

Description

Subject to alterations

**Hoval Primo b-i
(Oil burner integrated)**

Boiler

- 3-pass steel boiler for oil firing
- Thermolytic secondary heating surface
- Double joint boiler door
- Insulation for boiler body with mineral wool mat and special fabric
- Flue gas outlet on the boiler
- Casing made of steel plates, red/orange powder coated
- Instruction manual

Calorifier

- Made of chrome steel and integrated in the boiler
- Water capacity 128 l
- Boiler water capacity 180 l

Control panel

- Main switch on/off
- Safety limit temperature switch 110°
- Fuse 6.3A
- Trouble indication „burner“
- Plug connection for 1 stage burner
- Boiler sensor
- Outdoor sensor
- Flow sensor VF 100N
- Regulator TopTronic 23S
 - For 1 mixing circuit
 - Operation switch
 - Temperature adjustment “Day/Night”
 - Adaption with Microcomputer
 - Automatic switch summer/winter
 - Regulation of boiler temperature
 - Calorifier loading control
 - Digital display
 - Burner running time meter and count-up counter

Heating armature group

- Already mounted at the boiler with:
 - Heating circuit pump
 - Motorized 4 way mixing valve
 - 2 ball valves with thermostat
 - Non return valve
 - Piping with fittings

Oil burner

- Automatic 1-stage oil burner
- With motorized air damper
- Pre-wired with 7 pin connection
- Oil burner tested by Hoval
- Adjusted by Hoval for ≤ 1000 m above sea level 1.2% output reduction per 100 m higher level

Optional

- Absorber hood for burner and boiler door

Delivery

- Boiler and burner packed and delivered separately



Primo Type	Output kW
20/160	16-20

Hoval Primo

As Primo b-i but without burner

Delivery

- Boiler insulated and cased



**Boiler
Primo b-i**

Part no.

3-pass steel boiler for oil firing, calorifier made of chrome steel 1.4571 and control panel.
Oil burner separately packed and delivered.
Control panel with TopTronic 23S and sensors are included.

Primo Type	Oilburner Type	Out put kW	Pump
b-i 20/160	R1-V-L	16-20	M12-1



**Boiler
Primo**

3-pass steel boiler for oil-/gas firing, calorifier made of chrome steel 1.4571 and control panel.
(Without burner)
Control panel with TopTronic 23S and sensors are included.

Primo Type	Output kW	Pump
20/160	16-20	M12-1

8000529

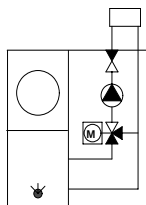
Control panel with TopTronic regulator

Part no.



23S for 1 mixing circuit

Control panel integrated and in boiler price included.



Accessories for control system



Room station RS 10

for 1 mixing circuit, with room sensor, information, program and correction key

242634



Remote control RFF 60S

for 1 mixing circuit with room sensor, easy program switch and temperature adjustment

2000754



Room temperature sensor RF 40

for 1 mixing circuit

242679



Temperature sensor KT 10-40 S

with 4m cable, for separate delivered calorifier

691215



Flow temperature guard RAM 342.001

for floor heating with cable and socket

6001889



**Heating armature group
HAP 25-4R 1"**

Part no.

For heating circuit with max 60°C.
Already in the boiler integrated



Accessories

Burner cover cap

For heat and sound absorbtion
L = 400 mm

639323

Transport frame

For delivery

6000787

Oil volume counter VZO 4K

With filter

6003163

Oil filter

OVENTROP 25-40µ

CG0107

Price

Subject to alterations



Service
Commissioning

Part no.

Technical data

Subject to alterations

Primo

Type	20/160		
• Nominal output ¹	kW	20	
• Range of output	kW	16-20	
• Max. firing output	kW	21,7	
• Max. boiler operation temperature ²	°C	90	
• Min. boiler operation temperature	°C	48	
• Min. boiler return temperature	°C	no min. limit	
• Min. flue gas temperature	°C	130	
• Boiler safety limit temperature	°C	110	
• Working- / Test pressure	bar	3,0 /4,5	
• Boiler efficiency at 80/60 °C	%	92	
• Nominal efficiency 75/60 °C (EN 303)	%	92,9	
• Stand-by deficiency qB at 70°C	Watt	288	
• Flue gas resistance at nominal output, 160 °C flue gas temperature, 12,5% CO ₂ , 500m above sea level (+/- 20%) ³	mbar	0,08	
• Flue gas mass flow 12,5% CO ₂ (heat oil EL)	kg/h	34	
• Flow resistance boiler ⁴	z-Wert	6,5	
• Water resistance at 10K	mbar	19,2	
• Water resistance at 20K	mbar	4,8	
• Water flow volume at 10K	m³h	1,72	
• Water flow volume at 20K	m³h	0,86	
• Boiler water capacity	Liter	180	
• Gas volume	m³	0.033	
• Insulation boiler body	mm	80	
• Weight (incl. casing)	kg	200	
• Acoustic capacity incl. cover cap ³			
– Heating noise	dB(A)	66	
– Chimney noise	dB(A)	80	
• Fire room dimension Ø x length	mm	Ø250x470	
• Fire room volume	m³	0,0196	
• Dimension (with burner and cover cap)	width	mm	654
	length	mm	1379
	height	mm	1660

Calorifier

Type	20/160		
• Water capacity	Liter	128	
• Heating surface	m²	1,55	
• Working temperature max. ²	°C	65	
• Working-/Test pressure	bar	10/15	
• Calorifier continuous output	dm³/h à 45°C	484	
• Calorifier max. output	dm³/10 min. à 45°C	158	
	dm³/10 min. à 60°C		
• Power characteristic number N _L		1,5	

¹ kW= flue gas losses (LRV 92), boiler water 80°C

² Limited to 70°C with control unit

³ Valid for b-i version

⁴ Flow resistance boiler in mbar = volume flow (m³/h)² x z

Heating armature group

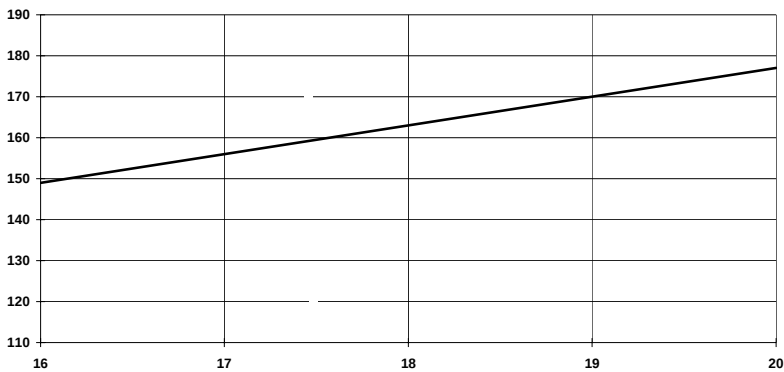
Flow resistance Primo with heating armature group

HAM-25-3-R/L z = 3,43

$$mbar = (m^3/h)^2 \times z$$

mbar = Flow resistance
m³/h = Volume flow

Flue gas - output - diagram



kW= Boiler output
°C = Flue gas temperature (DIN 4702)

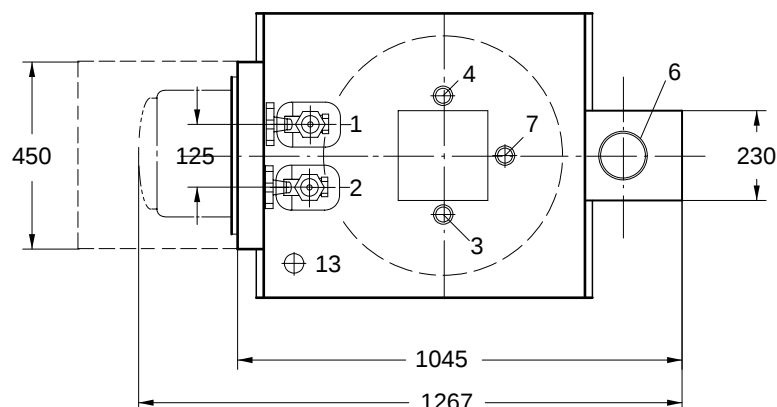
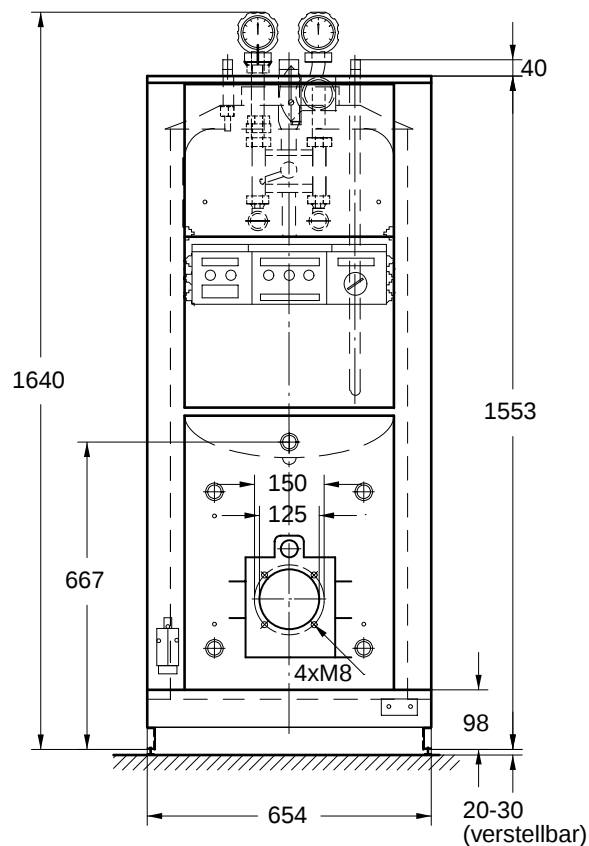
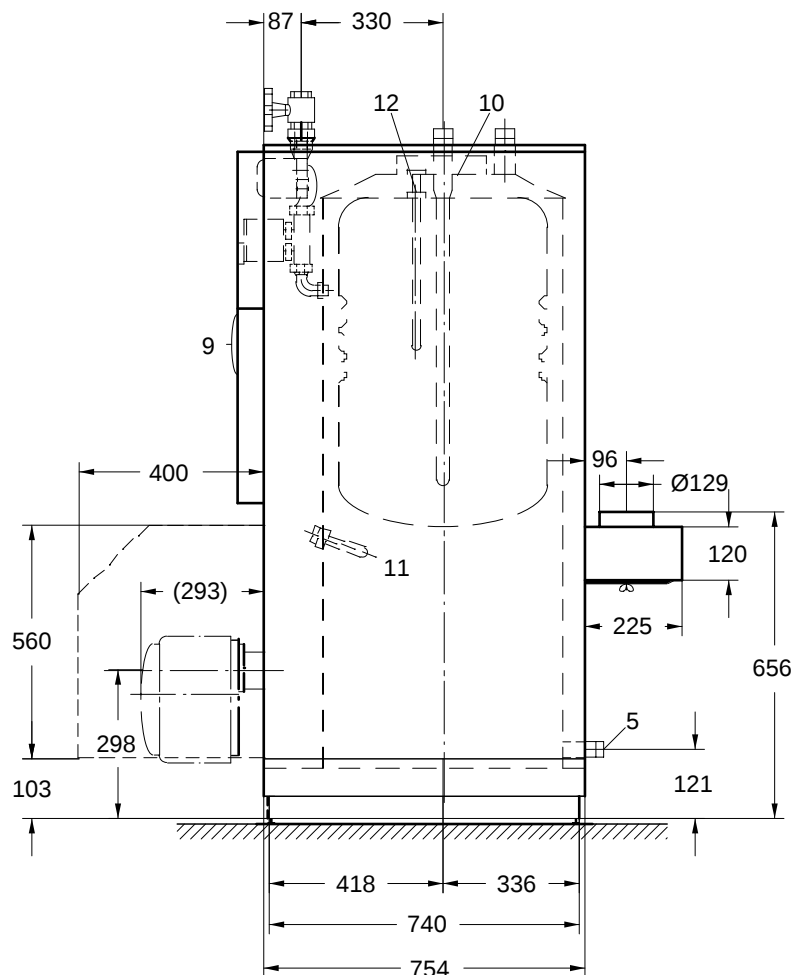
with Oil EL
λ = 1,22 at burner full load
(CO2 Oil EL = 12,5%)

Oil burner 1-stage

	to Primo	b-i 20
• Oil burner	Type	R1-V-L
• Output	kW	18-22
• Fuel consumption	kg/h	1,85

Primo (20/160)

(all measurements in mm)



- | | |
|---------------------------------|--------|
| 1 Flow | R 1" |
| 2 Return | R 1" |
| 3 Cold water | R 3/4" |
| 4 Hot water | R 3/4" |
| 5 Drain | R 1" |
| 6 Flue gas outlet Ø 129 (outer) | |
| 7 Safety flow (expansion) | |
| 8 Cleaning opening | |
| 9 Control panel | |
| 10 Hand hole cover | |
| 11 Pocket Boiler | |
| 12 Pocket Calorifier | |
| 13 Cable connection | |
| 14 Burner connection cable | |
| 15 Fire safety switch | |

Standards and Guidelines

Following standards and guidelines must be respected:

- Technical information and installation manual of company Hoval
- Hydraulic and technical control regulations of the local gas supply authority
- Firing guidelines of local gas works
- Fire protection standards
- Gas directives G1 of the SVGW
- Directives SWKI 97-1 «Water treatment for heating, steam and air conditioning installations»
- Ventilation and air supply for the boiler installation room according to directives SWKI 91-1
- Directives SWKI- 93-1 „Safety equipment for heating systems“.
- Directives Procal/FKR "Electric plug connections at heating boilers and burners".
- 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 installation".

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 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).

Outside temperature $\leq 30^{\circ}\text{C}$.

m	Ø1
20	100
15	100
10	100
5	100

Primo 20/160

m = Chimney height (m)
Ø1 = Min, Ø of chimney and flue gas tube.

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.

Oil burner mounting

- Burner flange incl. screws will be delivered with the burner. The burner flame tube must be fitted according to the installation manual.
- The burner connection plug must be mounted opposite of 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.

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 $> 160^{\circ}\text{C}$
- 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.

Required chimney diameter

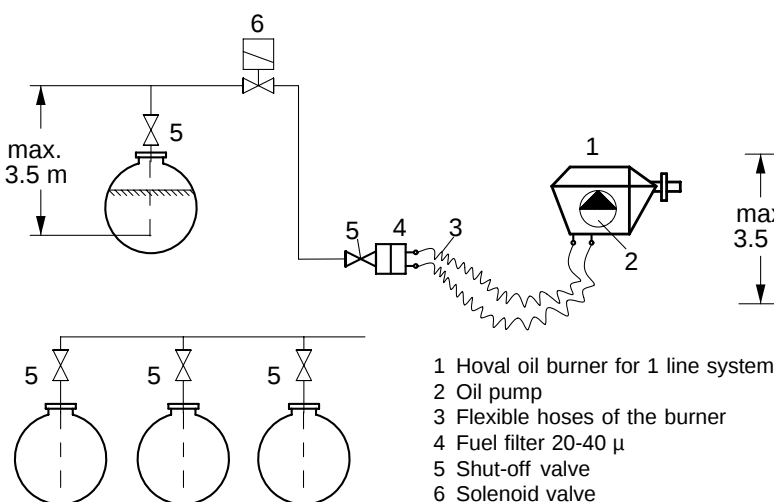
Basic: Smooth chimneys made of stainless steel, Flue gas tube $\leq 2,5$ m,
 $\Sigma\zeta = 2,2$, flue gas tube and chimney insulated.
Height above sea level ≤ 1000 m,

Piping

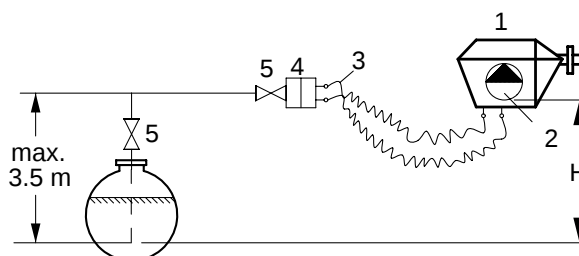
- The boiler Primo b-i can only be used for 1 line systems. Maximum suction height without pump 3.5m, maximum length of pipe system 40m.
- The pipes must be fitted that the boiler door can be swivelled 90°.
- At the end of the fixed piping a shut-off valve must be installed (by „Oventrop“ filter already included).
- A Filter (20-40 μ) must be installed in front of the burner in the piping.
- The highest point of the piping should be max. 3.5m above the tank suction pipe.
- The piping must be installed that no fluid can get into the pipes when the system is not working.
- If the highest oil level in the tank is higher then the lowest point of the piping system,

a solenoid valve must be installed at the highest point of the system (next to the oil tank).

Max. oil level higher than the lowest point of the piping system



Max. oil level lower as the lowest point of the piping system.



H = Suction height [m] (system with max. 4 bows, 1 shut off valve with non return valve. Height above sea level max. 1000m).

Primo b-i Type 20/160	1,0	¹⁾ Suction high in m 1,5	2,0	2,5	3,0	3,5
²⁾ Pipe system Ø 4/6 mm	30	29	23	16	10	3,5
Pipe system Ø 6/8 mm	—	—	—	—	—	20

¹⁾ System with max. 4 bows, 1 shut off valve with non return valve.
Height above sea level max. 1000 m

²⁾ Max. piping lenght

Sanitary Installation

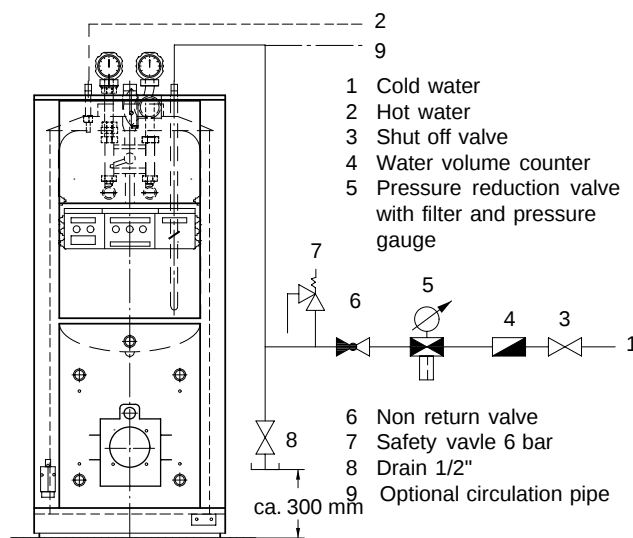
- The installation must be carried out according to the regulation of local water works.
- The hot water temperature is the same than the boiler temperature.
- The cleaning and drain of the calorifier can be done at the drain valve position 8 (see sketch)

Expansion tank

- If in your system is used a 4 way mixing vavle you have to install an expansion tank.
- In the case of a system with open expansion tank, it must be assured that the pressure in the suction pipe of the pump will be not lower the allowed.

Safety valve

- A safety valve must be installed in the safety flow.



Hoval Euro-3 (18-48)

**Boiler for oil or gas firing
with or without calorifier**

Description

Subject to alterations

Hoval Euro-3 b-i (Oil burner integrated)

Boiler

- 3-pass steel boiler for oil firing
- Thermolytic secondary heating surface with built in flue gas regulators on request
- Boiler door swivelled to the right
- Insulation 80mm mineral wool mat and special fabric
- Casing made of steel plates, red/orange powder coated
- Instruction manual

Oil burner

- Automatic 1-stage oil burner
- With motorized air damper
- Pre-wired with 7 pin connection
- Oil burner tested by Hoval
Adjusted by Hoval for ≤ 1000 m above sea level
1.2% output reduction per 100 m higher level

Optional

- Control panel with different regulators and functions
- Cover cap for burner and boiler door for heat and sound absorption
- Calorifier below the boiler

Delivery

- Boiler insulated and cased
Burners and cover cap are separately packed and delivered

Hoval Euro-3 Oil/Gas Heizkessel

as Euro-3 b-i

but without burner

Delivery

- Boiler insulated and cased

Euro-3 Type	Output kW
18	16-18
25	20-25
32	26-32
37	33-37
48	38-48

Calorifier LSP

- Placed below boiler
- Storage tank and heat exchanger out of double enamelling
- Size 200 l
- Magnesium anode
- Insulation with CFC-free cellular plastic heat insulation
- Casing out of red steel plate, stove enamelled
- Including temperature sensor

Delivery

- Calorifier insulated and cased



Loading group Calorifier

- Complete installed and wired consists of:
 - Loading pump M12-1
 - Non return valve
 - Piping with insulation calorifier LSP and Euro-3

Hoval Euro-3 (18-48)

Boiler for Oil or Gas firing with or without calorifier

Description

Subject to alterations

Control panel

Control panel to Euro-3 (18-37) with:

- Main switch «on/off»
- Boiler safety limit thermostat 110°C
- Fuse 6.3A
- Trouble indication „burner“
- Plug connection for 1 stage burner
- Boiler sensor KT 10-40
- *Regulator TopTronic 23S*
 - For 1 mixing circuit
 - Operation switch
 - Temperature adjustment “Day/Night”
 - Adaption with Microcomputer
 - Automatic summer/winter
 - Boiler temperature control
 - Calorifier loading control
 - Digital display
 - Burner running time meter and count-up counter
- Outside sensor AF 100N
- Flow temperature sensor VF 100N

Delivery

- Control panel on boiler integrated

Control panel to Euro-3 (48) with:

- Main switch with temperature guard
- Safety limit thermostat
- Fuse 6.3A
- Trouble indication „burner“
- Plug connection for 1 stage burner
- Boiler sensor KT 10-40

- *Regulator TopTronic 23B/233B*
 - For 1-2 mixing circuit
 - Regulator integrated
 - Operation switch
 - Temperature adjustment «Day/Night»
 - Adaption with Microcomputer
 - Automatic switch summer/winter
 - Regulation of boiler temperature
 - Calorifier loading control
 - Digital display
 - Burner running time meter and count-up counter

- Outside sensor AF 100N
- Flow temperature sensor VF 100N

Delivery

- Control panel separately packed and delivered

At place

- Mounting of control panel

Heating-armature-group

Typ HA 25-4R

- For systems with 1 Heating group and mixing valve
- Heating group for mounting right hand side
- Heating group to Euro-3 (18-37) with TopTronic regulator
- If the heating armature group is direct fitted at the boiler, no boiler circulation pump must be used
- Complete installed and wired consists of:
 - Heating circuit pump
 - Motorized 4-Way-mixing valve
 - 2 ball valves with thermometer
 - Non return valve
 - Piping and fittings
 - Power supply 1x230V
 - Cellular plastic heat insulation

Delivery

- Heating-armature-group separately packed and delivered

At place

- Optional modification of armature group to the left side

Heating-armature-group

Typ HA 32-4R

- For systems with 1 heating group with mixing valve
- Heating group for mounting right hand side
- Heating group to Euro-3 (48) with TopTronic regulator
- If the heating armature group is direct fitted at the boiler, no boiler circulation pump must be used
- Complete installed and wired consists of:
 - Heating circuit pump
 - Motorized 4-Way-mixing valve
 - 2 ball valves with thermometer
 - Non return valve
 - Piping and fittings
 - Power supply 1x230V

Heating armature group

Typ HA 32-4L

- As heating armature group HA 32-4R but for mounting left hand side

Delivery

- Heating armature group separately packed and delivered



Oil boiler (burner integrated) Euro-3 b-i

Part no.

Euro-3 b-i (18-37)

3-pass low temperature boiler with oil burner and absorber hood. Control panel TT23S is in the boiler price included.

Boiler insulated and cased, control panel mounted. Burner and absorber hood separately packed and delivered.

Euro-3 Type	Burner Type	Range of output kW
b-i 18	R1-V-L	16-18
b-i 25	R1-V-L	20-25
b-i 32	R1-V-L	26-32
b-i 37	R1-V-L	33-37

Euro-3 b-i (48)

3-pass low temperature boiler with oil burner and absorber hood, **without control panel.**

Boiler insulated and cased. Burner and absorber hood separately packed and delivered.

Euro-3 Type	Burner Type	Range of output kW
b-i 48	R20-L	38-48

Oil-/Gas Boiler Euro-3

Euro-3 (18-37)

3-pass low temperature boiler, control panel TT23S is in the boiler price included.

Boiler insulated and cased, control panel mounted.

Euro-3 Type	Range of output kW	
18	16-18	8000917
25	20-25	8000918
32	26-32	8000919
37	33-37	8000920

Euro-3 (48)

3-pass low temperature boiler, **without control panel.**

Boiler insulated and cased.

Euro-3 Type	Range of output kW	
48	38-48	8000921





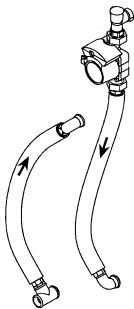
Calorifier LSP

Part no.

Calorifier out of steel with double enamelling, horizontal construction, with temperature sensor

to Euro-3 (18-37)
LSP 200

7000080



Loading group to LSP

Loading group with flexible piping for connection calorifier-boiler.
With pump M12-1 and non return valve
LG-LSPE

6000438



Loading group Type LG to CombiVal and Euro-3 (18-37)

for connection calorifier CombiVal and boiler Euro-3 (18-37)

Type	Flow/Return	Pump Type
LG 25-L	1"	M12-1

AW 4467



Boiler connection set

with bow and fittings for boiler Euro-3 connection

Euro-3 Type	Pump Type
18-37	AS 25-EH

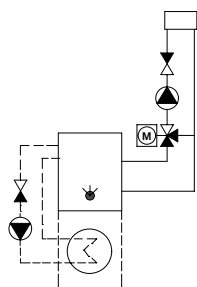
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Control panel with TopTronic regulator

Part no.



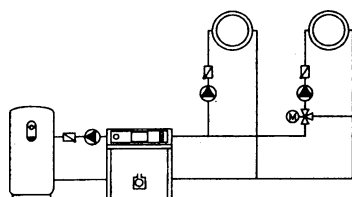
Control panel with 1 regulator to Euro-3 (18-37)



23S
1 stage burner control
1 mixing circuit regulation with hot water loading circuit, incl. sensors.

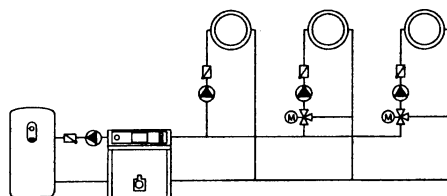


Control panel with 1 regulator to Euro-3 (48)



M1.3/23B
1 stage burner control
1 mixing circuit regulation, 1 direct circuit without mixing valve and hot water loading circuit, incl. sensors

7000291



M1.3/233B
1 stage burner control
2 mixing circuit regulation, 1 direct circuit without mixing valve and hot water loading circuit, incl. sensors

7000292



Accessories for heating control system TopTronic

Part no.

Room station RS 10

for one mixing circuit with room sensor, information, program, 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

242679



Flue gas sensor PT 1000/4

(Mounting at place) only for Euro-3 (48)

242681



Temperature sensor KT 10-40 S

with 4 m cable for calorifier or external heat acquisition

691215



Temperature sensor KT 10-40

for Euro-3 (48), TopTronic 23B, 233B

242371



Flow sensor VF100N

691217

Flow temperature guard to Euro-3 (18-37)

RAM 342.001

for floor heating incl. cable and plug

6001889



Flow temperature guard to Euro-3 (48)

for floor heating

(per heating circuit 1 guard)

- Thermostat with pocket

619.0015

242190

- Thermostat

692.1120

242217

- Thermostat RAM 342.001

with plug and cable

687997



**Heating-armature-group
HA-25 to Euro-3 (18-37)**

Part no.

Type HA 25-4, 2400 1/min, 1x230 V, 1"

For heating systems with 1 heating group with motorized 4-way mixing valve and insulation for Euro-3 (18-37) with integrated TopTronic regulator.

Armature group right

Pump

Type	Heating circuit	HA-Type
HA 25-4R		M12-1

AW 4411



**Heating-armature-group
HA-32 to Euro-3 (48)**

Typ HA 32-4, 2400 1/min, 1x230 V, 1 1/4"

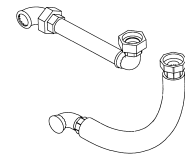
For heating systems with 1 or 2 heating groups with motorized 4-way mixing valve to Euro-3 (48) with TopTronic regulator.

Armature group right

Pump

Type	Heating circuit	HA-Type
HA 32-4R		M14-2

AW 4512



Boiler connection set

with bow and fittings for heating group connection.

to Euro-3 (18-37)

AS 25-EH

6000437

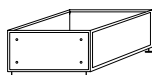
to Euro-3 (48)

AS 32-H

639370

Accessories**Part no.****Absorber hood**

for heat and sound absorption

Euro-3 (18) (l = 330 mm)
Euro-3 (25-48) (l = 400 mm)6003092
6003524**Casing and insulation**for exhaust manifold
(separately packed and delivered)Euro-3 (18, 25)
Euro-3 (32, 37, 48)639078
6001110**Boiler socket**

made of steel, height 150 mm

Euro-3 (18)
Euro-3 (25, 37)
Euro-3 (48)6000436
638609
638610**Oil volume counter VZO 4K**

with filter

6003163

Oil filterOVENTROP 25-40 μ

CG0107

**Service****Commissioning**

Technical data

Subject to alterations

Euro-3

Type			18	25	32	37	48
• Nominal output	kW ¹		18	25	32	37	48
• Range of output	kW		16-18	20-25	26-32	33-37	38-48
• Maximal burner output	kW		19.5	27.1	34.6	40.1	51.7
• Max. boiler working temperature ²	°C		90	90	90	90	90
• Min. boiler working temperature	°C		48 ³ /38 ⁴	48 ³ /38 ⁴	48 ³ /38 ⁴	48 ³ /38 ⁴	48 ³ /38 ⁴
• Min. return flow temperature	°C		38 ³ /30 ⁴	38 ³ /30 ⁴	38 ³ /30 ⁴	38 ³ /30 ⁴	38 ³ /30 ⁴
• Min. boiler flue gas temperature	°C		110/130	110/130	110/130	110/130	110/130
• Safety limit temperature	°C		110	110	110	110	110
• Working / test pressure	bar		3 /4,5	3 /4,5	3 /4,5	3 /4,5	3 /4,5
• Flue gas regulators			1R5/420	1R5+1R2/290	2R5+1R3/290	3R5/290	2R5+2R3/560
• Boiler efficiency at 80/60 °C	%		91,3	91,6	92	92,1	92,8
• Nominal efficiency at 75/60 °C (EN 303)	%		93,8	94,1	94,5	94,5	95
• Stand-by deficiency qB (70 °C)	Watt		176	212	219	219	232
• Flue gas resistance at nominal output (+/- 20 %)	mbar		0,10	0,08	0,08	0,18	0,34
• Flue gas mass flow at nominal output 12,5 % CO ₂ oil	kg/h		30,6	42,5	54,4	62,9	81,6
• Flow resistance boiler ⁶	z-Wert		6	6	6	6	3,2
• Water flow resistance at 10K	mbar		14,4	27,7	45,4	60,7	54,6
• Water flow resistance at 20K	mbar		3,6	2,15	2,75	3,18	4,13
• Water flow volume at 10K	m ³ /h		1,55	2,15	2,75	3,18	4,13
• Water flow volume at 20K	m ³ /h		0,77	1,08	1,38	1,59	2,06
• Boiler water capacity	Liter		34	73	68	68	85
• Boiler gas volume	m ³		0,029	0,049	0,057	0,057	0,067
• Insulation boiler body	mm		80	80	80	80	80
• Insulation boiler door	mm		20	20	20	20	20
• Weight (incl. casing)	kg		104	140	153	153	168
• Acoustic capacity incl. absorber hood ⁵							
– Heating noise	dB(A)		64	64	65	66	68
– Chimney noise	dB(A)		77	77	83	75	77
• Fire room dimension Ø x length	mm		ø242x415	ø312x520	ø312x520	ø312x630	ø312x630
• Fire room volume	m ³		0,017	0,034	0,034	0,034	0,048
• Dimension (without burner)							
width	mm		500	600	600	600	600
length	mm		848	955	955	955	1066
height	mm		881	981	981	981	981

¹ kW= Flue gas losses (LRV 92), boiler water 80°C

² Limited to 90°C by control unit

³ Valid by flue gas temperature min. 110°C

⁴ Valid by flue gas temperature min. 130 °C

⁵ Valid for Hoval Euro-3 b-i boiler

⁶ Flow resistance boiler in mbar = volume flow (m³/h)² x z

Calorifier LSP

Type			150	200
Volume		dm ³	150	200
Working / test pressure		bar	10 / 15	10 / 15
Working temperature maximal		°C	75	75
Insulation			cellular plastic	cellular plastic
Thermal conductivity λ		Watt/mK	0,025	0,025
Weight		kg	83	108
Dimension				
	Width	mm	600	600
	Length	mm	1010	1275
	Height	mm	550	550
Heating register (fully integrated)				
Heating surface		m ²	0.75	0.96
Hot water		dm ³	4,2	5,3
Working / test pressure		bar	10 / 15	10 / 15
Working temperature		°C	90	90

Hot water capacity LSP with Euro-3, Flow 80°C

Euro-3 / LSP Typ	Hot water capacity			Flates Quantity ³	Weight Euro-3 with LSP kg	Stand-by loss qB (70°C) ⁴ Watt
	dm ³ /10 min ¹ 45°C	dm ³ /h ² 45°C	dm ³ /h ² 60°C			
b-i (18) 150	175	440	270	1	192	236
b-i (18) 200	240	440	305	2	212	246
b-i (25) 150	180	480	270	1,5	228	272
b-i (25) 200	245	615	350	3	247	282
b-i (32) 150	180	480	270	1,5	236	279
b-i (32) 200	245	615	350	3	255	289
b-i (37) 150	180	480	270	1,5	246	279
b-i (37) 200	245	615	350	3	260	289

¹ Max. hot water capacity in 10 min, according to Procal tests.

Calorifier temperature 60°C

² Hot water continuous output per hour

Cold water 10°C, Boiler water temperature 80°C

³ Flate (3–4 rooms with 3-4 persons,

⁴ Euro-3 and LSP without loading line

Technical data

Subject to alterations

Heating armature group

Flow resistance Euro-3 (18-37) with heating armature group

HA-25-4-R z = 25,1

If the normal heating armature group for heating surface (water volume $\geq 3,0 \text{ m}^3/\text{h}$ at Euro-3 37/48) is used, a boiler circuit pump must be used.

Flow resistance Euro-3 (48) with heating armature group

HA-32-4-R z = 7,3

Loading group LG 25L to CombiVal and Euro-3 (18-37)

Flow resistance Euro-3 with loading group

LG-25L z = 18,4

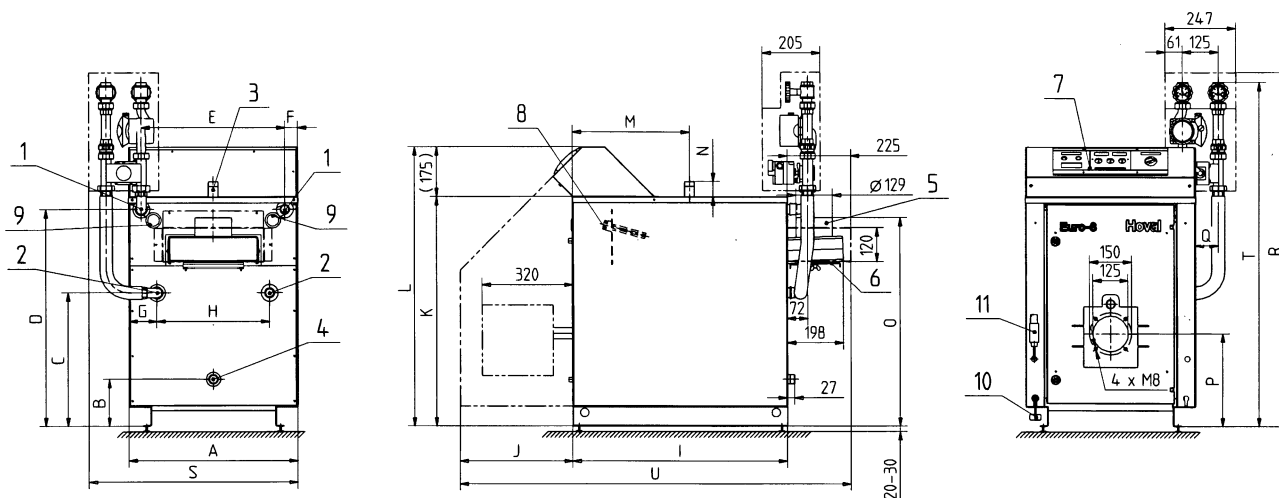
$$\text{mbar} = (\text{m}^3/\text{h})^2 \times z$$

mbar = Flow resistance
m³/h = Volume flow

If the capacity of the heat ex-changer in the calorifier is higher than the heat capacity of the boiler, than a by-pass with a throttle-clack-valve must be placed in the calorifier loading line.

Oil burner	Euro-3	b-i 18	b-i 25	b-i 32	b-i 37	b-i 48
• Oil burner	Type	R1-V-L	R1-V-L	R1-V-L	R1-V-L	R20-L
• Output capacity	kW	18-20	22-28	28-36	36-41	42-53
• Fuel consumption	kg/h	1,70	2,35	3,05	3,45	4,48

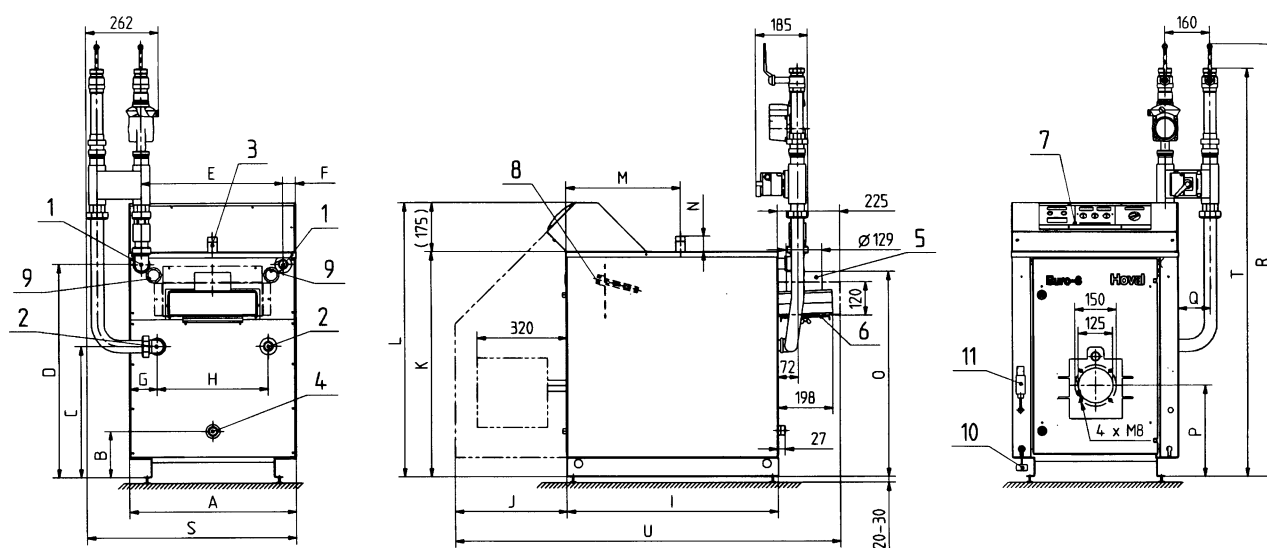
Euro-3 (18-37) with heating group HA 25



- | | |
|--------------------------------|---------------------------|
| 1 Flow R 1 | 7 Control panel |
| 2 Return R 1 | 8 Pocket |
| 3 Safety flow (expansion) R 1" | 9 Cable connection |
| 4 Drain R 1" | 10 Burner cable |
| 5 Flue gas outlet | 11 Fire protection switch |
| 6 Cleaning opening | |

Boiler Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
Euro-3 (18)	500	173	385	667	390	55	110	280	651	330	710	885	358	50	645	290	80	1157	641	1114	1206
Euro-3 (25-37)	600	167	473	767	510	45	100	400	758	400	810	985	411	54	738	329	80	1257	741	1214	1383

Euro-3 (48) with heating group HA 32

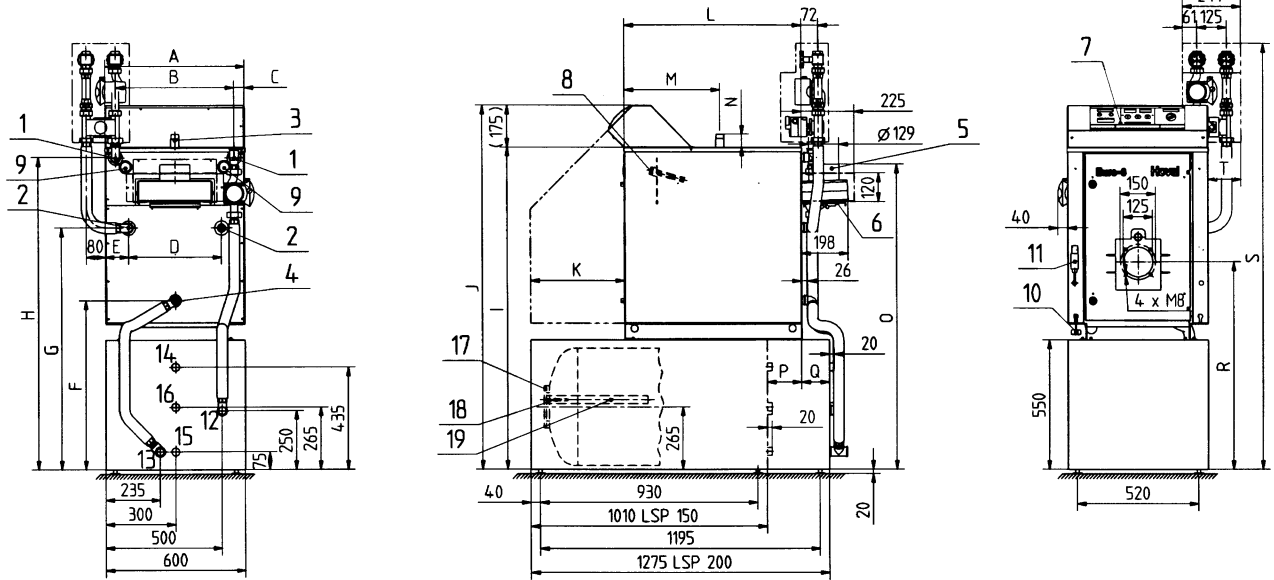


- | | |
|--------------------------------|---------------------------|
| 1 Flow R 1 1/4" | 7 Control panel |
| 2 Return R 1 1/4" | 8 Pocket |
| 3 Safety flow (expansion) R 1" | 9 Cable connection |
| 4 Drain R 1" | 10 Burner cable |
| 5 Flue gas outlet | 11 Fire protection switch |
| 6 Cleaning opening | |

Boiler Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
Euro-3 (48)	600	167	473	767	520	45	100	400	868	400	985	810	466	54	738	329	115	1550	754	1462	1493

**Euro-3 on calorifier LSP (150, 200)
with heating armature group HA 25**

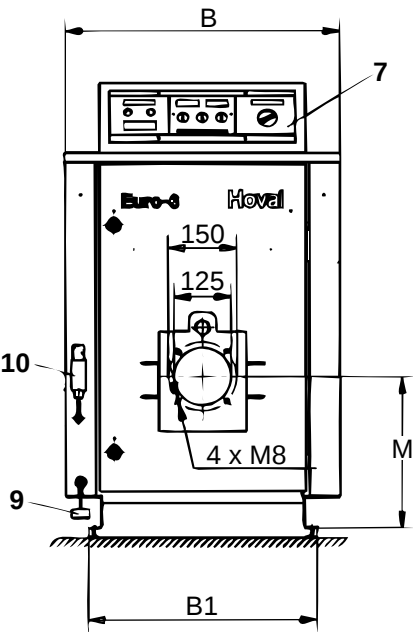
(All measurements in mm)



- | | |
|-------------------------------|---------------------------|
| 1 Flow R 1 | 11 Fire protection switch |
| 2 Return R 1 | 12 Flow R1 |
| 3 Safety flow (expansion) R 1 | 13 Return R1 |
| 4 Drain | 14 Hot water R1 |
| 5 Flue gas outlet | 15 Cold water R1 |
| 6 Cleaning opening | 16 Circulation |
| 7 Control panel | 17 Hand hole cover |
| 8 Pocket | 18 Pocket |
| 9 Cable connection | 19 Anode |
| 10 Burner cable | |

Boiler Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Euro-3 (18)	500	390	55	280	110	723	935	1217	1260	1435	330	651	358	50	1195	-29	294	840	1707	131
Euro-3 (25-37)	600	510	45	400	100	717	1023	1317	1360	1535	400	758	411	54	1288	148	117	879	1807	141

(All measurements in mm)

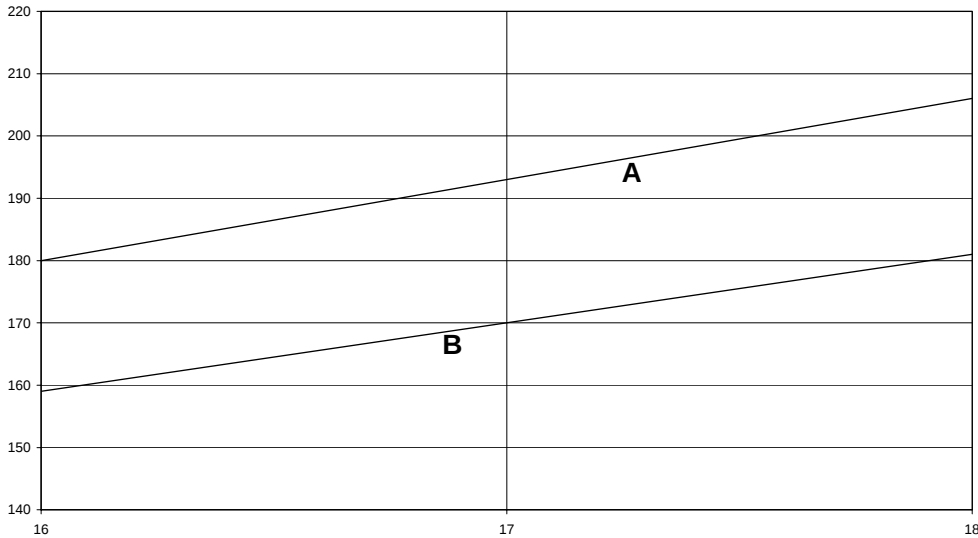


- 7 Control panel
- 9 Connection for burner cable (burner plug)
- 10 Fire protection switch

Boiler Type	B	B1	M
Euro-3 (18)	500	430	290
Euro-3 (25)	600	500	329
Euro-3 (32)	600	500	329
Euro-3 (37)	600	500	329
Euro-3 (48)	600	500	329

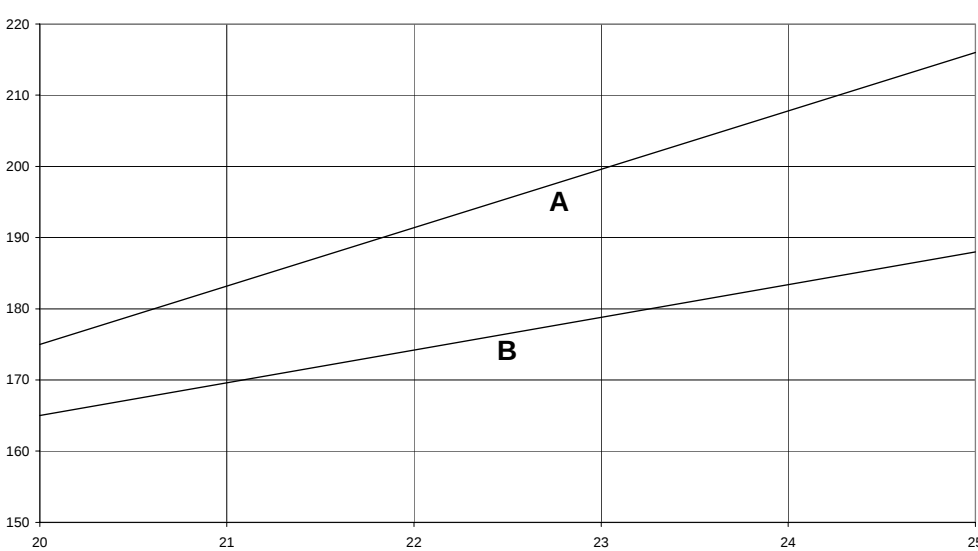
Euro-3 (18)

Boiler temperature Flow/Return 80/60°C



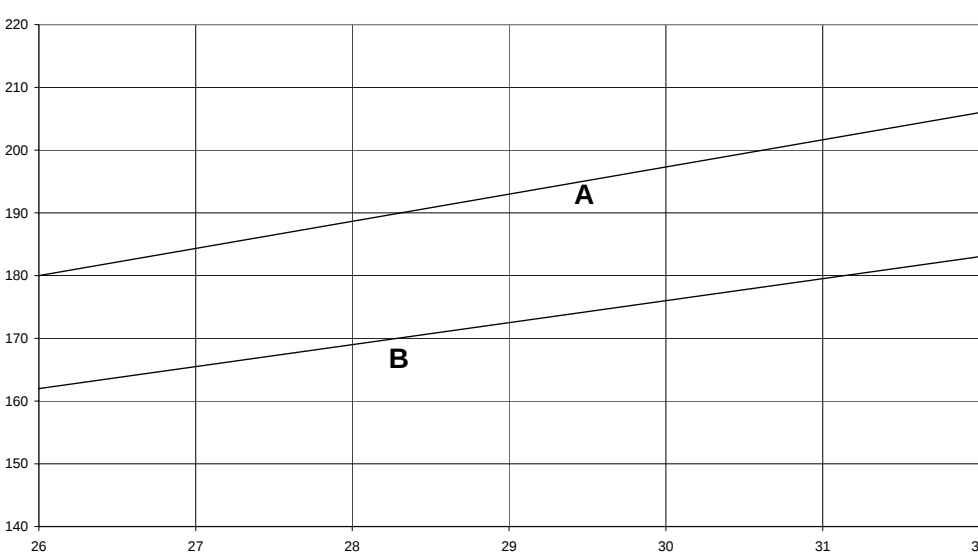
Euro-3 (25)

Boiler temperature Flow/Return 80/60°C



Euro-3 (32)

Boiler temperature Flow/Return 80/60°C

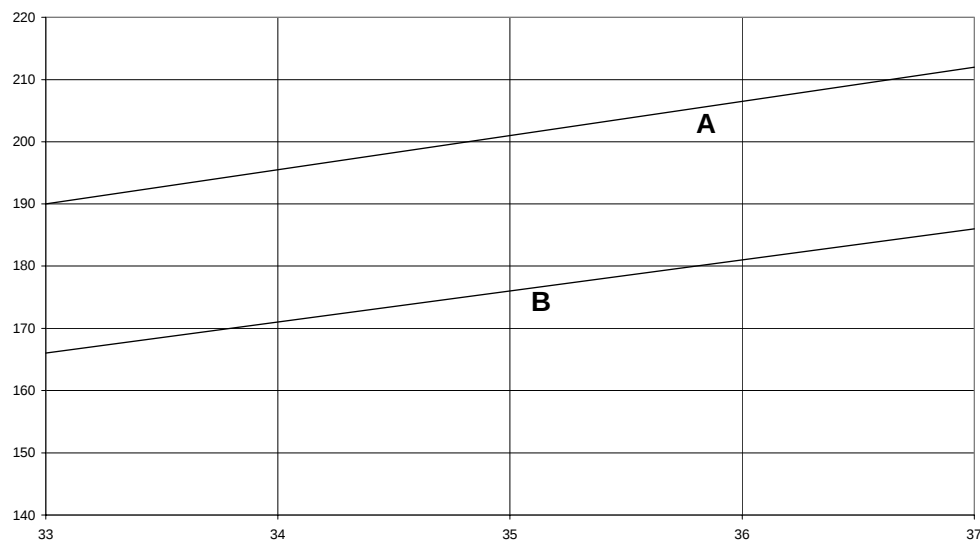


kW = Output

°C = Flue gas temperature
CO₂ Oil EL = 12,5 %.

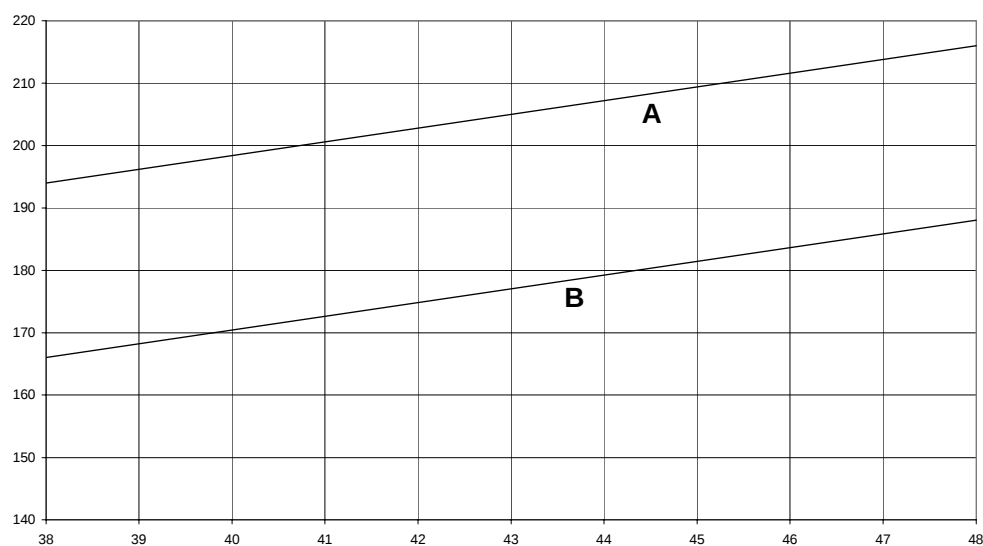
Euro-3 (37)

Boiler temperature Flow/Return 80/60°C



Euro-3 (48)

Boiler temperature Flow/Return 80/60°C



- A = Without flue gas regulators
- B = With flue gas regulators
- kW = Boiler output
- °C = Flue gas temperature, boiler water temperature 80°C (DIN 4702).

Standards and Guidelines

Following standards and guidelines must be respected:

- Technical information and installation manual of company Hoval
- Hydraulic and technical control regulations of the local gas supply authority
- Firing guidelines of local gas works
- Fire protection standards
- Gas directives G1 of the SVGW
- Directives SWKI 97-1 «Water treatment for heating, steam and air conditioning installations»
- Ventilation and air supply for the boiler installation room according to directives SWKI 91-1
- Directives SWKI- 93-1 „Safety equipment for heating systems“.
- Directives Procal/FKR "Electric plug connections at heating boilers and burners".
- 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 installation".

must be removed when swivelling boiler door.

Mounting of combustion chamber reflector

- The combustion chamber reflektor must be pushed into the combustion chamber til the limit stop.

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).

to the instructions of the chimney constructor.

- The cross sections are to be calculated for boilers without draft requirements.

Required chimney diameter

Basic: Smooth chimneys made of stainless steel, Flue gas tube $\leq 2,5$ m, $\Sigma \zeta = 2,2$, flue gas tube and chimney insulated. Height above sea level ≤ 1000 m, Outside temperature $\leq 30^\circ\text{C}$.

m	Ø1		
20	100	100	125
15	100	100	125
10	100	125	125
5	100	125	125
Euro-3			
Type	18 - 25	32	37 - 48

m = Chimney height(m)
Ø1 = Min, Ø of chimney and flue gas tube.

Water treatment

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

Heating armature group

If the normal heating armature group for heating surface (water volume $> 3,0$ m³/h, Euro-3 37, 48) is used, a boiler circuit pump must be fitted.

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.

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

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

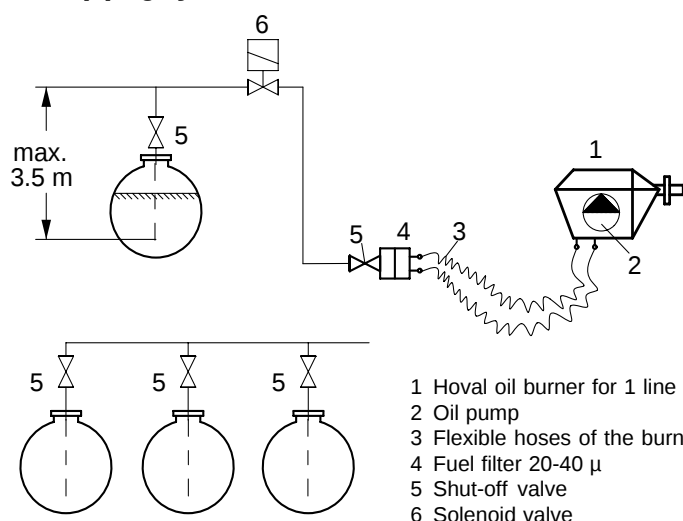
- The chimney must be water proof, acid resistant and suitable for flue gas temperature $> 160^\circ\text{C}$
- For existing chimney installation the restoration must be carried out according

Piping

- The boiler Primo b-i can only be used for 1 line systems. Maximum suction height without pump 3.5m, maximum length of pipe system 40m.
- The pipes must be fitted that the boiler door can be swivelled 90°.
- At the end of the fixed piping a shut-off valve must be installed (by „Oventrop“ filter already included).
- A Filter (20-40 μ) must be installed in front of the burner in the piping.
- The highest point of the piping should be max. 3.5m above the tank suction pipe.
- The piping must be installed that no fluid can get into the pipes, when the system is not working.
- If the highest oil level in the tank is higher then the lowest point of the piping system,

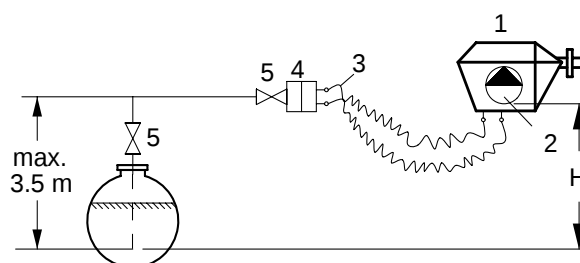
a solenoid valve must be installed at the highest point of the system (next to the oil tank).

Max. oil level higher than the lowest point of the piping system



- 1 Hoval oil burner for 1 line system.
- 2 Oil pump
- 3 Flexible hoses of the burner
- 4 Fuel filter 20-40 μ
- 5 Shut-off valve
- 6 Solenoid valve

Max. oil level lower as the lowest point of the piping system.



H = Suction height [m] (system with max. 4 bows, 1 shut-off valve with non return valve.

Height above sea level max. 1000 m)

H m	18	25	Euro-3			37	48
			32				
	Ø 4/6 mm, max. length m						
1,5	30	23	18	15	11		
2,0	24	17	13	11	8		
2,5	16	12	9	8	6		
3,0	3	6	5	4	3		

H m	18	25	Euro-3			37	48
			32				
	Ø 6/8 mm, max length m						
1,5	30	30	30	30	30		
2,0	30	30	30	30	30		
2,5	30	30	30	30	31		
3,0	30	34	27	23	17		

Sanitary installation

- The installation must be carried out according to the regulation of local water works.
- With calorifier LSP the hot water temp. can be max. 75 °C.

Calorifier

- If the capacity of the calorifier is higher than the boiler output, a by-pass at the calorifier loading line must be installed.

Expansion tank

- If a 4-way mixing valve is used in your system, you have to install an expansion tank.
- In the case of a system with open expansion tank, it must be assured that the pressure in the suction pipe of the pump will not be lower than allowed.

Safety valve

- A safety valve must be installed in the safety flow.

