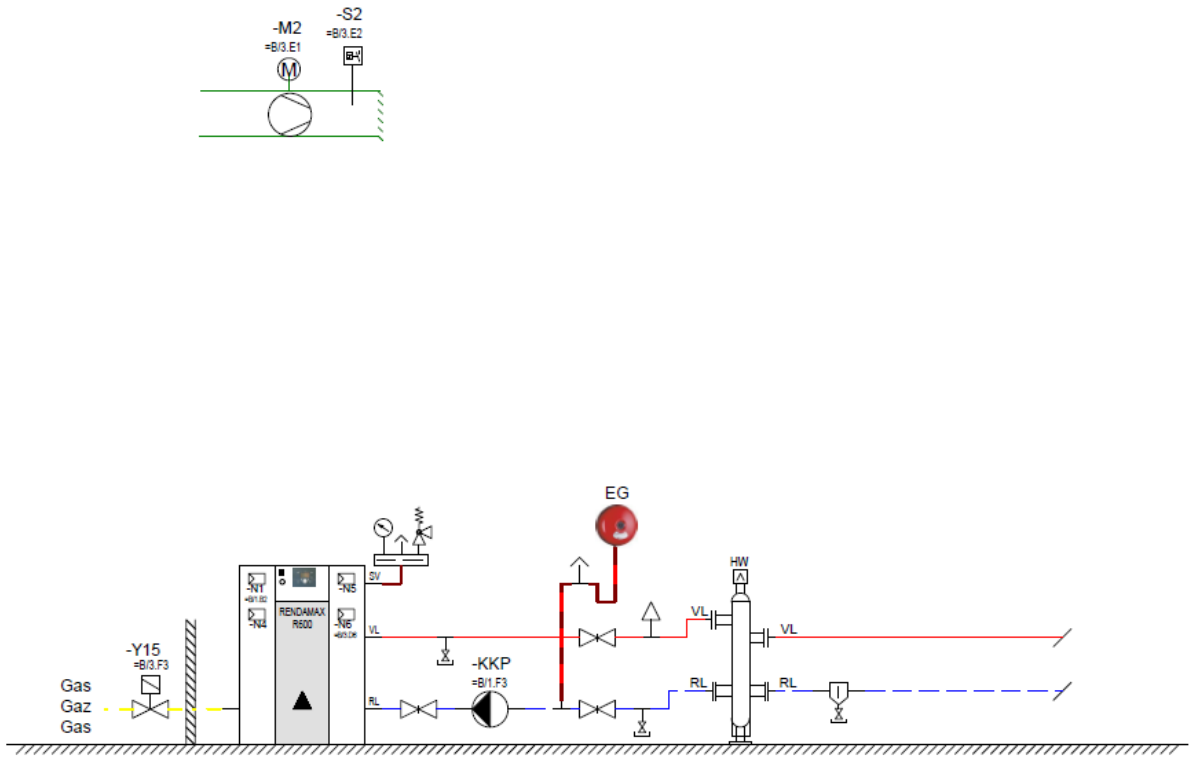
**Tips**

- Complete accessory kits with low loss header are available for ΔT=10-20K (see chapter „Accessories“).
- The primary circuit should be designed for ΔT=20K, this guarantees a high boiler efficiency.
- When the secondary circuit is designed for a ΔT smaller than 20K, the flow temperature in the header will be lower than the flow temperature of the boiler. This should be taken into consideration during the design stage.
- The header should be positioned close to the boiler, to avoid a negative influence on the temperature control quality.
- In case of a boiler room installed on the roof, the boiler may never be hydraulically connected at the highest point of the installation.

# Installation examples

## A-C: Boiler control via 0-10VDC + low loss header

**A-C: Boiler control via 0-10VDC + low loss header**




**Description**

- R600 EVO with low loss header

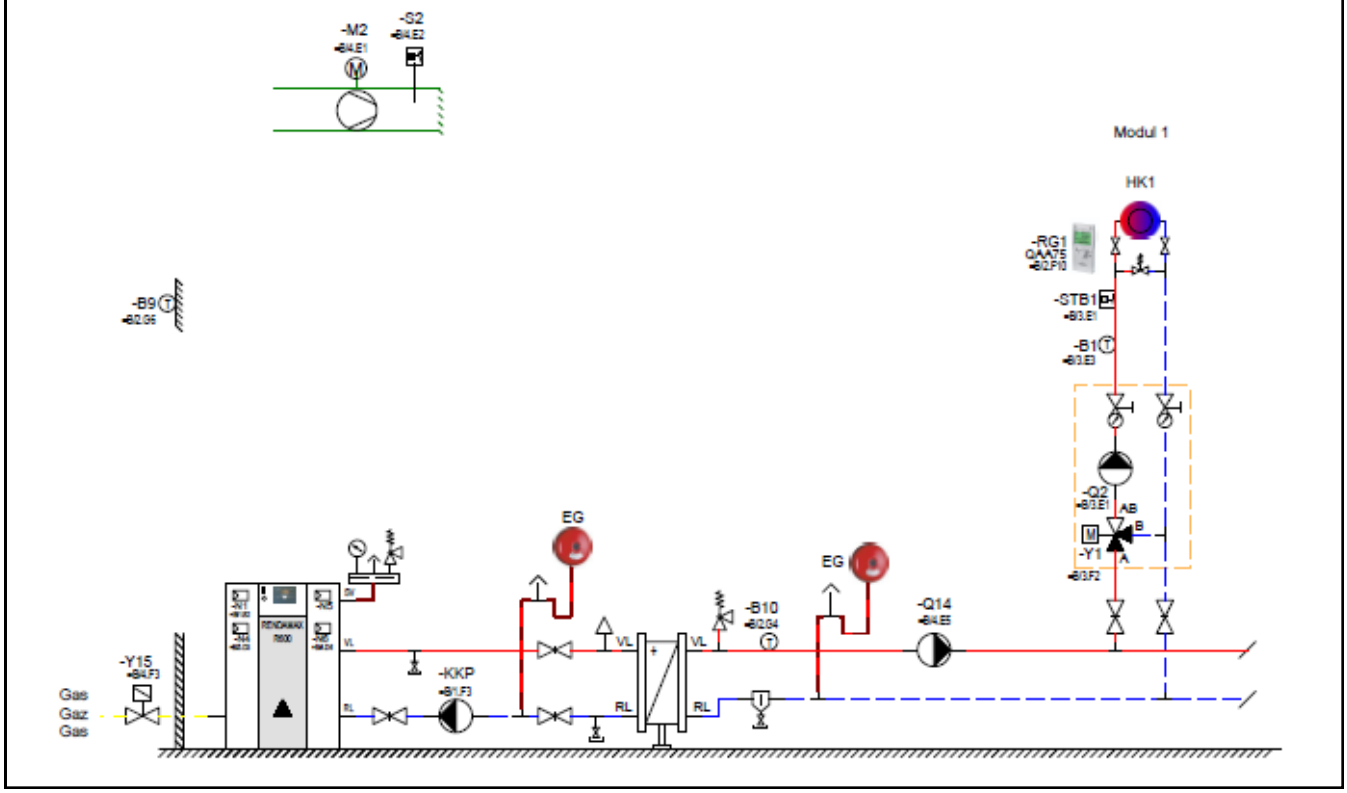
**Tips**

- Complete accessory kits with low loss header are available for ΔT=10-20K (see chapter „Accessories“).
- The primary circuit should be designed for ΔT=20K, this guarantees a high boiler efficiency.
- When the secondary circuit is designed for a ΔT smaller than 20K, the flow temperature in the header will be lower than the flow temperature of the boiler. This should be taken into consideration during the design stage.
- The header should be positioned close to the boiler, to avoid a negative influence on the temperature control quality.
- In case of a boiler room installed on the roof, the boiler may never be hydraulically connected at the highest point of the installation.

# Installation examples

## 2-B-C: 1 heating zone + plate heat exchanger

**2-B-C: 1 heating zone + plate heat exchanger**




**Description**

- R600 EVO with plate heat exchanger
- Weather compensated control
- 1 mixed heating zone

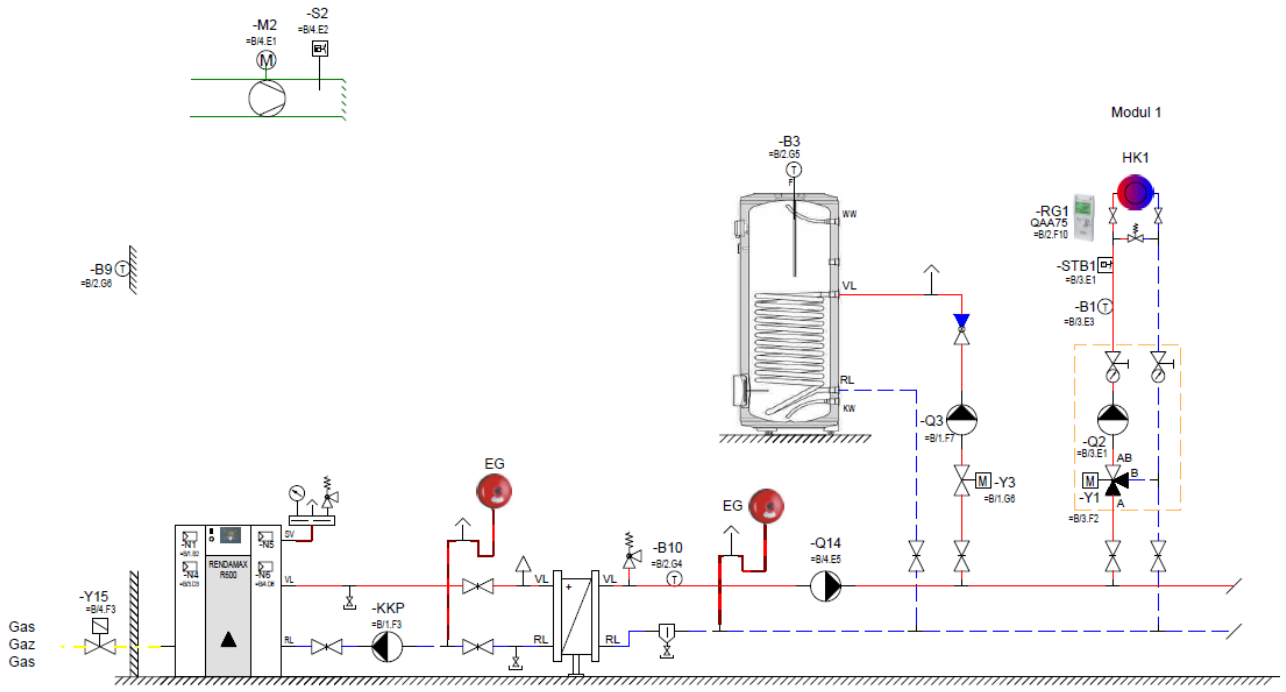
**Tips**

- Complete accessory kits with plate heat exchanger are available for ΔT=10-20K (see chapter „Accessories“).
- The primary circuit should be designed for ΔT=20K, this guarantees a high boiler efficiency.
- When the secondary circuit is designed for a ΔT smaller than 20K, the flow temperature of the plate heat exchanger will be lower than the flow temperature of the boiler. This should be taken into consideration during the design stage.
- The plate heat exchanger should be positioned close to the boiler, to avoid a negative influence on the temperature control quality.
- In case of a boiler room installed on the roof, the boiler may never be hydraulically connected at the highest point of the installation.

# Installation examples

## 2-5-B-C: 2 heating zones and sanitary hot water + plate heat exchanger

**2-5-B-C: 2 heating zones and sanitary hot water + plate heat exchanger**




**Description**

- R600 EVO with plate heat exchanger
- Weather compensated control
- 1 mixed heating zone
- Sanitary hot water

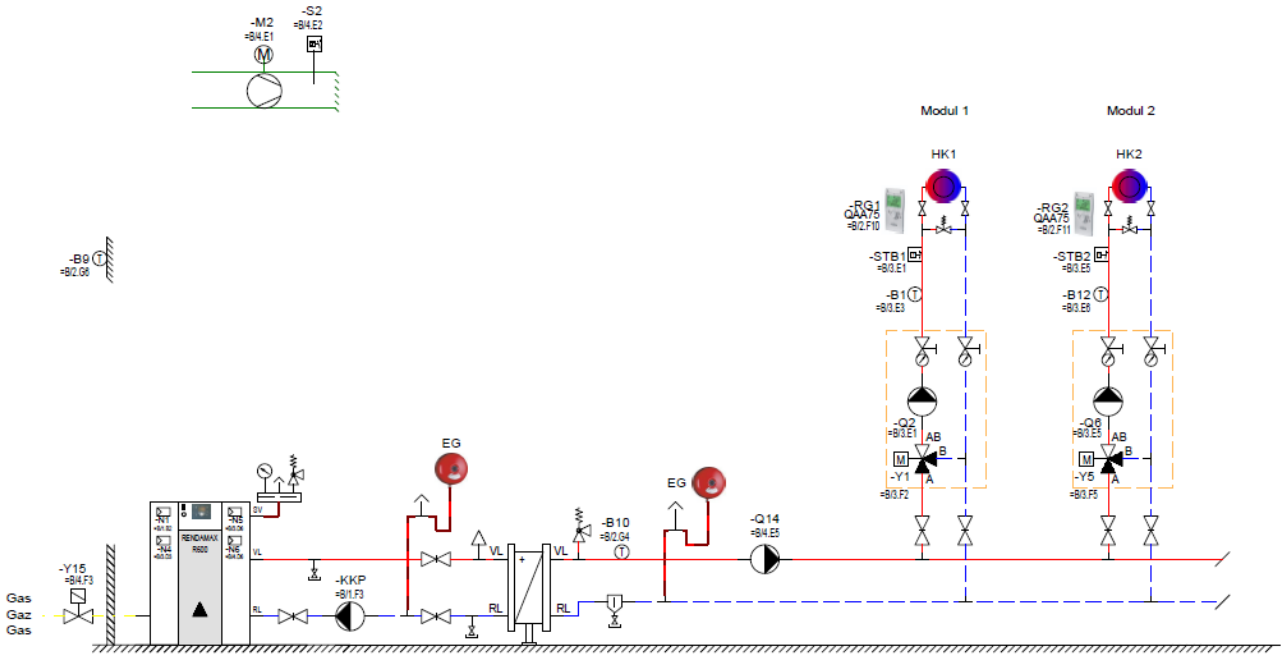
**Tips**

- Complete accessory kits with plate heat exchanger are available for ΔT=10-20K (see chapter „Accessories“).
- The primary circuit should be designed for ΔT=20K, this guarantees a high boiler efficiency.
- When the secondary circuit is designed for a ΔT smaller than 20K, the flow temperature of the plate heat exchanger will be lower than the flow temperature of the boiler. This should be taken into consideration during the design stage.
- The plate heat exchanger should be positioned close to the boiler, to avoid a negative influence on the temperature control quality.
- In case of a boiler room installed on the roof, the boiler may never be hydraulically connected at the highest point of the installation.

# Installation examples

## 4-B-C: 2 heating zones + plate heat exchanger

**4-B-C: 2 heating zones + plate heat exchanger**




**Description**

- R600 EVO with plate heat exchanger
- Weather compensated control
- 2 mixed heating zones

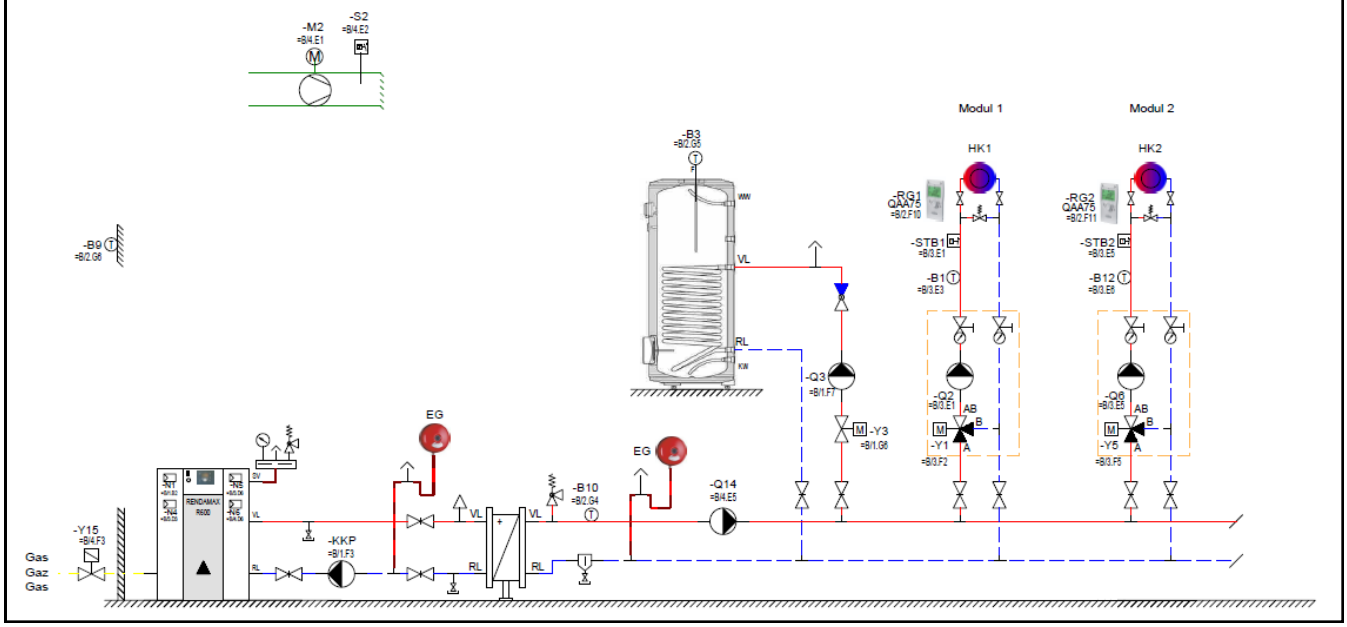
**Tips**

- Complete accessory kits with plate heat exchanger are available for ΔT=10-20K (see chapter „Accessories“).
- The primary circuit should be designed for ΔT=20K, this guarantees a high boiler efficiency.
- When the secondary circuit is designed for a ΔT smaller than 20K, the flow temperature of the plate heat exchanger will be lower than the flow temperature of the boiler. This should be taken into consideration during the design stage.
- The plate heat exchanger should be positioned close to the boiler, to avoid a negative influence on the temperature control quality.
- In case of a boiler room installed on the roof, the boiler may never be hydraulically connected at the highest point of the installation.

# Installation examples

## 4-5-B-C: 2 heating zones and sanitary hot water + plate heat exchanger

**4-5-B-C: 2 heating zones and sanitary hot water + plate heat exchanger**




**Description**

- R600 EVO with plate heat exchanger
- Weather compensated control
- 2 mixed heating zones
- Sanitary hot water

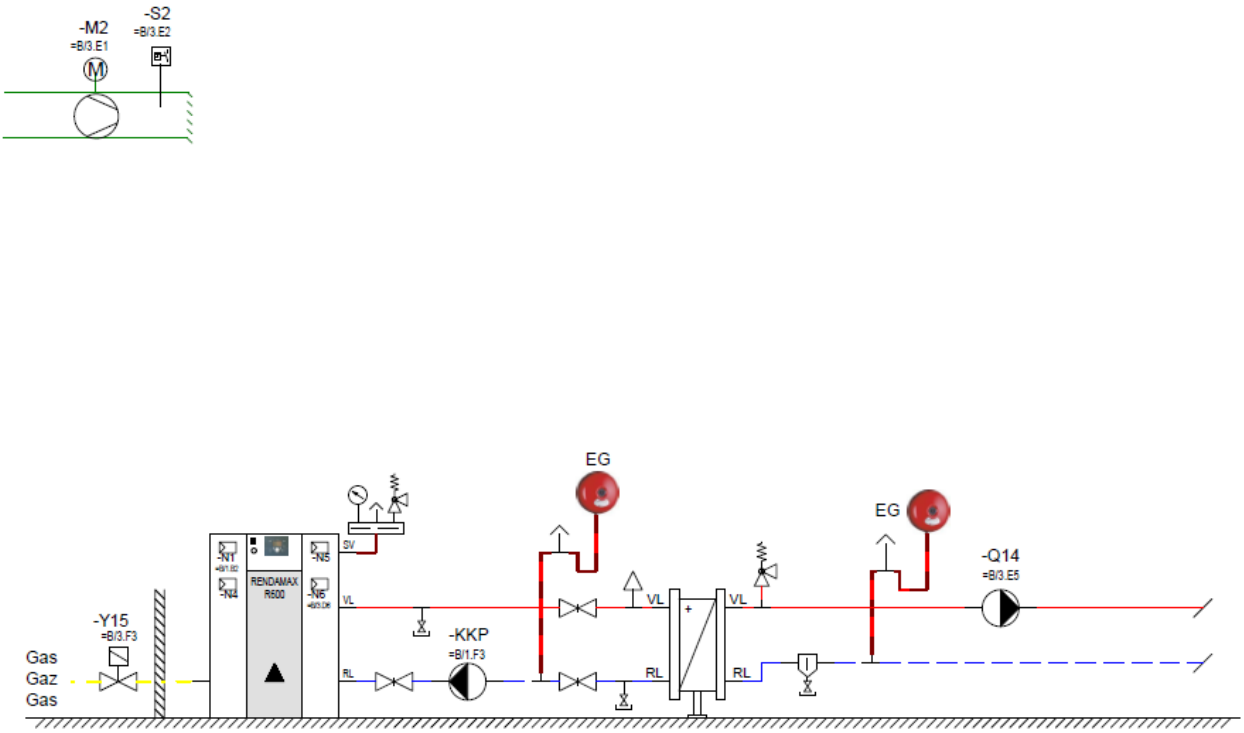
**Tips**

- Complete accessory kits with plate heat exchanger are available for ΔT=10-20K (see chapter „Accessories“).
- The primary circuit should be designed for ΔT=20K, this guarantees a high boiler efficiency.
- When the secondary circuit is designed for a ΔT smaller than 20K, the flow temperature of the plate heat exchanger will be lower than the flow temperature of the boiler. This should be taken into consideration during the design stage.
- The plate heat exchanger should be positioned close to the boiler, to avoid a negative influence on the temperature control quality.
- In case of a boiler room installed on the roof, the boiler may never be hydraulically connected at the highest point of the installation.

# Installation examples

## B-C: Boiler control via 0-10VDC + plate heat exchanger

**B-C: Boiler control via 0-10VDC + plate heat exchanger**




**Description**

- R600 EVO with plate heat exchanger

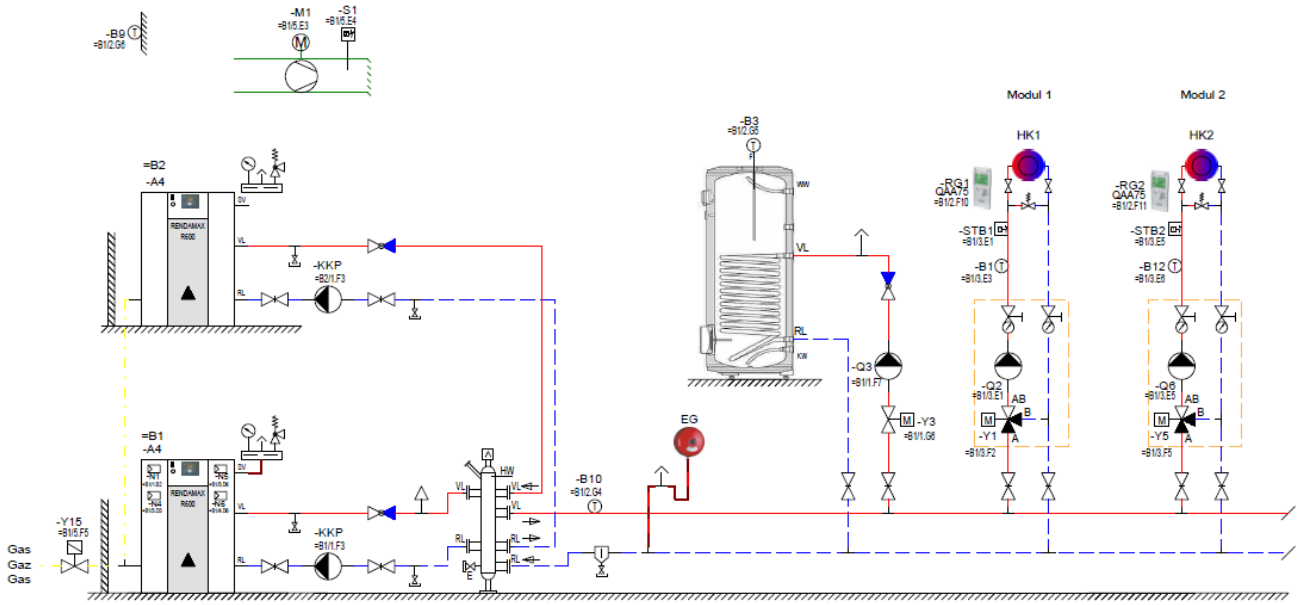
**Tips**

- Complete accessory kits with plate heat exchanger are available for ΔT=10-20K (see chapter „Accessories“).
- The primary circuit should be designed for ΔT=20K, this guarantees a high boiler efficiency.
- When the secondary circuit is designed for a ΔT smaller than 20K, the flow temperature of the plate heat exchanger will be lower than the flow temperature of the boiler. This should be taken into consideration during the design stage.
- The plate heat exchanger should be positioned close to the boiler, to avoid a negative influence on the temperature control quality.
- In case of a boiler room installed on the roof, the boiler may never be hydraulically connected at the highest point of the installation.

# Installation examples

## 4-5-A-C-E: 2 heating zones and sanitary hot water + cascade via low loss header

**4-5-A-C-E: 2 heating zones and sanitary hot water + cascade via low loss header**




**Description**

- 2x R600 EVO with low loss header
- Cascade control + weather compensation
- 2 mixed heating zones
- Sanitary hot water

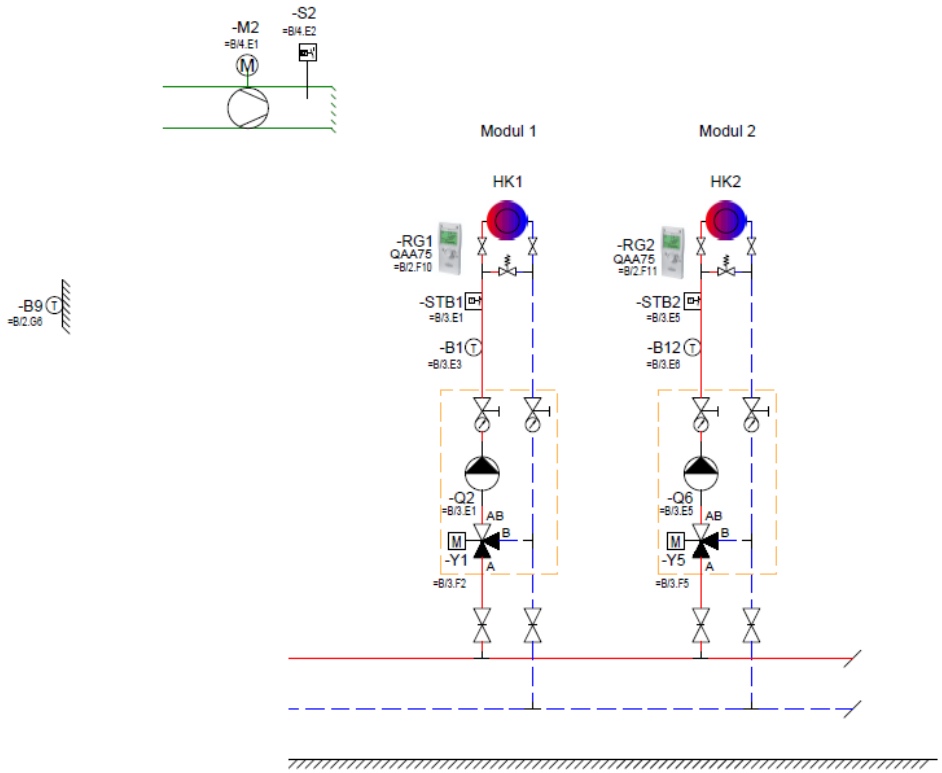
**Tips**

- Low loss duo headers are available for ΔT=15-20K (see chapter „Accessories“).
- The primary circuit should be designed for ΔT=20K, this guarantees a high boiler efficiency.
- When the secondary circuit is designed for a ΔT smaller than 20K, the flow temperature in the header will be lower than the flow temperature of the boiler. This should be taken into consideration during the design stage.
- The header should be positioned close to the boiler, to avoid a negative influence on the temperature control quality.
- In case of a boiler room installed on the roof, the boiler may never be hydraulically connected at the highest point of the installation.

# Installation examples

## Extension 2 heating zones

**Extension 2 heating zones**




**Description**

- Weather compensated controller with wall hung box LOGON B
- Extension of 2 heating zones

**Tips**

- The extension controller should always be used in combination with the integrated boiler controller LMS14
- With the extension controller 2 additional heating zones can be controlled.
- The heating zone control can be extended up to 15 heating zones.

# Technical Data

## Country specific

**Germany/Austria/Switzerland: EnEV (Anlagenaufwandzahl, DIN V4701-10)**

| | | R601 EVO | R602 EVO | R603 EVO | R604 EVO | R605 EVO | R606 EVO | R607 EVO | 115 EVO | 350 EVO |
|---|---|---|---|---|---|---|---|---|---|---|
| Nominal heat output at 80/60°C | kW | 142,3 | 190,4 | 237,6 | 285,7 | 381,3 | 476,7 | 540,2 | 113,7 | 343,0 |
| Nominal heat output at 40/30°C | kW | 151,2 | 202,3 | 252,3 | 303,3 | 404,3 | 505,2 | 572,8 | 120,8 | 363,6 |
| Efficiency at 80/60°C full load | % | 98,2 | 98,2 | 98,2 | 98,2 | 98,3 | 98,3 | 98,2 | 98,2 | 98,3 |
| Efficiency at 36/30°C 30% load | % | 109,1 | 109,1 | 109,2 | 109,2 | 109,2 | 109,3 | 109,4 | 109,1 | 109,2 |
| Flue gas temperature at 36/30°C 30% | °C | 31 | 31 | 31 | 31 | 31 | 31 | 30 | 31 | 31 |
| Standstill losses ($T_{water}$ = 70°C) | % | 0,006 | 0,004 | 0,003 | 0,003 | 0,002 | 0,002 | 0,001 | 0,005 | 0,004 |
| Support energy | W | 366 | 457 | 566 | 725 | 1034 | 1200 | 1476 | 366 | 1094 |

**Italy: Legge 10**

| | | R601 EVO | R602 EVO | R603 EVO | R604 EVO | R605 EVO | R606 EVO | R607 EVO | 115 EVO | 350 EVO |
|---|---|---|---|---|---|---|---|---|---|---|
| Combustion efficiency (indirect) at 80/60°C full load (burner on) | % | 97,4 | 97,4 | 97,4 | 97,4 | 97,4 | 97,4 | 97,4 | 97,4 | 97,4 |
| Combustion efficiency (indirect) at 80/60°C min load (burner on) | % | 98,1 | 98,1 | 98,1 | 98,1 | 98,1 | 98,1 | 98,1 | 98,1 | 98,1 |
| Combustion efficiency (indirect) at 40/30°C full load (burner on) | % | 98,4 | 98,4 | 98,4 | 98,4 | 98,3 | 98,3 | 98,3 | 98,4 | 98,3 |
| Combustion efficiency (indirect) at 40/30°C min load (burner on) | % | 99,5 | 99,5 | 99,5 | 99,5 | 99,5 | 99,5 | 99,5 | 99,5 | 99,5 |
| Combustion efficiency (direct) at 80/60°C full load | % | 98,2 | 98,2 | 98,2 | 98,2 | 98,3 | 98,3 | 98,2 | 98,2 | 98,3 |
| Combustion efficiency (direct) at 80/60°C 30% load | % | 97,4 | 97,4 | 97,1 | 97,1 | 96,9 | 97,5 | 98,2 | 97,4 | 96,9 |
| Combustion efficiency (direct) at 40/30°C full load | % | 104,3 | 104,3 | 104,2 | 104,2 | 104,2 | 104,2 | 104,2 | 104,3 | 104,2 |
| Combustion efficiency (direct) at 40/30°C 30% load | % | 110,0 | 110,0 | 110,3 | 110,3 | 110,3 | 110,3 | 110,5 | 110,0 | 110,3 |
| Thermal losses at chimney, at 80/60°C full load (burner on) | % | 2,6 | 2,6 | 2,6 | 2,6 | 2,6 | 2,6 | 2,6 | 2,6 | 2,6 |
| Thermal losses at chimney, at 80/60°C min load (burner on) | % | 1,9 | 1,9 | 1,9 | 1,9 | 1,9 | 1,9 | 1,9 | 1,9 | 1,9 |
| Thermal losses at chimney, at 40/30°C full load (burner on) | % | 1,6 | 1,6 | 1,6 | 1,6 | 1,7 | 1,7 | 1,7 | 1,6 | 1,7 |
| Thermal losses at chimney, at 40/30°C min load (burner on) | % | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 |
| Thermal losses at chimney (burner off) | % | <0,10 | <0,10 | <0,10 | <0,10 | <0,10 | <0,10 | <0,10 | <0,10 | <0,10 |
| Loss on surface (casing) | % | 0,006 | 0,004 | 0,003 | 0,003 | 0,002 | 0,002 | 0,001 | 0,005 | 0,004 |
| Nett flue gas temperature at 80/60°C full load | °C | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 56,0 | 55,0 | 55,0 |
| $CO_2$ level gas G20/G25 max | % | 10,2 | 10,2 | 10,2 | 10,2 | 10,2 | 10,2 | 10,2 | 10,2 | 10,2 |

# Technical Data

## Country specific

**RT2012 (France only)**

| | | R601 EVO | R602 EVO | R603 EVO | R604 EVO | R605 EVO | R606 EVO | R607 EVO | 115 | 350 |
|---|---|---|---|---|---|---|---|---|---|---|
| Nominal heat output at 80-60ºC | kW | 142,3 | 190,4 | 237,6 | 285,7 | 381,3 | 476,7 | 540,2 | 113,7 | 343,0 |
| Minimal heat output at 80-60ºC | kW | 31,3 | 42,0 | 47,0 | 56,5 | 75,2 | 94,6 | 120,0 | 31,3 | 75,2 |
| Efficiency at 80/60ºC full load | % | 98,2 | 98,2 | 98,2 | 98,2 | 98,3 | 98,3 | 98,2 | 98,2 | 98,3 |
| Efficiency at 36/30ºC 30% load | % | 109,1 | 109,1 | 109,2 | 109,2 | 109,2 | 109,3 | 109,4 | 109,1 | 109,2 |
| Standstill losses (dT=30K ; $T_{water}$ = 50ºC; $T_{amb}$= 20ºC) | W | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| Loss on surface (casing) | % | 0,006 | 0,004 | 0,003 | 0,003 | 0,002 | 0,002 | 0,001 | 0,005 | 0,004 |
| Power consumption boiler max (excl. pump) | W | 176,0 | 267,0 | 286,0 | 230,0 | 504,0 | 620,0 | 676,0 | 176,0 | 504,0 |
| Power consumption boiler min (excl. pump) | W | 48,0 | 48,0 | 53,0 | 50,0 | 54,0 | 64,0 | 61,0 | 48,0 | 54,0 |
| Power consumption boiler at standstill (no load) | W | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| Power consumption max pump | W | 190 | 190 | 280 | 495 | 530 | 580 | 800 | 190 | 590 |
| Operating temperature boiler max | °C | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Operating temperature boiler min | °C | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Nominal water flow at dT=20K | $m^3/h$ | 6,1 | 8,1 | 10,1 | 12,2 | 16,3 | 20,3 | 23,1 | 4,8 | 14,6 |

# Norms

**Germany:**
- DIN EN 483
- DIN EN 677
- DIN EN 13384-1
- DIN EN 13384-2
- DIN EN 12828
- DIN 18160-1
- DIN 18160-5
- DIN VDE 0100
- DIN VDE 0116
- DVGW-Arbeitsblatt G260/1-2
- Feuerungsverordnung (FeuVO) des jeweiligen Bundeslandes
- Landesbauverordnung (LBO)
- Muster-Feuerungsverordnung (MuFeuVO)
- Technische Regeln für Gas-Installationen DVGW-TRGI 86/96
- VDI2035

**Netherlands:**
- NEN 2757-2 (2011)
- NEN 3028 (2006)
- NEN 1010
- Bouwbesluit (2012)
- SCIOS (Scope 1)

**France:**
- EN 12098-1 : regulation system optimiser

**UK:**
- Gas Safety Installation & Use Regulations.
- BS 5440-1:2008
- BS 5440-2:2009
- BS 6644:2011 Inc corrigendum No1

**Austria:**
- ÖNORM H 5152: Brennwert-Feuerungsanlagen, Planungshilfen
- ÖNORM M 7443: Gasgeräte mit atm.Brenner Teil 1, 3, 5, 7
- ÖNORM M7457: Gasgeräte mit mechanisch unterstütztem Vormischbrenner
- ÖNORM M 5195-1: Heizwassernorm

ÖVGW Richtlinien:
- G1 Techn. Richtlinie für die Errichtung von Niederdruck-Gasanlagen
- G2 Techn. Richtlinie für die Errichtung von Flüssiggasanlagen
- G41 Gasbrennwert-Feuerungsstätten, Aufstellung und Anschluss
- G4 Heizraumrichtlinie

Der R600 EVO ist zugelassen nach Artikel 15a B-VG und gemäß Feuerungsanlagenverordnung VO (FAV 97)
Die örtlichen Bauordnungen sind zu beachten.

**Switzerland:**
- PROCAL
- SVGW – Gasleitsätze G1/G2
- EKAS – Form, 1942
- BAFU
- VKF
- Wasserbehandlung laut Richtlinie SWKI Nr. 97-1

**Italy:**
Sicurezza degli impianti
- Legge 5 marzo 1990 n. 46
- D.P.R. 6/12/91 n. 447
- D.M. 20/2/92
- D.M. 1 dicembre 1975
- I.S.P.E.S.L. (ex A.N.C.C.)
- Norma UNI 8065
- Norma Uni 9615

Sicurezza imiego gas
- Norma prEN 656
- Legge 6 dicembre 1971 n.1083
- D.M. 23/11/72
- Norma UNI 7129-72
- Norma UNI-CIG 7131-72

Risparmio energetico
- Legge 9 gennaio 1991 n.10
- D.P.R. 26-08-93 n.412
- D.P.R. n.551 del 21 dicembre 1999

Sicurezza antincendio
- Decreto del ministero dell'interno 16 febbraio 1982
- Decreto del ministero dell'interno 12 aprile 1996
- Norma CEI EN 60079-10
- Norma CEI 64-8 (giugno 1987)

Provvedimenti contro l'inquinamento atmosferico
- D.P.R. 24/5 1988 n.203

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