Hoval Cosmo (100-1200)

Oil / gas hot water boiler

Description

Subject to alterations

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.

At place
- Mounting of insulation and casing

Cosmo Type	Range of output kW
175	100-175
240	176-240
290	241-290
350	291-350
410	351-410
465	411-465
585	466-585
700	586-700
850	701-850
950	851-950
1050	951-1050
1200	1051-1200

Control panel

- for mounting on the boilerCosmo

Standard control panel for TopTronic regulator with:
- Main switch, with temperature sensor
- Safety limit thermostat110°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

Cosmo
Oil /gas hot water boiler

Part no.

Boiler

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

Delivery

Boiler, insulation and casing separately packed and delivered.

Cosmo Type	Range of output kW	Working pressure bar
175	100-175	6
240	176-240	6
290	241-290	6
350	291-350	6
410	351-410	6
465	411-465	6
585	466-585	6
700	586-700	6
850	701-850	6
950	851-950	6
1050	951-1050	6
1200	1051-1200	6

Delivery:

Assembly and mounting at place.

Cosmo Type	Range of output kW	Working pressure bar
175	100-175	6
240	176-240	6
290	241-290	6
350	291-350	6
410	351-410	6
465	411-465	6
585	466-585	6
700	586-700	6
850	701-850	6
950	851-950	6
1050	951-1050	6
1200	1051-1200	6

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

Standard control panel:

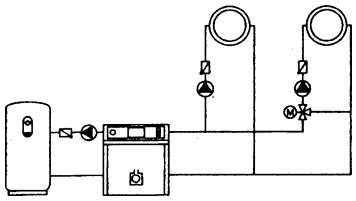
Part no.

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.

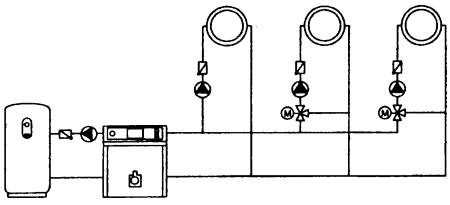
– With 7- + 4-pin plug connection for burner control 1H01031

Regulator set:



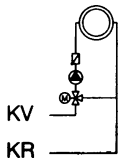
TopTronic 223B
1 stage burner control
Regulation of 1 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors. 691494

TopTronic 203B
Modmodulating 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

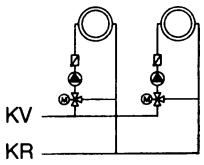
Additional Regulators:



TopTronic 3
for 1 additonal mixing circuit, including sensors 691335

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

	Part no.



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

TopTronic 233B
for 2 additional mixing circuit, including sensors 691282

Additonal equipment ZM1
Adapter set for second regulator 691138

Thermostat control panel (boiler control without heating regulator)

T 2.2 (Pre-wired solution)
- for systems without TopTronic regulator
- for direct 2 stage burner control 1H01030
- 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
  - Boilerlimit thermostat 110°C
  - 3 boiler thermostat 50-110°C
  - Trouble indication boiler/burner
  - 7+4-pin burner plug connection

- 2 burner running hour meter AU2970
- 2 burner running hour meter and count up counter AU3268
- Flue gas thermometer AU3351

T0.2-110 (for external control)
- for systems without TopTronic regulator
- for boiler sequence control 1H01029
- 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 AU3323
- 2 burner running hour meter and count up counter AU3324
- Flue gas thermometer AU3351
- Additional sensor for external TopTronic regulator 6001396

Accessories for heating control system TopTronic

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

Service	Part no.
Commission	

Cosmo

Type			175	240	290	350	410	465	585	700
• Nominal output		kW[1]	175	240	290	350	410	465	585	700
• Minimum output		kW	100	145	155	165	190	205	220	260
• Maximum burner output		kW	190	262	317	382	448	508	639	765
• Max. boiler operation temperature		°C	90	110	110	110	110	110	110	110
• Limit thermostat		°C	130	130	130	130	130	130	130	130
• Min. flue gas temperature [3]		°C	130	130	130	130	130	130	130	130
• Min. operation temperature[3]		°C	60	60	60	60	60	60	60	60
• Min. return flow temperature [3]		°C	55	55	55	55	55	55	55	55
• Working / Test pressure		bar	6/9	6/9	6/9	6/9	6/9	6/9	6/9	6/9
• Boiler efficiency at 80/60°C %			92,8	93,2	93,0	93,3	93,1	93,0	93,0	92,9
• Stand-by losses qB at 70°C		Watt	660	678	695	822	971	1023	1079	1112
• Flue gas resitsance at nominal output 180°C flue gas temperature, 12.5% CO_2, 500 m above sea level (+/- 20%)		mbar	1,0	1,0	1,3	2,0	2,0	2,2	2,8	3,2
• Flow resistance[2]		z-value	0,1	0,072	0,068	0,030	0,030	0,033	0,033	0,009
• Water content		Litre	270	333	385	396	455	574	617	697
• Weight (incl. casing)		kg	577	640	695	801	862	932	1184	1273
• Fire room dimension Ø-inside x Length		mm	490x984	490x1234	490x1434	558x1248	558x1448	558x1648	686x1457	686x1657
• Fire room volume		m³	0,18	0,23	0,26	0,33	0,38	0,44	0,52	0,60
• Dimension	width	mm	970	970	970	1078	1078	1078	1226	1226
	length	mm	1614	1864	2064	1864	2064	2264	2105	2305
	height	mm	1102	1102	1102	1120	1120	1120	1403	1403

[1] kW= Flue gas deficiency according to LRV 92 (Boiler water 80°C)
[2] Flow resitsance boiler in mbar = volume flow $(m^3/h)^2$ x z
[3] At min. output, oil and gas 60% of max. output

Technical data

Subject to alterations

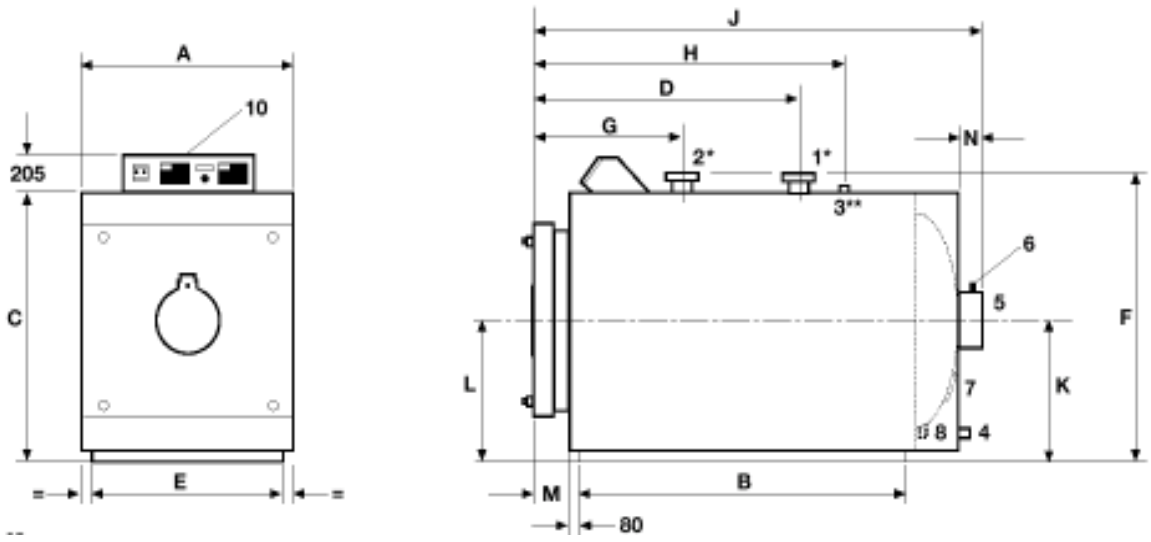
Cosmo

Type			850	950	1050	1200
• Nominal output		kW[1]	850	950	1050	1200
• Minimum output		kW	350	460	480	570
• Maximum burner output		kW	929	1038	1148	1311
• Max. boiler working temperature		°C	110	110	110	110
• Limit thermostat		°C	130	130	130	130
• Min. flue gas temperature [3]		°C	130	130	130	130
• Min. operation temperature [3]		°C	60	60	60	60
• Min. return flow temperature [3]		°C	55	55	55	55
• Working / Test pressure		bar	6/9	6/9	6/9	6/9
• Boiler efficiency at 80/60°C	%		91,4	91,5	91,6	91,5
• Stand-by deficiency qB at 70°C		Watt	1281	1495	1571	1850
• Flue gas resitsance at nominal output 180°C flue gas temperature, 12.5% CO_2, 500 m above sea level (+/- 20%)		mbar	3,8	4,0	4,5	5,2
• Flow resistance[2]		z-value	0,008	0,005	0,005	0,005
• Boiler water capacity		Litre	837	1134	1134	1138
• Weight (incl. casing)		kg	1433	1792	1792	2004
• Fire room dimension Ø-inside x Length		mm	686x2007	834x1877	834x1877	837x2227
• Fire room volume		m³	0,72	0,99	0,99	1,18
• Dimension	width	mm	1226	1400	1400	1400
	length	mm	2655	2504	2504	2854
	height	mm	1403	1580	1580	1580

[1] kW= Flue gas deficiency according to LRV 92 (Boiler water 80°C)
[2] Flow resitsance boiler in mbar = volume flow $(m^3/h)^2$ x z
[3] At min. output, oil and gas 60% of max. output

Cosmo

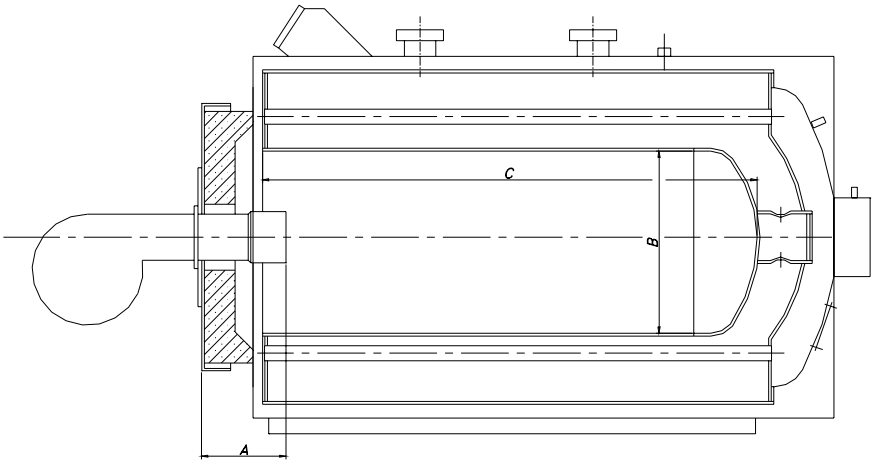
(Measurements in mm)

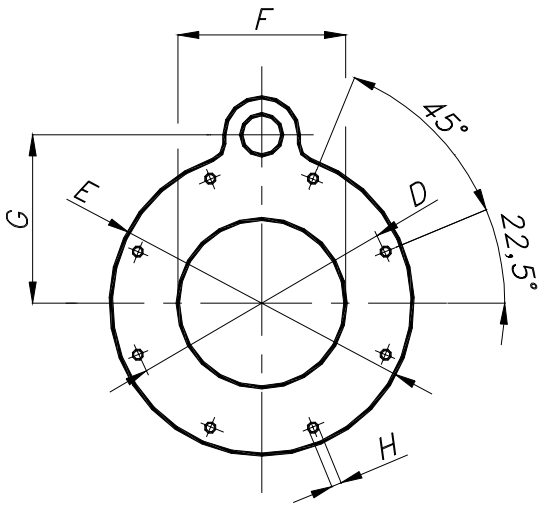


1	Flow	6	Flue gas monitoring point R 1/2“ (plugged off)	9	Control panel
2	Return			10	Optional TopTronic controller(s)
3	Safety valve	7	Cleaning door		
4	Drain R11/2“ (175-465)	8	Smokebox drain R1/2“		

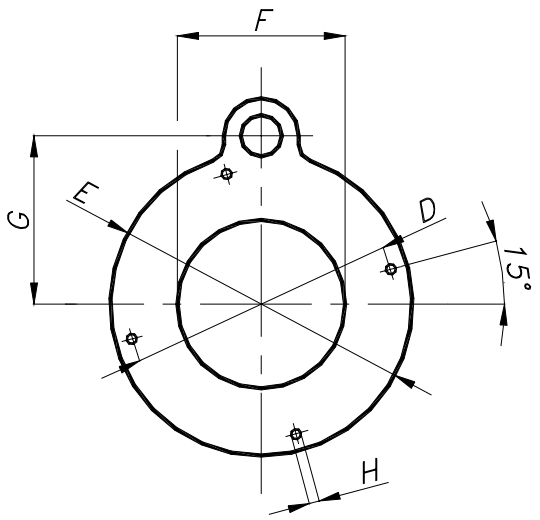
Cosmo Type	A	B	C	D	E	F	G	H	J	K	L	M	N
175	970	1014	1033	955	920	1102	495	1145	1614	552	552	201	110
240	970	1264	1033	1055	920	1102	495	1295	1864	552	552	201	110
290	970	1464	1033	1000	920	1102	495	1495	2064	552	552	201	110
350	1078	1264	1141	1105	1028	1210	515	1365	1864	606	606	201	110
410	1078	1464	1141	1185	1028	1210	515	1465	2064	606	606	201	110
465	1078	1664	1141	1100	1028	1210	515	1665	2264	606	606	201	110
585	1226	1464	1334	1245	1176	1403	565	1515	2105	725	725	231	110
700	1226	1664	1334	1360	1176	1403	565	1665	2305	715	715	231	110
850	1226	2014	1334	1245	1176	1403	565	2015	2655	725	725	231	110
950	1400	1864	1491	1355	1350	1580	595	1845	2504	795	795	231	80
1050	1400	1864	1491	1355	1350	1580	595	1845	2504	795	795	231	80
1200	1400	2214	1491	1515	1350	1580	595	2195	2854	795	795	231	80

Cosmo (175 - 1200)





Flange Cosmo 175 - 465

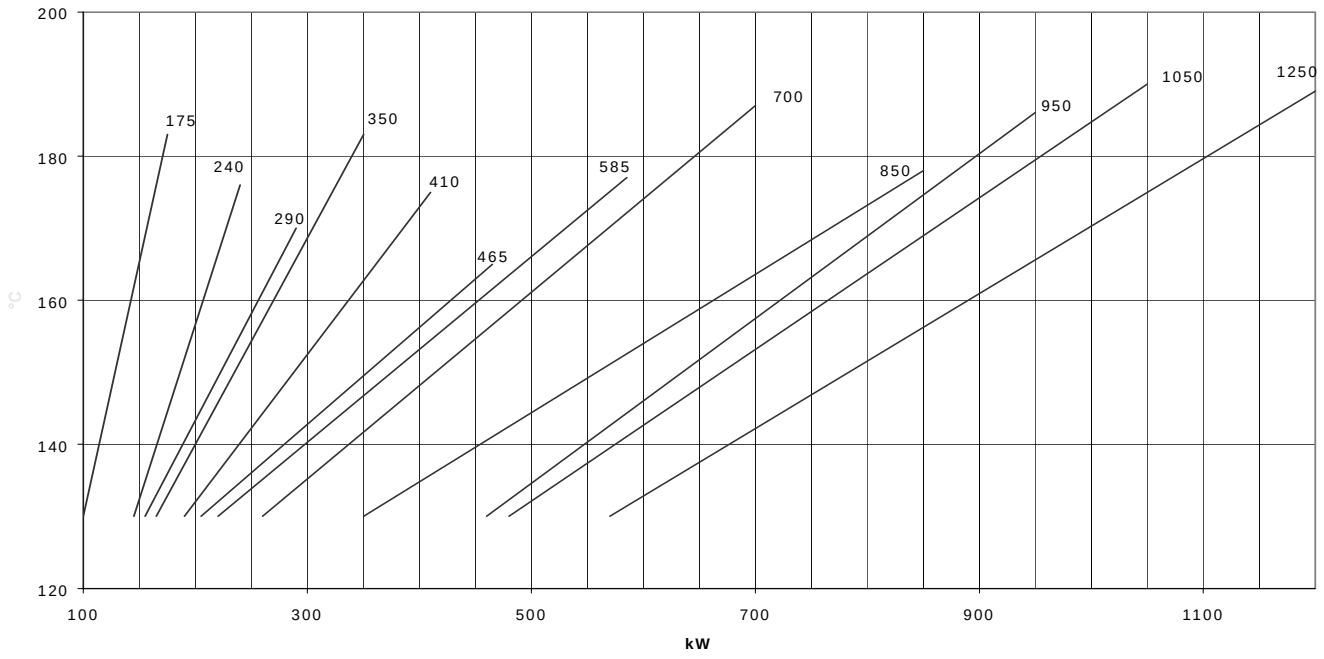


Flange Cosmo 585 - 1200

Dimension
(all measurements in mm)

Cosmo	A		B	C	D	E	F	G	H
	min	max							
175	270	320	490	984	230	350	160	200	M12
240	270	320	490	1234	230	350	200	200	M12
290	270	320	490	1434	230	360	200	200	M12
350	270	440	588	1248	350	460	200	250	M12
410	270	440	558	1448	350	460	250	250	M12
465	270	440	558	1648	350	460	250	250	M12
585	300	500	686	1457	350	460	250	250	M12
700	300	500	686	1657	350	460	250	250	M12
850	300	500	686	2007	350	460	250	250	M12
950	300	500	834	1877	350	460	250	250	M12
1050	300	500	834	1877	350	460	250	250	M12
1200	300	500	834	2227	350	460	250	250	M12

Flue gas / Output diagram



kW = Boiler output
°C = Flue gas temperature with Oil EL, Flow 80°C, Return flow 60°C, CO_2 Heizöl EL = 13,0%, clean heating surface
Firing with gas or oil L if the flue gas temperature is approx. 15°C higher

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 systemes 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 obtaines 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 that short that the plug must be removed when swivelling boiler door.

Sound absorbation

Sound absorbation 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).

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).

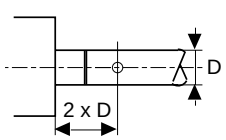
Chimney / Flue gas system

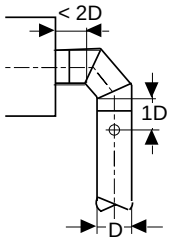
Flue gas tube

- 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





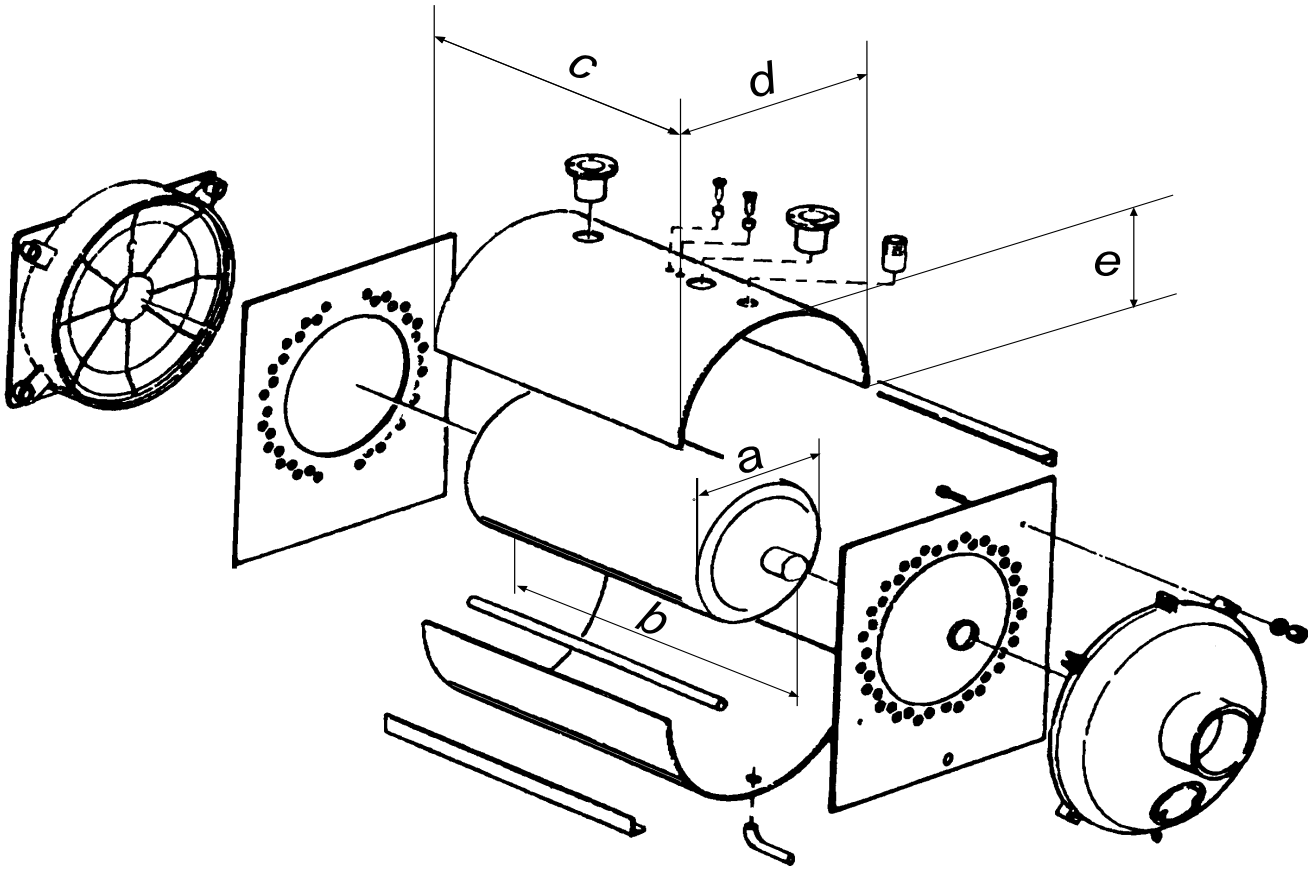
Sanitary installation

- 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



Combustion chamber

Cosmo type	a	b	weight kg
175	500	943	59
240	500	1193	74
290	500	1393	86
350	600	1325	112
410	600	1525	130
465	600	1725	148
585	700	1434	185
700	700	1734	210
850	700	2084	250
950	850	1948	316
1050	850	1948	316
1200	850	2298	375

Water wall shell

Cosmo type	c	d	e	weight kg
175	988	802	401	40
240	1238	802	401	50
290	1438	802	401	58
350	1238	910	455	59
410	1438	910	455	65
465	1538	910	455	74
585	1436	1056	528	74
700	1636	1056	528	84
850	1986	1056	528	102
950	1834	1270	635	114
1050	1834	1270	635	114
1200	2184	1270	635	136

Place requirement for assembly and mounting on site

Min. Heating room dimension in mm

	175	240	290	350	410	465	585	700	850	950	1050	1200
Length	3000	3000	3000	3000	3000	3000	3500	3500	3500	4000	4000	4000
Width	2200	2200	2200	2200	2200	2200	2500	2500	2500	2800	2800	2800
Hight	2500	2500	2500	2500	2500	2500	3000	3000	3000	3000	3000	3000

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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

Max-3 Type	Range of output kW
250	160-300
320	192-360
420	252-500
530	318-610
620	372-720
750	450-870
1000	600-1150
1250	750-1400

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 TopTronic heating regulator
- for 1 or 2 heating circuit
- Operation switch
- Temperature adjustment “Day/Night”
- Adaption with Microcomputer
- Automatic switch summer/winter
- Heating boiler temperature control
- 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

Max-3
Oil/gas hot water boiler

Part no.

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.

Max-3 Type	Range of output kW	Working pressure bar	
250	160-300	6	1A16021
320	192-360	6	1A16022
420	252-500	6	1A16023
530	318-610	6	1A16024
620	372-720	6	1A16025
750	450-870	6	1A16026
1000	600-1150	6	1A16027
1250	750-1400	6	1A16028

Delivery: welding on-site

Assembly and mounting at place.

Max-3 Type	Range of output kW	Working pressure bar	
320 PGS	192-360	6	1A 16030
420 PGS	252-500	6	1A 16031
530 PGS	318-610	6	1A 16032
620 PGS	372-750	6	1A 16033
750 PGS	450-870	6	1A 16034
1000 PGS	600-1150	6	1A 16035
1250 PGS	750-1400	6	1A 16036

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

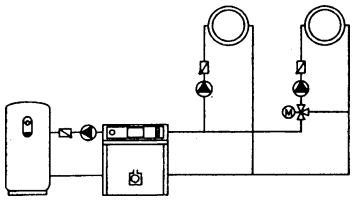
Standard control panel:

	Part no.
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.

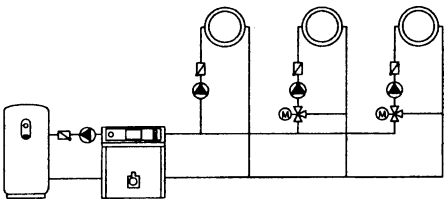
– With 7- + 4-pin plug connection for burner control — 1H01031

Regulator set:



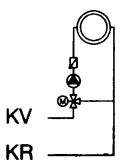
TopTronic 223B
1 stage burner control
Regulation of 1 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors. — 691494

TopTronic 203B
Modmodulated 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

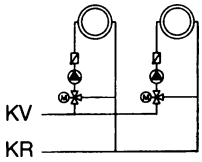
Additional Regulators:



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

TopTronic 3
for 1 additonal mixing circuit, including sensors — 691335

	Part no.



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

TopTronic 233B
for 2 additional mixing circuit, including sensors — 691282

Additonal equipment ZM1
Adapter set for second regulator — 691138

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 — 1H01030

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 — AU2970
- 2 burner running hour meter — AU3268
- 2 burner running hour meter and count up counter — AU3351
- Flue gas thermometer

T0.2-110 (for external control)
- for systems without TopTronic regulator
- for boiler sequence control
- for special control functions — 1H01029

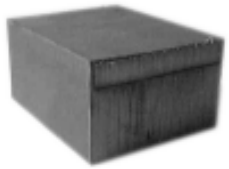
consists of:
- Main switch 0/1
- Boiler limit thermostat 130°C
- 3 boiler boiler thermostat 50-110°C
- without burner plug connection

- 2 burner running hour meter — AU3323
- 2 burner running hour meter and count up counter — AU3324
- Flue gas thermometer — AU3351
- Additional sensor for external TopTronic regulator — 6001396

Accessories for heating control system TopTronic

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

Accessories



Vibration damper for boiler base

For sound and vibration absorbation. Made of unvulcanized rubber.
Cross section 80/50mm.

Delivery

4 vibration damper per boiler, mounted under the boiler base

To Max-3 Type	Size	Length mm	Part no.
250-530	3	200	239706
620-750	L400	400	239708
1000-1250	L500	500	239709

Flue gas thermometer

Ø 80–150 (Mounting at place) 241133

Service	Part no.
Commissioning	

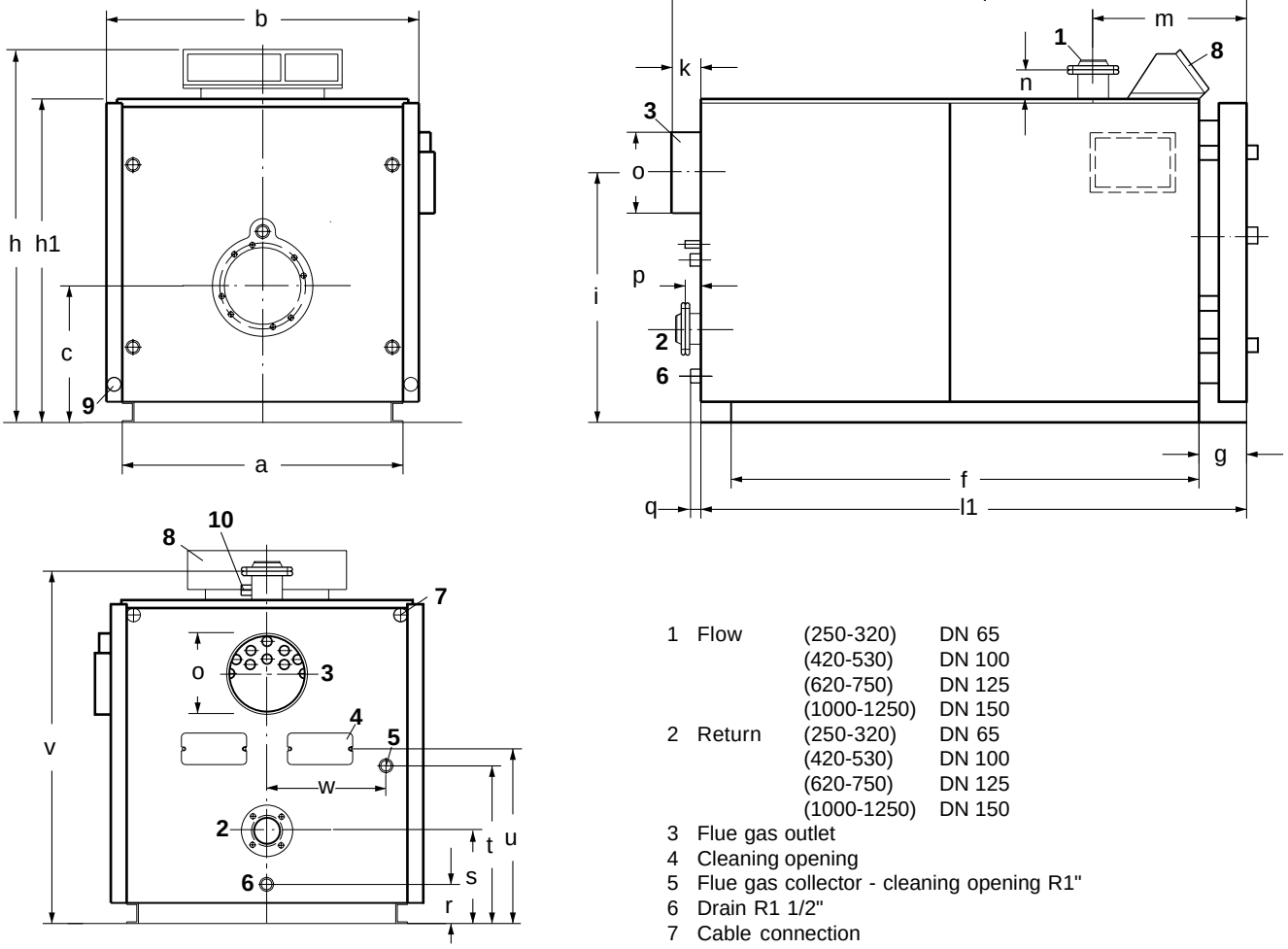
Max-3

Type			250	320	420	530	620	750	1000	1250
• Max. output		kW[1]	300	360	500	610	720	870	1150	1400
• Min. output		kW	160	192	252	318	372	450	600	750
• Max. buner output		kW	323	388	535	665	773	933	1234	1514
• Max. Boiler working temperature		°C	120	120	120	120	120	120	120	120
• Safety limit temperature		°C	130	130	130	130	130	130	130	130
• Min. Flue gas temperature oil/gas [3]		°C	130	130	130	130	130	130	130	130
• Min. boiler flow temperature oil/gas [3]		°C	60/65	60/65	60/65	60/65	60/65	60/65	60/65	60/65
• Min. return temperature oil/gas [3]		°C	50/55	50/55	50/55	50/55	50/55	50/55	50/55	50/55
• Working / Test pressure		bar	6/9	6/9	6/9	6/9	6/9	6/9	6/9	6/9
• Boiler efficiency at 80/60°C		%	92,3	93,2	92,9	92,6	92,5	92,5	92,6	92,6
• Stand-by deficiency qB at 70°C		Watt	680	819	1000	1035	1120	1180	1250	1380
• Flue gas resistance at nominal output 180°C flue gas temperature, 12.5% CO_2, 500 m above sea level (+/- 20%)		mbar	2,54	4,5	4,9	5,7	5,2	6,5	7,4	9,0
• Flue gas volume at nominal output 12,5% Co_2 Oil		kg/h	520	554	850	1037	1224	1479	1955	2295
• Flow resistance boiler	[2]	z-value	0,1	0,1	0,022	0,022	0,008	0,008	0,003	0,003
• Water flow resistance at	15K	mbar	29,4	33,4	18,0	26,7	13,5	19,8	13,0	17,9
	20K	mbar	16,5	18,8	10,1	15,0	7,6	11,1	7,3	10,8
• Water flow volume at	15K	m³/h	17,14	18,20	28,57	34,86	41,14	49,71	65,71	77,14
	20K	m³/h	12,86	13,71	21,43	26,14	30,86	37,29	49,29	57,86
• Boiler content		Liter	361	420	552	520	969	938	1528	1478
• Boiler gas volume		m³	0,317	0,370	0,583	0,602	0,846	0,872	1,350	1,390
• Insulation boiler body		mm	80	80	80	80	80	80	80	80
• Weight (incl. casing)		kg	793	885	1093	1150	1770	1800	2500	2600
• Weight (without casing)		kg	693	765	943	1000	1590	1620	2360	2460
• Fire room dimension Ø-inside x Length		mm	486x1295	486/1515	606/1624	606/1624	684/1899	684/1899	782/2182	782/2182
• Fire room volume		m³	0,240	0,282	0,466	0,466	0,669	0,669	1,047	1,047
• Dimension (without burner and sound absorber hood)	width	mm	970	970	1190	1190	1310	1310	1500	1500
	length	mm	1736	2065	2178	2178	2452	2452	2739	2739
	height	mm	1255	1255	1435	1435	1555	1555	1755	1755

[1] kW= Flue gas deficiency according to LRV 92 (Boiler water 80°C)
[2] Boiler water flow resistance in mbar = water flow volume $(m^3/h)^2$ x z
[3] At min. output, oil and gas 60% of max. output

Max-3

(Measurements in mm)

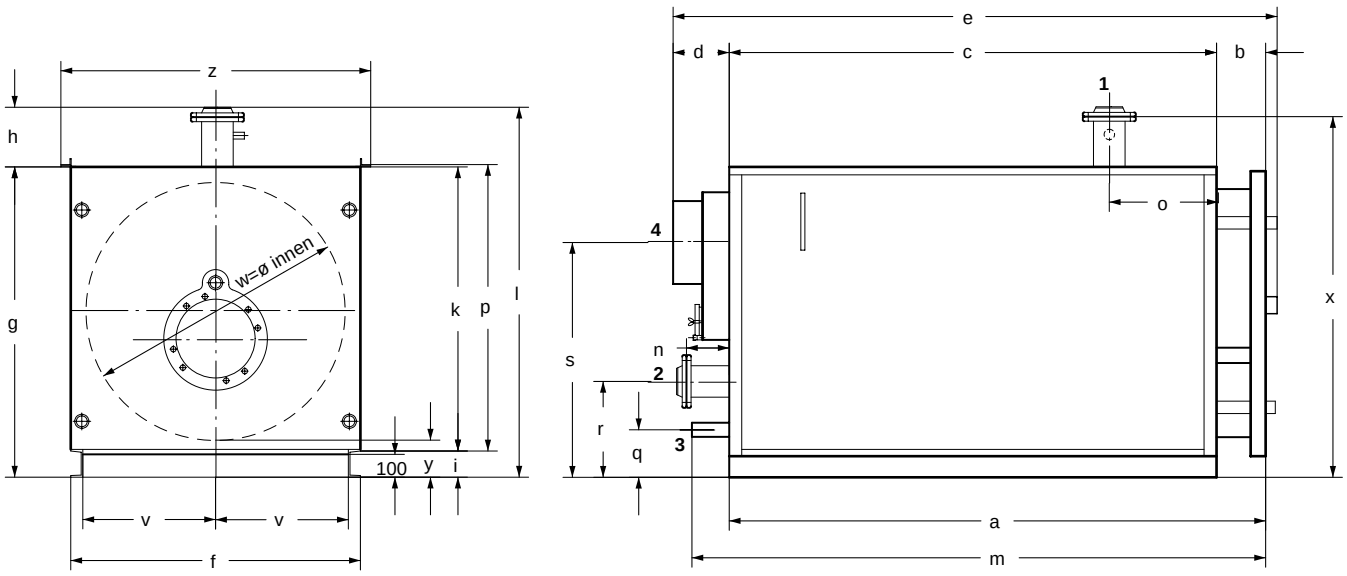


1 Flow (250-320) DN 65
(420-530) DN 100
(620-750) DN 125
(1000-1250) DN 150
2 Return (250-320) DN 65
(420-530) DN 100
(620-750) DN 125
(1000-1250) DN 150
3 Flue gas outlet
4 Cleaning opening
5 Flue gas collector - cleaning opening R1"
6 Drain R1 1/2"
7 Cable connection
8 Control panel
9 Electric connection
10 Socket Rp 3/4" with pocket for boiler temperature sensor

Max-3 Type	a	b	c	f	g	h	h1	i	k	l	l1	m	n	Ø o	p	q	r	s	t	u	v	w
250	850	970	450	1440	178	1255	1050	800	109	1845	1736	579	93	249	59	39	170	420	527	592	1143	345
320	850	970	450	1660	178	1255	1050	800	109	2065	1956	579	93	249	59	39	170	420	527	592	1143	345
420-530	1060	1190	515	1770	181	1435	1230	950	104	2178	2074	641	100	299	54	34	175	350	595	660	1330	450
620-750	1180	1310	550	2045	181	1555	1350	1050	105	2452	2347	666	95	349	55	35	170	550	722	786	1445	475
1000-1250	1370	1500	635	2330	181	1755	1549	1250	107	2739	2632	681	111	349	77	37	175	415	620	685	1660	590

Dimension without insulation and casing

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



1 Flow
2 Return
3 Drain
4 Flue gas outlet

Max-3 Type	a	b	c	d	e	f	g	h	i	k	l	m	n	o	p
250	1589	149	1440	227	1889	850	1000	184	120	880	1184	1746	178	400	–
320	1809	149	1660	227	2109	850	1000	184	120	880	1184	1966	178	400	–
420-530	1920	150	1770	277	2222	1060	1180	196	120	1060	1376	2077	175	460	1072
620-750	2195	150	2045	228	2498	1180	1300	196	120	1180	1496	2353	172	485	1192
1000-1250	2480	150	2330	228	2783	1370	1500	160	120	1380	1660	2638	198	500	1392

Max-3 Type	q	r	s	v	w	x	y	z	1	2	3	4
250	170	420	800	370	812	1143	143	–	DN 65/PN 6	DN 65/PN 6	1 1/2"	Ø 249
320	170	420	800	370	812	1143	143	–	DN 65/PN 6	DN 65/PN 6	1 1/2"	Ø 249
420-530	175	350	950	475	990	1330	150	1140	DN 100/PN 6	DN 100/PN 6	1 1/2"	Ø 299
620-750	170	550	1050	535	1110	1445	145	1260	DN 125/PN 6	DN 125/PN 6	1 1/2"	Ø 349
1000-1250	175	415	1250	630	1298	1660	150	1450	DN 150/PN 6	DN 150/PN 6	1 1/2"	Ø 349

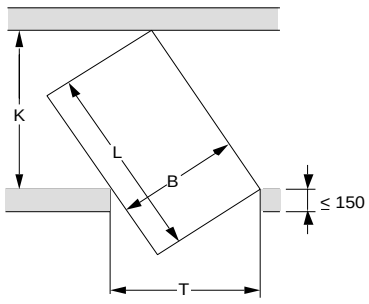
Required min. door and corridor measurment for boiler movement

(min. calculated measurements)

$$K = \frac{B}{T} \times L$$

$$T = \frac{B}{K} \times L$$

T = Door width
K = Corridor width
B = Boiler width
L = Max. boiler length



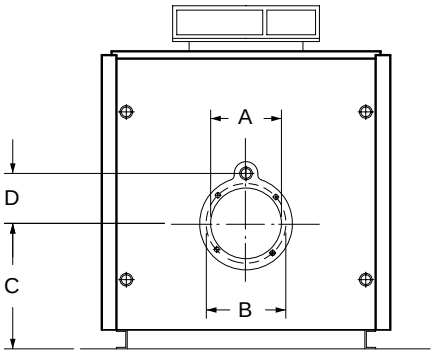
Hoval Max-3 (250-1250)

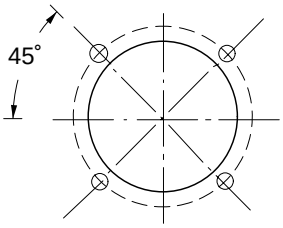
Combustion related dimension

Hoval

subject to alterations

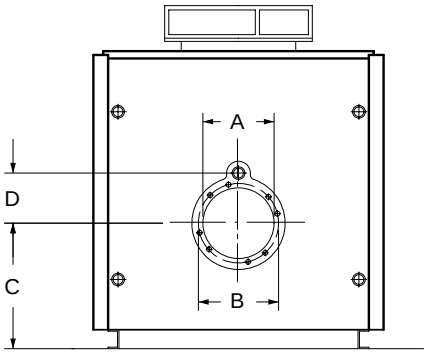
Max-3 (250-320)

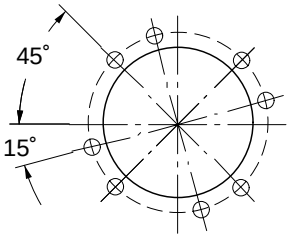




Flange Max-3 (250-320)
4 x M10 (45°)

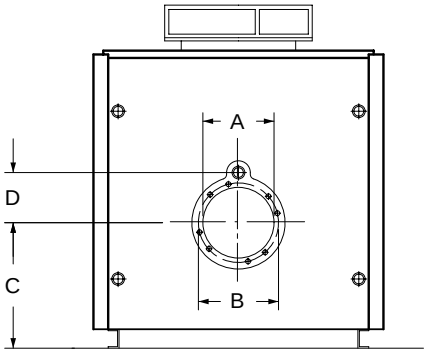
Max-3 (420-530)

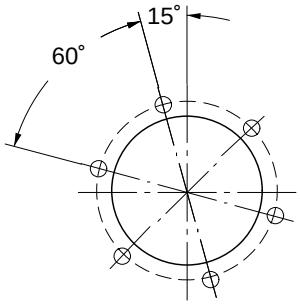




Flange Max-3 (420–530)
4 x M12 (45°) +
4 x M12 (15°)

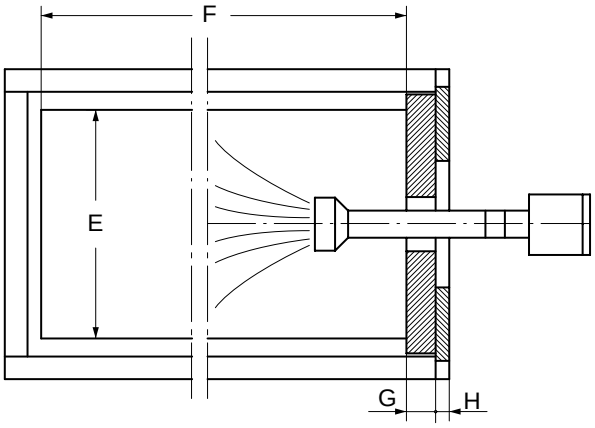
Max-3 (620-1250)





Flange Max-3 (620–750)
6 x M12 (15°)

Flange Max-3 (1000–1250)
6 x M16 (15°)

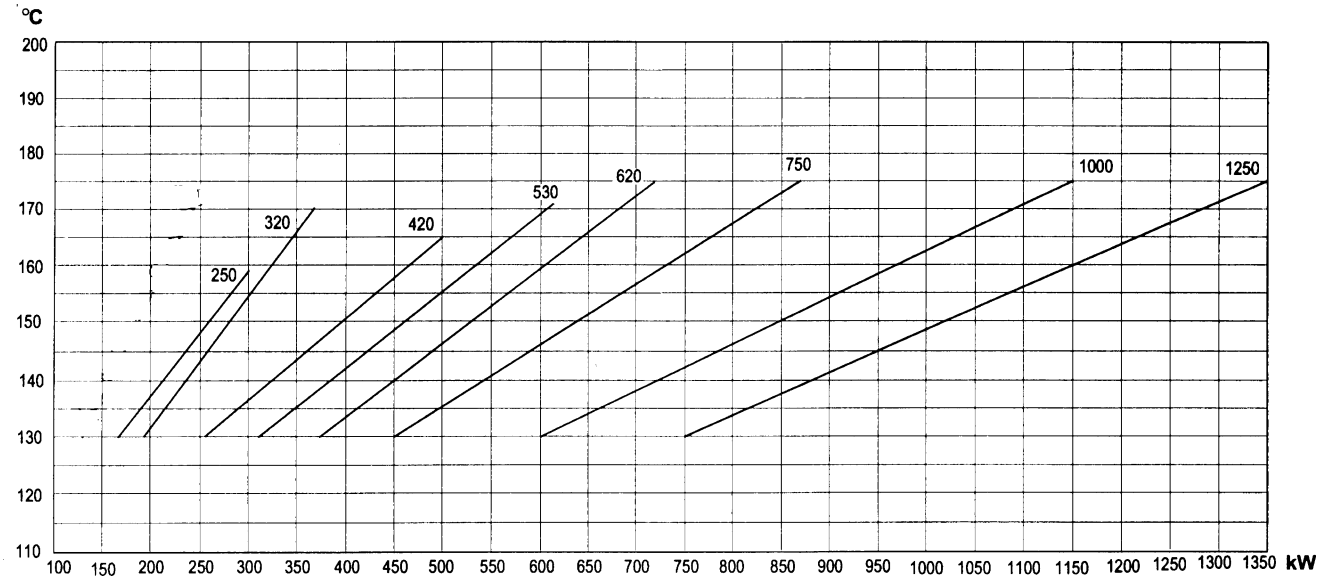


Dimension

Max-3 Type	A	B	C	D	E	F	G	H
250	240	270	450	195	486	1295	162	30
320	240	270	450	195	486	1515	162	30
420-530	290	330	515	250	606	1624	163	30
620-750	350	400	550	310	684	1899	163	30
1000-1250	400	450	635	330	782	2182	163	30

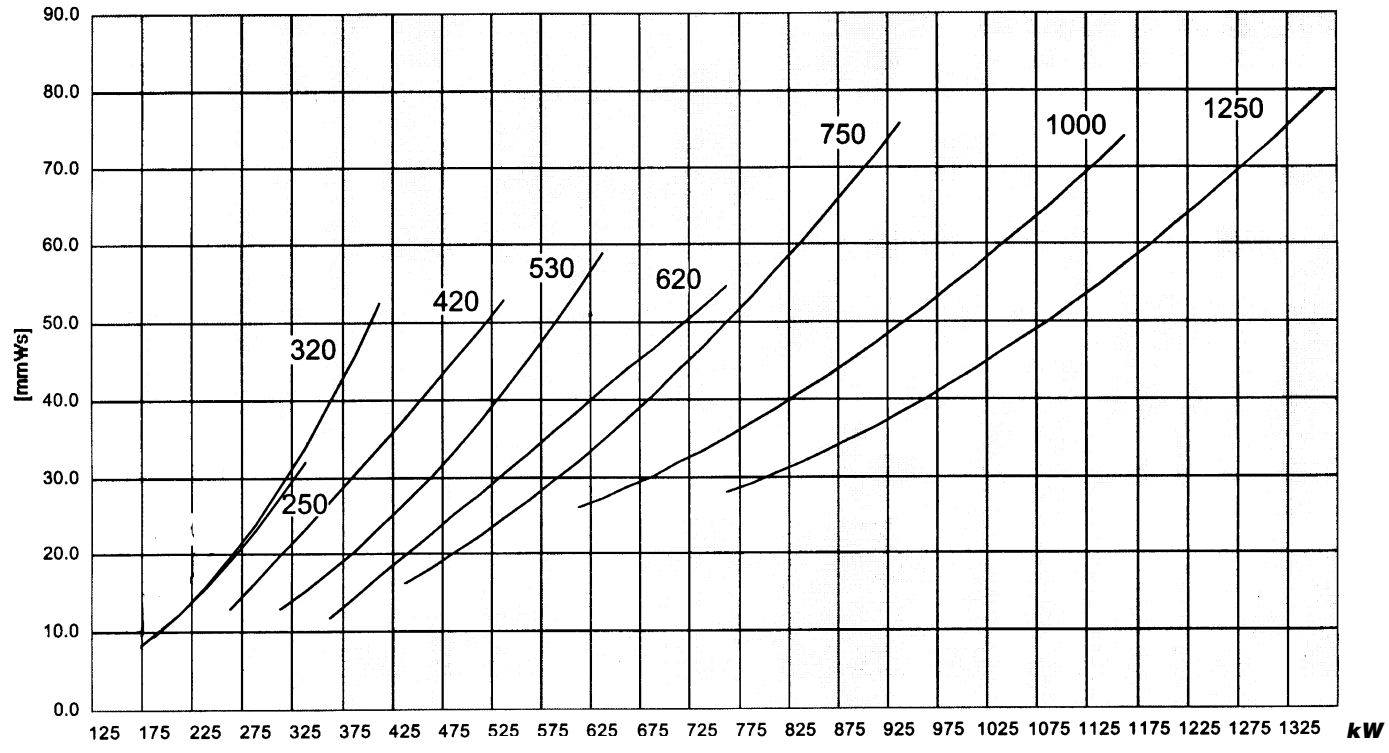
(All measurement in mm)

Flue gas / Output diagram



kW = Boiler output
°C = Flue gas temperature with diesel oil, flow 80°C, return flow 60°C, CO_2 diesel oil = 13,0%, clean heating surface
Firing with gas or medium oil the flue gas temperature is approx. 15°C higher

Flue gas resistance



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 systemes 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 obtaines 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 absorbation

Sound absorbation 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).

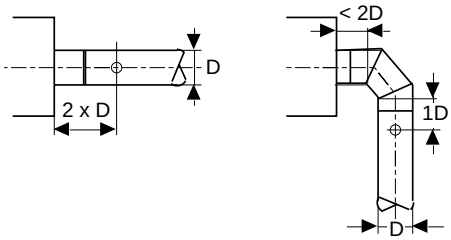
Chimney / Flue gas system

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.

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 bar.

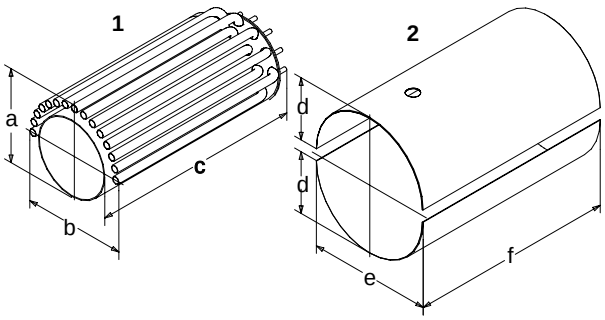
Assembly and mounting on site
Max-3 (320-1250)

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.

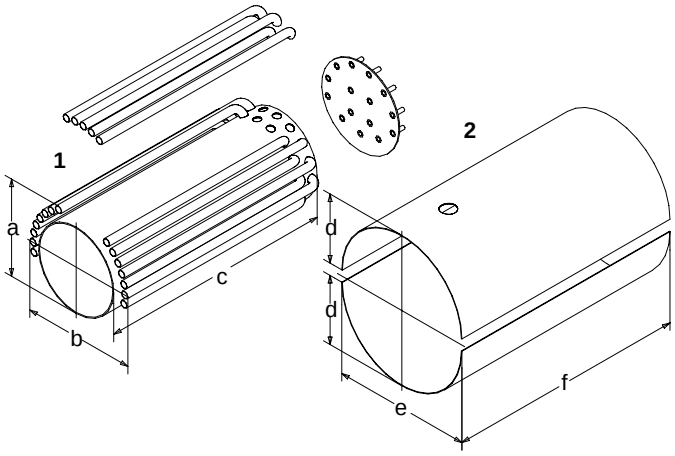
- In case of an order, please add in your order „assembly and mounting on site“
- Assembly and mounting work on site has to be coordinate with Hoval on a case to case basis

Dimension and weight

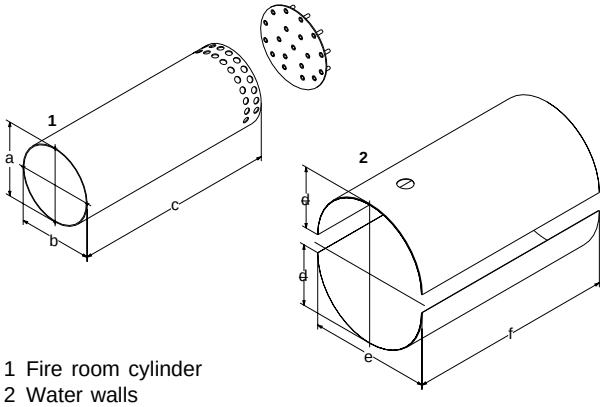
Max-3 (320–530)



Max-3 (620–750)



Max-3 (1000–1250)



1 Fire room cylinder
2 Water walls

Combustion chamber 1

Max-3 Type	a	b	c	Weight kg
(320)	610	715	1615	225
(420, 530)	730	835	1725	325
(620, 750)	745	915	2000	410
(1000, 1250)	800	800	2180	375

Water wall-shell 2

d	e	f	Weight kg
410	820	1555	65
500	1000	1665	105
560	1120	1940	135
655	1310	2225	215

Place requirement for assembly and mounting on site

Min. heating room dimension in mm

	320	420	530	620	750	1000	1250
Length	3500	3700	3700	4500	4500	5000	5000
Width	2200	2200	2200	2500	2500	2800	2800
Hight	2500	2500	2500	3000	3000	3000	3000

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

subject to alterations

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

ST-Plus Typ	Range of output kW
325	125-378
500	193-581
800	310-930
1250	484-1453
1500	726-1744
1800	726-2093
2100	1012-2442
2500	1012-2907

Control panel

- for mounting on the boilerSt-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”
- Adaption 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 Thermostate

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

ST-plus
Oil / gas hot water boiler

Part no.

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

Delivery:
Boiler, insulation and casing separately
delivered

ST-Plus Type	Range of output kW	Working pressure bar	
325	125-378	5	1A13020
500	193-581	5	1A13022
800	310-930	5	1A13024
1250	484-1453	5	1A13026
1500	726-1744	6	1A13027
1800	726-2093	6	1A13028
2100	1012-2442	6	1A13029
2500	1012-2907	6	1A13030

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

Part no.

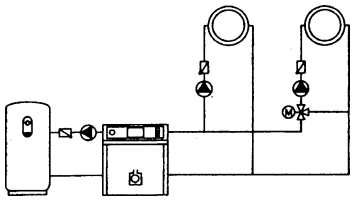
Standard control panel:

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.

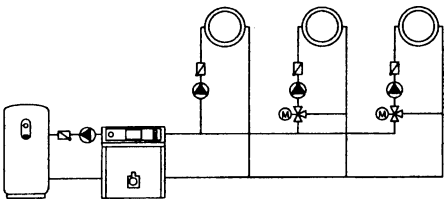
– with 7- + 4-pin plug connection for burner control — 1A 13019

Regulator sets:



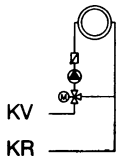
TopTronic 223B
1 stage burner control
Regulation of 1 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors — 691494

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



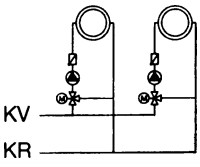
TopTronic 2233B
2 stage burner control
Regulation of 2 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors — 691435

Additional Regulator:



TopTronic 3
for 1 additonal mixing circuit, including sensors — 691335

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



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

	Part no.
TopTronic 233B	
for 2 additional mixing circuit, including sensors	691282
Additonal equipment ZM1	
Adapter set for second regulator	691138

Thermostat control panel (boiler control without heating 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	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	AU 2970
- 2 burner running hour meter	6003627
- 2 burner running hour meter and count up counter	
- Flue gas thermometer	AU 3351

T0.2-110 (for external control)	
- for systems without TopTronic regulator - for boiler sequence control - for special control functions	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	AU 3312
- 2 burner running hour meter and count up counter	691321
- Flue gas thermometer	AU 3351
- Additional sensor for external TopTronic regulator	6001396

Accessories for heating control system TopTronic

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

Service **Part no.**

Commissioning

ST-Plus

Type			325	500	800	1250	1500	1800	2100	2500
• Maximal output		kW	378	581	930	1453	1744	2093	2442	2907
• Minimal output		kW	125	193	310	484	726	726	1012	1012
• Burner output maximum		kW	411	628	1003	1574	1887	2270	2637	3139
• Burner output minimum		kW	134	207	330	516	772	772	1075	1075
• Max. boiler temperatur		°C	120	120	120	120	120	120	120	120
• Safety limit temperature		°C	130	130	130	130	130	130	130	130
• Min. Flue gas temperature oil/gas		°C	130	130	130	130	130	130	130	130
• Min. boiler flow temperature oil/gas		°C	70/75	70/75	70/75	70/75	70/75	70/75	70/75	70/75
• Min. return temperature oil/gas		°C	55/65	55/65	55/65	55/65	55/65	55/65	55/65	55/65
• Working-/Test pressure		bar	5/7.5	5/7.5	5/7.5	5/7.5	6/9	6/9	6/9	6/9
• Working / Test pressure (alternative)		bar	8/12	8/12	8/12	8/12	8/12	8/12	8/12	8/12
• Boiler efficiency at 80/60°C		%	92.6	93	93	92.6	92.7	92.4	92.7	92.7
• Stand-by loss qB at 70°C		Watt	2170	2390	2660	3610	4140	4140	5270	5270
• Flue gas resistance at nominal output		mbar	4.7	4.6	6	7.3	8.1	8.6	7.2	8.4
• FLue gas volume at nominal output 12.5% CO_2 oil		kg/h	642.6	987.7	1581.0	2470.1	2964.8	3558.1	4151.4	4941.9
• Flow resistance boiler		z-value	0.035	0.016	0.0068	0.0032	0.0032	0.0032	0.002	0.002
• Water resistance at	15K	mbar	16.4	17.8	19.3	22.2	32.0	46.1	39.2	55.6
• Water resistance at	20K	bar	9.2	10.0	10.9	12.5	18.0	25.9	22.1	31.3
• Water flow volume at	15K	m^3/h	21.7	33.3	53.3	83.3	100.0	120.0	140.0	166.7
• Water flow volume at	20K	m^3/h	16.3	25.0	40.0	62.5	75.0	90.0	105.0	125.0
• Boiler content		Liter	370	520	950	1600	2220	2220	2400	2400
• Boiler gas volume		m^3	0.439	0.668	1.097	1.710	2.355	2.355	3.305	3.305
• Insulation boiler body		mm	100	100	100	100	100	100	100	100
• Weight (incl. casing)		kg	1177	1550	2313	3420	4560	4560	7030	7030

Hoval ST-plus (325-2500)

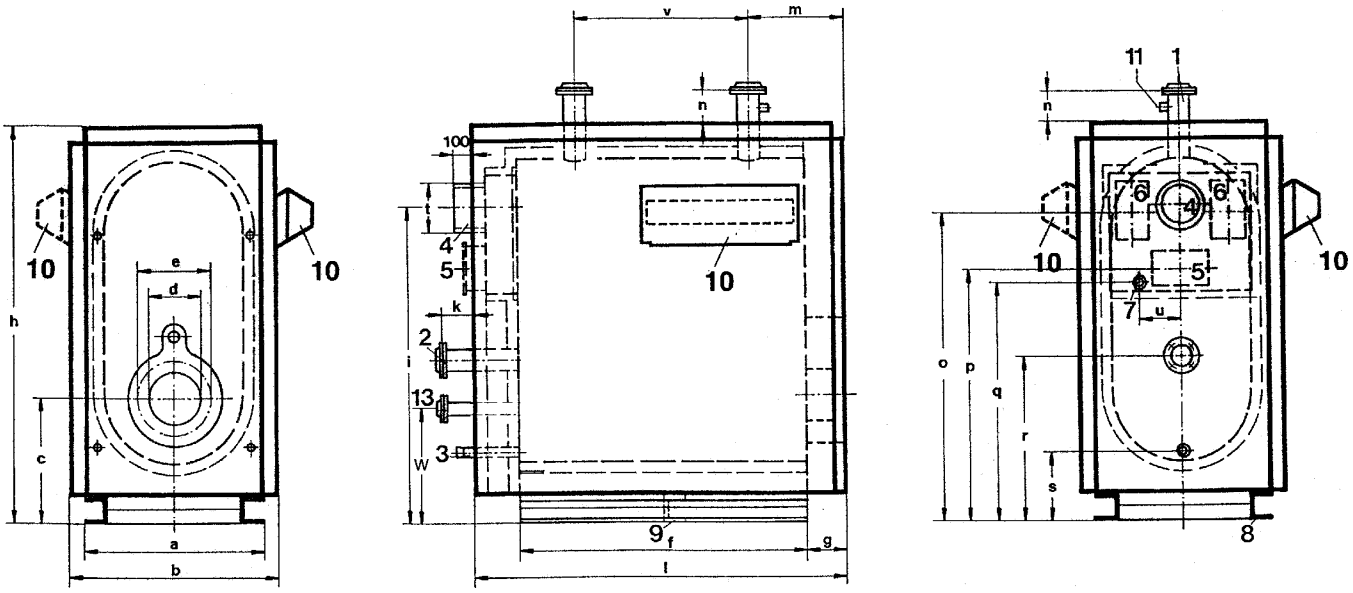
Dimension

Hoval

subject to alterations

ST-Plus

(Measurments in mm)



ST-plus Type	l	b	h	a	c	d	e	f	g	i	k	m	n	o
325	1674	896	1615	790	580	250	350	1292	138	1240	69	358	124	–
500	2034	896	1615	790	580	250	350	1652	146	1264	69	412	122	–
800	2416	996	1800	890	600	300	400	2060	133	1468	59	490	121	–
1250	2980	1226	1990	1120	630	350	400	2500	149	1307	57	556	124	1250
1500-1800	2980	1406	2267	1300	725	400	450	2500	149	1650	57	556	117	1518
2100-2500	3568	1586	2520	1480	750	400	450	3080	153	1830	59	560	121	1272

ST-plus Type	p	q	r	s	tØ	u	Flow DN	Return DN	Flange	v	w	Safety flow DN	Safety return
325	975	866	660	305	200	270	80	80	PN 16	829	—	50	1 1/2"
500	991	881	530	280	250	270	100	100	PN 16	1015	—	50	1 1/2“
800	1082	972	650	230	360	270	125	125	PN 16	1377	430	65	2 "
1250	—	1022	630	230	450	110	150	150	PN16	1734	—	65	65
1500-1800	1257	1147	680	220	450	415	150	150	PN16	1734	400	80	65
2100-2500	1668	1167	770	270	650	515	200	200	PN16	2171	460	100	65

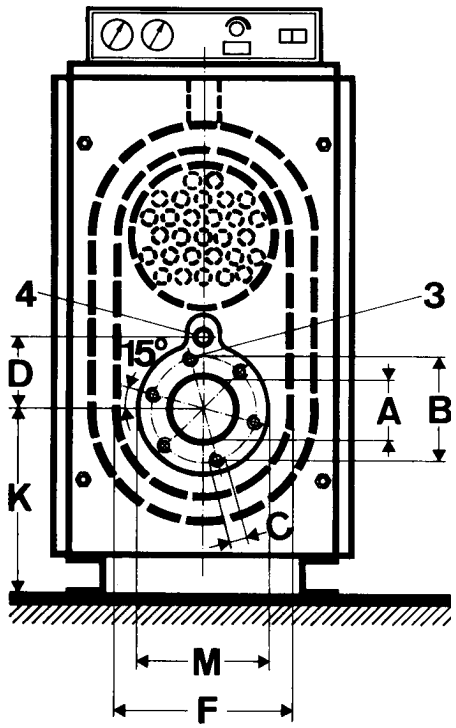
1 Flow
2 Return
3 Drain R 1 1/2"
4 Flue gas outlet
5 Cleaning opening 450 x 260 mm
6 Cleaning opening 260 x 450 mm
7 Flue gas collector - cleaning outlet 1"
8 Base U-channel,
Type 270–1800 = 55/120mm
Type 2100–2500 = 75/200mm
9 Base U-channelr to Type 1000–2500
10 Control panel
11 Fitting 3/4" with pocket 3/4"-120/Ø19 for temperature sensor
12 Safety flow
13 Safety return

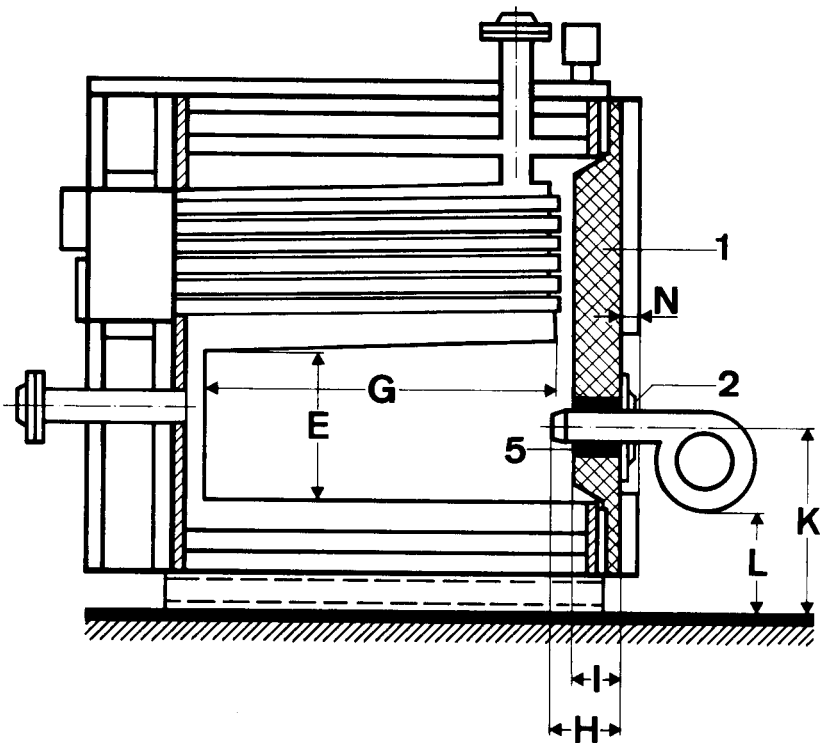
Hoval ST-plus (325-2500)

Burner mounting

Hoval

subject to alterations





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

ST-plus Type	A	B	C	D	E	F	G	H	I	K	L (min.)	M	N
325	250	350	M 12	250	475	534	1098	222-342	126	580	80	420	18
500	250	350	M 12	250	541	596	1387	261-412	146	580	80	420	18
800	300	400	M 16	310	635	672	1710	286-450	158	600	80	500	18
1250	350	400	M 16	330	705	800	2110	286-464	158	630	80	550	18
1500-1800	400	450	M 16	330	845	976	2104	286-481	158	725	80	550	18
2100-2500	400	450	M 16	360	970	1080	2120	278-450	150	750	80	600	18

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 Absorbation

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.

Hoval ST-plus (325-2500)

Output at partial load and range of output, Boiler efficiency

Hoval

subject to alterations

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 minmum 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.

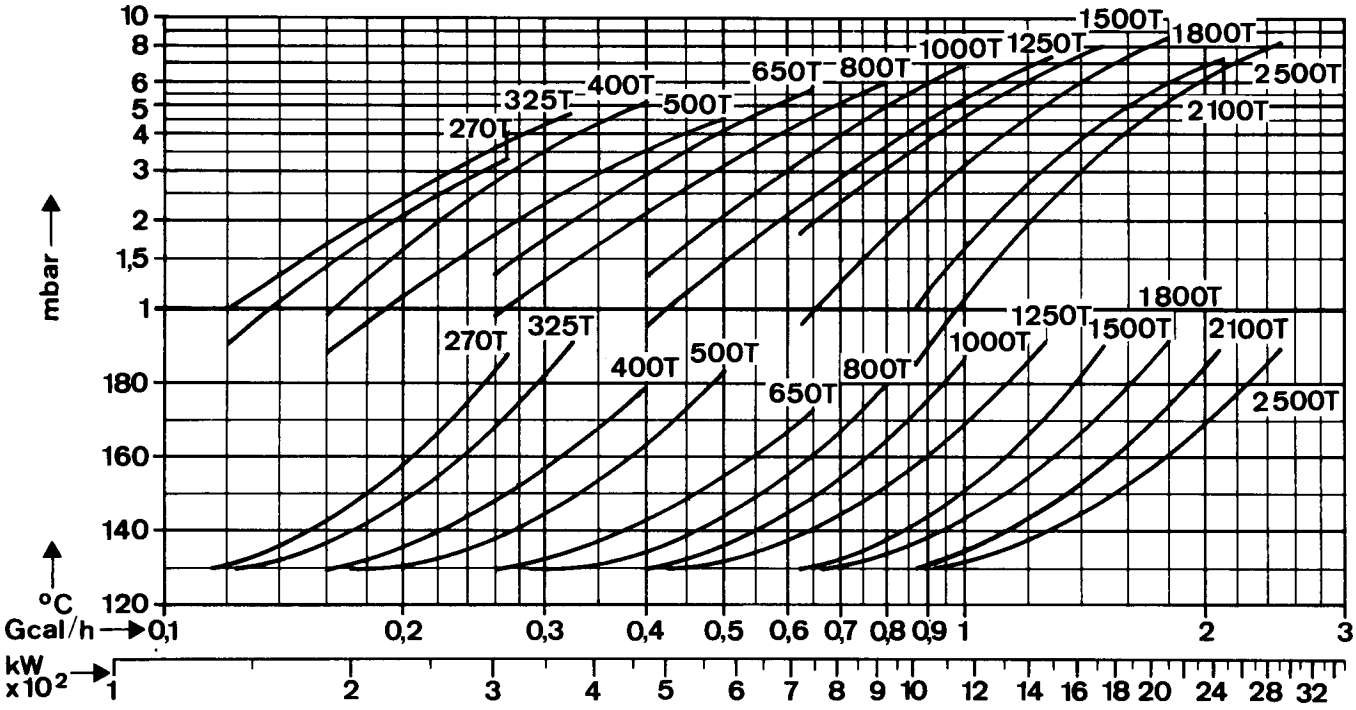
ST-Plus Type	Nominal Output kW	Flue gas *°C	*mbar	Minimum Output kW	Flue gas *°C
325	378	195	4,7	125	130
500	581	182	4,6	193	130
800	930	182	6,0	310	130
1250	1453	190	7,3	484	130

ST-Plus Type	Nominal Output kW	Flue gas *°C	*mbar	Minimum Output kW	Flue gas *°C
1500	1744	190	8,1	726	130
1800	2093	190	8,6	726	130
2100	2442	190	7,2	1012	130
2500	2907	190	8,4	1012	130

*°C = At 80°C boiler water temperature. CO_2 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) CO_2, 500m above sea level (Tolerance +/– 20 %)

Range of Output



Gcal/h, kW = Boiler Output

mbar = Combustion counter pressure at 12,5% (l 1,22) CO_2, 500 m above sea level (Tolerance +/– 20%).

°C = Flue gas temperature for oil firing, CO_2 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

Influence of CO_2 content on the flue gases

If CO_2 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 CO_2content 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

ST-plus Boiler Temperature 80°C

Type	*qs		*qi		*qb	
	W	%	W	%	W	%
325	2580	0,68	380	0,10	1500	0,35
500	2840	0,49	450	0,08	1670	0,25
800	3160	0,34	650	0,07	1890	0,18
1250	4290	0,30	780	0,05	2600	0,16
1500	4920	0,28	840	0,05	2600	0,15
1800	4920	0,24	840	0,04	2900	0,12
2100	6270	0,26	1020	0,04	3780	0,13
2500	6270	0,22	1020	0,03	3780	0,11

ST-plus Boiler Temperature 70°C

Type	*qs		*qi		*qb	
	W	%	W	%	W	%
325	2170	0,57	260	0,07	1110	0,26
500	2390	0,41	310	0,05	1240	0,19
800	2660	0,29	440	0,05	1400	0,13
1250	3610	0,25	530	0,04	1930	0,12
1500	4140	0,24	570	0,03	2150	0,11
1800	4140	0,20	570	0,03	2150	0,09
2100	5270	0,22	690	0,03	2800	0,10
2500	5270	0,18	690	0,02	2800	0,08

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
*qs, *qi = % related to the boiler nominal output
*qb = % related to the boiler nominal load (combustion output)

Boiler efficiency

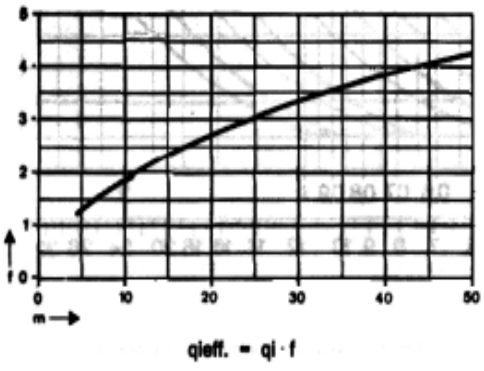
Boiler efficiency at boiler temperature of 80°C, CO_2=13,5% (I 1,14)

ST-plus Type	Nominal boiler Output hK1%	Min. boiler Output hK2%
325	92,6	92,7
500	93,0	93,3
800	93,0	93,7
1250	92,6	93,8
1500	92,7	94,0
1800	92,4	94,0
2100	92,7	94,1
2500	92,7	94,1

Chimneys

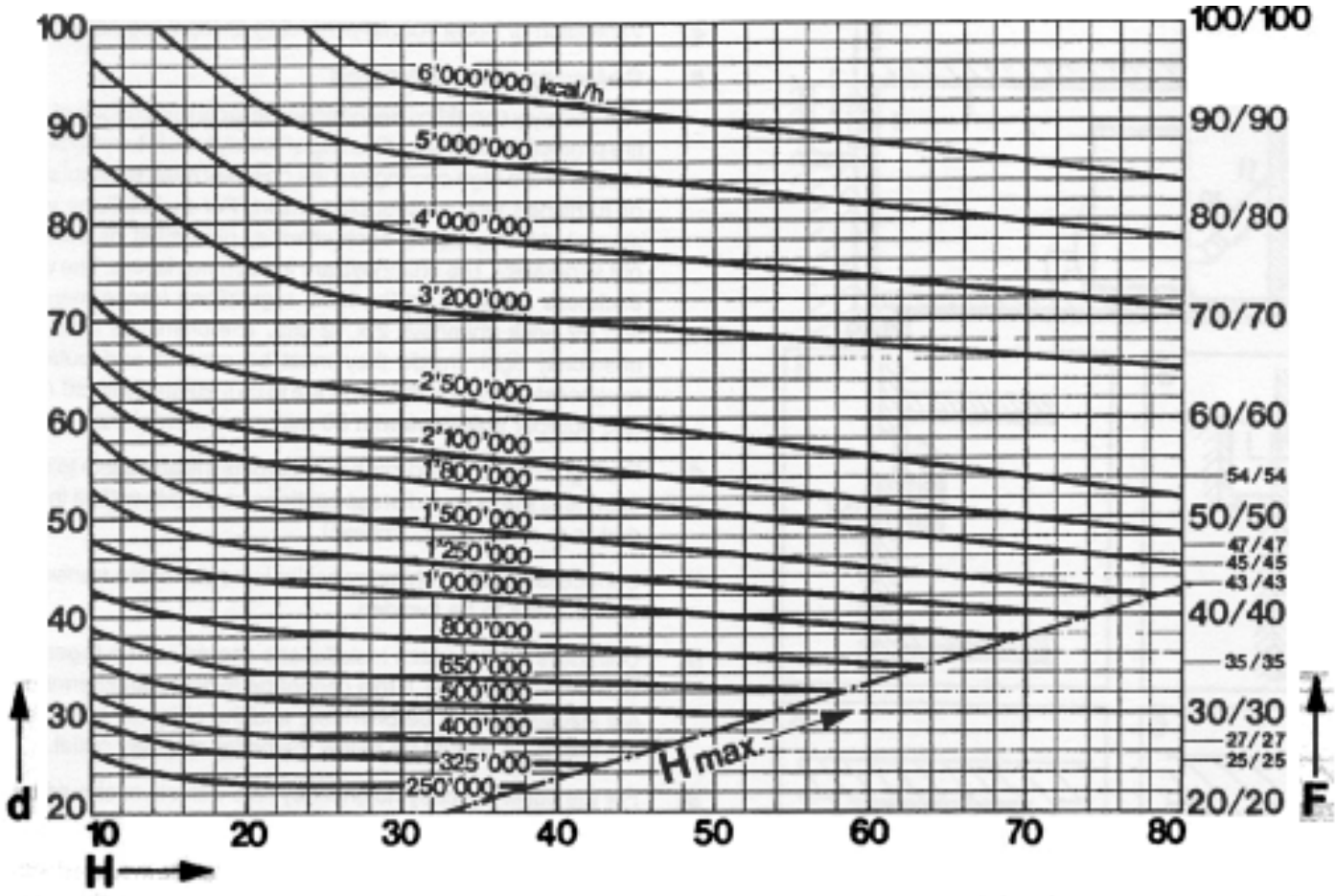
For new installation water-proof and acid resistant chimneys must be foreseen.
For existing chimney installations restoration of chimney and the adaptation of chimney cross-section must be carried out according to the instructions of the chimney constructor.

Inner cooling loss depending on chimney height



m = chimney height
f = correction factor
qieff. = inner cooling depending on chimney height

Chimney cross-sections for oil and gas firing



H = Chimney height in meters
H max. = Guide value for max. admissible chimney height for brick chimneys

d = Chimney diameter in cm
F = Side lenght in cm for a squar chimney

Calculation basis

Barometric pressure 700 mmHg (approx. 600m above sea level). CO_2 = 12% for diesel oil
Average flue gas temperature in the chimney = 180°C.
Outside temperature +30°C
Specific weight of lfue gases at 180°C = 0,735 kg/m^3
Specific weight of air at +30°C = 1.070 kg/m^3
Flue gas quantity at a heating output of 100'000 Kcal/h, 180°C and 700mmHg = 302 m^3/h.
Smoothbore and tight chimney construction.

High chimneys

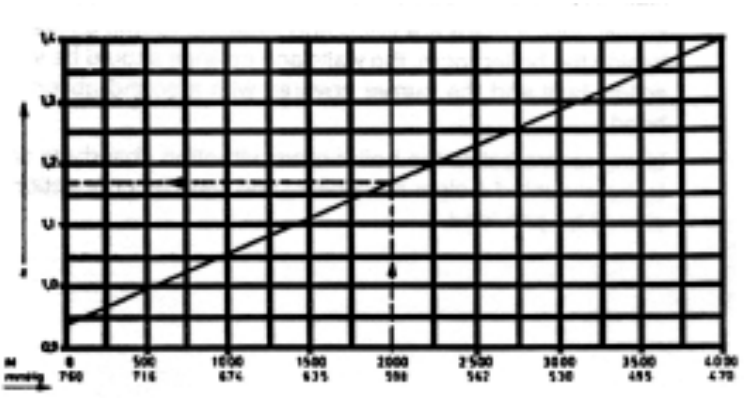
For very high chimney constructions and low boiler outputs it is advisable to use chimney with thin-walled inner parts (e.g. steel tubes).

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.

Height above sea level

For other altitudes the chimney cross section in cm$_2$ (not the diameter) should be multiplied by the correction factor „z“ according to the following diagram:



M = Altitude above sea level in m
mmHg = Average barometric pressure
z = Correction factor

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 systemes 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 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 obtaines from the responsible authority
- Heating water reqirements
  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

- Combustion air supply must be guaranteed at all time. 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

- 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 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 electrical cable of the burner must be that short that the plug must be removed when swivelling boiler door.

Sound absorbation

Sound absorbation 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).

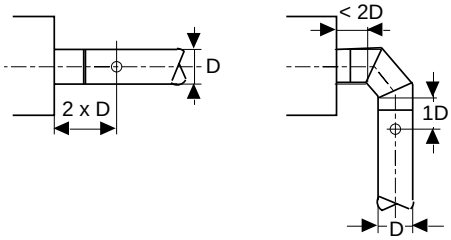
Chimney / Flue gas system

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.

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



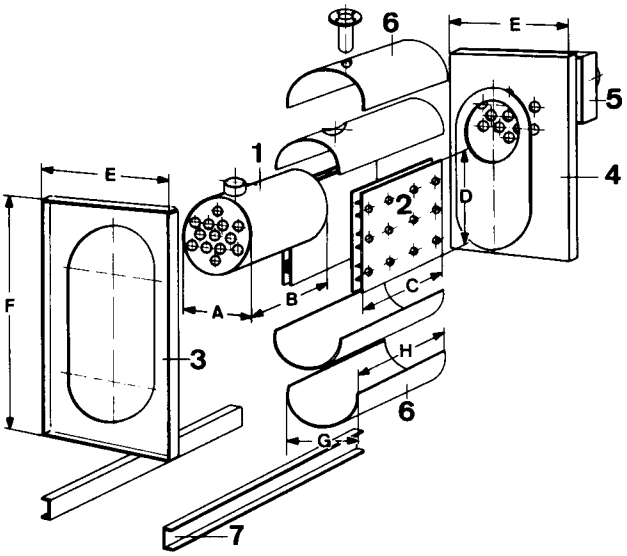
Sanitary installation

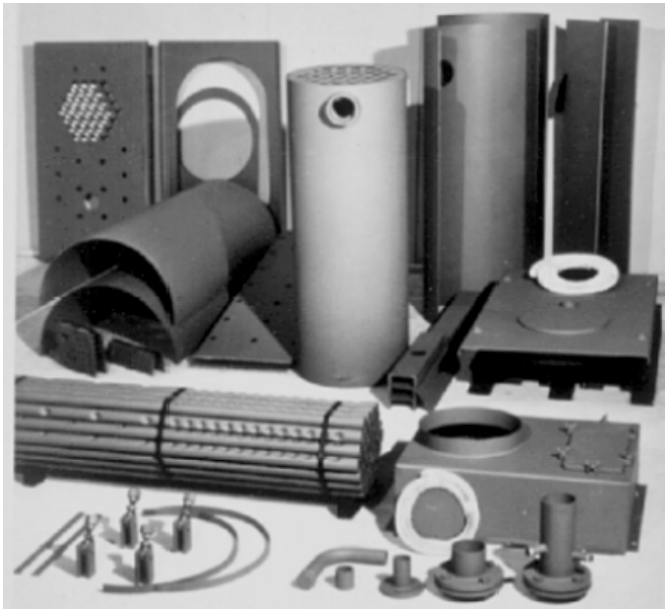
- The installation must be carried out according to the regulation of local water works.
- Pressure safety limit max. 6 or 8 bar.

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 Type	A	B	C	D	E	F	G	H	ca. *kg
325	470	1110	1256	490	790	1440	660	1220	180
500	530	1400	1616	490	790	1440	706	1580	194
800	600	1725	1998	650	890	1630	802	1960	300
1250	700	2135	2438	695	1120	1820	1000	2400	441
1500-1800	880	2135	2438	800	1300	2097	1176	2400	523
2100-2500	1000	2710	3020	825	1480	2270	1354	2980	657

*kg = Weight of heaviest component

Hoval Mega-3 (380-920)

Oil/Gas boiler

Description

Subject to alterations

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 Mega-3 Type	Range of output kW
380	171-450
460	207-560
530	239-620
600	270-720
750	337-900
920	414-1080

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 ajustment “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 temperture 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

Oil/Gas boiler Mega-3 i

Part no.

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.

Mega-3 Type	Range of output kW	Working pressure bar	Part no.
380 i	171-450	4	1A14001
380 i	171-450	8	on request
460 i	207-560	4	1A14002
460 i	207-560	8	on request
530 i	239-620	5	1A14003
530 i	239-620	8	on request
600 i	270-720	5	1A14004
600 i	270-720	8	on request
750 i	337-900	5	1A14005
750 i	337-900	8	on request
920 i	414-1080	5	1A14006
920 i	414-1080	8	on request

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 prepaired for the place welding. Casing and control panel separately packed.

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

Control panel with TopTronic regulator for Mega-3 and 1 to 4 mixing circuits

Part no.

Standard control panel:

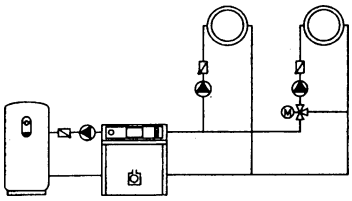
Delivery
Control panel separately packed and delivered

Work on site
Mounting of TopTronic regulator

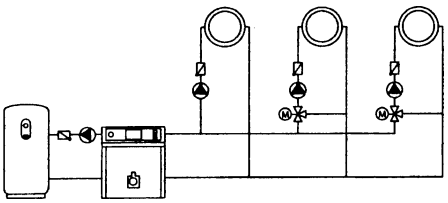
M3.1
For external on/off and nominal/maximum output control with TopTronic or other regulator. Boiler temperature sensor KT10 for regulation already integrated.

– with 7- + 4-pin plug connection for burner control — 1A 13019

Regulator sets:

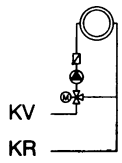


TopTronic 223B
1 stage burner control
Regulation of 1 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors — 691494



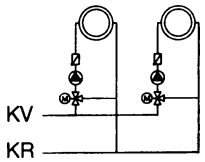
TopTronic 2233B
2 stage burner control
Regulation of 2 mixing circuit, 1 direct heating circuit without mixing valve and hot water loading circuit, incl. sensors — 691435

Additional Regulator:



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

TopTronic 3
for 1 additonal mixing circuit, including sensors — 691335



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

	Part no.
TopTronic 233B	
for 2 additional mixing circuit, including sensors	691282
Additonal equipment ZM1	
Adapter set for second regulator	691138

Thermostat control panel (optional to standard control panel with TopTronic 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 — 1H 01018

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 how meter	AU 2970
- 2 burner running how meter and count up counter	AU 3268
- Flue gas thermometer	AU 3351

T0.2-110 (for external control

- for systems without TopTronic regulator
- boiler sequence control — 1H 01017
- 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	AU 3312
- 2 burner running hour meter and count up counter	AU 3324
- Flue gas thermometer	AU 3351
- Additional sensor for external TopTronic regulator	6001396

Accessories for heating control system TopTronic

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

Service	Part no.
Commissioning	

Hoval Mega-3 (380-920)

Technical Data

Hoval

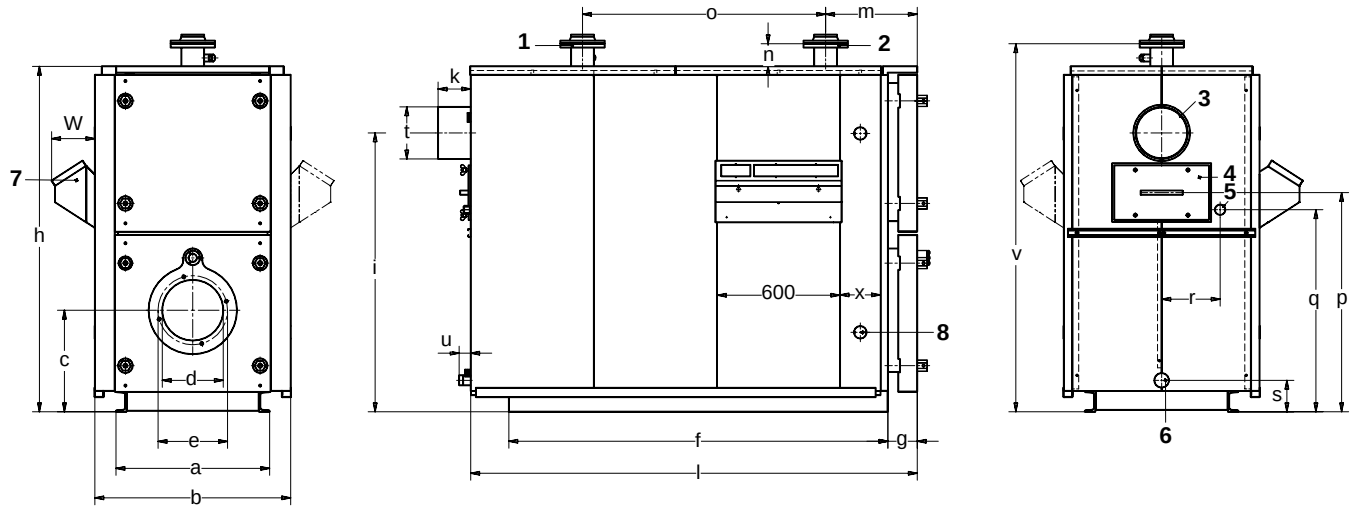
Subject to alterations

Mega-3

Type			380	460	530	600	750	920
• Maximum Output		kW	450	560	620	720	900	1080
• Minimum Output		kW	171	207	239	270	337	414
• Burner output maximum		kW	485	603	665	773	962	1159
• Burner output minimum		kW	181	219	251	283	354	435
• Maximum working temperature		°C	120	120	120	120	120	120
• Limit thermostat		°C	130	130	130	130	130	130
• Min. flue gas temperture oil/gas [3]		°C	125	125	125	125	125	125
• Min. boiler temperature oil/gas [3]		°C	55/65	55/65	55/65	55/65	55/65	55/65
• Min. return lfow temperature oil/gas [3]		°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% CO_2 ,500 m above sea level								
(+/- 20%)	LN.i	mbar	3,8	4,8	4,6	5,6	5,6	6,5
	LN.e	mbar	4,5	5,4	5,4	6,2	7,0	7,7
• Flue gas mass flow at nominal output								
12.5% CO_2 heat oil		kg/h	765	952	1054	1224	1580	1836
• Flow resistance boiler [2]		z-value	0,019	0,019	0,019	0,019	0,008	0,008
• Water flow resistance	at 15 K	mbar	12,6	19,5	23,8	32,2	21,2	30,5
	at 20 K	mbar	7,1	10,9	13,4	18,1	11,9	17,1
• Water flow volume	at 15K	m³/h	25,71	32,0	35,43	41,14	51,43	61,71
	at 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
	LN.e	kg	1195	1255	1525	1569	2190	2250
• Fire room dimension Ø-inside x length		mm	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	mm	930	930	990	990	1130	1130
(without burner and	Width	mm	2320	2320	2530	2530	2750	2750
absorber hood)	Hight	mm	1750	1750	1925	1925	2223	2223

[2] Flow resistance boiler in mbar = volume flow $(m^3/h)^2$ x z
[3] At minimum output, oil and gas 60% of max. output

Mega-3 i (380-920)



1 Flow (380-600) NW 100, (750,920) NW 125
2 Return (380-600) NW 100, (750,920) NW 125
3 Flue gas outlet
4 Cleaning opening
5 Flue gas collector-cleaning opening R1"
6 Drain R1 1/2"
7 Control panel left or right
8 Electrical connection left or right

Mega-3 i

Type	a	b	c	d	e	f	g	h	i	k	l	m	n	o
380 / 460	730	930	485	290	330	1800	141	1650	1332	155	2121,5	435,5	100	1155
530 / 600	790	990	530	290	330	1961	141	1825	1469,5	155	2333	491	100	1260
750 / 920	930	1130	600	350	400	2145	141	2115	1730	154	2553	561	108	1305

Mega-3 i

Typ e	p	q	r	s	t	u	v	w	x
380 / 460	1047	965	278	150	249	55	1750	206	185,5
530 / 600	1153	1071,5	310	166	299	94	1925	206	222,5
750 / 920	1303	1221,5	380	167	349	59	2223	206	256

Transport weight

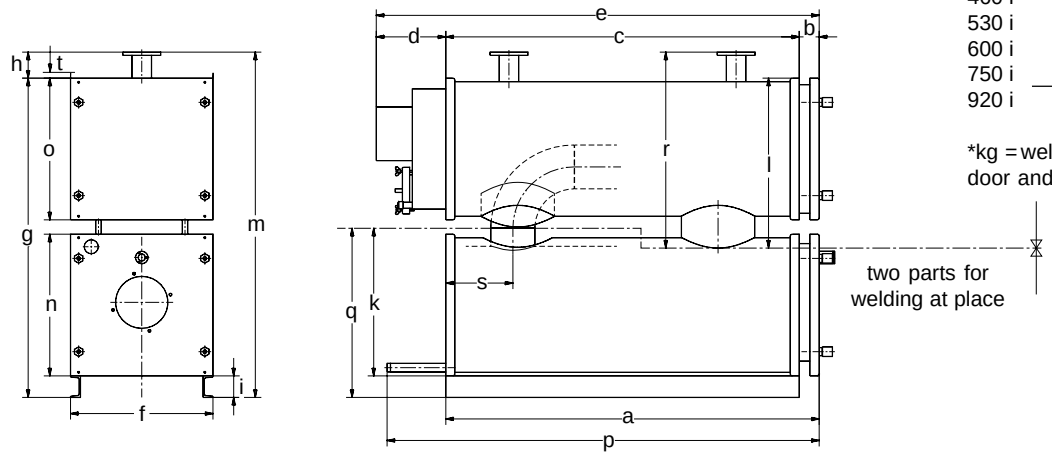
Boiler without casing

Mega-3 Type	upper boiler part appr. kg*	lower boiler part appr. kg*
380 i	520	400
460 i	580	400
530 i	630	530
600 i	670	530
750 i	950	800
920 i	1010	800

*kg = welding at place (without boiler door and flue gas collector)

Deminsion without insolation and casing (transport measurements)

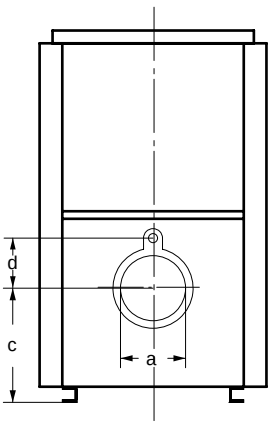
Boiler incl. flange, outlet and flue gas collector.

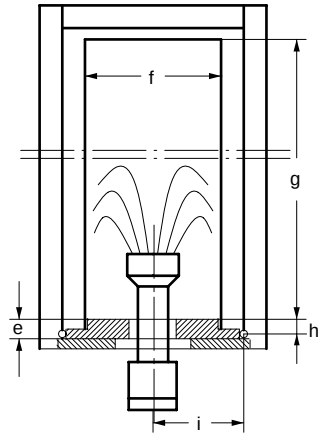


Mega-3 i

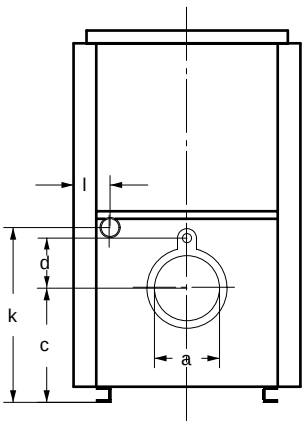
Type	a	b	c	d	e	f	g	h	i	k	l	m	n	o	p	q	r	s	t
380 / 460	1910	110	1800	337	2247	730	1605	145	100	748	835	1750	730	730	2147	850	978	350	28,5
530 / 600	2070	110	1960	387	2457	790	1780	145	120	825	950	1925	790	790	2397	945	1093	372	28,5
750 / 920	2255	110	2145	421	2676	930	2070	153	120	935	1105	2225	930	930	2582	1055	1257	416	28,5

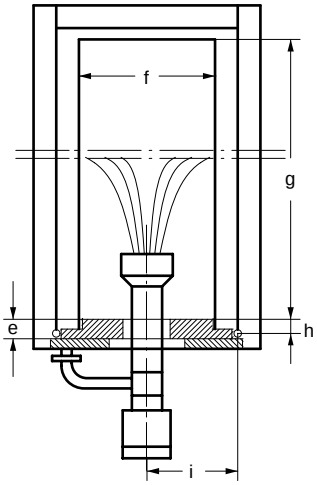
Mega-3 i (380-920)



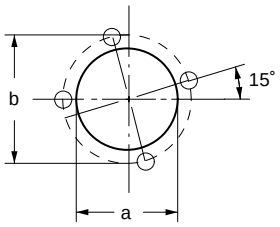


Mega-3 e (380-920) (only on request)

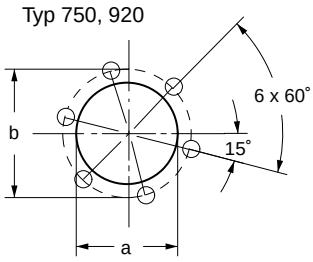




Typ 380 - 600



Typ 750, 920



Gewindeborung (ohne Schrauben)
Typ 380 - 920 = M12

Mega-3 Type	a Ø	b Ø	c	d	e	f Ø	g	h	i	k	l
380 - 460	290	330	485	250	120	548	1623	50	340	765	205
530 - 600	290	330	530	250	120	611	1819	50	370	840	215
750 - 920	350	400	600	310	120	724	2004	50	440	980	250

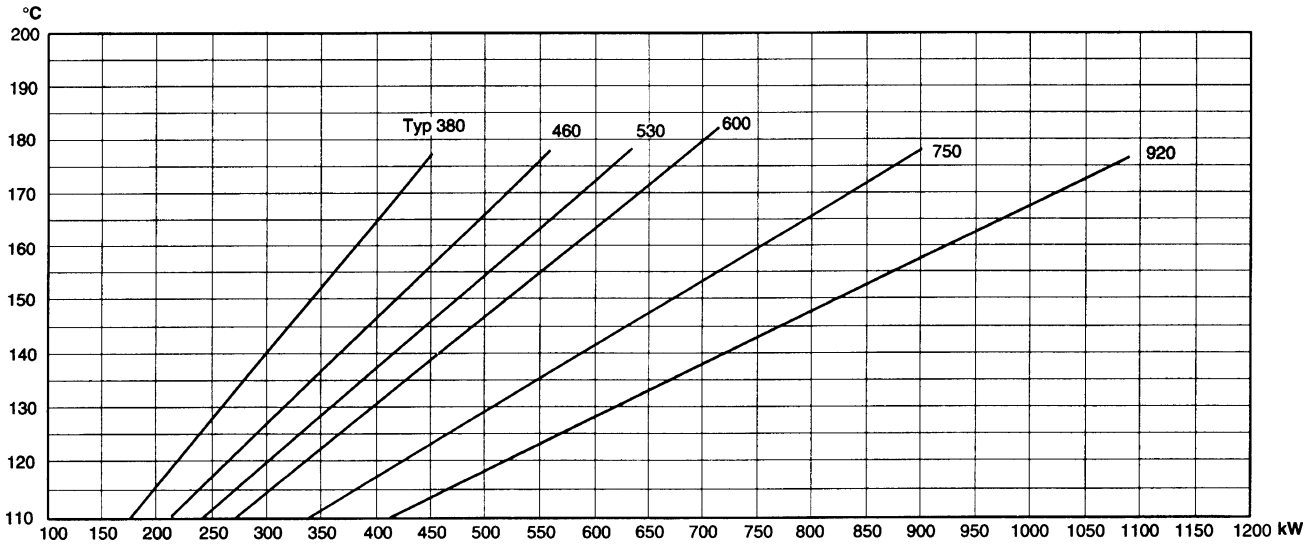
(Measurements in mm)

Hoval Mega-3 (380-920)

Flue gas - output diagram

Hoval

Subject to alterations

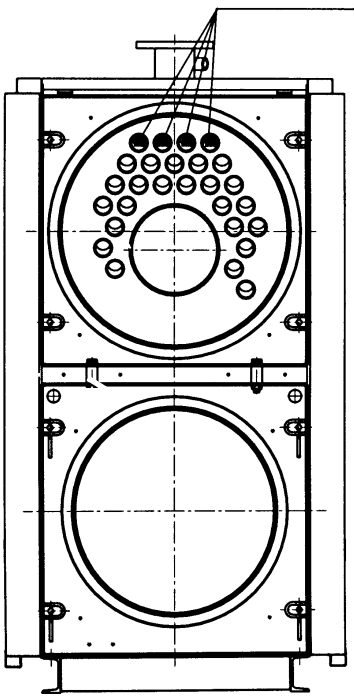


kW = Boiler output
°C = Flue gas temperature (DIN 4702). Boiler water 80/60°C,
λ = 1,17 (CO_2 heat oil EL = 13,0%, natural gas = 10,0%)

Flue gas regulators

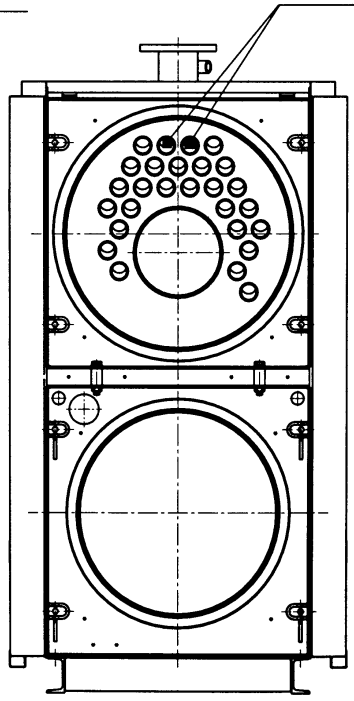
Mega-3 i

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

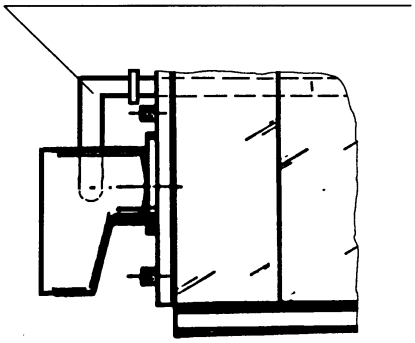


Mega-3 e
(on request)

- Mega-3 (380-600)middle 2 pipes with flue gas requlators
- Mega-3 (750,920) without flue gas regulators



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



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 systemes 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 obtaines 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. The adaptor flange including screws must be delivered by the burner 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

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 absorbation

Sound absorbation 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.
- The inlet of the flue gas tube into the chimney has to be carried out in such a 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.

Sanitary installation

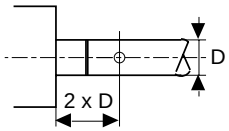
- The installation must be carried out according to the regulation of local water works.
- Pressure safety limit max 8 bar.

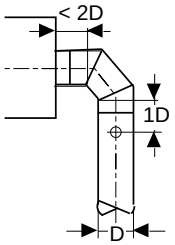
Chimney/flue gas system

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.





- It is recommendable to use a secondary air valve for chimney draf limiting.

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

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.

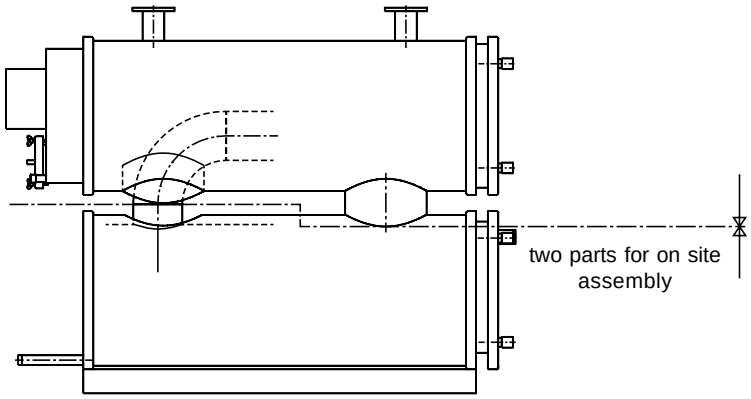
Mega-3	Type 380		Type 460		Type 530		Type 600		Type 750		Type 920	
	tube	chimney	tube	chimney	tube	chimney	tube	chimney	tube	chimney	tube	chimney
m	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm
25	250	250	300	300	300	300	300	300	350	350	350	350
20	250	250	300	300	300	300	300	300	350	350	400	350
15	300	300	300	300	300	300	350	300	350	350	400	400
10	300	300	300	300	350	300	350	350	400	350	400	400

m = chimney height

Assembly and mounting on site Mega-3 (380-920)

At a favourable all inclusive price Hoval iffers 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“



Mega-3 Type	Boiler in two parts upper boiler part appr. kg*	lower boiler part appr. kg*
380	520	400
460	580	400
530	630	530
600	670	530
750	950	800
920	1010	800

*kg = without boiler door and flue gas collector

Boiler Mega-3 Type	Min. boiler room dimension in mm Length	Width	Height
380 – 460	4000	2800	2200
530 – 600	4500	2800	2400
750 – 920	4800	3000	2600