BENSON

External Cabinet Heaters

Gas & Oil Fired Heaters

AMBIRAD

HEATING AND VENTILATION SOLUTIONS

External Cabinet Heaters

External cabinet heaters combine innovative design with a proven four pass heat exchanger technology to provide a high efficiency cost effective and durable range.

External cabinets provide the ideal solution for a wide range of industrial and commercial applications where space or environmental criteria restrict the use of internally sited units.

All units are IP44 rated purpose designed for external installation and are available in both vertical and horizontal configuration. All heaters are CE certified in accordance with EN1020.

Model Range

Vertical and horizontal Cabinet heaters are available as either gas or oil fired models.

> Gas fired cabinet heaters are suitable for use with Natural Gas (G20), most units can also be specified for Propane (G31)

> Oil fired cabinet heaters are suitable for use with Class D gas oil (35 sec), most units can also be specified for Kerosene (28 sec oil)

Vertical freestanding models are available from 29kW to 380kW

Horizontal models from 58kW to 380kW

Specification

Cabinet

Cabinets are constructed from electro-zinc coated steel with an inner heat shield and finished in a durable epoxy powder coated finish to form a rigid weatherproof casework suitable for outdoor installation. All cabinets are IP44 rated.

Air Distribution

Centrifugal fan(s) circulate large air volumes evenly across the full heat exchanger surface for enhanced life expectancy. Fans on models 30 to 85 are direct drive with a single phase motor whilst larger models are fitted with three phase motors compliant with directive 2005/32/EC.

Standard heaters are supplied with a duct outlet and a return air spigot for connection to ductwork, a fresh air inlet louvre may be specified as an option.

Efficiency

Each heater within the range has been designed and developed with fuel efficiency in mind and efficiencies exceed the mandatory requirements of CE legislation.

Options

> Low ambient units for installations where external temperatures are below -5ºC

> High/low or fully modulating burners

> Fresh air inlet louvres

> Air inlet filters

> Manual or motorised inlet dampers

> Up-rated fan motor for increased static pressure

Applications

> Factories

> Warehouses

> Workshops

> Showrooms

> Greenhouses

Flues

External cabinet heaters are supplied complete with a 600mm length of flue and terminal which allows the free discharge of flue gases directly to atmosphere. Depending on the heater location it may be necessary to extend the flue to enable the point of discharge to be repositioned. Should this be necessary the diameter of any flue must not be less than stated in the data table.

Combustion Air Supply

External cabinet heaters are designed specifically for outdoor location and as such obtain necessary combustion air via the inlet louvres in the control compartment door. Where heaters are installed in very low ambient temperatures it may be desirable to duct the combustion air from the heated building to the heater via a combustion air connection. Where ducted combustion air is required a spigot will be provided, this option must be specified at time of order clearly stating which side the spigot is required.

Ductwork Connections

Supply and return air ductwork must be adequately sized and sharp reductions or bends adjacent to the heater connections should be avoided. Ductwork should always be connected via the spigot connections on the heater and all joints should be sealed to prevent air leakage and water ingress. Ductwork connections should be adequately insulated and both the ductwork and insulation should be weatherproof and water tight.

Warranty

First year parts and labour, second year parts and ten year time related on combustion chamber.

Vertical freestanding model

Horizontal model

Heat Exchanger

Four pass combustion chamber/heat exchanger assembly provides improved thermal efficiency in excess of 91% on most models and is manufactured from stainless steel for enhanced life expectancy.

The combustion chamber and heat exchanger are mounted to allow for thermal expansion thereby avoiding undue stress and premature heat exchange failure.

Burner

Gas fired heaters are fitted with a fully automated forced draught burner complete with full safety controls, all burners are CE certified to EN676. High/low and modulating gas burners can be specified as an option on models 60 and above, a high low gas burner is supplied as standard on model 375.

Oil fired units are supplied complete with a fully automatic burner complete with safety controls and a factory fitted oil filter and fire valve. High/low oil fired burners may be specified on models 60 and above, a high low oil burner is fitted as standard on models 350 and 375.

Fuel

Gas fired heaters are designed for use with natural gas (G20), most gas fired units can also be specified for use on Propane (G31)

Oil fired heaters are deigned to operate on Class D light distillate 'gas oil' having a maximum viscosity of 4.5c.St at 20ºC (35 sec Redwood at 100ºF). The burners have also been designed to operate on oil containing up to 7% bio diesel. Most oil fired heaters can also be specified to operate using Kerosene.

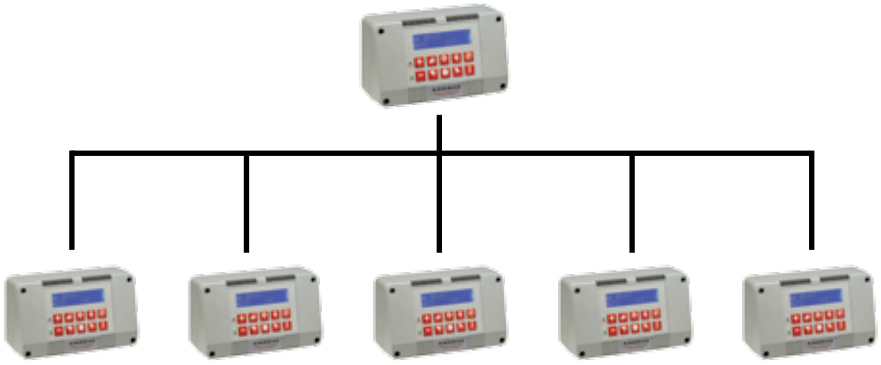
Optimised Control

Benson external cabinet heaters are supplied ready for fully automatic operation and are complete with both safety and comfort controls. Each heater is fitted with a safety overheat thermostat and supplied with a time and temperature control system.

As standard, heaters are supplied with a remote SmartCom, an optimised control that includes a secure entry code facility, an optimised digital time switch with override facility, electronic day thermostat, and frost protection sensor. The control is supplied loose. Inter-connecting wiring between heater and remote control is by others.

All heaters have the facility of 'fan only' operation for summer air movement.

- > Self adapting optimum start and stop
- > Simple user friendly programming
- > Individual seven day programming
- > Day, night and frost (5˚C) temperature settings
- > Three on/off periods per day
- > Easy set overtime and holiday periods Remote burner reset facility
- > Password protection to prevent unauthorised adjustment
- > Hours run and service data logging
- > Battery back up in the event of mains failure
- > High / low or modulating burner control (SmartCom MZ required)



Optional SmartCom MZ panel allows up to 16 panels to be linked for centralised control

Remote Sensor Options

Warm Air Sensors

Remote sensors for applications where the temperature sensor must be located away from the controller. Remote sensors can also be used for temperature averaging in conjunction with the controllers integral sensor.

Warm Air Duct Sensors

The sensor may be located in the return air duct (prior to any mixing with fresh air). Alternatively for make-up air applications requiring a constant supply air temperature the duct sensor may be located in the supply duct to control high/low or modulating burners (SmartCom^3 MZ control only).

Warm Air Sensors

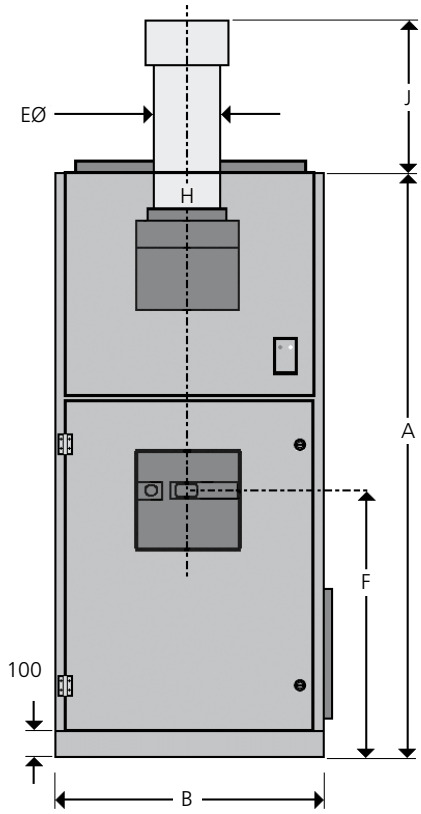
Warm Air Duct Sensors

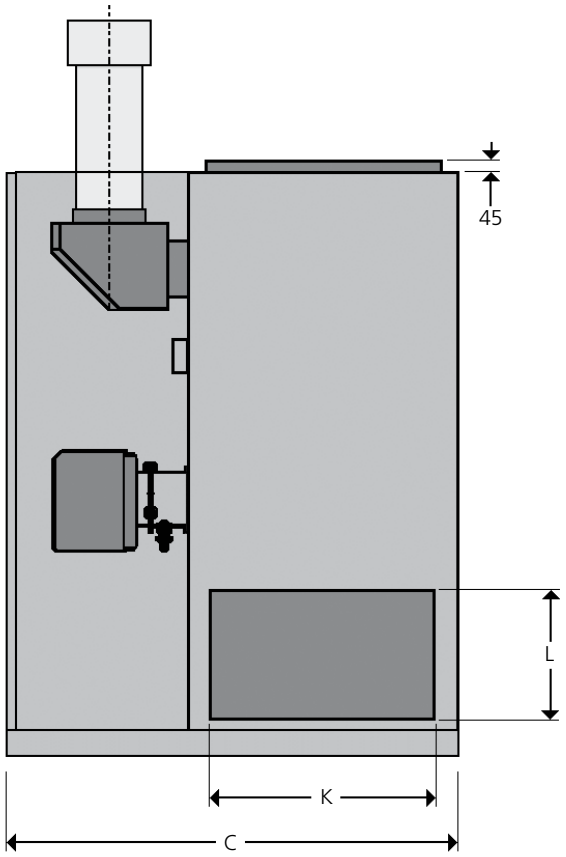
Technical Data

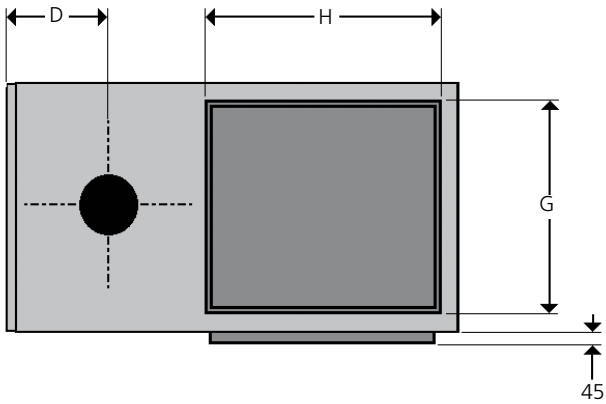
			Model Ref												
			30	35	40	60	75	85	120	135	180	205	235	275	350	375
Gas Fired																
Nominal heat output		kW	29	36	40	58	73	83	117	133	177	206	237	278	350	381
Temperature rise		K	39	42	50	46	43	48	44	41	46	49	44	46	41	45
Gas Consumption Nat gas G20		m^3/h	3.4	4.2	4.7	6.7	8.5	9.7	13.6	15.3	20.4	23.9	27.2	33.0	40.7	45.8
Gas Consumption propane G31		m^3/h	1.3	1.6	1.8	2.6	3.2	3.7	5.2	6.0	7.8	9.2	10.4	12.3	16.1	18.1
Minimum inlet pressure Nat gas G20		mbar	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Minimum inlet pressure propane G31		mbar	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0
Gas Connection[1]		Rc	½"	½"	½"	½"	½"	½"	¾"	¾"	1"	1¼"	1¼"	1¼"	1 ½"	2"
Oil Fired																
Nominal heat output		kW	32	38	43	60	76	82	123	138	184	208	248	265	340	381
Temperature rise		K	39	42	51	46	43	50	45	45	48	49	44	48	40	45
Oil Consumption		l/h	3.4	4.1	4.7	6.5	8.1	9.1	13.3	15.0	19.5	22.5	27.0	34.1	40.4	45.6
Oil Connection		Rc	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Air Handling Data																
Airflow		m^3/s	0.61	0.71	0.71	1.03	1.39	1.39	2.15	2.65	3.11	3.4	4.32	4.86	6.88	6.88
Static pressure	Std motor	Pa	75	100	100	125	100	100	137	150	175	188	125	175	250	250
	200 ESP upgrade		-	-	-	-	-	-	200	200	200	200	200	200	std	std
	400 ESP upgrade		-	-	-	400	400	400	400	400	400	400	400	400	400	400
	600 ESP upgrade		-	-	-	-	-	-	600	600	600	600	600	600	600	600
Main fan motor		kW	0.55	0.55	0.55	0.99	0.99	0.99	1.50	2.20	3.0	3.00	4.00	5.50	7.50	7.50
Up-rated fan motors		kW	tba	tba	tba	tba	tba	tba	tba	tba	tba	tba	tba	tba	tba	tba
Installation Clearances	EVD	Front	550	550	550	550	550	550	600	600	600	900	900	900	900	900
		Side	150	150	150	150	150	150	150	150	150	150	400	400	500	500
		Rear	700	700	700	1000	1000	1000	1200	1200	1500	1500	2000	2000	2000	2000
	EHD	Front	-	-	-	550	550	550	600	600	600	900	900	900	900	900
		Side	-	-	-	150	150	150	150	150	150	150	400	400	500	500
		Rear	-	-	-	1000	1000	1000	1200	1200	1500	1500	2000	2000	2000	2000
General Data																
Flue diameter Nominal		mmø	125	125	125	150	150	175	175	175	200	200	225	225	250	250
Combustion air diameter Nominal[2]		mmø	125	125	125	125	125	125	150	150	150	150	150	150	150	150
Noise level[3]		dB(A)	67	69	69	72	72	72	74	76	78	78	79	81	81	81
Net weight		kg	196	196	196	241	243	243	330	332	525	540	630	646	1090	1090

1. Gas lines must be adequately sized and reduced at appliance as required.
2. Standard external cabinets are designed to take combustion air directly from external source, however combustion air may be ducted from the heated space for installations where external ambients are very low. This option must be specified at time of order.
3. Noise levels measured at 5 metres from appliance.

External Vertical Cabinet Heaters EVD





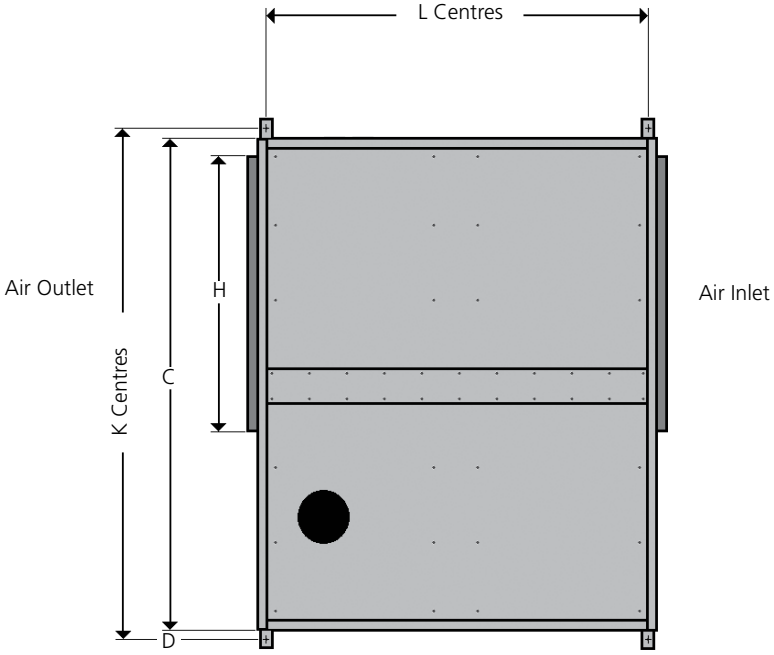


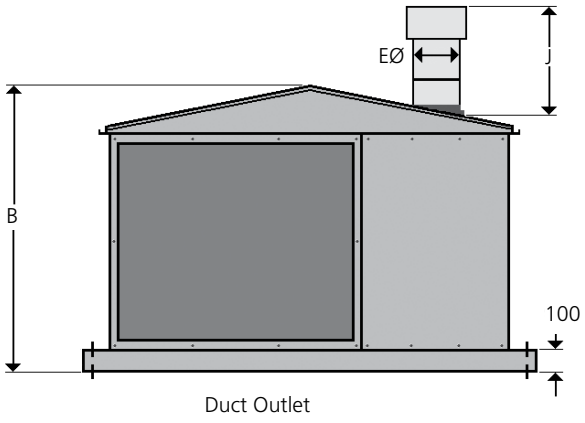
Dimensions

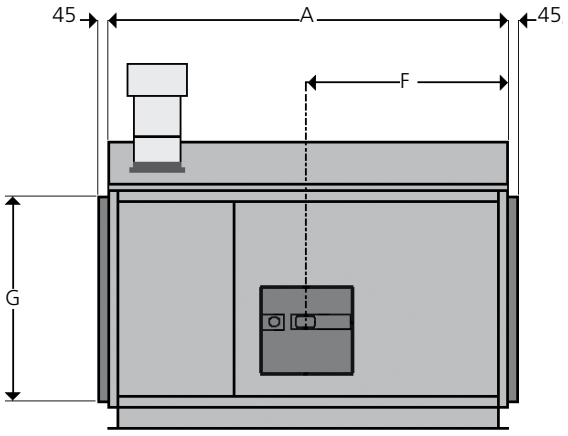
			Model Ref												
			30	35	40	60	75	85	120	135	180	205	235	275	350	375
A	All	mm	1720	1720	1720	1970	1970	1970	2097	2097	2195	2195	2180	2180	2767	2767
B	All	mm	660	660	660	660	660	660	790	790	1000	1000	1100	1100	1244	1224
C	All	mm	1165	1166	1165	1430	1430	1590	1585	1585	2200	2200	2400	2400	2550	2550
D	All	mm	408	408	408	335	335	335	330	330	407	407	505	505	797	797
E	All	mm Ø	125	125	125	150	150	175	175	175	200	200	225	225	250	250
F	All	mm	935	935	935	1084	1084	1084	1071	1071	1169	1169	1154	1154	1472	1472
G	All	mm	570	570	570	634	634	634	717	717	897	897	1000	1000	1086	1086
H	All	mm	570	570	570	770	770	770	950	950	1127	1127	1450	1450	1365	1365
J	All	mm	640	640	640	690	690	690	770	770	945	945	1130	1130	1203	1203
K	All	mm	522	522	522	702	702	702	904	904	1077	1077	1145	1145	1150	1150
L	All	mm	348	348	348	427	427	427	642	642	691	691	654	654	796	796

Side return air spigot shown is on right hand side but can be specified for left hand side. The side required for the return air spigot must be specified at time of order.
Return air spigot sited on the rear panel is available on certain models.

External Horizontal Cabinet Heaters EHD







Dimensions

			Model Ref									
			60	75	85	120	135	180	205	235	275	350	375
A	All	mm	1870	1870	1870	1963	1963	2060	2060	2080	2080	2667	2667
B Inc roof	All	mm	760	760	760	1076	1076	1341	1341	1450	1450	1600	1600
C	All	mm	1430	1430	1430	1585	1585	2198	2198	2400	2400	2550	2550
D	All	mm	335	335	335	330	330	402	402	505	505	797	797
E	All	mm Ø	150	150	175	175	175	200	200	225	225	250	250
F	All	mm	984	984	984	938	938	1036	1036	1054	1054	1372	1372
G	All	mm	634	634	634	711	711	890	890	1000	1000	1086	1086
H	All	mm	770	770	770	944	944	1120	1120	1450	1450	1365	1365
J	All	mm	570	570	570	770	770	945	945	665	665	675	675
K	All	mm	1585	1585	1585	1789	1789	2404	2404	2600	2600	2740	2740
L	All	mm	1806	1806	1806	1895	1895	1992	1992	2020	2020	2610	2610

Heater shown is with airflow right to left, units may also be specified for airflow left to right. Airflow direction required must be specified at time of order.
Optional locations for return air spigots are detailed on rear of brochure.

GB/BEN/012/0913

AMBIRAD LIMITED
Fens Pool Avenue
Brierley Hill
West Midlands DY5 1QA
United Kingdom

Tel: **01384 489 700**
Fax: **01384 489 707**

ambiradsales@nordyne.com
www.ambiradgroup.co.uk

AMBIRAD AIRBLOC NORDAIRNICHE BENSON