

THW-I HTE

Industrial Hot Water Boiler for Oil and Gas Firing

Hoval

Description

THW-I HTE

Hoval Hot Water Boiler

The Hoval high output hot water boilers are made of quality steel and are distinguished by their solid, robust and elastic construction. They particularly convince by their easy way of operation, their easy maintenance and optimal efficiency. The client receives an economical, environment friendly compact unit, ready for installation. The boilers are constructed for oil- or gasfiring.

Boiler type THW-I HTE

The type THW-I HTE classical 3 pass flame tube flue gas tube boiler with an inner fully water cooled flue gas turning chamber guarantees high efficiency. The boiler consists of a cylindrical shell, the two headplates, the centric flue tube including the back flue gas turning chamber with water cooled finned tube wall and the two flue gas passes. The boiler door is thermal insulated and flue gas proof for burner mounting. The boiler is completely electrically welded and provided with all required inspection openings.

The spacious designed flame tube with low thermal charges results in an excellent combustion and reduces emissions. The large water content secures an even boiler running time and thus reduces the number of boiler starts.

Admissible max. safety valve pressure / temperature

Standard pressures: 10,13 and 16 bar.

Higher pressure on request.

Max. temperature up to 210 °C.

Thermal insulation

The boiler is fully insulated including flue gas collector with rock wool insulation. The casing is made of structured aluminium plate. Sockets and cuttings are nicely framed.

Connection fittings and sockets

The connection fittings and sockets on the boiler and on the fitting pipe are meant for the attachment of:

Flow intermediate piece, Thermometer for return, return shut-off, safety valve, drain.

Large Equipment

2 boiler supports

1 flue gas collector with integrated flue gas exit backward.

1 Back cleaning cover with bleeder valves

1 boiler door for burner mounting, thermal insulated and designed flue gas proof, placed on left and right swivelable hinges for the flue gas sided cleaning of boiler

1 boiler plate

High Efficiency

Due to the above technical facts an efficiency of up to 92 % (120 °C middle temperature, flow/ return) can be achieved. Thus continuous working costs are kept low. The sources of energy are used more efficiently and Hoval spares the environment.



Construction guiding, quality approval

The boiler is designed with all necessary inspection doors.

The construction and manufacturing of the boilers is done according to the European Pressure Equipment Directive (PED) 97/23 EC - EN12953 with CE-certificate. The ISO 9001:2000 certification and the quality approval at our factory with our Hoval quality performance department with works certificate guarantees the highest product quality. For installation and operation of the boiler the local laws and norms are to be respected.

Control Panel

The control panel for the Hoval boiler can be equipped with the required control units and indicators for control and supervision of boiler and burner. The operation and alarm reports may be shown as fault indication. The control panel will be made upon customer requirements and depending on the burner to be used.

Boiler Water Quality

For operation the Hoval and the country specific boiler water regulations have to be respected and local waste water regulations have to be paid attention to. Detailed information for the boiler water quality can be found in the appendix.

Delivery

The pressure body is provided with a primer. Due to transport reasons the insulation can be fixed at the factory. Burner armatures and control panel are either pre-mounted (as far as transport technically possible) or packed loosely in a separate box. The mounting and wiring can be done at the factory or at site. Connection openings are covered.

On Request

- Volt free contacts for BMS connection (Building Management System).

Sectional view



Returninjection: The return water from the heating system is led into the warm area of the boiler. Because of the special returninjection the entering water into the boiler will be turned by 90° and accelerated by a baffle plate. By injector effect hot water will be sucked in and will be mixed intensively with the cold water. Thereby the temperature of the return water increases.

Boiler door: Large boiler door provides easy access for cleaning of the combustion chamber to the second and third pass. The boiler door can be easily opened by the special hinge construction to the left or right. The boiler door with an optimized thermal insulation helps to reduce the calorific losses of the boiler to a minimum.

Heating surface: The smooth flue gas flame tube without any turbulators reduces the exhaust gas losses and makes an easy and fast cleaning possible for an economical operation.

Burner: The boiler can be optimally fitted with LowNOx burners due to combustion chamber geometry and the low combustion chamberload.

Finned tube wall (reverse chamber): Due to the finned tube wall a completely water cooled turning chamber of the first to the second pass secure a maximum utilisation of the heat.

Insulation: A highly effective thermal insulation with aluminium boarding reduces the standby losses to a minimum and contributes to highest economy.



Technical data

THW-I HTE (10/05 - 34/25)

Technical data

Type		(10/05)	(13/08)	(17/10)	(22/15)	(27/20)	(34/25)
• Nominal output	kW	1000/ 500	1300/ 800	1700/ 1000	2200/ 1500	2700/ 2000	3400/ 2500
• Operating temperature max. (SBT) ¹		depending on net pressure					
• Temperature level flow/ return		depending on net pressure					
• Safety valve pressure	bar	10	10	10	10	10	10
	bar	13	13	13	13	13	13
	bar	16	16	16	16	16	16
• Boiler efficiency at 120 °C (Natural gas)	%	88.7/ 91.5	89.1/ 91.2	89.9/ 91.9	89.7/ 91.3	89.6/ 90.9	89.8/ 91.8
• Boiler efficiency at 120 °C (Diesel oil)	%	88.8/ 91.5	89.5/ 91.5	90.1/ 90.0	89.9/ 91.5	89.9/ 91.1	90.1/ 91.3
• Flue gas resistance	mbar	9.5/ 5.5	10.5/ 6.5	11.5/ 6.5	11.0/ 7.0	11.0/ 8.0	13.0/ 8.0
• Water content	l	1700	1900	2100	2800	3500	4500
• Flue gas temperature after boiler (Natural gas)	°C	278/ 210	238/ 219	242/ 199	255/ 219	257/ 227	251/ 222
• Flue gas temperature after boiler (Diesel oil)	°C	265/ 203	254/ 210	241/ 198	244/ 210	245/ 218	240/ 213

¹ Country and equipment specific

Dimensions and weights

Type		(10/05)	(13/08)	(17/10)	(22/15)	(27/20)	(34/25)
• Flame tube diameter	10 bar mm	600	650	700	750	800	850
	13 bar mm	600	650	700	750	800	850
	16 bar mm	600	650	700	750	800	850
• Flame tube length with turning chamber	mm	1900	2200	2400	2800	3300	3650
• Boiler length							
with insulation, without burner	mm	2580	2880	3080	3480	3980	4330
• Boiler width							
with insulation, without armatures	mm	1550	1600	1700	1750	1850	1950
• Boiler height							
with insulation, with assembly tube	mm	2150	2285	2360	2430	2530	2630
• Diameter flue gas outlet	mm	300	350	400	450	500	500
• Transport weight without burner incl. equipment							
	10 bar kg	2500	2900	3500	4500	6000	7000
	13 bar kg	2700	3300	4000	5000	6500	8500
	16 bar kg	3000	3500	4500	5500	7000	9000

Technical data

Assembly tube

Type		(10/05)	(13/08)	(17/10)	(22/15)	(27/20)	(34/25)
• 1 Assembly tube without insulation (flow intermediate piece)	[DN]	80	100	100	125	125	150

Boiler basic equipment

Type		(10/05)	(13/08)	(17/10)	(22/15)	(27/20)	(34/25)
• 1 Drain ball valve	[DN]	40	40	40	40	40	40
• 1 Ventilation valve (Assembly tube)	[DN]	½"	½"	½"	½"	½"	½"
• 1 Thermometer flow	[DN]	½"	½"	½"	½"	½"	½"
• 1 Thermometer return	[DN]	½"	½"	½"	½"	½"	½"
• 1 Safety thermostat	[DN]	½"	½"	½"	½"	½"	½"
• 1 Cleaning set		Brush with rod					

Safety valve

Type		(10/05)	(13/08)	(17/10)	(22/15)	(27/20)	(34/25)
• 1 Safety valve 10 bar		25/40	32/50	32/50	40/65	40/65	65/100
• 1 Safety valve 13 bar		25/40	32/50	32/50	32/50	40/65	40/65
• 1 Safety valve 16 bar		25/40	25/40	32/50	32/50	40/65	40/65

Flow/return flow shut off armature

Type		(10/05)	(13/08)	(17/10)	(22/15)	(27/20)	(34/25)
• Shut off flap		80	100	100	125	125	150

Boiler equipment according to TRD 604

Type		(10/05)	(13/08)	(17/10)	(22/15)	(27/20)	(34/25)
• 2 Safety temperature control		R ½"	R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Return flow temperature control		R ½"	R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Manometer		R ½"	R ½"	R ½"	R ½"	R ½"	R ½"
• 2 Safety pressure control		R ½"	R ½"	R ½"	R ½"	R ½"	R ½"
• 2 Pressure min. control		R ½"	R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Water shortage		R ½"	R ½"	R ½"	R ½"	R ½"	R ½"

Boiler return flow heat up

Type		(10/05)	(13/08)	(17/10)	(22/15)	(27/20)	(34/25)
• 1 Pump 140 °C	[m³/h]	14	18	24	35	40	50
• 1 Thermostat	[DN]	R ½"	R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Non return valve	[DN]	40	40	50	80	80	80
• 2 Shut off flap	[DN]	40	40	50	80	80	80
• 1 Pump 180 °C	[m³/h]	14	18	24	35	40	50
• 1 Thermostat	[DN]	R ½"	R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Non return valve	[DN]	65	65	65	80	80	80
• 2 Shut off flap	[DN]	65	65	65	80	80	80

1 Connection pipe

Type		(10/05)	(13/08)	(17/10)	(22/15)	(27/20)	(34/25)
• 1 Connection pipe 140 °C	[DN]	40	40	50	80	80	80

Subject to project-related alterations

Technical data

THW-I HTE (39/30 - 59/50)

Technical data

Type		(39/30)	(43/35)	(48/40)	(54/45)	(59/50)
• Nominal output	kW	3900/3000	4300/ 3500	4800/4000	5400/4500	5900/5000
• Operating temperature max. (SBT) ¹		depending on net pressure				
• Temperature level flow/ return		depending on net pressure				
• Safety valve pressure	bar	10	10	10	10	10
	bar	13	13	13	13	13
	bar	16	16	16	16	16
• Boiler efficiency at 120 °C (Natural gas)	%	90,0/91,1	90,3/ 91,2	90,5/91,3	90,4/ 91,1	90,4/91,1
• Boiler efficiency at 120 °C (Diesel oil)	%	90,3/ 91,3	90,6/ 91,4	90,8/ 91,5	90,6/ 91,3	90,6/ 91,3
• Flue gas resistance	mbar	13,0/ 9,5	13,0/ 10,0	12,5/ 9,0	13,0/ 10,5	14,0/ 11,5
• Water content	l	5000	5500	6500	7000	8000
• Flue gas temperature after boiler (Natural gas)	°C	246/ 221	239/ 220	235/ 218	238/ 221	238/ 222
• Flue gas temperature after boiler (Diesel oil)	°C	236/ 213	229/ 212	225/ 210	229/ 213	228/ 214

¹ Country and equipment specific

Dimensions and weights

Type		(39/30)	(43/35)	(48/40)	(54/45)	(59/50)
• Flame tube diameter	10 bar mm	900	950	1000	1025	1050
	13 bar mm	900	950	1000	1025	1050
	16 bar mm	900	950	1000/1100	1025/1125	1050/1150
• Flame tube length with turning chamber	mm	3950	4100	4500	4750	4800
• Boiler length with insulation, without burner	mm	4630	4780	5180	5430	5480
• Boiler width with insulation, without armatures	mm	2000	2050	2150	2200	2250
• Boiler height with insulation, with assembly tube	mm	2835	2885	3065	3165	3215
• Diameter flue gas outlet	mm	550	600	600	650	650
• Transport weight without burner incl. equipment						
	10 bar kg	7500	8500	10500	12000	12500
	13 bar kg	9000	10000	12000	13000	14000
	16 bar kg	10000	11000	13000	14000	15000

Technical data

Assembly tube

Type		(39/30)	(43/35)	(48/40)	(54/45)	(59/50)
• 1 Assembly tube without insulation (flow intermediate piece)	[DN]	150	150	200	200	200

Boiler basic equipment

Type		(39/30)	(43/35)	(48/40)	(54/45)	(59/50)
• 1 Drain ball valve	[DN]	40	40	40	40	40
• 1 Ventilation valve (Assembly tube)	[DN]	½"	½"	½"	½"	½"
• 1 Thermometer flow	[DN]	½"	½"	½"	½"	½"
• 1 Thermometer return flow	[DN]	½"	½"	½"	½"	½"
• 1 Safety thermostat	[DN]	½"	½"	½"	½"	½"
• 1 Cleaning set		Brush with rod				

Safety valve

Type		(39/30)	(43/35)	(48/40)	(54/45)	(59/50)
• 1 Safety valve 10 bar		65/100	65/100	65/100	65/100	65/100
• 1 Safety valve 13 bar		50/80	50/80	50/80	65/100	65/100
• 1 Safety valve 16 bar		40/65	50/80	50/80	50/80	50/80

Flow/Return flow shut off armature

Type		(39/30)	(43/35)	(48/40)	(54/45)	(59/50)
• Shut off flap		150	150	200	200	200

Boiler equipment according to TRD 604

Type		(39/30)	(43/35)	(48/40)	(54/45)	(59/50)
• 2 Safety temperature control STB		R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Return flow temperature control		R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Manometer		R ½"	R ½"	R ½"	R ½"	R ½"
• 2 Safety pressure control		R ½"	R ½"	R ½"	R ½"	R ½"
• 2 Pressure min. control		R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Water shortage		R ½"	R ½"	R ½"	R ½"	R ½"

Boiler return flow heat up

Type		(39/30)	(43/35)	(48/40)	(54/45)	(59/50)
• 1 Pump 140 °C	[m³/h]	60	65	75	80	90
• 1 Thermostat	[DN]	R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Non return valve	[DN]	80	80	80	80	100
• 2 Shut off flap	[DN]	80	80	80	80	100
• 1 Pump 180 °C	[m³/h]	60	65	75	80	90
• 1 Thermostat	[DN]	R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Non return valve	[DN]	65	65	80	80	80
• 2 Shut off flap	[DN]	65	65	80	80	80

1 Connection pipe

Type		(39/30)	(43/35)	(48/40)	(54/45)	(59/50)
• 1 Connection pipe 140 °C	[DN]	80	80	80	80	100

Subject to project-related alterations

Technical data

THW-I HTE (68/60 - 115/100)

Technical data

Type		(68/60)	(78/70)	(89/80)	(99/90)	(115/100)
• Nominal output	kW	6800/ 6000	7800/ 7000	8900/ 8000	9900/ 9000	11500/ 10000
• Operating temperature max. (SBT) ¹		depending on net pressure				
• Temperature level flow/ return		depending on net pressure				
• Safety valve pressure	bar	10	10	10	10	10
	bar	13	13	13	13	13
	bar	16	16	16	16	16
• Boiler efficiency at 120 °C (Natural gas)	%	90,7/ 91,2	90,5/ 90,9	90,4/ 90,8	90,3/ 90,7	90,3/ 90,9
• Boiler efficiency at 120 °C (Diesel oil)	%	90,9/ 91,4	90,7/ 91,1	90,6/ 91,3	90,6/ 91,0	90,5/ 91,1
• Flue gas resistance	mbar	14,5/ 12,5	14,0/ 12,5	14,0/ 12,0	15,5/ 13,5	16,5/ 14,0
• Water content	l	9000	10000	11500	13000	14000
• Flue gas temperature after boiler (Natural gas)	°C	232/ 221	236/ 226	238/ 228	239/ 232	240/ 227
• Flue gas temperature after boiler (Diesel oil)	°C	223/ 213	227/ 217	229/ 220	230/ 221	231/ 218

¹ Country and equipment specific

Dimensions and weights

Type			(68/60)	(78/70)	(89/80)	(99/90)	(115/100)
• Flame tube diameter	10 bar	mm	1100	1150	1200	1250	1300
	13 bar	mm	1100	1150/1250	1200/1300	1250/1350	1300/ 1450
	16 bar	mm	1100/1200	1150/1250	1200/1300	1250/1350	1300/ 1450
• Flame tube length with turning chamber		mm	5000	5200	5500	5800	5900
• Boiler length							
with insulation, without burner		mm	5680	5970	6270	6570	6720
• Boiler width							
with insulation, without armatures		mm	2350	2450	2550	2650	2750
• Boiler height							
with insulation, with assembly tube		mm	3315	3505	3605	3705	3910
• Diameter flue gas outlet		mm	700	750	750	800	850
• Transport weight without burner incl. equipment							
	10 bar	kg	13500	16000	18000	20000	22000
	13 bar	kg	16000	18000	21000	23000	25000
	16 bar	kg	17000	20000	22000	25000	27000

Technical data

Assembly tube

Type		(68/60)	(78/70)	(89/80)	(99/90)	(115/100)
• 1 Assembly tube without insulation (flow intermediate piece)	[DN]	200	250	250	250	250

Boiler basic equipment

Type		(68/60)	(78/70)	(89/80)	(99/90)	(115/100)
• 1 Drain ball valve	[DN]	40	40	40	40	40
• 1 Ventilation valve (Assembly tube)	[DN]	½"	½"	½"	½"	½"
• 1 Thermometer flow	[DN]	½"	½"	½"	½"	½"
• 1 Thermometer return	[DN]	½"	½"	½"	½"	½"
• 1 Safety thermostat	[DN]	½"	½"	½"	½"	½"
• 1 Cleaning set		Brush with rod				

Safety valve

Type		(68/60)	(78/70)	(89/80)	(99/90)	(115/100)
• 1 Safety valve 10 bar		65/100	80/125	80/125	80/125	100/150
• 1 Safety valve 13 bar		65/100	65/100	65/100	80/125	80/125
• 1 Safety valve 16 bar		65/100	65/100	65/100	65/100	80/125

Flow/return flow shut off armature

Type		(68/60)	(78/70)	(89/80)	(99/90)	(115/100)
• Shut off flap		200	250	250	250	250

Boiler equipment according to TRD 604

Typ		(68/60)	(78/70)	(89/80)	(99/90)	(115/100)
• 2 Safety temperature control		R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Return flow temperature control		R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Manometer		R ½"	R ½"	R ½"	R ½"	R ½"
• 2 Safety pressure control		R ½"	R ½"	R ½"	R ½"	R ½"
• 2 Pressure min. control		R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Water shortager		R ½"	R ½"	R ½"	R ½"	R ½"

Boiler return flow heat up

Type		(68/60)	(78/70)	(89/80)	(99/90)	(115/100)
• 1 Pump 140 °C	[m³/h]	105	120	135	150	175
• 1 Thermostat	[DN]	R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Non return valve	[DN]	100	125	125	150	150
• 2 Shut off flap	[DN]	100	125	125	150	150
• 1 Pump 180 °C	[m³/h]	105	120	135	150	175
• 1 Thermostat	[DN]	R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Non return valve	[DN]	80	80	100	100	100
• 2 Shut off flap	[DN]	80	80	100	100	100

1 Connection pipe

Type		(68/60)	(78/70)	(89/80)	(99/90)	(115/100)
• 1 Connection pipe 140 °C	[DN]	100	125	125	150	150

Subject to project-related alterations

Technical data

THW-I HTE (130/120 - 210/200)

Technical data

Type		(130/120)	(150/140)	(170/160)	(190/180)	(210/200)
• Nominal output	kW	13000/ 12000	15000/ 14000	17000/ 16000	19000/ 18000	21000/ 20000
• Operating temperature max. (SBT) ¹		depending on net pressure				
• Temperature level flow/ return		depending on net pressure				
• Safety valve pressure	bar	10	10	10	10	10
	bar	13	13	13	13	13
	bar	16	16	16	16	16
• Boiler efficiency at 120 °C (Natural gas)	%	90,5/ 90,8	90,5/ 90,8	90,8/ 91,0	90,9/ 91,2	91,4/ 91,5
• Boiler efficiency at 120 °C (Diesel oil)	%	90,7/ 91,0	90,7/ 91,0	91,0/ 91,2	91,1/ 91,3	91,5/ 91,7
• Flue gas resistance	mbar	16,0/ 14,0	15,0/ 14,0	15,0/ 13,5	15,0/ 13,0	16,0/ 14,0
• Water content	l	15000	16500	20000	25000	30000
• Flue gas temperature after boiler (Natural gas)	°C	236/ 228	236/ 230	229/ 224	226/ 221	216/ 212
• Flue gas temperature after boiler (Diesel oil)	°C	227/ 220	227/ 221	221/ 215	217/ 213	209/ 205

¹ Country and equipment specific

Dimensions and weights

Type			(130/120)	(150/140)	(170/160)	(190/180)	(210/200)
• Flame tube diameter	10 bar	mm	1400/1550	1500/1650	1600/1750	1700/1850	1800/1950
	13 bar	mm	1400/1550	1500/1650	1600/1750	1700/1850	1800/1950
	16 bar	mm	1400/1550	1500/1650	1600/1750	1700/1850	1800/1950
• Flame tube length with turning chamber		mm	6200	6200	6600	6800	7100
• Boiler length with insulation, without burner		mm	7020	7220	7420	7620	7920
• Boiler width with insulation, without armatures		mm	2850	3050	3250	3350	3650
• Boiler height with insulation, with assembly tube		mm	4060	4260	4460	4745	5245
• Diameter flue gas outlet		mm	900	1000	1050	1100	1100
• Transport weight without burner incl. equipment							
	10 bar	kg	25000	29000	33000	37000	43000
	13 bar	kg	28000	33000	39000	44000	49000
	16 bar	kg	31000	36000	41000	46000	52000

Technical data

Assembly tube

Type		(130/120)	(150/140)	(170/160)	(190/180)	(210/200)
• 1 Assembly tube without insulation (flow intermediate piece)	[DN]	250	250	300	300	300

Boiler basic equipment

Type		(130/120)	(150/140)	(170/160)	(190/180)	(210/200)
• 1 Drain ball valve	[DN]	40	40	40	40	40
• 1 Ventilation valve (Assembly tube)	[DN]	½"	½"	½"	½"	½"
• 1 Thermometer flow	[DN]	½"	½"	½"	½"	½"
• 1 Thermometer return	[DN]	½"	½"	½"	½"	½"
• 1 Safety thermostat	[DN]	½"	½"	½"	½"	½"
• 1 Cleaning set		Bürste mit Stange				

Safety valve

Type		(130/120)	(150/140)	(170/160)	(190/180)	(210/200)
• 1 Safety valve 10 bar		100/150	100/150	100/150	125/200	125/200
• 1 Safety valve 13 bar		80/125	100/150	100/150	100/150	100/150
• 1 Safety valve 16 bar		80/125	80/125	100/150	100/150	100/150

Flow/return flow shut off armature

Type		(130/120)	(150/140)	(170/160)	(190/180)	(210/200)
• Shut off flap		250	250	300	300	300

Boiler equipment according to TRD 604

Type		(130/120)	(150/140)	(170/160)	(190/180)	(210/200)
• 2 Safety temperature control		R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Return flow temperature control		R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Manometer		R ½"	R ½"	R ½"	R ½"	R ½"
• 2 Safety pressure control		R ½"	R ½"	R ½"	R ½"	R ½"
• 2 Pressure min. control		R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Water shortager		R ½"	R ½"	R ½"	R ½"	R ½"

Boiler return flow heat up

Type		(130/120)	(150/140)	(170/160)	(190/180)	(210/200)
• 1 Pump 140 °C	[m³/h]	200	230	260	290	320
• 1 Thermostat	[DN]	R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Non return valve	[DN]	150	150	150	150	150
• 2 Shut off flap	[DN]	150	150	150	150	150
• 1 Pump 180 °C	[m³/h]	200	230	260	290	320
• 1 Thermostat	[DN]	R ½"	R ½"	R ½"	R ½"	R ½"
• 1 Non return valve	[DN]	150	150	150	150	150
• 2 Shut off flap	[DN]	150	150	150	150	150

1 Connection pipe

Type		(130/120)	(150/140)	(170/160)	(190/180)	(210/200)
• 1 Connection pipe 140 °C	[DN]	150	150	150	150	150

Subject to project-related alterations

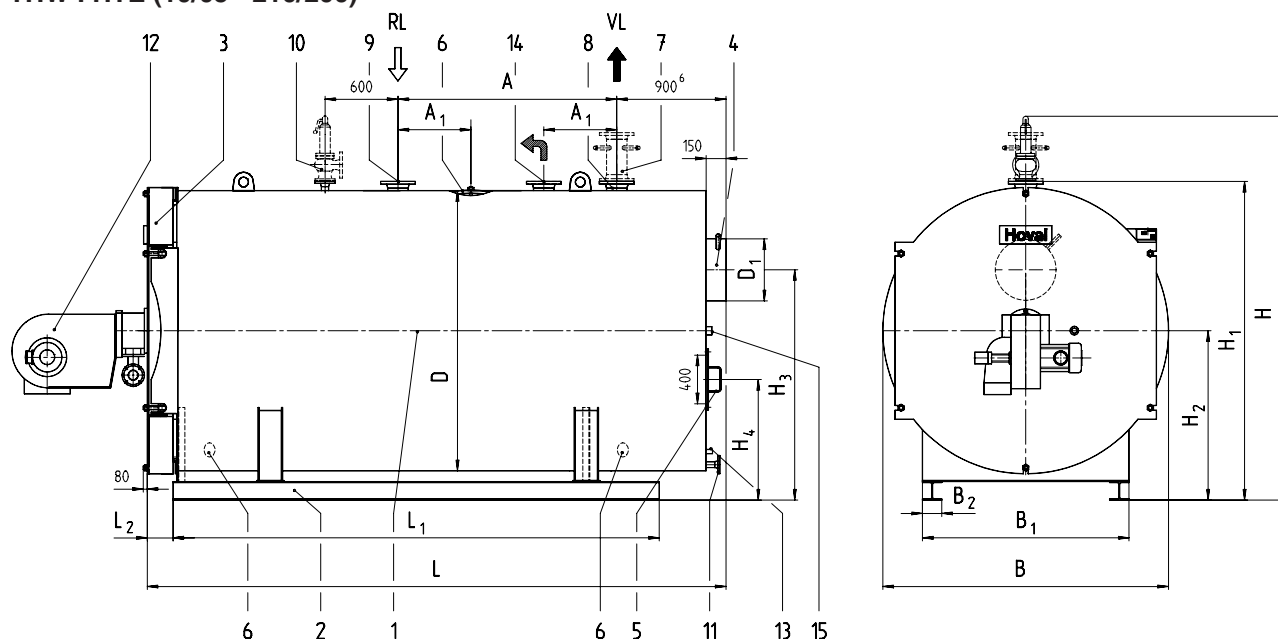
THW-I HTE

Industrial Hot Water Boiler for Oil and Gas Firing



Technical data

THW-I HTE (10/05 - 210/200)



- | | | |
|--|--|------------------------------------|
| 1 Boiler (with flue gas collector) | 4 Flue gas outlet with 1 x 1/2" pipe fitting | 10 Safety valve nozzle (SV) |
| 2 Boiler base
(to THW-I HTE (43/35) with U-beam section,
from THW-I HTE (48/40) with I-beam section) | 5 Explosion flap and cleaning opening | 11 Purge/ drain valve DN 40/ PN 40 |
| 3 Hinged door, incl. reversal chamber
2nd./3rd. smoke gas pass | 6 Inspection opening | 12 Burner |
| | 7 Assembly tube PN 16 / PN 25 | 13 Condensate drain nozzle R1/2" |
| | 8 Boiler flow nozzle (BF) | 14 Return flow heat up (BS) |
| | 9 Return flow nozzle | 15 Flame peephole |

Design pressure 10,13 and 16 bar (gauge).
Dimensions for pressure stage 10 bar.
Note: Add 100 mm to H₁ for crane hooks.

Other pressure levels on request!
Dimensions incl. 100 mm insulation

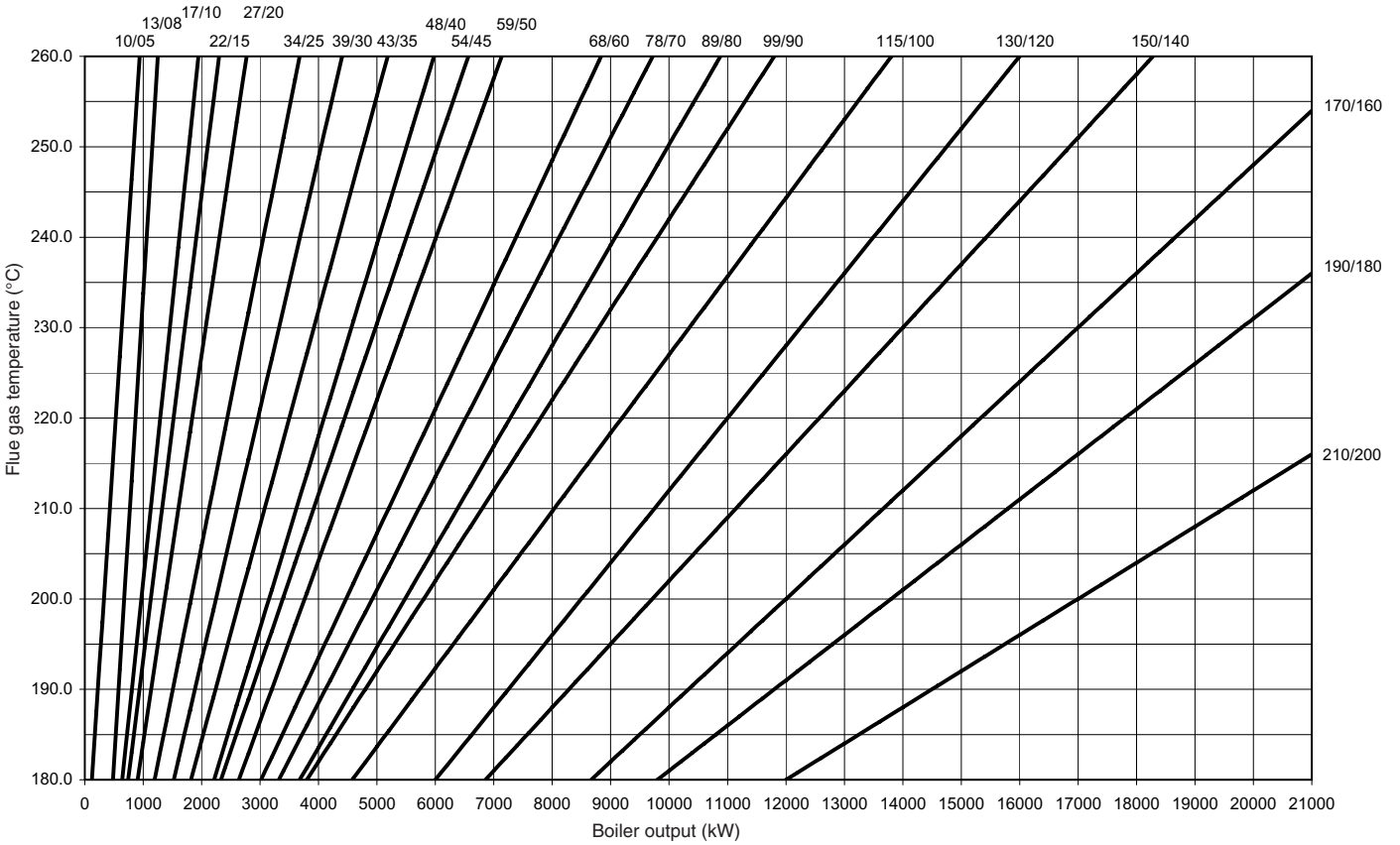
Boiler Type	Main dimensions					Boiler foundation					Transport dim.		F/R nozzle			Flue gas con.			SV DN ¹	BS DN ¹
	W	L	H	H ₁	H ₂	D	L ₁	L ₂	B ₁	B ₂	B _{min}	H _{min}	A	A ₁	DN ¹	H ₃	D ₁	H ₄		
(10/05)	1550	2580	2150	1700	900	1500	1500	230	1050	60	1750	2700	850	250	80	1200	300	500	32	40
(13/08)	1600	2880	2285	1750	925	1550	1500	230	1100	60	1800	2750	1000	300	100	1250	350	500	40	40
(17/10)	1700	3080	2360	1825	975	1650	2000	230	1200	60	1900	2850	1000	300	100	1300	400	600	40	50
(22/15)	1750	3480	2430	1900	1000	1700	2500	230	1250	60	1950	2900	1600	600	125	1400	450	700	50	65
(27/20)	1850	3980	2530	2000	1050	1800	3000	230	1350	60	2050	3000	1800	600	125	1500	500	700	65	80
(34/25)	1950	4330	2630	2100	1100	1900	3500	230	1400	60	2150	3100	2100	700	150	1550	500	750	65	80
(39/30)	2000	4630	2835	2150	1125	1950	3500	230	1450	60	2200	3150	2100	700	150	1600	550	750	65	80
(43/35)	2050	4780	2885	2200	1150	2000	3500	230	1500	60	2250	3200	2100	700	150	1650	600	750	65	80
(48/40)	2150	5180	3065	2350	1250	2100	4000	350	1550	160	2350	3450	2500	800	200	1750	600	800	80	100
(54/45)	2200	5430	3165	2450	1325	2150	4000	350	1600	160	2400	3550	2500	800	200	1800	650	850	80	100
(59/50)	2250	5480	3215	2500	1350	2200	4500	350	1650	160	2450	3600	2500	800	200	1850	650	850	80	100
(68/60)	2350	5680	3315	2600	1400	2300	4500	350	1700	160	2550	3750	2500	800	200	1900	700	900	80	125
(78/70)	2450	5970	3505	2700	1450	2400	5000	350	1800	160	2650	4000	3000	900	250	2050	750	950	100	125
(89/80)	2550	6270	3605	2800	1500	2500	5000	350	1850	160	2750	4100	3000	900	250	2100	750	1000	100	150
(99/90)	2650	6570	3705	2900	1550	2600	5500	350	1950	160	2850	4250	3000	900	250	2200	800	1050	100	150
(115/100)	2750	6720	3910	3000	1600	2700	5500	400	2000	160	2950	4550	3000	900	250	2300	850	1050	125	150
(130/120)	2850	7020	4060	3150	1700	2800	6000	400	2050	200	3050	4600	3500	1000	250	2350	900	1100	125	150
(150/140)	3050	7220	4260	3350	1800	3000	6000	400	2200	200	3250	3800	3500	1000	250	2500	1000	1150	150	150
(170/160)	3250	7420	4460	3550	1900	3200	6000	400	2300	200	3450	5150	4000	1200	300	2600	1050	1250	150	200
(190/180)	3350	7620	4745	3800	2000	3400	6500	400	2500	200	3550	5000	4000	1200	300	2800	1100	1300	2x100	200
(210/200)	3650	7920	5245	4150	2200	3600	6500	400	2700	200	3850	5350	4000	1200	300	3000	1200	1350	2x100	200

¹ DN/...PN 16/PN 40



Flue gas diagram

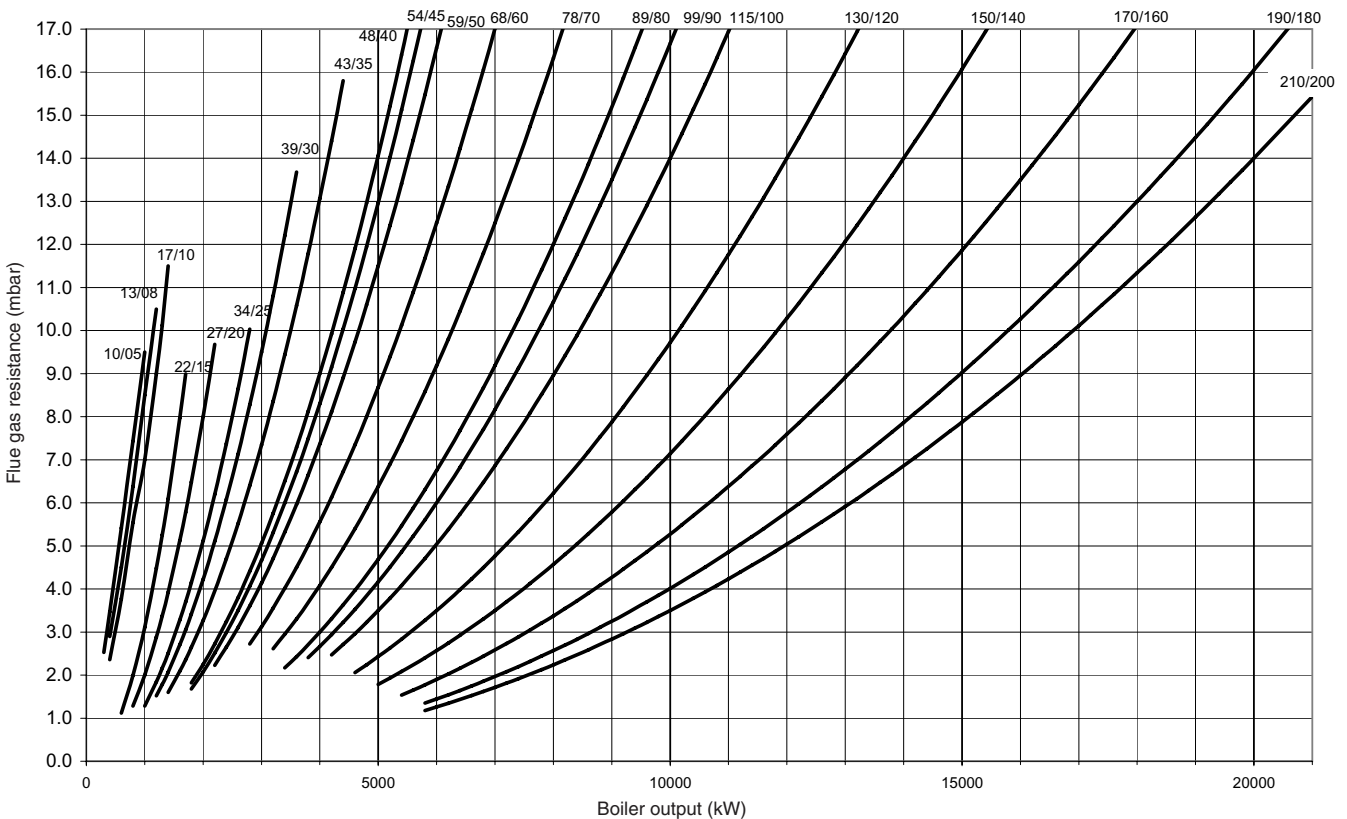
THW-I HTE (10/05 - 210/200)



These data represent an average value from measurements with different burner manufacturers.

- kW = Boiler output
- °C = Flue gas temperature with cleaned heating surface, boiler flow temperature 120 °C, boiler return flow temperature 100 °C (in accordance with DIN 4702).
- Operating with natural gas, $\lambda = 1,1$ with max. burner output
- A reduction of the boiler water temperature of 10K causes a reduction of the flue gas temperature by approx. 6-8K.

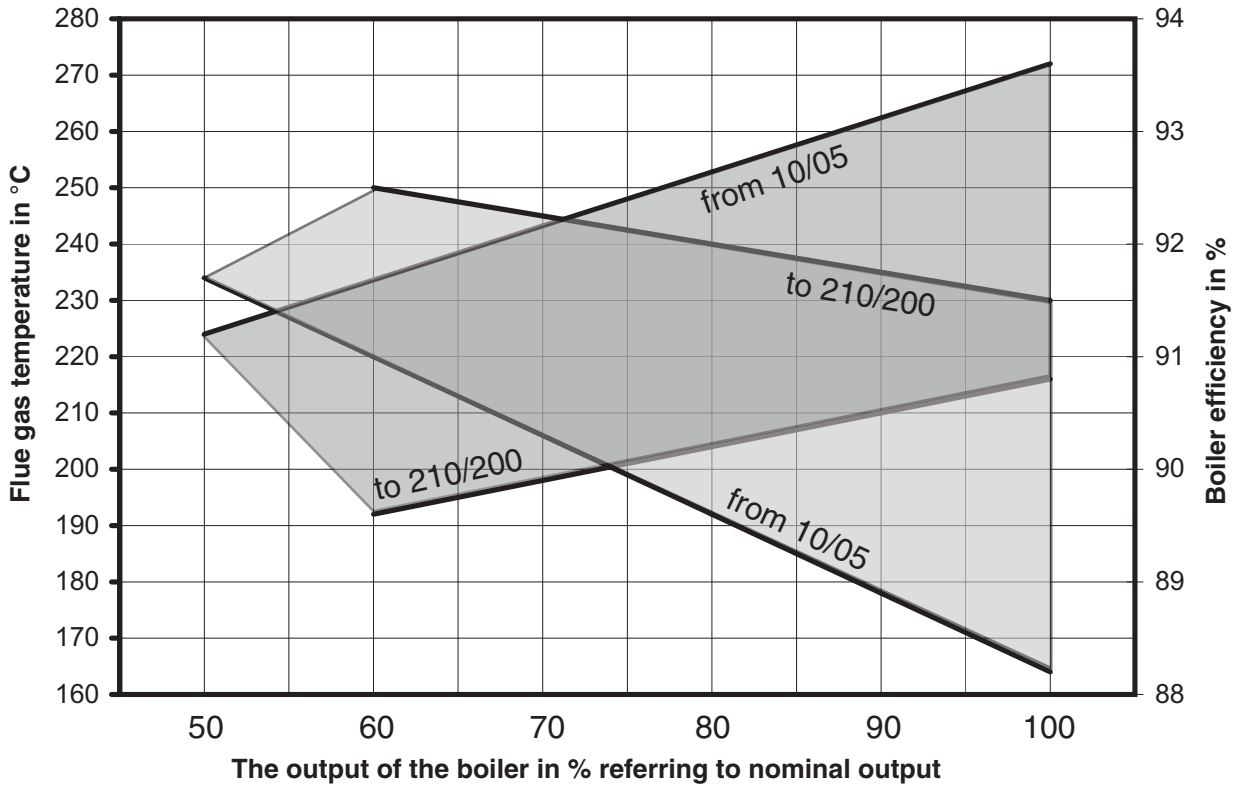
Flue gas resistance



Flue gas temperature and boiler efficiency

Flue gas temperature and boiler efficiency

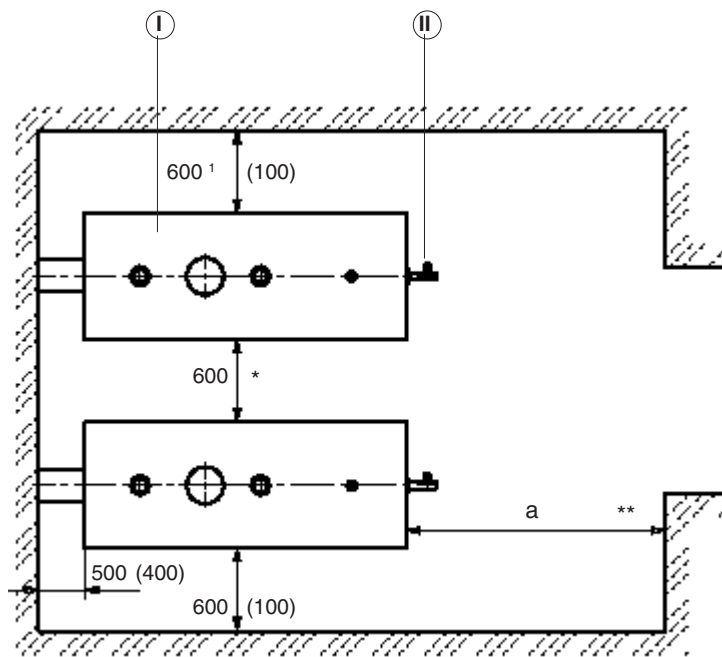
In dependence on the boiler efficiency with a middle boiler water temperature of 120 °C.



Technical data

Installation

(All dimensions in mm)



- Ⓛ Boiler
- Ⓜ Burner
- * Consider control panel
- ** Flame tube length (cleaning)
- ¹ 600 - 900, depending on local standards

To facilitate installation and maintenance the given measures should be kept; in case of limited space the minimal spaces (measures in brackets) are sufficient.

Positioning

- No air pollution through halogenated hydrocarbon (contained e.g. sprays, paints, solvents and cleaners)
- No large amounts of dust
- No high atmospheric humidity
- Frost-resistant and well ventilated

Otherwise errors and damages to the installation may occur.

The boiler may only be installed in rooms where air pollution through halogenated hydrocarbon can occur if sufficient measures are taken ensuring the supply of unpolluted combustion air.

THW-I HTE

Type	(10/05) mm	(13/08) mm	(17/10) mm	(22/15) mm	(27/20) mm	(34/25) mm	(39/30) mm	(43/35) mm	(48/40) mm	(54/45) mm	(59/50) mm
a	2000	2300	2500	2900	3400	3750	4050	4200	4600	4850	4900

THW-I HTE

Type	(68/60) mm	(78/70) mm	(89/80) mm	(99/90) mm	(115/100) mm	(130/120) mm	(150/140) mm	(170/160) mm	(190/180) mm	(210/200) mm
a	5100	5300	5600	5900	6100	6300	6500	6700	6900	7200

Rules and regulations

The following rules and regulations have to be respected:

- Hoval technical information and installation guide.
- Hydraulic and control technical regulations, to guarantee the min. admissible boiler temperature and the conditions for a safe operation according to national regulations.
- Fire protection regulations
- National regulations concerning permission, installation and operation of boiler appliances.
Boiler appliances have to be installed according to national laws and regulations and accessories requirements.
- Besides the national and local regulations the project specific circumstances of the boiler supplier have to be considered for every application.

Water treatment/water quality

- The quality of the boiler water has to be guaranteed according to Hoval technical information and national regulations.
- Hoval boilers must only be operated with treated water. For the treatment of water apply for the values to be kept refer to the Hoval guide lines.
- Requested water quality: see supplement
- Do not use chemical additives such as anti-freeze, inhibitors, etc. without written confirmation by Hoval.
- Old and new installations must be well flushed before filling.
- The water quality should be monitored and recorded.

Planning, operation and maintenance

- National and local rules and regulations have to be considered for the fuel supply.
- Safety and exhaust valve connections must be able to discharge the system pressure without any risk.
- Filters and strainers have to be cleaned periodically, especially if installed in front of control devices.
- The components containing heat and the pipes are to be insulated in order to reduce radiation losses.

Combustion air

- The supply of combustion air must be guaranteed for a safe and economic operation. There must be no possibility to close the air supply opening.
- Aeration and ventilation of the boiler house has to be secured.
- In the installation room no negative pressure larger than 3 N/m² is allowed. To adhere to this demand, plan a cross free section for the air supply opening of at least 200 cm², resp. 2 cm² per kW output. The aspect ratio for rectangular openings should not be more than 1.5 : 1.
If the opening is trellised an adequate surcharge is needed. National laws have to be respected.
- Boiler houses have to be fitted with the relevant outer pressure relief surface.
- Gas boilers are not to be installed in rooms where halogen compounds occur which can enter the combustion air. (e.g. laundries, drying, etc.).

Noise level reduction

The following measures for noise level reduction are possible:

- Solid construction of heating room walls, ceiling and floor, installation of silencer in fresh air supply, noise insulation for support and bracket of pipes.
- Installation of sound reduction cover for burner.
- A substantial part of the sound caused in the combustion chamber and in the top heating surfaces is radiated from the exhaust system as sound transmitted by air. In addition to this, resonance features, depending on chimney dimensioning and inlet, may occur which are triggered by the oscillation of the combustion noises (snooping). These sounds can be reduced by burner-lateral measures, e.g. changes of flame geometry, atomization characteristics or fuel throughput.
- Flue gas sound absorbers cause a substantial sound level reduction as well. These sound absorbers should usually be tuned at low frequencies of 60 - 250 Hz. Flue gas sound absorbers function according to the principle of sound absorption. The kinetic energy of the exhaust gases is consumed by friction requiring an increase in chimney draft in the exhaust system. This has to be considered for burner dimensioning. The connection piece from the boiler to the flue gas sound absorber has to be gas-tight because the draft- and pressure-zero point is behind the flue gas sound absorber.
- The necessary space requirement of approx. 1 m for the later installation of a flue gas sound absorber should already be included when planning.

Chimney-/flue gas system

- Flue gases need to be drained in an accordingly dimensioned flue considering the pressure and draught situation.
- To achieve as smooth a discharging of the exhaust gases from the boiler into the chimney as possible the flue gas connection tube between the boiler and the chimney must be led into the chimney with approx. 30-45 °.
- From a length of more than 1 m thermal insulation is necessary.
- The insertion of the flue gas tube into the chimney gas to be carried out in such a way that no condensate can flow from the chimney backward into the boiler flue gas outlet.

Boiler water specifications for warm water

**Guiding lines for boiler - and system water specifications for pump circulation boilers
(Large water room boiler)**

Working pressure	bar	> 0,5 ≤ 25
General requirements		colourless, clear, free from suspended matter and foam
pH-value at 25 °C		9-10
Sum of earth alkalies (Ca + Mg) ¹	mmol/l	< 0,02
	°dH	0,112
Conductivity at 25 °C ⁴	µS/cm	< 1000
Acid capacity KS 8,2 ² (p-value)	mmol/l	1-5
Silicic acid (SiO ₂)	mg/l	< 100
Phosphate (P ₂ O ₄) ³	mg/l	5-10
Sodium sulphite (Na ₂ SO ₃) ³	mg/l	5-10

¹ Noted in the past as °dH, changing factor: 1 mmol/l = 5,6 °dH (German hardness)

² Noted in the past as p-value, changing factor: KS 8,2 = 1 according p-value = 1

³ Measuring only necessary if dosing chemicals are used which contains these values.

⁴ For level electrodes minimum conductivity > 5 µS/cm

It is not necessary to make continuous control of following parameters: Silicic acid (SiO₂)

Important note:

Hoval recommends that a water treatment specialist is employed to carry out routine monitoring of the supply water in order to ensure it remains within specification.