

Hamworthy Ansty

Stainless Steel Condensing Boilers
Power Flame Gas Fired
Outputs 75kW to 640kW
Boiler Efficiency 98% Gross



Heating *at work.*

Ansty

Condensing Boilers Power Flame Gas Fired

The Hamworthy Ansty is a high performance commercial condensing boiler designed for use as a single or modular boiler. There are 7 models in the Ansty range with single boiler outputs from 75kW to 320kW and then the option of dual models stacking one above the other, including manifold kits, to cover outputs up to 640kW from a single boiler footprint.

In commercial applications, there is often the need to supply heat to higher temperature circuits (80/60°C) for DHW or fan coil units, but also to benefit from condensing low temperature circuits (50/30°C). With the new Ansty boilers, you can achieve both, simultaneously, with a single boiler, thanks to the innovative design which incorporates two return connections, one high temperature and the other low temperature.

The patented design of the flue gas passages maximises turbulence and surface area to promote excellent heat transfer, achieving exceptional efficiency performance, up to 98% gross C.V. (108.5% nett C.V).

The furnace, boiler shell and horizontal flue sections are constructed using high quality AISI 316 Ti grade titanium stainless steel to ensure long life.

The slim design enables the boiler body to pass through a doorway, and the high output, space saving capability is further enhanced with the option of stacking frames and pipework manifold kits. Where dual boilers are installed, then the boilers are supplied with a control panel for each boiler.

Options

- **High/low or fully modulating burner**
- **Dual model stacking including pipework manifolds**

- **Energy saving condensing performance**
- **Reduced emissions**
- **Robust condensing design**
- **Tolerant of older systems**
- **High & low temperature circuits together**
- **Saves more space on larger loads**

BENEFITS

The Ansty condensing technology can be used on fixed temperature 80/60°C circuits and variable temperature 50/30°C circuits together, to maximize system efficiencies.



Specification

Ansty condensing boilers can be used individually, or in multiple boiler configurations, and are suitable for use on either open vented or sealed low temperature hot water heating systems. For hot water (DHW) production they can be used in conjunction with calorifiers such as Hamworthy's Powerstock range.

Construction

The boilers are reverse flame design incorporating a horizontal wet back furnace with low heat release which reduces thermal NOx.

Manufactured from high quality AISI 316 Ti grade titanium stainless steel, the boilers use a patented design in the flue gas passages to maximise efficiency performance. The flue gas passages slope to the rear of the boiler to assist natural drainage of the condensate from the boiler.

Accessibility

Owing to its slim design, the boiler can be installed in most plant rooms, particularly where access is a problem. The smaller models, being less than 700mm wide, pass easily through a standard doorway, and on the larger models the front and rear end plates can be removed to reduce the boiler width by 100mm, so that the shell can pass through smaller spaces.

Burners

The Antsy range of boilers is available with a choice of high/low or fully modulating matched burners, suitable for firing natural gas.

A drilled mounting plate is supplied to suit the specified burner for fitting to the boiler. The Ansty boiler has a hinged door, which can be handed left or right, for ease of access to the combustion chamber. Burners are supplied with a flying lead and plug for connection to the boiler.

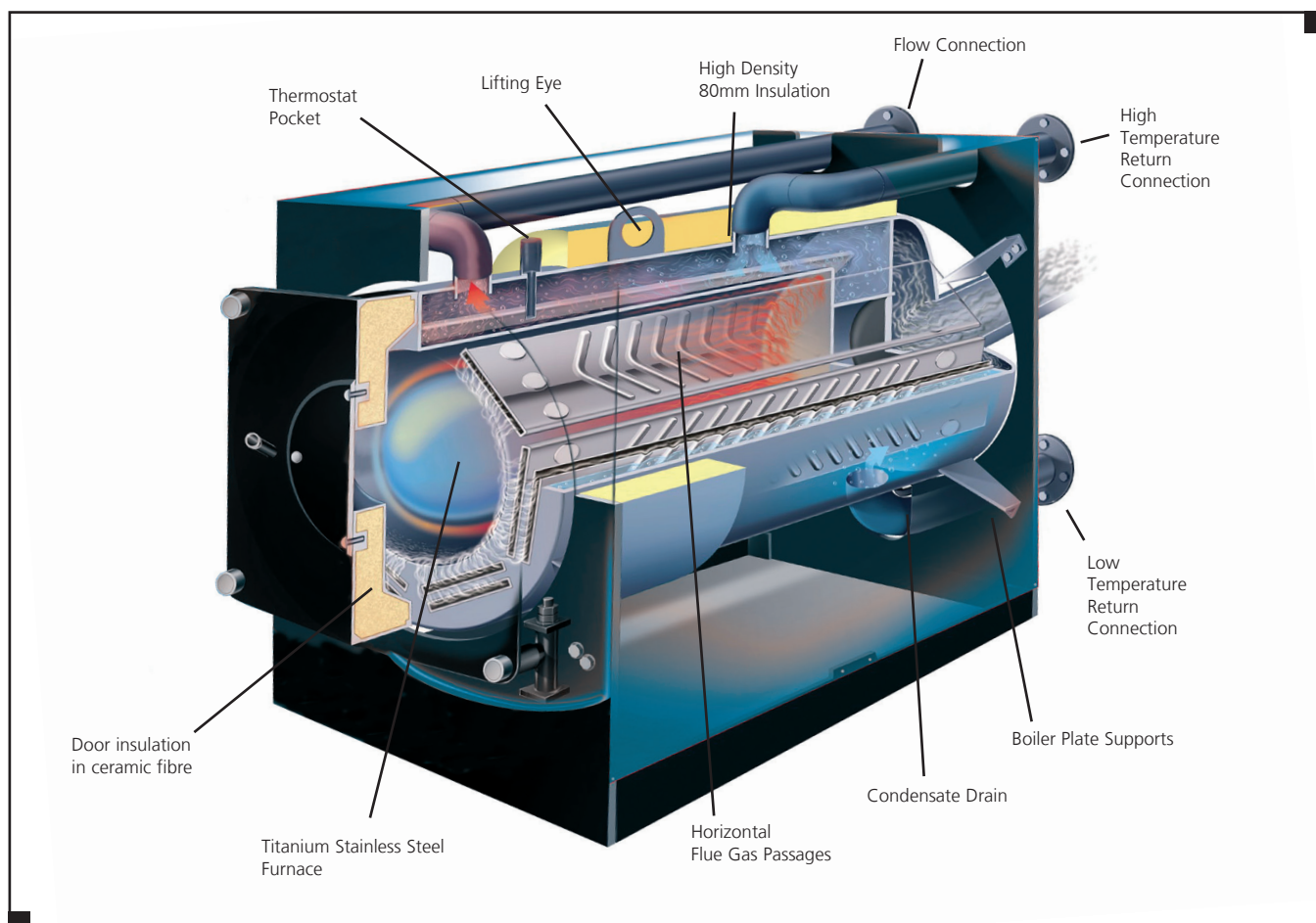
Controls

Each single boiler is supplied with a pre-wired control panel which mounts on top of the boiler casing, or can be positioned on the side of the casing if more convenient. The standard control includes control thermostat, limit thermostat, pump on/off switch, boiler on/off switch and hours run meters for high & low fire.

Where dual boilers are supplied for stacking, then individual control panels for each boiler are supplied to the same specification as above.

Remote Signalling

Remote signalling is achieved via a set of volt free contacts which indicate boiler lockout, high limit lockout and normal run.



Specification

Boiler Kit

Ansty boilers are supplied to site complete with the following:

- Boiler body
- Casing panels
- Control panels
- Matched burner (where specified)
- Burner flying lead and plug for connection to boiler
- Burner mounting plate

Thermostats

An adjustable control thermostat is supplied with every boiler, range 0-100°C.

The boiler control panel is fitted with a temperature limiter (overheat thermostat) which will shut down the boiler should the water temperature reach 110°C. The limiter has a manual reset and there is an overheat indicator on the control panel.

Time Clock Control

Where boilers are operated from time clocks, to avoid overheating and progressive calcium deposits at zero flow conditions, provision should be made for a 5 minutes circulating pump over-run after the last boiler has ceased firing.

Multiple Boiler Control



The front and rear end plates can be removed easily to enable the boiler shell to pass through smaller spaces.

For multiple boiler installations Hamworthy can supply a Marshall HE boiler sequence control system which provides a comprehensive range of features to achieve optimum efficiency.

The Marshall HE control panel, housed within a smart, slim, lightweight casing, is designed to be installed on the boiler-house wall or alternatively it can be located anywhere within the building.

The Marshall HE can control a combination of boilers up to a maximum of 8 sequence stages, as well as providing circulation pump control.

The boilers and circulation pump are individually wired to the Marshall HE panel. The water temperature, room temperature and external sensors (where fitted) are individually wired to the control panel using shielded twisted pair cable.

The Ansty boilers that have an electrical rating in excess of 3 amps, will need to be controlled via a power relay, (not Hamworthy supply).

For further details on the Marshall HE, refer to publication 500002136.

Condensate Drainage

The Ansty is a high performance condensing boiler and as such will produce a steady flow of condensate at optimum conditions.

The condensate is typically 3.5pH, so slightly acidic but less so than vinegar, and can be disposed of normally through the drainage system. If any doubt about local regulations, check with the local water authority.

Volume is related to system water temperature, and at normal condensing conditions, where the return temperature is below 50°C, condensate will be produced at the nominal rate of 1.2 litres for every cubic metre of gas burnt. Using natural gas, 100kW gross input equates to 9.4m³/hr gas flow rate, so in theory will produce 11 litres of condensate per hour.

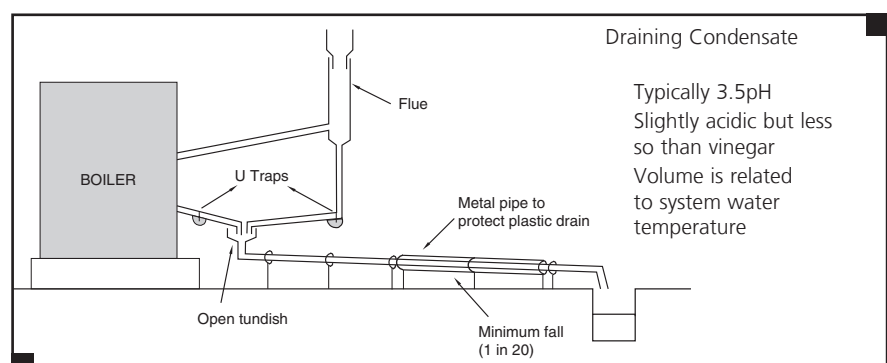
There is a condensate drain on the boiler which must be connected to a suitable drainage system, typically as shown below. The material should be a suitable PVC plastic system with glued sealed joints to prevent the escape of condensate.

Drain traps and an open tundish should be incorporated into the design, and the pipe work given appropriate protection from physical damage.

Flue System

The flue system must be capable of handling the wet flue gases and horizontal sections should incorporate a fall for drainage of the condensate that forms in the flue system.

The Hamworthy Masterflue MF system is designed specifically for high performance condensing boilers and features fully welded construction and a unique factory fitted tri-lip silicone sealing ring with every component. The Masterflue MF range of components also includes a standard range of tees and elbows at 87 and 43 degrees to facilitate easy drainage without alignment problems.



System Design

Ansty Condensing Boilers

System Temperatures

Each Ansty boiler is equipped with two return connections to maximise the condensing performance of the system. The normal (higher) temperature connection is to suit typical 80/60°C circuits which would supply fixed temperature fan coil units or calorifiers for hot water (DHW) production. The condensing (lower) temperature connection, typically 50/30°C, allows the low return water temperatures to be maintained without the dilution effect of the fixed temperature circuits.

The installation of Ansty condensing boilers in commercial heating and hot water systems offers a wide choice of design options and applications.

The systems shown here are typical and should be considered for general guidance only.

Example 1

Typical boiler installation comprising constant temperature domestic hot water and variable temperature radiator circuits. Flow rate returning from the heating circuits may be reduced to zero due to the water mass of the boiler.

Example 2

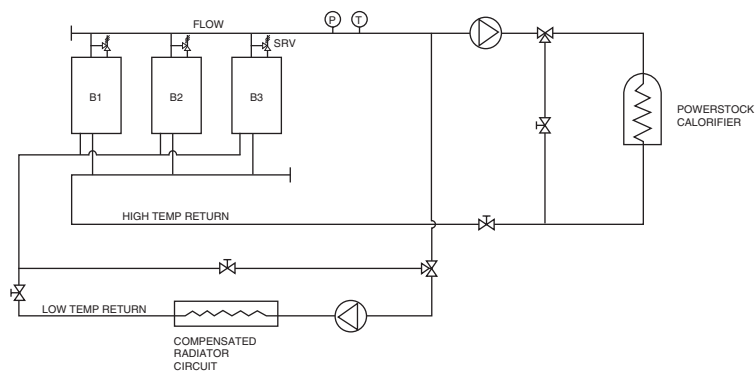
Typical boiler installation comprising constant temperature air handling units & variable temperature radiator circuits. Flow rate returning from the heating circuits may be reduced to zero due to the water mass of the boiler.

Example 3

Typical boiler installation comprising variable temperature underfloor heating & variable temperature radiator circuits. Flow rate returning from the compensated radiator circuit & underfloor heating circuit may be zero due to the water mass of the boiler. The high temperature return connections need to be blanked off.

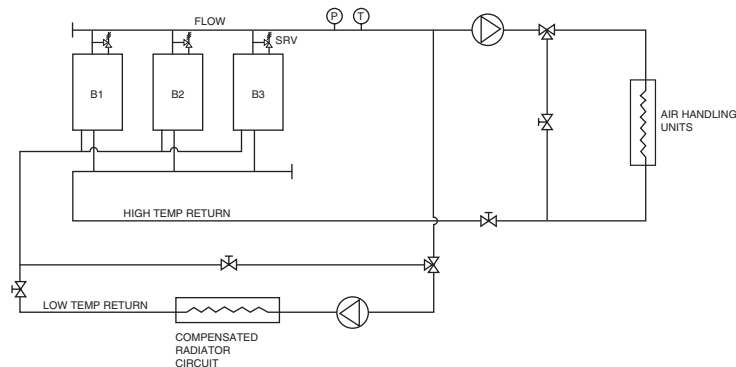
Example 1

Compensated Radiator Circuit, with Domestic Hot Water



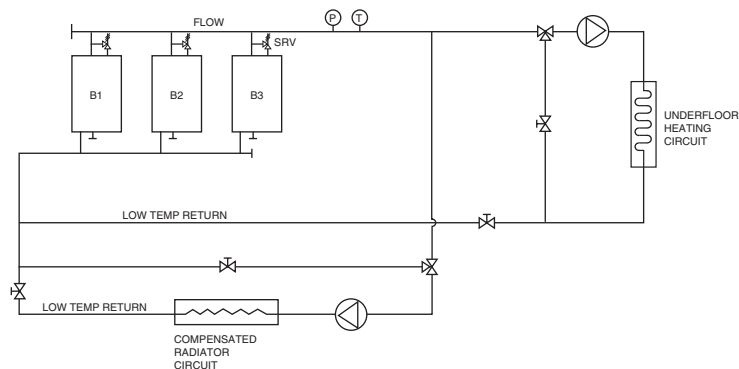
Example 2

Compensated Radiator Circuit, with Air Handling Units



Example 3

Compensated Radiated Circuit, with Underfloor Heating



Note: Due to its thermal mass, the Ansty boiler may fire with zero flow conditions. The boiler will switch off on its temperature controls until either the boiler's internal temperature drops or flow conditions resume

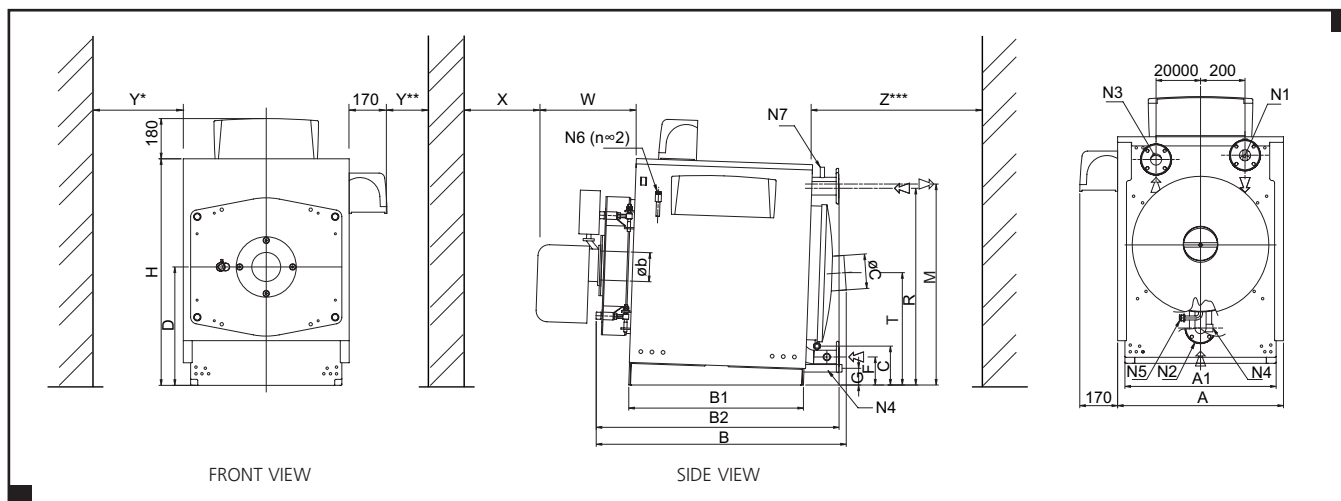
Ansty Single Boiler Technical Data

Performance and General Data Information

	Boiler Model	AS75	AS90	AS120	AS160	AS220	AS270	AS320
Energy	Heat output to water - Gross Non condensing 80/60°C	kW 67.7 Btu/hr x 1000 231	81.2 277	108.2 369.2	144.3 492.3	198.5 677.3	243.6 831.2	280.1 989.8
	Heat output to water - Gross Condensing 50/30°C	kW 75 Btu/hr x 1000 255.9	90 307.1	120 409.4	160 545.9	220 750.6	270 921.2	320 1091.8
	Heat input (net) - Gross	kW 78.5 Btu/hr x 1000 267.8	94.3 321.7	126.3 430.9	168.3 574.2	230.4 786.1	282.7 964.6	336.7 1148.8
	Heat input (net) - Net	kW 69.8 Btu/hr x 1000 238.2	83.7 285.6	112.2 382.8	149.5 510.1	204.7 698.4	251.2 856.8	299.1 1020.5
Water	Water content	l UK gal 97 21	97 21	97 21	112 25	147 33	230 51	230 51
	Design flow rate @ 11°C Δt	l/min UK gal/min 98 22.5	117 25.7	156 34.3	208 45.8	287 63.1	352 77.4	417 91.7
	Waterside pressure drop @ 11°C Δt	mbar in wg 0.8 0.3	1 0.4	1.2 0.5	1.3 0.5	1.5 0.6	1.6 0.6	1.8 0.7
	Design flow rate @ 20°C Δt	l/min UK gal/min 54 11.9	64 14.1	86 18.9	115 25.3	158 34.8	194 42.7	229 50.4
	Waterside pressure drop @ 20°C Δt	mbar in wg 0.25 0.1	0.3 0.1	0.36 0.1	0.39 0.2	0.45 0.2	0.48 0.2	0.54 0.2
	Flow rate @ 40°C Δt	l/min UK gal/min 27 5.9	32 7.0	43 9.5	57 12.5	79 17.4	97 21.3	115 25.3
	Maximum water pressure	bar psig	5 72.5					
	Maximum water flow temperature	°C	100					
Gas	Combustion resistance	mbar in wg 0.7 1.75	0.9 2.25	1.5 3.75	2.5 6.25	2.8 7	3 7.5	3.8 9.5
	Input rate Natural Gas (G20)	m³/h ft³/h 7.38 260.61	8.86 312.9	11.87 419.2	15.82 558.7	21.66 764.9	26.58 938.7	31.65 1117.7
	Nominal inlet pressure required Natural gas - inlet to gas train	mbar in wg	20 8					
	Approx. flue gas volume at NTP natural gas	m³/h ft³/h 98 3461	118 4167	158 5580	210 7416	288 10170	352 12431	420 14832
	Approx. flue gas temp - nat. gas @ 30° return temp	°C °F	45 113					
Flue	Flue connection O/D	mm in 151 5.95	151 5.95	151 5.95	181 7.13	181 7.13	201 7.91	201 7.91
	Flue draught requirements	Balanced Condition at Boiler Outlet						
Electrical	Electrical supply - boiler / burner	230V 1PH 50hz						
	Start current	Amps	2.6	2.6	4.5	4.5	4.8	4.8
	Run current	Amps	0.7	0.7	1.4	1.4	1.3	1.3

Dimensional Details

Ansty Single Boiler Models



Single Boilers

Notes:

The Control panel can be mounted on top or side casing.
When installing more than 2 boilers it is recommended that only 2 are close spaced with access provided between 2nd & 3rd boilers.

ANSTY									
Model			AS75	AS90	AS120	AS160	AS220	AS270	AS320
Casing width	A	mm	746	746	746	846	846	976	976
Frame width	A1	mm	680	680	680	780	780	920	920
Overall length	B	mm	1155	1155	1155	1155	1435	1455	1455
Body length	B1	mm	785	785	785	785	1040	1040	1040
Boiler length	B2	mm	1093	1093	1093	1119	1398	1436	1436
Condense drain	C	mm	174	174	174	174	174	77	77
Burner	D	mm	529	530	530	580	580	550	550
Return	F	mm	125	126	126	126	126	133	133
Boiler drain	G	mm	125	126	126	126	126	59	59
Boiler height	H	mm	1015	1015	1015	1115	1115	1115	1115
Flow	M	mm	900	900	900	1000	1000	1035	1035
Return	R	mm	881	881	881	980	980	922	922
Flue	T	mm	503	503	503	553	553	524	524
Flue Connection	ØiC	mm	151	151	151	181	181	201	201
Draught Tube Opening	Øb	mm	130	130	130	145	145	180	180
Flow/Return/Connection PN6	N1/N2/N3	DN	50	50	50	50	50	65	65
Boiler drain	N4	in	3/4"	3/4"	3/4"	3/4"	3/4"	1/2"	1/2"
Condense drain	N5	in	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"
Sensor pockets	N6/N7	in	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Clearances									
Burner Depth	W	mm	238	238	262	262	580	580	580
Front Access	X	mm	455	455	455	455	455	455	455
Side Access	Y*	mm	350	350	350	350	350	350	350
Rear Access	Z***	mm	500	500	500	500	500	500	500
Side Clearance	Y**	mm	300	300	300	300	300	300	300

*Y Dimension -

It is recommended this clearance is maintained at least on 1 side for rear access to pipe connections and flue. Where 2 boilers are used the minimum space between boilers is 60mm to facilitate fitting the casing.

**Y Dimension -

Where using side mounted control panels this is the minimum recommended clearance to facilitate access to thermostats and switches.

***Z Dimension -

This dimension is a minimum recommendation permitting access to rear of boiler for maintenance. It may not however be adequate for the flue installation. Where necessary the dimension must be increased accordingly.

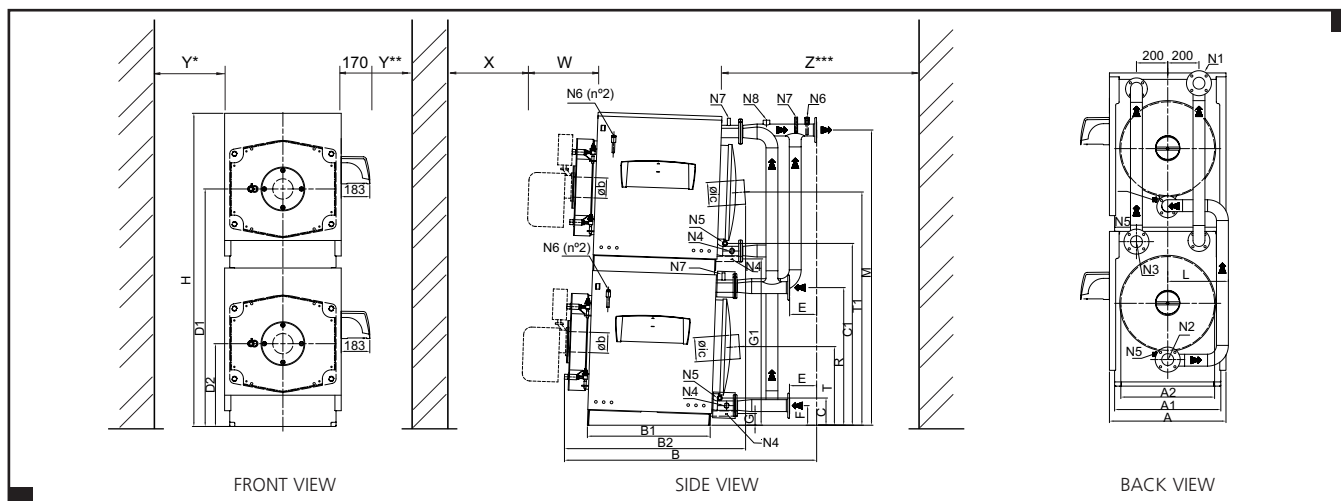
Ansty Dual Boiler Technical Data

Performance and General Data Information

	Boiler Model	AD150	AD180	AD240	AD320	AD440	AD540	AD640
Energy	Heat output to water - Gross Non condensing 80/60°C	kW 136.00 Btu/hr x 1000 464	163.20 556.8	218.5 745.5	294.1 1003.5	398.9 1361	489.5 1670.2	580.2 1979.6
	Heat output to water - Gross Condensing 50/30°C	kW 150 Btu/hr x 1000 511.8	180 614.2	240 818.9	320 1091.8	440 1501.3	540 1842.5	640 2183.7
	Heat input (net) - Gross	kW 157.8 Btu/hr x 1000 538.4	189.4 646.2	254.9 869.7	343.1 1170.7	462.9 1579.4	568.1 1938.1	673.3 2297.3
	Heat input (net) - Net	kW 140.2 Btu/hr x 1000 478.4	168.2 573.9	226.4 772.5	304.8 1040	411.2 1403	504.7 1722	598.1 2040.7
Water	Water content	l UK gal 194 43	194 43	194 43	224 49	298 66	460 101	460 101
	Design flow rate @ 11°C Δt	l/min UK gal/min 196 43.1	234 51.5	312 68.6	416 91.5	574 126.3	704 154.9	834 183.5
	Waterside pressure drop @ 11°C Δt	mbar in wg 1.6 0.64	2 0.8	2.4 0.96	2.6 1.04	3.0 01.20	3.2 2.66	3.6 1.44
	Design flow rate @ 20°C Δt	l/min UK gal/min 108 23.8	128 28.2	172 37.8	230 50.6	316 69.5	388 85.4	458 100.7
	Waterside pressure drop @ 20°C Δt	mbar in wg 0.5 0.2	0.6 0.24	0.72 0.29	0.78 0.31	0.90 0.36	0.98 0.39	1.08 0.43
	Flow rate @ 40°C Δt	l/min UK gal/min 54 11.9	64 14.1	86 18.9	114 25.1	158 34.8	194 42.7	230 50.6
	Maximum water pressure	bar psig	5 72.5					
	Maximum water flow temperature	°C	100	100	100	100	100	100
Gas	Combustion resistance	mbar in wg 0.7 1.75	0.9 2.25	1.5 3.75	2.5 6.25	2.8 7	3 7.5	3.8 9.5
	Input rate Natural Gas (G20)	m³/h ft³/h 14.83 253.7	17.80 628.6	23.96 846.1	32.25 1138.9	43.51 1536.6	53.40 1885.8	63.29 2235.1
	Nominal inlet pressure required Natural gas - inlet to gas train	mbar in wg	20 8					
	Approx. flue gas volume at NTP natural gas	m³/h ft³/h 196 6922	236 8334	316 11160	420 14832	576 20340	704 24862	840 29664
	Approx. flue gas temp - nat. gas @ 30° return temp	°C °F	45 113					
Flue	Flue connection O/D 2 Connections	mm in 151 11.9	151 11.9	151 11.9	181 14.26	181 14.26	201 15.82	201 15.82
	Flue draught requirements	Balanced Condition at Boiler Outlet						
Electrical	Electrical supply - boiler / burner	230V 1PH 50hz						
	Start current	Amps	2.6	2.6	4.5	4.5	4.8	4.8
	Run current	Amps	0.7	0.7	1.4	1.4	1.3	1.3

Dimensional Details

Ansty Dual Boiler Models



Dual Boilers

ANSTY									
Model			AD150	AD180	AD240	AD320	AD440	AD540	AD640
Boiler width	A	mm	746	746	746	846	846	976	976
Foot width	A1	mm	680	680	680	780	780	920	920
Overall length	B	mm	1642	1642	1642	1647	1982	1996	1996
Body length	B1	mm	785	785	785	785	1040	1040	1040
Boiler length	B2	mm	1188	1188	1188	1192	1463	1484	1484
Condense drain	C	mm	174	174	174	174	174	77	77
Condense drain	C1	mm	1163	1163	1163	1263	1274	1166	1166
Burner Ø	D	mm	530	530	530	580	580	550	550
Burner Ø	D1	mm	1520	1520	1520	1670	1670	1640	1640
	E	mm	173	173	173	173	201	201	201
Returnx	F	mm	126	126	126	126	126	133	133
Boiler drain	G	mm	126	126	126	126	126	59	59
Boiler drain	G1	mm	-	-	-	-	-	1165	1165
Boiler height	H	mm	2004	2004	2004	2204	2204	2204	2204
Manifold to Ø	L	mm	388	388	388	388	388	606	606
Flow	M	mm	1889	1889	889	2089	2089	2125	2125
Return	R	mm	881	881	881	980	980	922	922
Flue	T	mm	503	503	503	553	553	524	524
Flue	T1	mm	1492	1492	1492	1642	1644	1614	1614
Flue Connection	ØiC	mm	151	151	151	181	181	201	201
Draught tube opening	Øb	mm	130	130	130	145	145	180	180
Flow/Return/Connection PN6	N1/N2/N3	DN	50	50	50	50	80	80	80
Boiler drain	N4	in	3/4"	3/4"	3/4"	3/4"	3/4"	1/2"	1/2"
Condense drain	N5	in	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"
Sensor pockets	N6/N7	in	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Gauge tapping	N8	in	1"	1"	1"	1"	1"	1"	1"
Clearances									
Burner depth	W	mm	238	238	262	262	580	580	580
Front Access	X	mm	455	455	455	455	455	455	455
Side Access	Y*	mm	350	350	350	350	350	350	350
Rear Access	Z***	mm	1000	1000	1000	1000	1000	1000	1000
Side Clearance	Y1**	mm	300	300	300	300	300	300	300

*Y Dimension -

It is recommended this clearance is maintained at least on 1 side for rear access to pipe connections and flue. Where 2 boilers are used the minimum space between boilers is 60mm to facilitate fitting the casing.

**Y Dimension -

Where using side mounted control panels this is the minimum recommended clearance to facilitate access to thermostats and switches.

***Z Dimension -

This dimension is a minimum recommendation permitting access to rear of boiler for maintenance. It may not however be adequate for the flue installation.

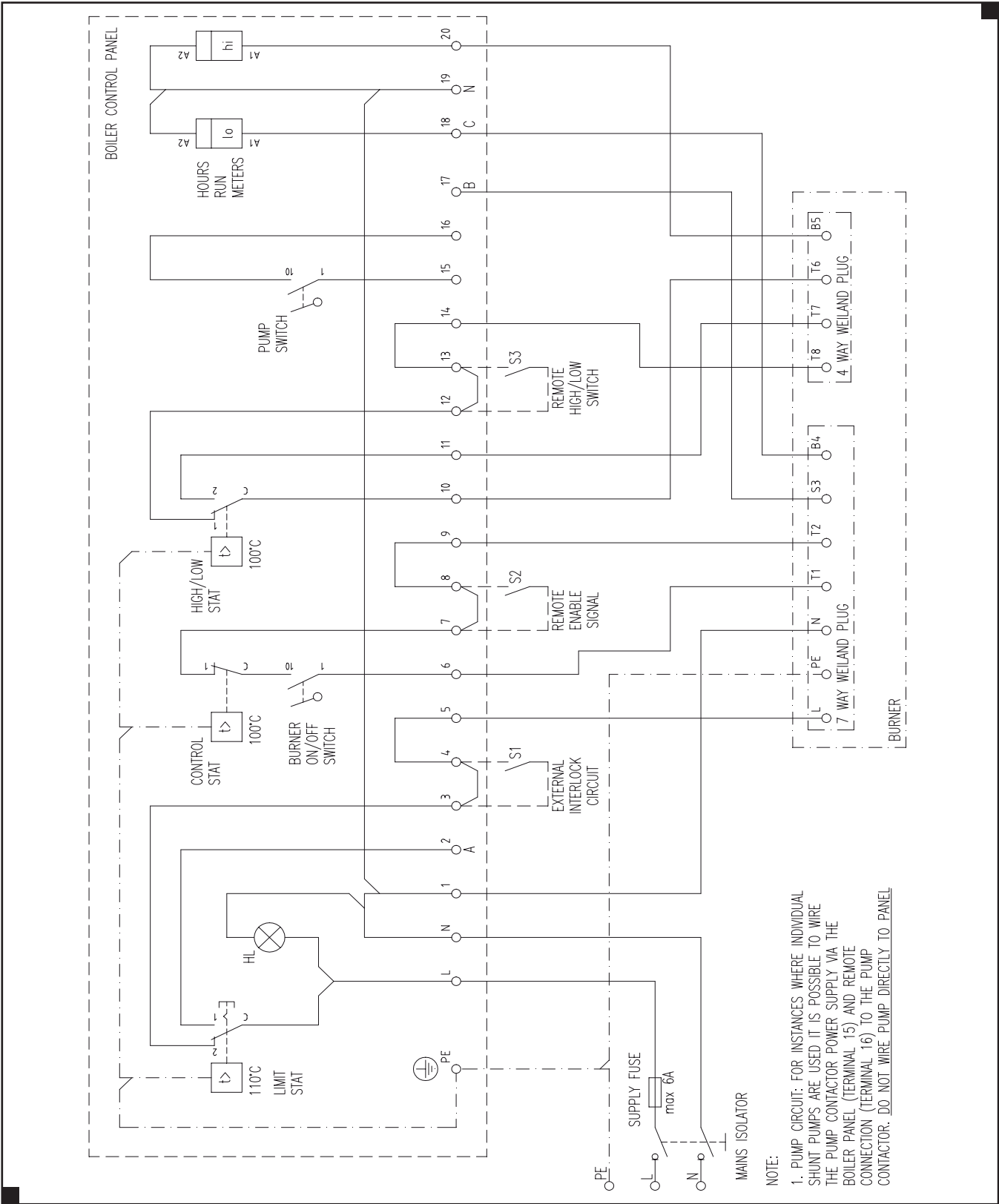
Where necessary the dimension must be increased accordingly.

Note:

When installing more than 2 boilers it is recommended that only 2 are close spaced with side access provided between 2nd & 3rd boilers.

Wiring Diagram

Ansty Boiler



Flue System

Hamworthy Ansty boilers are designed to be used with natural draught flue systems, which should be designed in accordance with current regulations. The following points should be noted:

The boiler is designed for connection to a single flue system, or a common flue header, where part of a multiple boiler installation. The flue system should be designed to maintain atmospheric pressure or a slight suction at the boiler flue connection at all times.

If at any time the suction is likely to exceed 0.3 mbar (0.12 in wg), it is recommended that a draught stabiliser be fitted to the flue system.

The flue system must be self supporting and facilitate access for cleaning and maintenance near the boiler connection.

When designing the flue system, care must be taken to ensure that any condensate that may form within the system can be drained safely to a suitable waste point, and that the flue and drain materials are resistant to the corrosive effects of the condensate.

Ansty boilers are suitable for installation in a balanced compartment in accordance with the requirements of BS 6644.



Flues from Hamworthy

The Masterflue MF system from Hamworthy is a modular, twin wall, insulated, fully welded flue solution, optimised for high efficiency and condensing boiler applications.

Leak-Free

Unique factory fitted tri-lip silicone gasket as standard- leak proof, high temperature seal, impervious to water and vapour.

All components fully welded and pressure tight, including traditionally troublesome elbows.

Corrosion-Free

Premium grade stainless steel construction for inner and outer walls. 87 degree elbows and tees to ensure condensate drains effectively.

Worry-Free

Fast, push-fit assembly with no need for additional sealants.

Precision finished, reliable components for high quality installation.

Range of 'Tru-Align' adjustable wall brackets for simplifying alignment, achieving a faster installation and neater finish.

Continuous insulation from base to stub.

Fire resistant - 4 hour fire rated.

Stress-free thermal expansion.

CE mark accredited to meet 2005 legislation.

The Masterflue range from Hamworthy also comprises 3 further specialist flue lines:

Masterflue ME - single wall, fully welded flue system.

Masterflue AG - gas vent system for atmospheric appliances

Masterflue BF - balanced flue system.

Design & Install, or Supply Only

Hamworthy's extensive knowledge of combustion systems, and the flue requirements for each boiler, makes a boiler and flue package the perfect solution for every project.

Offering a comprehensive range of flue and chimney equipment for natural draught, fan assisted and fan dilution applications, Hamworthy will provide a full design and installation service incorporating sizing, site survey and drawings for approval (where necessary) prior to installation. All this with the added benefit of a single commissioning visit for boiler and flue system together.

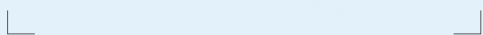
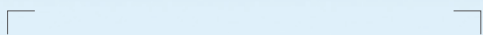
Alternatively, Hamworthy can provide components on a supply only basis for the contractor to install.

Speak with Hamworthy about your flue requirements and get peace of mind on your next project - guaranteed.

Phone 0845 450 2865

Email flues@hamworthy-heating.com

Your local contact is:



**British engineering excellence from Hamworthy Heating;
the commercial heating and hot water specialists.**



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