**Hoval Cosmo (100-1200)**

**Oil / gas hot water boiler**

### Description

**Hoval Cosmo**

**Oil / gas boiler**

**Boiler**
- Boiler made of steel for oil / gas firing
- Boiler door to be swivelled to the right
- Insulation 100mm mineral wool mat and special fabric
- Casing made of steel plates, red/orange powder coated
- Flue gas outlet on the back
- Heating connection on the top of the boiler

**Optional**
- Control panel with different regulators and functions
- Stand-by calorifier
- Working pressure 8 bar
- Assembly and mounting at place

**Delivery**
- Boiler, insulation and casing separately packed and delivered.

<table>
<thead>
<tr>
<th>Type</th>
<th>Range of output kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>175</td>
<td>100-175</td>
</tr>
<tr>
<td>240</td>
<td>176-240</td>
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<tr>
<td>290</td>
<td>241-290</td>
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<tr>
<td>350</td>
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<tr>
<td>410</td>
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<tr>
<td>465</td>
<td>411-465</td>
</tr>
<tr>
<td>585</td>
<td>466-585</td>
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<tr>
<td>700</td>
<td>586-700</td>
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<td>951-1050</td>
</tr>
<tr>
<td>1200</td>
<td>1051-1200</td>
</tr>
</tbody>
</table>

**Control panel**
- for mounting on the boiler Cosmo

**Standard control panel for TopTronic regulator with:**
- Main switch, with temperature sensor
- Safety limit thermostat 110°C
- Fuse 6.3A
- Trouble indication „burner”
- Plug connection for 2-stage burner
- Boiler sensor
- Outside thermostat sensor
- Flow temperature sensor

**Control panel with TopTronic**
- For 1 to 2 heating mixing circuit
- Operation switch
- Temperature adjustment “Day/Night”
- Adaption with Microcomputer
- Automatic switch summer/winter
- Boiler temperature regulation
- Calorifier loading control with time clock
- Digital display of boiler / water temperature and time clock
- Burner running hour meter and count-up counter

- Possibility for additional regulator for 1 or 2 additional mixing circuit

**Control panel with Thermostat**

**T 2.2**
- Pre-wired execution with external signals
- Working pressure 90°C

**T 0.2-110**
- Execution not pre-wired for external connection
- Working pressure 110°C

**Delivery**
- Control panel separately delivered

**At place**
- Mounting of control panel
Subject to alterations

**Hoval Cosmo (100-1200)**

**Price**

---

**Cosmo Oil /gas hot water boiler**

<table>
<thead>
<tr>
<th>Type</th>
<th>Range of output</th>
<th>Working pressure</th>
<th>Part no.</th>
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<tr>
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<tr>
<td>1200</td>
<td>1051-1200</td>
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<td></td>
</tr>
</tbody>
</table>

**Boiler**

Boiler made of steel for oil/gas firing without control panel.

**Delivery**

Boiler, insulation and casing separately packed and delivered.

---

**Delivery:**

Assembly and mounting at place.

<table>
<thead>
<tr>
<th>Type</th>
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<th>Part no.</th>
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<tbody>
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</tbody>
</table>
Hoval Cosmo (100-1200)

Control panel with TopTronic regulator for Cosmo and 1 to 4 mixing circuits

Standard control panel:

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Delivery</td>
<td>Control panel separately packed and delivered</td>
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</tbody>
</table>

M3.1
For external on/off and nominal/maximum output control with TopTronic or other regulator. Boiler temperature sensor KT10 for regulation already integrated.

- With 7- + 4-pin plug connection for burner control 1H01031

Regulator set:

TopTronic 223B
1 stage burner control
Regulation of 1 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors. 691494

TopTronic 203B
Modulating burner control
Regulation of 1 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors 691493

TopTronic 2233B
2 stage burner control
Regulation of 2 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors 691435

Additional Regulators:

TopTronic 3
for 1 additional mixing circuit, including sensors 691335

Additional Regulators:

KV...flow
KR...return
Hoval Cosmo (100-1200)

Price

Subject to alterations

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**Thermostat control panel**

(boiler control without heating regulator)

---

**TopTronic 233B**

- for 2 additional mixing circuit, including sensors
- 691282

**Additional equipment ZM1**

- Adapter set for second regulator
- 691138

---

**T 2.2 (Pre-wired solution)**

- for systems without TopTronic regulator
- for direct 2 stage burner control
- For external calorifier or external heating commands

Not usable for:
- Boiler sequence control
- Dual fuel burner

- consists of:
  - Main switch 0/1
  - Switch summer/winter
  - Switch burner output
  - Boiler limit thermostat 110°C
  - 3 boiler thermostat 50-110°C
  - Trouble indication boiler/burner
  - 7+4-pin burner plug connection

- 2 burner running hour meter
- 2 burner running hour meter and count up counter
- Flue gas thermometer

- AU2970
- AU3268
- AU3351

---

**T0.2-110 (for external control)**

- for systems without TopTronic regulator
- for boiler sequence control
- for special control functions

- consists of:
  - Main switch 0/1
  - Boiler limit thermostat 130°C
  - 3 boiler thermostat 50-110°C
  - without burner plug connection

- 2 burner running hour meter
- 2 burner running hour meter and count up counter
- Flue gas thermometer
- Additional sensor for external TopTronic regulator

- AU3323
- AU3324
- AU3351
- 6001396

---
### Accessories for heating control system TopTronic

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
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</thead>
<tbody>
<tr>
<td><strong>Room station RS 10</strong></td>
<td>242634</td>
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<tr>
<td>for one mixing circuit with room sensor, information, program and correction key</td>
<td></td>
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<tr>
<td><strong>Remote control RFF 60S</strong></td>
<td>2000754</td>
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<tr>
<td>for one mixing circuit with room sensor, easy program switch, temperature adjustment</td>
<td></td>
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<tr>
<td><strong>Room temperature sensor RF 40</strong></td>
<td>242679</td>
</tr>
<tr>
<td>for one mixing circuit (instead of RS10 or RFF60S)</td>
<td></td>
</tr>
<tr>
<td><strong>Additional outdoor temperature sensor AF 100N</strong></td>
<td>242646</td>
</tr>
<tr>
<td>for one mixing circuit (per heating circuit 1 separate outdoor temperature sensor is possible)</td>
<td></td>
</tr>
<tr>
<td><strong>Flue gas temperature sensor PT 1000/4</strong></td>
<td>242681</td>
</tr>
<tr>
<td><strong>Temperature sensor KT 10-40</strong></td>
<td>242371</td>
</tr>
<tr>
<td>with 4 m cable for calorifier or external heat acquisition</td>
<td></td>
</tr>
<tr>
<td><strong>Temperature Sensor VF100N</strong></td>
<td>242647</td>
</tr>
<tr>
<td>for min. return flow temperature for systems with boiler circuit pump.</td>
<td></td>
</tr>
<tr>
<td><strong>Flow temperature safety thermostat</strong></td>
<td></td>
</tr>
<tr>
<td>for floor heating (per heating circuit 1 thermostat)</td>
<td></td>
</tr>
<tr>
<td>- Thermostat with pocket</td>
<td>619.0015, 242190</td>
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<tr>
<td>- Thermostat</td>
<td>692.1120, 242217</td>
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<tr>
<td><strong>Flow temperature Sensor 9C2.70301</strong></td>
<td>687997</td>
</tr>
<tr>
<td>for floor heating incl. cable and plug</td>
<td></td>
</tr>
<tr>
<td><strong>Resistor</strong> 910 Ohm</td>
<td>2002602</td>
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Subject to alterations
<table>
<thead>
<tr>
<th>Service</th>
<th>Part no.</th>
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</thead>
<tbody>
<tr>
<td>Commission</td>
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</table>
### Hoval Cosmo (100-1200)

#### Technical data

**Cosmo**

<table>
<thead>
<tr>
<th>Type</th>
<th>175</th>
<th>240</th>
<th>290</th>
<th>350</th>
<th>410</th>
<th>465</th>
<th>585</th>
<th>700</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Nominal output</td>
<td>kW</td>
<td>175</td>
<td>240</td>
<td>290</td>
<td>350</td>
<td>410</td>
<td>465</td>
<td>585</td>
</tr>
<tr>
<td>• Minimum output</td>
<td>kW</td>
<td>100</td>
<td>145</td>
<td>155</td>
<td>165</td>
<td>190</td>
<td>205</td>
<td>220</td>
</tr>
<tr>
<td>• Maximum burner output</td>
<td>kW</td>
<td>190</td>
<td>262</td>
<td>317</td>
<td>382</td>
<td>448</td>
<td>508</td>
<td>639</td>
</tr>
<tr>
<td>• Max. boiler operation temperature</td>
<td>°C</td>
<td>90</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
</tr>
<tr>
<td>• Limit thermostat</td>
<td>°C</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
</tr>
<tr>
<td>• Min. flue gas temperature</td>
<td>°C</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
</tr>
<tr>
<td>• Min. operation temperature</td>
<td>°C</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>• Min. return flow temperature</td>
<td>°C</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>• Boiler efficiency at 80/60°C</td>
<td>%</td>
<td>92.8</td>
<td>93.2</td>
<td>93.0</td>
<td>93.3</td>
<td>93.1</td>
<td>93.0</td>
<td>93.0</td>
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<tr>
<td>• Stand-by losses qB at 70°C</td>
<td>Watt</td>
<td>660</td>
<td>678</td>
<td>695</td>
<td>822</td>
<td>971</td>
<td>1023</td>
<td>1079</td>
</tr>
<tr>
<td>• Flue gas resistance at nominal output</td>
<td>mbar</td>
<td>1.0</td>
<td>1.0</td>
<td>1.3</td>
<td>2.0</td>
<td>2.0</td>
<td>2.2</td>
<td>2.8</td>
</tr>
<tr>
<td>500 m above sea level (+/- 20%)</td>
<td>z-value</td>
<td>0.1</td>
<td>0.072</td>
<td>0.068</td>
<td>0.030</td>
<td>0.030</td>
<td>0.033</td>
<td>0.033</td>
</tr>
<tr>
<td>• Flow resistance</td>
<td>m³/h</td>
<td>490x984</td>
<td>490x1234</td>
<td>490x1434</td>
<td>558x1248</td>
<td>558x1448</td>
<td>558x1648</td>
<td>686x1457</td>
</tr>
<tr>
<td>• Fire room dimension</td>
<td>m³</td>
<td>0.18</td>
<td>0.23</td>
<td>0.26</td>
<td>0.33</td>
<td>0.38</td>
<td>0.44</td>
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<tr>
<td>• Fire room volume</td>
<td>width</td>
<td>970</td>
<td>970</td>
<td>970</td>
<td>1078</td>
<td>1078</td>
<td>1078</td>
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<tr>
<td>length</td>
<td>mm</td>
<td>1614</td>
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<td>2064</td>
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<tr>
<td>height</td>
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<td>1102</td>
<td>1102</td>
<td>1120</td>
<td>1120</td>
<td>1120</td>
<td>1403</td>
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</tbody>
</table>

1 kW = Flue gas deficiency according to LRV 92 (Boiler water 80°C)

2 Flow resistance boiler in mbar = volume flow (m³/h)² x z

3 At min. output, oil and gas 60% of max. output
# Hoval Cosmo (100-1200)

## Technical data

### Cosmo

<table>
<thead>
<tr>
<th>Type</th>
<th>850</th>
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<th>1050</th>
<th>1200</th>
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<tr>
<td>Nominal output kW</td>
<td>850</td>
<td>950</td>
<td>1050</td>
<td>1200</td>
</tr>
<tr>
<td>Minimum output kW</td>
<td>350</td>
<td>460</td>
<td>480</td>
<td>570</td>
</tr>
<tr>
<td>Maximum burner output kW</td>
<td>929</td>
<td>1038</td>
<td>1148</td>
<td>1311</td>
</tr>
<tr>
<td>Max. boiler working temperature °C</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
</tr>
<tr>
<td>Limit thermostat °C</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
</tr>
<tr>
<td>Min. flue gas temperature °C</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
</tr>
<tr>
<td>Min. operation temperature °C</td>
<td>60</td>
<td>60</td>
<td>60</td>
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<tr>
<td>Min. return flow temperature °C</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
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<tr>
<td>Boiler efficiency at 80/60°C %</td>
<td>91.4</td>
<td>91.5</td>
<td>91.6</td>
<td>91.5</td>
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<tr>
<td>Stand-by deficiency qB at 70°C Watt</td>
<td>1281</td>
<td>1495</td>
<td>1571</td>
<td>1850</td>
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<tr>
<td>Flue gas resistance at nominal output 180°C flue gas temperature, 12.5% CO₂, 500 m above sea level (+/- 20%) mbar</td>
<td>3.8</td>
<td>4.0</td>
<td>4.5</td>
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<td>Flow resistance z-value</td>
<td>0.008</td>
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<td>0.005</td>
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<td>Boiler water capacity Litre</td>
<td>837</td>
<td>1134</td>
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<td>Weight (incl. casing) kg</td>
<td>1433</td>
<td>1792</td>
<td>1792</td>
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<td>Fire room dimension Ø-inside x Length mm</td>
<td>686x2007</td>
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<td>834x1877</td>
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<td>Fire room volume m³</td>
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<td>1.18</td>
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</table>

1 kW= Flue gas deficiency according to LRV 92 (Boiler water 80°C)

2 Flow resistance boiler in mbar = volume flow (m³/h)² x z

3 At min. output, oil and gas 60% of max. output
Hoval Cosmo (100-1200)

Dimension

Cosmo
(Measurements in mm)

1 Flow
2 Return
3 Safety valve
4 Drain R11/2" (175-465)
6 Flue gas monitoring point R 1/2" (plugged off)
7 Cleaning door
8 Smokebox drain R1/2"
9 Control panel
10 Optional TopTronic controller(s)

<table>
<thead>
<tr>
<th>Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
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<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
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<td>175</td>
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<td>1014</td>
<td>1033</td>
<td>955</td>
<td>920</td>
<td>1102</td>
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### Hoval Cosmo (100-1200)

**Dimensions / burner mounting**

Subject to alterations

#### Cosmo (175 - 1200)

![Cosmo Diagram](image)

<table>
<thead>
<tr>
<th>Dimension (all measurements in mm)</th>
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<tr>
<td><strong>Cosmo</strong></td>
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<td>290</td>
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<tr>
<td>1050</td>
</tr>
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</table>

*Note: All dimensions are in millimeters.*
Hoval Cosmo (100-1200)

Flue gas / Output diagram

Flue gas / Output diagram

\[ \text{kW} = \text{Boiler output} \]
\[ ^\circ C = \text{Flue gas temperature with Oil EL, Flow 80\degree C, Return flow 60\degree C, CO}_2 \text{ Heizöl EL = 13,0\%, clean heating surface} \]

Firing with gas or oil L if the flue gas temperature is approx. 15\degree C higher
The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- Hydraulic and technical control regulations of the local gas supply authority
- Gas directives G1 of the SVGW
- Flue gas systems are to be created according to the SVGW directives and the VKF fire protection guidelines.
- Local fire brigade regulations
- The fire protection regulations of the VKF
- Procal data sheet „Corrosion through halogen compounds“
- Procal data sheet „Corrosion damage in heating installations“ and the brochure „Protection against corrosion and boiler scale formation in heating and service water installations“
- Ventilation and air supply for the boiler installation room according to directives SWIKI 91-1
- Directives SWIKI 97-1 «Water treatment for heating, steam and air conditioning installations»
- Approval for diverting the flue gas condensate water to the drainage system must be obtained from the responsible authority
- Heating water pH-value 8.3 to 9.0 max. oxygen content 0.1 mg/m³ chlorine content max. 30 mg/m³

**Water treatment**
- Old installations must be well flushed before filling.
- The water quality must be tested at least once a year

**Heating armature group**

- Min. volume of mixing valve:
  - H4G-1½" = 1.5 m³/h
  - H4G 2" = 2.2 m³/h

**Oil burner mounting**

- The burner connection plug must be mounted opposite the burner door hinges.
- It should be possible to swivel the boiler door incl. burner by 90°.
- The space between burner and boiler door must be insulated by the additional delivered insulation material

**Electric connection of the burner**

- 1 x 230 V, 50 Hz, 10 A.
- For safety reasons the electric cable of the burner must be so short that the plug must be removed when swivelling boiler door.

**Sound absorption**

Sound absorption is possible through the following steps:

- Walls, ceilings and floor should be very solidly built, a sound absorber should be mounted into the air inlet. Pipe holders and support should be protected by means of anti-vibration sleeves.
- Install sound absorber hood for burner.
- If living rooms are located above or under the boiler room, vibration absorbers have to be mounted to the boiler base. Pipes and flue gas tube must be connected flexible with compensators.
- Pumps have to be connected with compensators to the pipes.
- For damping of flame noise it is possible to install a silencer into the flue gas tube (Space should be foreseen for later installation).

**Chimney / Flue gas system**

**Flue gas tube**

- The flue gas tube must be led into the chimney with an angle of 30-45°.
- If the flue gas tube is longer than 1m, it must be insulated.
- The inlet of the flue gas tube into the chimney has to be carried out in such way, that no condensate can flow from the chimney into the flue gas tube and boiler
- A closeable flue gas measuring socket with an inner diameter of 10-21 mm must be foreseen.

**Chimney**

- The chimney must be water proof, acid resistant and suitable for flue gas temperature > 160°C
- For existing chimney installation the restoration must be carried out according to the instructions of the chimney constructor.
- The cross sections are to be calculated for boilers without draft requirements

**Sanitary installation**

- The installation must be carried out according to the regulation of local water works.
- Pressure safety limit max 8 bar.
Assembly and mounting on site Cosmo (100-1200)

At a favourable all inclusive price Hoval offers on-site assembly of boiler in complete of component form as well as mounting in boiler room ready to be connected. Mounting according to the strict quality standards of the assembly department.

- In case of an order, please add in your order „assembly and mounting on site“
- Assembly and mounting work on site has to be coordinate with Hoval on a case to case basis

<table>
<thead>
<tr>
<th>Cosmo type</th>
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<th>b</th>
<th>weight kg</th>
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**Hoval Cosmo (100-1200)**

**Assembly and mounting on site**

---

**Place requirement for assembly and mounting on site**

**Min. Heating room dimension in mm**

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Subject to alterations
**Hoval Max-3 (250-1250)**

**Oil / gas hot water boiler**

**Description**

**Hoval Max-3**

**Oil / gas hot water boiler**

**Boiler**
- 3-pass steel boiler for oil / gas firing
- Boiler door to be swivelled to the right or left
- Insulation 80mm mineral wool mat and special fabric
- Casing made of steel plates, red/orange powder coated
- Flue gas outlet and heating return connections on the back, heating flow connection on the top

**Optional**
- Control panel with different regulators and functions
- Calorifier
- Assembly and Mounting at place

**Delivery**
- Boiler, insulation and casing separately packed and delivered.

**At place**
- Mounting of insulation and casing

<table>
<thead>
<tr>
<th>Type</th>
<th>Range of output kW</th>
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<tr>
<td>320</td>
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<td>620</td>
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<td>750</td>
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<td>1250</td>
<td>750-1400</td>
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**Control panel**

- for mounting on the boiler Max-3

**Standard boiler control panel for TopTronic regulator with:**
- Main switch, with temperature guard
- Safety limit thermostat 110°C
- Fuse 6.3A
- Trouble indication „burner”
- Plug connection for 2-stage burner
- Boiler sensor
- Outdoor temperature sensor
- Flow temperature sensor

**Control panel with Thermostat**

**T 2.2**
- Pre-wired execution with external signals
- Working pressure 90°C

**T 0.2-110**
- Execution not pre-wired for external connection
- Working pressure 110°C

**Delivery**
- Control panel separately delivered

**At place**
- Mounting of control panel

- Possibility for additional regulator for 1 or 2 additional mixing circuit
### Hot water boiler

3-pass steel hot water boiler for oil/gas firing without control panel

#### Delivery: complete

Boiler, insulation and casing separately packed and delivered.

<table>
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<th>Max-3 Type</th>
<th>Range of output kW</th>
<th>Working pressure bar</th>
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<td>420</td>
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<td>450-870</td>
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<td>1250</td>
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#### Delivery: welding on-site

Assembly and mounting at place.

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<th>Max-3 Type</th>
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Boiler Max-3 250 is not as „assembly and mounting on-site boiler“ available.
Control panel with TopTronic regulator for Max-3 for 1 to 4 mixing circuits

**Standard control panel:**

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## Part no.

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<td>Regulation of 1 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors.</td>
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<th>TopTronic 203B</th>
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<td>Modulated burner control</td>
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<th>TopTronic 2233B</th>
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<td>2 stage burner control</td>
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</table>

## M3.1

For external on/off and nominal/maximum output control with TopTronic or other regulator. Boiler temperature sensor KT10 for regulation already integrated.

- With 7- + 4-pin plug connection for burner control 1H01031

## Regulator set:

### Additional Regulators:

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<tbody>
<tr>
<td>for 1 additional mixing circuit, including sensors</td>
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<td>691335</td>
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</table>

KV...flow
KR...return
Hoval Max-3 (250-1250)

Price

subject to alterations

---

**TopTronic 233B**
for 2 additional mixing circuit, including sensors

KV
KR
KV...flow
KR...return

**Additional equipment ZM1**
Adapter set for second regulator

**Boiler control without heating regulator**
**Thermostat control panel**
(optional to standard control panel with regulator)

**T 2.2 (Pre-wired solution)**
- for systems without TopTronic regulator
- for direct 2 stage burner control
- For external calorifier or external heating commands

Not usable for:
- Boiler sequence control
- Dual fuel burner

- consists of:
  - Main switch 0/1
  - Switch summer/winter
  - Switch burner load
  - Boiler limit thermostat 110°C
  - 3 boiler thermostat 50-110°C
  - Trouble indication boiler/burner
  - 7+4-pin burner plug connection

- 2 burner running hour meter
- 2 burner running hour meter and count up counter
- Flue gas thermometer

**T0.2-110 (for external control)**
- for systems without TopTronic regulator
- for boiler sequence control
- for special control functions

consists of:
- Main switch 0/1
- Boiler limit thermostat 130°C
- 3 boiler boiler thermostat 50-110°C
- without burner plug connection

- 2 burner running hour meter
- 2 burner running hour meter and count up counter
- Flue gas thermometer
- Additional sensor for external TopTronic regulator

---

**Part no.**

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<th>Item Description</th>
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<td>Dual fuel burner</td>
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<td>Additional sensor for external TopTronic regulator</td>
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Part nos. are subject to alterations.

---

KV...flow
KR...return
## Accessories for heating control system TopTronic

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<th>Description</th>
<th>Part no.</th>
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<tbody>
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<td><strong>Room station RS 10</strong>&lt;br&gt;for one mixing circuit with room sensor, information, program and correction key</td>
<td>242634</td>
</tr>
<tr>
<td><strong>Remote control RFF 60S</strong>&lt;br&gt;for one mixing circuit with room sensor, easy program switch and temperature adjustment</td>
<td>2000754</td>
</tr>
<tr>
<td><strong>Room temperature sensor RF 40</strong>&lt;br&gt;for one mixing circuit (instead of RS10 or RFF60S)</td>
<td>242679</td>
</tr>
<tr>
<td><strong>Additional outdoor temperature sensor AF 100N</strong>&lt;br&gt;for one mixing circuit (per heating circuit 1 separate outdoor temperature sensor is possible)</td>
<td>242646</td>
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<tr>
<td><strong>Flue gas temperature sensor PT 1000/4</strong>&lt;br&gt;</td>
<td>242681</td>
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<tr>
<td><strong>Temperature sensor KT 10-40</strong>&lt;br&gt;with 4 m cable for calorifier or external heat acquisition</td>
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<tr>
<td><strong>Temperature Sensor VF100N</strong>&lt;br&gt;for min. return flow temperature for systems with boiler circuit pump.</td>
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<tr>
<td><strong>Flow temperature safety thermostat</strong>&lt;br&gt;for floor heating (per heating circuit 1 thermostat)&lt;br&gt;- Thermostat with pocket 619.0015&lt;br&gt;- Thermostat 692.1120</td>
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<td><strong>Flow temperature Sensor 9C2.70301</strong>&lt;br&gt;for floor heating incl. cable and plug</td>
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<td><strong>Resistor</strong>&lt;br&gt;910 Ohm</td>
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Hoval Max-3 (250-1250)

Price

Accessories

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<th>Vibration damper for boiler base</th>
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<td>For sound and vibration absorption. Made of unvulcanized rubber.</td>
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<td>Cross section 80/50mm.</td>
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<table>
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<td>4 vibration damper per boiler, mounted under the boiler base</td>
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Hoval Max-3 (250-1250)

Price

subject to alterations

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## Hoval Max-3 (250-1250)

### Technical data

#### Max-3

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<th>530</th>
<th>620</th>
<th>750</th>
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<td>Flue gas resistance at nominal output 180°C flue gas temperature, 12.5% CO₂</td>
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<td>Weight (incl. casing) kg</td>
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<td>Weight (without casing) kg</td>
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<td>Fire room volume m³</td>
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1 kW= Flue gas deficiency according to LRV 92 (Boiler water 80°C)
2 Boiler water flow resistance in mbar = water flow volume (m³/h)² x z
3 At min. output, oil and gas 60% of max. output
**Hoval Max-3 (250-1250)**

**Dimension**

**Max-3**

(Measurements in mm)

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<tr>
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<th>c</th>
<th>f</th>
<th>g</th>
<th>h</th>
<th>h1</th>
<th>i</th>
<th>k</th>
<th>l</th>
<th>ll</th>
<th>m</th>
<th>n</th>
<th>Øo</th>
<th>p</th>
<th>q</th>
<th>r</th>
<th>s</th>
<th>t</th>
<th>u</th>
<th>v</th>
<th>w</th>
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1. Flow (250-320) DN 65
   (420-530) DN 100
   (620-750) DN 125
   (1000-1250) DN 150

2. Return (250-320) DN 65
   (420-530) DN 100
   (620-750) DN 125
   (1000-1250) DN 150

3. Flue gas outlet
4. Cleaning opening
5. Flue gas collector - cleaning opening R1"
6. Drain R1 1/2"
7. Cable connection
8. Control panel
9. Electric connection
10. Socket Rp 3/4" with pocket for
    boiler temperature sensor

subject to alterations
Hoval Max-3 (250-1250)

Raw boiler dimension

Dimension without insulation and casing

Boiler incl. boiler door, outlet without flue gas collector.
(Measurment in mm)

Max-3

<table>
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<tr>
<th>Type</th>
<th>a</th>
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<th>c</th>
<th>d</th>
<th>e</th>
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<th>g</th>
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Max-3

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Required min. door and corridor measurement for boiler movement
(min. calculated measurements)

\[
\frac{B}{T} = \frac{K}{L}
\]

\[
T = \text{Door width}
K = \text{Corridor width}
B = \text{Boiler width}
L = \text{Max. boiler length}
\]
**Hoval Max-3 (250-1250)**

**Combustion related dimension**

subject to alterations

### Max-3 (250-320)

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<th>D</th>
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<td>420-530</td>
<td>290</td>
<td>350</td>
<td>515</td>
<td>250</td>
<td>606</td>
<td>1515</td>
<td>162</td>
<td>30</td>
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<tr>
<td>620-750</td>
<td>350</td>
<td>400</td>
<td>550</td>
<td>310</td>
<td>684</td>
<td>1899</td>
<td>163</td>
<td>30</td>
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<tr>
<td>1000-1250</td>
<td>400</td>
<td>450</td>
<td>635</td>
<td>330</td>
<td>782</td>
<td>2182</td>
<td>163</td>
<td>30</td>
</tr>
</tbody>
</table>

*All measurements in mm*

---

**Flange Max-3 (250-320)**

4 x M10 (45°)

**Flange Max-3 (420–530)**

4 x M12 (45°) + 4 x M12 (15°)

**Flange Max-3 (620–750)**

6 x M12 (15°)

**Flange Max-3 (1000–1250)**

6 x M16 (15°)
Hoval Max-3 (250-1250)

Flue gas / Output diagram

Flue gas / Output diagram

\[ ^\circ C = \text{Flue gas temperature with diesel oil, flow 80}^\circ C, \text{return flow 60}^\circ C, \text{CO}_2 \text{ diesel oil} = 13.0\%, \text{clean heating surface} \]

Firing with gas or medium oil the flue gas temperature is approx. 15° higher

Flue gas resistance

\[ \text{kW} = \text{Boiler output} \]

\[ ^\circ C = \text{Flue gas temperature with diesel oil, flow 80}^\circ C, \text{return flow 60}^\circ C, \text{CO}_2 \text{ diesel oil} = 13.0\%, \text{clean heating surface} \]
Standards and guidelines
The following standards and guidelines must be observed:
- Hoval technical information and installation instructions
- Hydraulic and technical control regulations of the local gas supply authority
- Gas directives G1 of the SVGW
- Flue gas systems are to be created according to the SVGW directives and the VKF fire protection guidelines.
- Local fire brigade regulations
- The fire protection regulations of the VKF
- Procal data sheet „Corrosion through halo gen compounds“
- Procal data sheet „ Corrosion damage in heating installations“ and the brochure „Protection against corrosion and boiler scale formation in heating and service water installations“
- Ventilation and air supply for the boiler installation room according to directives SWIKI 91-1
- Directives SWKI 97-1 «Water treatment for heating, steam and air conditioning installations»
- Approval for diverting the flue gas condensate water to the drainage system must be obtained from the responsible authority
- Heating water requirement total hardness less than 1°f
  pH-value 8.3 to 9.0
  max. oxygen content 0.1 mg/m³
  chlorine content max. 30 mg/m³

Water treatment
- Old installations must be well flushed before filling.
- The water quality must be tested at least once a year

Heating system
Combustion Air
- The combustion air supply must be warranted. Opening must not be lockable.
- Minimal free cross section for air opening 6.5 cm² per 1 kW boiler output.

Insulation and Casing
- To mount the insulation and casing you need about 40 cm space on the left and right side. After the boiler is cased no space on the side is required.
- 2 boiler can be placed without space between them. (The door of the left boiler must swivelling to the left and the the right door to the right).

Burner mounting
- The burner connection plug must be mounted opposite the burner door hinges.
- It should be possible to swivel the boiler door incl. burner by 90°.
- The space between burner and boiler door must be insulated by the additional delivered insulation material

Electric connection of the burner
- 1 x 230 V, 50 Hz, 10 A. for control
- 1 x 230V or 3x 400V for burner motor
- For safety reasons the electric cable of the burner must be that short that the plug must be removed when swivelling boiler door.

Sound absorption
Sound absorption is possible through the following steps:
- Walls, ceilings and floor should be solid built, a sound absorber should be mounted into the air inlet. Pipe holders and support should be protected by means of anti-vibration sleeves.
- Install sound absorber hood for burner.
- If living rooms are located above or under the boiler room, vibration absorbers have to be mounted to the boiler base. Pipes and flue gas tube must be connected flexible with compensators.
- Pumps have to be connected with compensators to the pipes.
- For damping of flame noise it is possible to install a silencer into the flue gas tube (Space should be foreseen for later installation).

Chimney
- The chimney must be water proof, acid resistant and suitable for flue gas temperature > 150°C
- For existing chimney installation the restoration must be carried out according to the instructions of the chimney constructor.
- The cross sections are to be calculated for boilers without draft requirements

Chimney / Flue gas system
Flue gas tube
- The flue gas tube must be led into the chimney with an angle of 30-45 °.
- If the flue gas tube is longer than 1m, it must be insulated.
- The inlet of the flue gas tube into the chimney has to be carried out in such way, that no condensate can flow from the chimney backward into the boiler flue gas outlet
- A closeable flue gas measuring socket with an inner diameter of 10-21 mm must be foreseen.

Sanitary installation
- The installation must be carried out according to the regulation of local water works.
- Pressure safety limit max 6 bar.
**Hoval Max-3 (250-1250)**

**Assembly and mounting on site**

**Max-3 (320-1250)**

At a favourable all inclusive price Hoval offers on-site assembly of boiler in complete of component form as well as mounting in boiler room ready to be connected. Mounting according to the strict quality standards of the assembly department.

- In case of an order, please add in your order “assembly and mounting on site”
- Assembly and mounting work on site has to be coordinate with Hoval on a case to case basis

**Dimension and weight**

**Max-3 (320–530)**

<table>
<thead>
<tr>
<th>Type</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>(330)</td>
<td>610</td>
<td>715</td>
<td>1615</td>
<td>225</td>
</tr>
<tr>
<td>(420, 530)</td>
<td>730</td>
<td>835</td>
<td>1725</td>
<td>325</td>
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<tr>
<td>(620, 750)</td>
<td>745</td>
<td>915</td>
<td>2000</td>
<td>410</td>
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<tr>
<td>(1000, 1250)</td>
<td>800</td>
<td>800</td>
<td>2180</td>
<td>375</td>
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</table>

**Combustion chamber 1**

1 Fire room cylinder  
2 Water walls

**Max-3 (620–750)**

**Water wall-shell 2**

<table>
<thead>
<tr>
<th>d</th>
<th>e</th>
<th>f</th>
<th>Weight kg</th>
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<tr>
<td>410</td>
<td>820</td>
<td>1555</td>
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</tr>
<tr>
<td>500</td>
<td>1000</td>
<td>1665</td>
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<td>560</td>
<td>1120</td>
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<td>655</td>
<td>1310</td>
<td>2225</td>
<td>215</td>
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## Place requirement for assembly and mounting on site

### Min. heating room dimension in mm

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<th>320</th>
<th>420</th>
<th>530</th>
<th>620</th>
<th>750</th>
<th>1000</th>
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<tr>
<td>Length</td>
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<td>Width</td>
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<td>3000</td>
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</table>

Boiler Max-3 250 is not as „assembly and mounting on site boiler“ available.
Hoval ST-plus (325-2500)
Oil / gas hot water boiler

Description

Hoval ST-Plus
Oil / gas hot water boiler

Boiler
- Reversed flow 3 pass hot water boiler out of steel for oil and gas firing
- Boiler door to be swivelled to the right or left
- Insulation 100mm mineral wool mat and special fabric
- Casing made of steel plates, red/orange powder coated
- Flue gas outlet and heating return connections on the back, heating flow connection to the top

Optional
- Control panel with different regulators and functions
- Additional Calorifier
- Assembly and mounting at place

Delivery
- Boiler, Insulation and casing separately packed and delivered

At place
- Mounting of insulation and casing

<table>
<thead>
<tr>
<th>ST-Plus</th>
<th>Range of output</th>
</tr>
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<tbody>
<tr>
<td>Typ</td>
<td>kW</td>
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<tr>
<td>325</td>
<td>125-378</td>
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<tr>
<td>500</td>
<td>193-581</td>
</tr>
<tr>
<td>800</td>
<td>310-930</td>
</tr>
<tr>
<td>1250</td>
<td>484-1453</td>
</tr>
<tr>
<td>1500</td>
<td>726-1744</td>
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<tr>
<td>1800</td>
<td>726-2093</td>
</tr>
<tr>
<td>2100</td>
<td>1012-2442</td>
</tr>
<tr>
<td>2500</td>
<td>1012-2907</td>
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</tbody>
</table>

Control panel

for mounting on the boiler ST-plus

Standard control panel for TopTronic regulator with:
- Main switch, with temperature guard
- Safety limit thermostat 110°C
- Fuse 6.3A
- Trouble indication “burner”
- Plug connection for 2-stage burner
- Boiler sensor
- Outside temperature sensor
- Flow temperature sensor

Control panel with TopTronic
- For 1 or 2 heating mixing circuit
- Operation switch
- Temperature adjustment “Day/Night”
- Adaptation with Microcomputer
- Automatic switch summer/winter
- Regelung der Heizkesseltemperatur mit Anfahrschutz
- Calorifier loading control with time clock
- Digital display of boiler- / water temperature and time clock
- Burner running time hour and count-up counter
- Possibility for additional regulator for 1 or 2 additional mixing circuit

Control panel with Thermostat

T 2.2
- Pre-wired execution with external signal
- Working temperature 90°C

T 0.2-110
- Execution not pre-wired for external connection
- Working temperature 110°C

Delivery
- Control panel separately deliverd

At place
- Mounting of control panel
Hoval ST-plus (325-2500)

**Price**

Subject to alterations

**ST-plus**

**Oil / gas hot water boiler**

<table>
<thead>
<tr>
<th>Type</th>
<th>Range of output</th>
<th>Working pressure</th>
<th>Part no.</th>
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<td>325</td>
<td>125-378</td>
<td>5</td>
<td>1A13020</td>
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<tr>
<td>500</td>
<td>193-581</td>
<td>5</td>
<td>1A13022</td>
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<td>800</td>
<td>310-930</td>
<td>5</td>
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<td>1250</td>
<td>484-1453</td>
<td>5</td>
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<td>1500</td>
<td>726-1744</td>
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<td>1A13027</td>
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<tr>
<td>1800</td>
<td>726-2093</td>
<td>6</td>
<td>1A13028</td>
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<tr>
<td>2100</td>
<td>1012-2442</td>
<td>6</td>
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<tr>
<td>2500</td>
<td>1012-2907</td>
<td>6</td>
<td>1A13030</td>
</tr>
</tbody>
</table>

**Boiler**

Steel hot water boiler for oil/gas firing, without control panel

**Delivery:**

Boiler, insulation and casing separately delivered

**ST-plus oil / gas hot water boiler**

with working pressure 8 bar and for welding on site on request.
Control panel with TopTronic regulator for ST-plus for 1 to 4 mixing circuits

Standard control panel:

Delivery
Control panel separately packed and delivered

M3.1
For external on/off and nominal/maximum output control with TopTronic or other regulator. Boiler temperature sensor KT10 for regulation already integrated.

Regulator sets:

TopTronic 223B
1 stage burner control
Regulation of 1 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors

TopTronic 203B
Modulated burner control
Regulation of 1 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors

TopTronic 2233B
2 stage burner control
Regulation of 2 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors

Additional Regulator:

TopTronic 3
for 1 additional mixing circuit, including sensors

Part no.
1A 13019
691494
691493
691435
691335
Hoval ST-plus (325-2500)

**Price**

---

**subject to alterations**

---

**Thermostat control panel**  
(boiler control without heating regulator)

- **TopTronic 233B**  
  for 2 additional mixing circuit, including sensors  
  **Part no.** 691282

- **Additonal equipment ZM1**  
  Adapter set for second regulator  
  **Part no.** 691138

---

**T 2.2 (Pre-wired solution)**

- for systems without TopTronic regulator  
- for direct 2-stage burner control  
- For external calorifier or external heating commands  
  **Part no.** 1H 01030

Not usable for system with:

- Boiler sequence control  
- Dual fuel burner

- consists of:
  - Main switch 0/1  
  - Switch summer/winter  
  - Switch burner load  
  - Boiler limit thermostat 110°C  
  - 3 boiler thermostat 50 - 110°C  
  - Trouble indication boiler/burner  
  - 7+4-pin burner plug connection  
  - 2 burner running hour meter  
  - 2 burner running hour meter and count up counter  
  - Flue gas thermometer  
  **Part nos.**  
  AU 2970  
  6003627  
  AU 3351

---

**T0.2-110 (for external control)**

- for systems without TopTronic regulator  
- for boiler sequence control  
- for special control functions  
  **Part no.** 1H 01029

consists of:

- Main switch 0/1  
- Boiler limit thermostat 130°C  
- 3 boiler thermostat 50-110°C  
- without burner plug connection  
- 2 burner running hour meter  
- 2 burner running hour meter and count up counter  
- Flue gas thermometer  
- Additional sensor for external TopTronic regulator  
  **Part nos.**  
  AU 3312  
  691321  
  AU 3351  
  6001396
## Accessories for heating control system TopTronic

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
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</thead>
<tbody>
<tr>
<td><strong>Room station RS 10</strong>&lt;br&gt;for one mixing circuit with room sensor, information, program and correction key</td>
<td>242634</td>
</tr>
<tr>
<td><strong>Remote control RFF 60S</strong>&lt;br&gt;for one mixing circuit with room sensor, easy programm switch, temperature adjustment</td>
<td>2000754</td>
</tr>
<tr>
<td><strong>Room temperature sensor RF 40</strong>&lt;br&gt;for one mixing circuit (instead of RS10 or RFF60S)</td>
<td>242679</td>
</tr>
<tr>
<td><strong>Additional outdoor temperature sensor AF 100N</strong>&lt;br&gt;for one mixing circuit (per heating circuit 1 separate outdoor temperature sensor is possible)</td>
<td>242646</td>
</tr>
<tr>
<td><strong>Flue gas temperature sensor PT 1000/4</strong></td>
<td>242681</td>
</tr>
<tr>
<td><strong>Temperature sensor KT 10-40</strong>&lt;br&gt;with 4 m cable for calorifier or external heat acquisition</td>
<td>242371</td>
</tr>
<tr>
<td><strong>Temperature Sensor VF100N</strong>&lt;br&gt;for min. return flow temperature for systems with boiler circulation pump</td>
<td>242647</td>
</tr>
<tr>
<td><strong>Flow temperature safety thermostat</strong>&lt;br&gt;for floor heating (per heating circuit 1 thermostat)&lt;br&gt;- Thermostat with pocket 619.0015 692.1120&lt;br&gt;- Thermostat 619.0015 692.1120</td>
<td>242190 242217</td>
</tr>
<tr>
<td><strong>Flow temperature Sensor 9C2.70301</strong>&lt;br&gt;for floor heating incl. cable and plug</td>
<td>687997</td>
</tr>
<tr>
<td><strong>Resistor</strong> 910 Ohm</td>
<td>2002602</td>
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<tr>
<td>Service</td>
<td>Part no.</td>
</tr>
<tr>
<td>--------------</td>
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<tr>
<td>Commissioning</td>
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## Technical data

### Hoval ST-plus (325-2500)

#### ST-Plus

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<th>Type</th>
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<th>800</th>
<th>1250</th>
<th>1500</th>
<th>1800</th>
<th>2100</th>
<th>2500</th>
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</thead>
<tbody>
<tr>
<td>Maximal output</td>
<td>kW</td>
<td>378</td>
<td>581</td>
<td>930</td>
<td>1453</td>
<td>1744</td>
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<td>2442</td>
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<tr>
<td>Minimal output</td>
<td>kW</td>
<td>125</td>
<td>193</td>
<td>310</td>
<td>484</td>
<td>726</td>
<td>726</td>
<td>1012</td>
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<tr>
<td>Burner output maximum</td>
<td>kW</td>
<td>411</td>
<td>628</td>
<td>1003</td>
<td>1574</td>
<td>1887</td>
<td>2270</td>
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<td>Burner output minimum</td>
<td>kW</td>
<td>134</td>
<td>207</td>
<td>330</td>
<td>516</td>
<td>772</td>
<td>772</td>
<td>1075</td>
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<td>Max. boiler temperature</td>
<td>°C</td>
<td>120</td>
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<td>120</td>
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<td>Safety limit temperature</td>
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<tr>
<td>Min. Flue gas temperature oil/gas</td>
<td>°C</td>
<td>130</td>
<td>130</td>
<td>130</td>
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<td>55/65</td>
<td>55/65</td>
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<tr>
<td>Working-/Test pressure</td>
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<td>5/7.5</td>
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<td>Working / Test pressure (alternative)</td>
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<td>8/12</td>
<td>8/12</td>
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<tr>
<td>Boiler efficiency at 80/60°C</td>
<td>%</td>
<td>92.6</td>
<td>93</td>
<td>93</td>
<td>92.6</td>
<td>92.7</td>
<td>92.4</td>
<td>92.7</td>
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<tr>
<td>Stand-by loss qB at 70°C</td>
<td>Watt</td>
<td>2170</td>
<td>2390</td>
<td>2660</td>
<td>3610</td>
<td>4140</td>
<td>4140</td>
<td>5270</td>
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<tr>
<td>Flue gas resistance at nominal output</td>
<td>mbar</td>
<td>4.7</td>
<td>4.6</td>
<td>6</td>
<td>7.3</td>
<td>8.1</td>
<td>8.6</td>
<td>7.2</td>
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<tr>
<td>Flue gas volume at nominal output 12.5% CO2 oil</td>
<td>kg/h</td>
<td>642.6</td>
<td>987.7</td>
<td>1581.0</td>
<td>2470.1</td>
<td>2964.8</td>
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<td>Flow resistance boiler</td>
<td>z-value</td>
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<td>0.016</td>
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<td>0.0032</td>
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<td>Water resistance at 15K</td>
<td>mbar</td>
<td>16.4</td>
<td>17.8</td>
<td>19.3</td>
<td>22.2</td>
<td>32.0</td>
<td>46.1</td>
<td>39.2</td>
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<td>Water resistance at 20K</td>
<td>bar</td>
<td>9.2</td>
<td>10.0</td>
<td>10.9</td>
<td>12.5</td>
<td>18.0</td>
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<td>Water flow volume at 15K</td>
<td>m³/h</td>
<td>21.7</td>
<td>33.3</td>
<td>53.3</td>
<td>83.3</td>
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<td>Water flow volume at 20K</td>
<td>m³/h</td>
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## Hoval ST-plus (325-2500)

### Dimension

#### ST-Plus

(Measurements in mm)

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#### ST-plus

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1. Flow
2. Return
3. Drain R 1 1/2"
4. Flue gas outlet
5. Cleaning opening 450 x 260 mm
6. Cleaning opening 260 x 450 mm
7. Flue gas collector - cleaning outlet 1"
8. Base U-channel,
9. Base U-channel to Type 1000-2500
10. Control panel
11. Fitting 3/4" with pocket 3/4"-120/Ø19 for temperature sensor
12. Safety flow
13. Safety return
Hoval ST-plus (325-2500)

Burner mounting

1 Boiler door
2 Optimal burner flange
3 Thread (without screw)
4 Inspection hole
5 The intermediate space between burner tube and boiler door should be filled with the refractory material delivered together with the boiler.

Delivery of boiler
Boiler with door, drilled and inspection hole. Refractory material for burner installation.

Burner installation
For mounting of the burner an adapter flange may be required depending on the size of burner flange. The adaptor flange including screws must be delivered by the burner company. In order to allow the burner to swivelled by 90° to the left and right, the full connection should be flexible and long enough. The intermediate space between the burner tube and the boiler should be filled with refractory cement (refractory cement delivered together with boiler). Refractory cement can be found in the combustin chamber of the boiler.

Attention:
Burner tube should be introduced into boiler according to dimension H.

Electrical connection
An electrical outlet should be mounted by an electrical engineer on the opposite side of the hinges of boiler door. The electrical cable of the burner must be that short that the plug has to be removed when swivelling burner door.

The installation must be carried out according to the local regulations.

Sound Absorption
Oil and gas pipes must be installed in such a way that no vibrations are transmitted to the building. The burner can be covered with a sound absorber hood (on request).

If in the boiler room the opening for the supply of combustion air is located below sleeping and living rooms, a sound absorber should be mounted.

<table>
<thead>
<tr>
<th>ST-plus</th>
<th>Type</th>
<th>A</th>
<th>B</th>
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**Hoval ST-plus (325-2500)**

**Output at partial load and range of output, Boiler efficiency**

**Partial load**

If boiler is operated at partial load, flue gas temperature of boiler with clean heating surfaces must be at least 130°C. The minimum boiler water return temperature for all operating conditions are 55°C for oil and 65°C for gas firing. The stated minimum output capacities must be observed.

<table>
<thead>
<tr>
<th>ST-Plus Type</th>
<th>Nominal Output kW</th>
<th>Flue gas °C</th>
<th>Combustion mbar</th>
<th>Minimum Output kW</th>
<th>Flue gas °C</th>
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<td>190</td>
<td>7.3</td>
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**°C = At 80°C boiler water temperature. CO₂ at nominal output 13.5% (l 1.14) and at minimum output approx. 11–12 % (l 1.27). For gas firing the flue gas temperature is increased by approx. 10°C.**

**mbar = Combustion counter pressure at 12.5 % (l 1.22) CO₂, 500m above sea level (Tolerance +/- 20%).**

**Range of Output**

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<th>°C</th>
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<td>3.0</td>
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</table>

Gcal/h, kW = Boiler Output
mbar = Combustion counter pressure at 12.5% (l 1.22) CO₂, 500 m above sea level (Tolerance +/- 20%).
°C = Flue gas temperature for oil firing, CO₂ at nominal output 13.5% (l 1.14) and at minimal output approx. 11–12% (l 1.27), combustion air 20°C, boiler water temperature 80°C. For gas firing the flue gas temperature is increased by approx. 10°C.

*St-plus 270, 400, 650 and 1000 are not more available*
**Hoval ST-plus (325-2500)**

**Engineering**

---

**Influence of CO₂ content on the flue gases**

If CO₂ content is changed by +/- 1%, flue gas temperature will change by +/- 8 K and combustion counted pressure by approx. +/- 0.8 mbar. At full load the CO₂ content is approx. 2.5 - 13.5% and at minimum load (with multi-stage and modulating burners) approx. 11 - 12%.

**Influence of the boiler water temperature on the flue gas temperature**

If boiler water temperature is increased/reduced by +/- 10°C, the flue gas temperature is increased/reduced by approx. +/- 6 °C.

---

**Heat losses ST-plus**

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<th>*qi</th>
<th>*qb</th>
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<td>W%</td>
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<tr>
<td>2500</td>
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- *qs = Heat loss in boiler room due to radiation and convection (boiler room temperatrue 20°C)
- *qi = Inner cooling loss
- *qb = Stand-by loss at chimney draught of 0.05 mbar

---

**Boiler efficiency**

Boiler efficiency at boiler temperature of 80°C, CO₂=13.5% (I 1,14)

<table>
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---

**Chimneys**

For new installation water-proof and acid resistant chimneys must be foreseen. For existing chimney installations restoration of chimney and the adaptation of chimney cross-section must be carried out according to the instructions of the chimney constructor.

**Inner cooling loss depending on chimney height**

\[ q_{\text{eff}} = q_i \cdot f \]

- \( m \) = chimney height
- \( f \) = correction factor
- \( q_{\text{eff}} \) = inner cooling depending on chimney height
Chimney cross-sections for oil and gas firing

Calculation basis
Barometric pressure 700 mmHg (approx. 600m above sea level). CO₂ = 12% for diesel oil
Average flue gas temperature in the chimney = 180°C.
Outside temperature +30°C
Specific weight of flue gases at 180°C = 0.735 kg/m³
Specific weight of air at +30°C = 1.070 kg/m³
Flue gas quantity at a heating output of 100'000 Kcal/h, 180°C and 700mmHg = 302 m³/h.
Smoothbore and tight chimney construction.

Height above sea level
For other altitudes the chimney cross section in cm² (not the diameter) should be multiplied by the correction factor „z“ according to the following diagram:

High chimneys
For very high chimney constructions and low boiler outputs it is advisable to use chimney with thin-walled inner parts (e.g. steel tubes).

Low chimneys
For very long flue gas tubes the chimney cross section should be increased. For chimney heights of less than 10 meters, gas-tight chimneys should be used and cross section should be carried out according to the diameter of the flue gas outlet of boiler. In this case the pressure loss in the chimney must be overcome by the oil burner.

H = Chimney height in meters
H max. = Guide value for max. admissible chimney height for brick chimneys
d = Chimney diameter in cm
F = Side length in cm for a square chimney
M = Altitude above sea level in m
mmHg = Average barometric pressure
z = Correction factor
The following standards and guidelines must be observed:
- Hoval technical information and installation instructions
- Hydraulic and technical control regulations of the local gas supply authority
- Gas directives G1 of the SVGW
- Flue gas systems are to be created according to the SVGW directives and the VKF fire protection guidelines.
- Local fire brigade regulations
- The fire protection regulations of the VKF
- Procal data sheet „Corrosion through halogen compounds“
- Procal data sheet „Corrosion damage in heating installations“ and the brochure „Protection against corrosion and boiler scale formation in heating and service water installations“
- Ventilation and air supply for the boiler installation room according to directives SWKI 91-1
- Directives SWKI 97-1 «Water treatment for heating, steam and air conditioning installations»
- Approval for diverting the flue gas condensate water to the drainage system must be obtained from the responsible authority
- Heating water requirements total hardness less than 1°f pH-value 8.3 to 9.0 max. oxygen content 0.1 mg/m³ chlorine content max. 30 mg/m³

**Burner mounting**
- For mounting of the burner an adapter flange may be required depending on the size of burner flange. The adaptor flange including screws must be delivered by the burner company.
- The burner connection plug must be mounted opposite the boiler door hinges.
- It should be possible to swivel the boiler door incl. burner by 90°.
- The space between burner and boiler door must be insulated by the additional delivered insulation material

**Electric connection of the burner**
- 1 x 230 V, 50 Hz, 10 A.
- For safety reasons the electrical cable of the burner must be so short that the plug must be removed when swivelling boiler door.

**Sound absorption**
Sound absorption is possible through the following steps:
- Walls, ceilings and floor should be solid built, a sound absorber should be mounted into the air inlet. Pipe holders and support should be protected by means of anti-vibration sleeves.
- Install sound absorber hood for burner.
- If living rooms are located above or under the boiler room, vibration absorbers have to be mounted to the boiler base. Pipes and flue gas tube must be connected flexible with compensators.
- Pumps have to be connected with compensators to the pipes.
- For damping of flame noise it is possible to install a silencer into the flue gas tube (Space should be foreseen for later installation).

**Chimney**
- The chimney must be water proof, acid resistant and suitable for flue gas temperature > 160°C
- For existing chimney installation the restoration must be carried out according to the instructions of the chimney constructor.
- The cross sections are to be calculated for boilers without draft requirements

**Sanitary installation**
- The installation must be carried out according to the regulation of local water works.
- Pressure safety limit max. 6 or 8 bar.
**Hoval ST-plus (325-2500)**

**Assembly and mounting on-site**

ST-plus

Assembly and Mounting on site

At a favourable all-inclusive price Hoval offers on-site assembly of boiler in complete or component from as well as mounting in boiler room ready to be connected. Mounting according to the strict quality standards of the assembly department.

---

1. Economiser
2. Side water walls
3. Front plate
4. Back wall
5. Flue gas collector, detachable
6. Lower and upper water walls
7. Base

---

### ST-plus

<table>
<thead>
<tr>
<th>Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
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</table>

*kg = Weight of heaviest component
**Hoval Mega-3 (380-920)**

**Oil/Gas boiler**

**Description**

**Hoval Mega-3 i**

**Oil/Gas boiler**

**Heating boiler**

- 3 pass steel boiler for oil/gas firing
- Re-switch heating surface with 4 flue gas regulators
- Both boiler doors (upper and lower) are swivelled to the right or left
- Boiler body insulation 50mm mineral wool mat and special fabric, boiler door 30mm insulated
- Casing made of steel plates, red/orange powder coated
- Flue gas outlet at the back
- Heating connection on the top

**Optional**

- Control panel with or without TopTronic in different designs
- With external flue gas re-circulation (on request, Mega-3 e)
- Stand-by calorifier
- Assembly and mounting on site

**Delivery**

- Boiler, insulation and casing separately packed and delivered

**At place**

- Mounting of insulation and casing

---

### Model

<table>
<thead>
<tr>
<th>Type</th>
<th>Range of output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mega-3</td>
<td>kW</td>
</tr>
<tr>
<td>380</td>
<td>171-450</td>
</tr>
<tr>
<td>460</td>
<td>207-560</td>
</tr>
<tr>
<td>530</td>
<td>239-620</td>
</tr>
<tr>
<td>600</td>
<td>270-720</td>
</tr>
<tr>
<td>750</td>
<td>337-900</td>
</tr>
<tr>
<td>920</td>
<td>414-1080</td>
</tr>
</tbody>
</table>

---

### Control panel

- For mounting on the left or right side

**Boiler control panel with TopTronic regulator:**

- Main switch, connected with temperature sensor
- Safety limit thermostat 130°C
- Fuse 6.3A
- Trouble indication “Burner”
- Burner plug connection fur 2 stage burner
- Switch Nominal/Maximum output
- Boiler sensor
- Outdoor sensor
- Flow sensor
- Return flow sensor

- Built-in possibility for second Toptronic regulator

---

### TopTronic regulator

- For 1 or 2 mixing circuit
- Operation switch
- Temperature adjustment “day/night”
- Adaption with micro computer
- Automatic switch summer/winter
- Heating boiler temperature control
- Calorifier loading control with time clock
- Digital display of boiler / water temperature and time clock

---

### Control panes with Thermostat

**T2.2**

- Pre-wired execution with external signals
- Working temperature 90°C

**T0.2-110**

- Execution mot pre-wired for external connection
- Working temperature 110°C

**Delivery**

- Control panel separately packed

**At place**

- Mounting of control panel
**Hoval Mega-3 (380-920)**

**Oil/Gas boiler**

*Mega-3 i*

3 pass steel boiler for oil/gas firing, without control panel, fully welded. Re-switch heating surface with 4 flue gas regulator. Both boiler doors (upper and lower) are swivelled to the right or left. Boiler, insulation and casing separately packed.

<table>
<thead>
<tr>
<th>Mega-3 Type</th>
<th>Range of output kW</th>
<th>Working pressure bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>380 i</td>
<td>171-450</td>
<td>4</td>
</tr>
<tr>
<td>380 i</td>
<td>171-450</td>
<td>8</td>
</tr>
<tr>
<td>460 i</td>
<td>207-560</td>
<td>4</td>
</tr>
<tr>
<td>460 i</td>
<td>207-560</td>
<td>8</td>
</tr>
<tr>
<td>530 i</td>
<td>239-620</td>
<td>5</td>
</tr>
<tr>
<td>530 i</td>
<td>239-620</td>
<td>8</td>
</tr>
<tr>
<td>600 i</td>
<td>270-720</td>
<td>5</td>
</tr>
<tr>
<td>600 i</td>
<td>270-720</td>
<td>8</td>
</tr>
<tr>
<td>750 i</td>
<td>337-900</td>
<td>5</td>
</tr>
<tr>
<td>750 i</td>
<td>337-900</td>
<td>8</td>
</tr>
<tr>
<td>920 i</td>
<td>414-1080</td>
<td>5</td>
</tr>
<tr>
<td>920 i</td>
<td>414-1080</td>
<td>8</td>
</tr>
</tbody>
</table>

**Part no.**

- 1A14001: on request
- 1A14002: on request
- 1A14003: on request
- 1A14004: on request
- 1A14005: on request
- 1A14006: on request
### Hoval Mega-3 (380-920) Oil/Gas boiler

Mega-3 i PGS (assembly / mounting on site)

3-pass steel boiler made of steel for oil/gas firing, without control panel. The boiler parts are prepared for the place welding. Casing and control panel separately packed.

<table>
<thead>
<tr>
<th>Mega-3 Type</th>
<th>Range of output kW</th>
<th>Working pressure bar</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>380 i PGS</td>
<td>171-450</td>
<td>4</td>
<td>1A14007</td>
</tr>
<tr>
<td>380 i PGS</td>
<td>171-450</td>
<td>8</td>
<td>on request</td>
</tr>
<tr>
<td>460 i PGS</td>
<td>207-560</td>
<td>4</td>
<td>1A14008</td>
</tr>
<tr>
<td>460 i PGS</td>
<td>207-560</td>
<td>8</td>
<td>on request</td>
</tr>
<tr>
<td>530 i PGS</td>
<td>239-620</td>
<td>5</td>
<td>1A14009</td>
</tr>
<tr>
<td>530 i PGS</td>
<td>239-620</td>
<td>8</td>
<td>on request</td>
</tr>
<tr>
<td>600 i PGS</td>
<td>270-720</td>
<td>5</td>
<td>1A14010</td>
</tr>
<tr>
<td>600 i PGS</td>
<td>270-720</td>
<td>8</td>
<td>on request</td>
</tr>
<tr>
<td>750 i PGS</td>
<td>337-900</td>
<td>5</td>
<td>1A14011</td>
</tr>
<tr>
<td>750 i PGS</td>
<td>337-900</td>
<td>8</td>
<td>on request</td>
</tr>
<tr>
<td>920 i PGS</td>
<td>414-1080</td>
<td>5</td>
<td>1A14012</td>
</tr>
<tr>
<td>920 i PGS</td>
<td>414-1080</td>
<td>8</td>
<td>on request</td>
</tr>
</tbody>
</table>

Price

- 1A14007  
- on request
- 1A14008  
- on request
- 1A14009  
- on request
- 1A14010  
- on request
- 1A14011  
- on request
- 1A14012  
- on request
Control panel with TopTronic regulator for Mega-3 and 1 to 4 mixing circuits

Standard control panel:

Delivery
Control panel separately packed and delivered

Work on site
Mounting of TopTronic regulator

M3.1
For external on/off and nominal/maximum output control with TopTronic or other regulator. Boiler temperature sensor KT10 for regulation already integrated.

– with 7- + 4-pin plug connection for burner control

Regulator sets:

TopTronic 223B
1 stage burner control
Regulation of 1 mixing circuit. 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors

TopTronic 2233B
2 stage burner control
Regulation of 2 mixing circuit. 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors

Additional Regulator:

TopTronic 3
for 1 additional mixing circuit, including sensors
**Hoval Mega-3 (380-920)**

**Price**

Subject to alterations

---

**Thermostat control panel**

*(optional to standard control panel with TopTronic regulator)*

**TopTronic 233B**

- for 2 additional mixing circuit, including sensors
- Part no. 691282

**Additional equipment ZM1**

- Adapter set for second regulator
- Part no. 691138

---

**T 2.2 (pre-wired solution)**

- for systems without TopTronic regulator
- for direct 2-stage burner control
- For external calorifier or external heating commands
- Not usable for system with
  - Boiler sequence control
  - Dual fuel burner
- consists of:
  - Main switch 0/1
  - Switch summer/winter
  - Switch burner output
  - Boiler limit thermostat 110°C
  - 3 boiler thermostat 50-110°C
  - Trouble indication boiler/burner
  - 7+4-pin burner plug connection
  - 2 burner running hour meter
  - 2 burner running hour meter and count up counter
  - Flue gas thermometer
- Part no. 1H 01018
  - AU 2970
  - AU 3268
  - AU 3351

**T0.2-110 (for external control)**

- for systems without TopTronic regulator
- boiler sequence control
- special control functions
- consists of:
  - Main switch 0/1
  - Boiler limit thermostat 130°C
  - 3 boiler thermostat 50-110°C
  - without burner plug connection
  - 2 burner running hour meter
  - 2 burner running hour meter and count up counter
  - Flue gas thermometer
  - Additional sensor for external TopTronic regulator
  - Part no. 1H 01017
    - AU 3312
    - AU 3324
    - AU 3351
    - AU 6001396
## Accessories for heating control system TopTronic

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room station RS 10 for one mixing circuit with room sensor, information</td>
<td>242634</td>
</tr>
<tr>
<td>program and correction key</td>
<td></td>
</tr>
<tr>
<td>Remote control RFF 60S for one mixing circuit with room sensor, easy</td>
<td>2000754</td>
</tr>
<tr>
<td>program key and temperature adjustment</td>
<td></td>
</tr>
<tr>
<td>Room temperature sensor RF 40 for one mixing circuit (instead of RS10 or</td>
<td>242679</td>
</tr>
<tr>
<td>RFF60S)</td>
<td></td>
</tr>
<tr>
<td>Additional outdoor temperature sensor AF 100N for one mixing circuit</td>
<td>242646</td>
</tr>
<tr>
<td>(per heating circuit 1 separate outdoor temperature sensor is possible)</td>
<td></td>
</tr>
<tr>
<td>Flue gas temperature sensor PT 1000/4</td>
<td>242681</td>
</tr>
<tr>
<td>Temperature sensor KT 10-40 with 4 m cable for calorifier or external heat</td>
<td>242371</td>
</tr>
<tr>
<td>acquisition</td>
<td></td>
</tr>
<tr>
<td>Temperature Sensor VF100N for min. return flow temperature for systems</td>
<td>242647</td>
</tr>
<tr>
<td>with boiler circuit pump</td>
<td></td>
</tr>
<tr>
<td>Flow temperature safety thermostat for floor heating</td>
<td></td>
</tr>
<tr>
<td>(per heating circuit 1 thermostat)</td>
<td></td>
</tr>
<tr>
<td>- Thermostat with pocket 619.0015</td>
<td>242190</td>
</tr>
<tr>
<td>- Thermostat 692.1120</td>
<td>242217</td>
</tr>
<tr>
<td>Flow temperature Sensor 9C2.70301 for floor heating incl. cable and plug</td>
<td>687997</td>
</tr>
<tr>
<td>Resistor 910 Ohm</td>
<td>2002602</td>
</tr>
<tr>
<td>Service</td>
<td>Part no.</td>
</tr>
<tr>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>Commissioning</td>
<td></td>
</tr>
</tbody>
</table>
### Mega-3

<table>
<thead>
<tr>
<th>Type</th>
<th>380</th>
<th>460</th>
<th>530</th>
<th>600</th>
<th>750</th>
<th>920</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Maximum Output kW</td>
<td>450</td>
<td>560</td>
<td>620</td>
<td>720</td>
<td>900</td>
<td>1080</td>
</tr>
<tr>
<td>• Minimum Output kW</td>
<td>171</td>
<td>207</td>
<td>239</td>
<td>270</td>
<td>337</td>
<td>414</td>
</tr>
<tr>
<td>• Burner output maximum kW</td>
<td>485</td>
<td>603</td>
<td>665</td>
<td>773</td>
<td>962</td>
<td>1159</td>
</tr>
<tr>
<td>• Burner output minimum kW</td>
<td>181</td>
<td>219</td>
<td>251</td>
<td>283</td>
<td>354</td>
<td>435</td>
</tr>
</tbody>
</table>

| • Maximum working temperature °C | 120  | 120  | 120  | 120  | 120  | 120  |
| • Limit thermostat °C | 130  | 130  | 130  | 130  | 130  | 130  |
| • Min. flue gas temperature oil/gas °C | 125  | 125  | 125  | 125  | 125  | 125  |
| • Min. boiler temperature oil/gas °C | 55/65 | 55/65 | 55/65 | 55/65 | 55/65 | 55/65 |
| • Min. return flow temperature oil/gas °C | 45/55 | 45/55 | 45/55 | 45/55 | 45/55 | 45/55 |

| • Working / Test pressure | bar | 4/6 | 4/6 | 5/7,5 | 5/7,5 | 5/7,5 | 5/7,5 |
| • Working / Test pressure optional | bar | 8/12 | 8/12 | 8/12 | 8/12 | 8/12 | 8/12 |

| • Boiler efficiency at 70°C | % | 92  | 92  | 92,8 | 92,2 | 92,2 | 92,7 |
| • Stand-by deficiency qB at 70°C Watt | 850  | 870  | 1030 | 1150 | 1750 | 1840 |

| • Flue gas resistor at nominal output 180°C flue gas temp., 12.5% CO₂, 500 m above sea level (+/- 20%) LN.i mbar | 3,8  | 4,8  | 4,6  | 5,6  | 5,6  | 6,5  |
| • Flue gas mass flow at nominal output 12.5% CO₂ heat oil kg/h | 765  | 952  | 1054 | 1224 | 1580 | 1836 |

| • Flow resistance boiler ² | z-value | mbar | 0,019 | 0,019 | 0,019 | 0,019 | 0,008 | 0,008 |
| • Water flow resistance | 15 K mbar | 12,6  | 19,5  | 23,8  | 32,2  | 21,2  | 30,5  |
| • Water flow resistance | 20 K mbar | 7,1  | 10,9  | 13,4  | 18,1  | 11,9  | 17,1  |

| • Water flow volume | 15K m³/h | 25,71 | 32,0  | 35,43 | 41,14 | 51,43 | 61,71 |
| • Water flow volume | 20K m³/h | 19,29 | 24,0  | 26,57 | 30,86 | 38,57 | 46,29 |

| • Boiler water capacity Liter | 638  | 620  | 812  | 794  | 1266 | 1225 |
| • Boiler gas volume m³ | 0,657  | 0,671  | 0,917  | 0,932  | 1,494 | 1,525 |
| • Insulation boiler body mm | 100  | 100  | 100  | 100  | 100  | 100  |
| • Weight (incl. casing) LN.i kg | 1175  | 1235  | 1495  | 1539  | 2130 | 2190 |
| • Weight (incl. casing) LN.e kg | 1195  | 1255  | 1525  | 1569  | 2190 | 2250 |

| • Fire room dimension Ø-inside x length m | 548/1658 | 548/1658 | 611/1819 | 611/1819 | 724/2004 | 724/2004 |
| • Fire room volume m³ | 0,391  | 0,391  | 0,533  | 0,533  | 0,825  | 0,825  |

| • Dimension Length (without burner and absorber hood) mm | 930  | 930  | 990  | 990  | 1130 | 1130 |
| • Dimension Width mm | 2320  | 2320  | 2530  | 2530  | 2750 | 2750 |
| • Dimension Height mm | 1750  | 1750  | 1925  | 1925  | 2223 | 2223 |

² Flow resistance boiler in mbar = volume flow (m³/h)² x z
³At minimum output, oil and gas 60% of max. output
Hoval Mega-3 (380-920)

Deminsion

Mega-3 i (380-920)

Transport weight
Boiler without casing

Deminsion without insolation and casing (transport measurements)
Boiler incl. flange, outlet and flue gas collector.
### Hoval Mega-3 (380-920)

#### Dimension

**Mega-3 i (380-920)**

<table>
<thead>
<tr>
<th>Type</th>
<th>øØ</th>
<th>øØ</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
<th>g</th>
<th>h</th>
<th>i</th>
<th>k</th>
<th>l</th>
</tr>
</thead>
<tbody>
<tr>
<td>380 - 460</td>
<td>290</td>
<td>330</td>
<td>485</td>
<td>250</td>
<td>120</td>
<td>548</td>
<td>1623</td>
<td>50</td>
<td>340</td>
<td>765</td>
<td>205</td>
</tr>
<tr>
<td>530 - 600</td>
<td>290</td>
<td>330</td>
<td>530</td>
<td>250</td>
<td>120</td>
<td>611</td>
<td>1819</td>
<td>50</td>
<td>370</td>
<td>840</td>
<td>215</td>
</tr>
<tr>
<td>750 - 920</td>
<td>350</td>
<td>400</td>
<td>600</td>
<td>310</td>
<td>120</td>
<td>724</td>
<td>2004</td>
<td>50</td>
<td>440</td>
<td>980</td>
<td>250</td>
</tr>
</tbody>
</table>

*Mega-3 e (380-920) (only on request)*

<table>
<thead>
<tr>
<th>Typ 380 - 600</th>
<th>15˚</th>
<th>6 x 60˚</th>
</tr>
</thead>
</table>

**Gewindeborung (ohne Schrauben)**

Typ 380 - 920 = M12

(Measurements in mm)
Hoval Mega-3 (380-920)

Flue gas - output diagram

\[ \text{kW} = \text{Boiler output} \]
\[ \text{°C} = \text{Flue gas temperature (DIN 4702). Boiler water 80/60°C,} \]
\[ \lambda = 1.17 \text{ (CO} _2 \text{ heat oil EL = 13.0%, natural gas = 10.0%)} \]

The flue gas temperature will be regulated with the quantity of the regulators. Flue gas temperature appr. 100-130°C

Flue gas regulators

**Mega-3 i**
- upper 4 pipes
- (or 3 at Mega-3 (750,920)) with flue gas regulators

**Mega-3 e**
- (on request)
- Mega-3 (380-600) middle 2 pipes with flue gas regulators
- Mega-3 (750,920) without flue gas regulators
**Standards and guidelines**

The following standards and guidelines must be complied with:
- Hoval technical information and installation instructions
- Hydraulic and technical control regulations of the local gas supply authority
- Gas directives G1 of the SVGW
- Flue gas systems are to be created according to the SVGW directives and the VKF fire protection guidelines.
- Local fire brigade regulations
- The fire protection regulations of the VKF
- Procal data sheet „Corrosion through halogen compounds”
- Procal data sheet „ Corrosion damage in heating installations” and the brochure „Protection against corrosion and boiler scale formation in heating and service water installations”
- Ventilation and air supply for the boiler installation room according to directives SWIKI 91-1
- Directives SWKI 97-1 «Water treatment for heating, steam and air conditioning installations»
- Approval for diverting the flue gas condensate water to the drainage system must be obtained from the responsible authority
- Heating water
  - pH-value 8.3 to 9.0
  - max. oxygen content 0.1 mg/m³
  - chlorine content max. 30 mg/m³.

**Water treatment**

- Old installations must be well flushed before filling.
- The water quality must be tested at least once a year

**Heating system**

**Combustion Air**

- The combustion air supply must be warranted. Opening must not be lockable.
- Minimal free cross section for air opening 6.5 cm² per 1 kW boiler output.

**Burner mounting**

- For mounting of the burner an adapter flange may be required depending on the size of burner flange including delivered by company.
  - The burner connection plug must be mounted opposite the burner door hinges.
  - It should be possible to swivel the boiler door incl. burner by 90°.
  - The space between burner and boiler door must be insulated by the additional delivered insulation material

**Sanitary installation**

- The installation must be carried out according to the regulation of local water works.
- Pressure safety limit max 8 bar.

**Electric connection of the burner**

- 1 x 230 V, 50 Hz, 10 A.
- For safety reasons the electrical cable of the burner must be that short that the plug must be removed when swivelling boiler door.

**Sound absorption**

Sound absorption is possible through the following steps:

- Walls, ceilings and floor should be very solidly built, a sound absorber should be mounted into the air inlet. Pipe holders and support should be protected by means of anti-vibration sleeves.
- Install sound absorber hood for burner.
- If living rooms are located above or under the boiler room, vibration absorbers have to be mounted to the boiler base. Pipes and flue gas tube must be connected flexible with compensators.
- Pumps have to be connected with compensators to the pipes.
- For damping of flame noise it is possible to install a silencer into the flue gas tube (Space should be foreseen for later installation).

**Chimney / Flue gas system**

**Flue gas tube**

- The flue gas tube must be led into the chimney with an angle of 30-45°.
- If the flue gas tube is longer then 1m, it must be insulated.
**Chimney/flue gas system**

**Flue gas tube**
- The flue gas tube between boiler and chimney must be connect with an angle 30 - 45° to the chimney.
- If the flue gas tube is longer then 1m, it must be insulated
- The flue gas tube must be designed that no condensate water can get into the boiler.

**Chimney**
- The flue gas system must be water and acid proof and admitted up to 160°C
- The chimney profile must be calculated for boiler with out draft requirement. Please note guideline SIA / no. 384/4, „chimney for building heating, profile calculation“.

**Recommended chimney diameter**

<table>
<thead>
<tr>
<th>Mega-3 (tube)</th>
<th>Type 380 (tube)</th>
<th>Type 460 (tube)</th>
<th>Type 530 (tube)</th>
<th>Type 600 (tube)</th>
<th>Type 750 (tube)</th>
<th>Type 920 (tube)</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>Ø mm</td>
<td>Ø mm</td>
<td>Ø mm</td>
<td>Ø mm</td>
<td>Ø mm</td>
<td>Ø mm</td>
</tr>
<tr>
<td>25</td>
<td>250</td>
<td>250</td>
<td>300</td>
<td>300</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>20</td>
<td>250</td>
<td>250</td>
<td>300</td>
<td>300</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>15</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>350</td>
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</tr>
<tr>
<td>10</td>
<td>300</td>
<td>300</td>
<td>350</td>
<td>300</td>
<td>350</td>
<td>350</td>
</tr>
</tbody>
</table>

**Basis:** smooth chimney wall out of chrome steel

- Flue gas line ≤ 5 m, Σζ = 2.2,
- Flue gas tube and chimney with insulation above sea level ≤ 1000 m,
- outdoor temperature ≤ 30 °C.
Assembly and mounting on site Mega-3 (380-920)

At a favourable all inclusive price Hoval offers on-site assembly of boiler in complete of component form as well as mounting in boiler room ready to be connected. Mounting according to the strict quality standards of the assembly department.

- In case of an order, please add in your order „version PGS“

<table>
<thead>
<tr>
<th>Boiler in two parts</th>
<th>Mega-3 Type</th>
<th>upper boiler part appr. kg*</th>
<th>lower boiler part appr. kg*</th>
</tr>
</thead>
<tbody>
<tr>
<td>380</td>
<td>520</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>460</td>
<td>580</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>530</td>
<td>630</td>
<td>530</td>
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<tr>
<td>920</td>
<td>1010</td>
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</tbody>
</table>

*kg = without boiler door and flue gas collector

<table>
<thead>
<tr>
<th>Boiler</th>
<th>Min. boiler room dimension in mm</th>
</tr>
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<tbody>
<tr>
<td>Mega-3</td>
<td>Length</td>
</tr>
<tr>
<td>380 – 460</td>
<td>4000</td>
</tr>
<tr>
<td>530 – 600</td>
<td>4500</td>
</tr>
<tr>
<td>750 – 920</td>
<td>4800</td>
</tr>
</tbody>
</table>