INSTRUCTIONS AIR HEATERS SEALED WITH FLUEBOOSTER INTERMITTENT PILOT-IGNITION TYPES WSP11..100-A/C GB/IR/DK Capacities 11 up to 100 kW

Version: GB 69a

File /PO1/C/md/Instr.b

INSTALLATION AND SERVICE INSTRUCTIONS SEALED AIR HEATER WITH FLUE BOOSTER

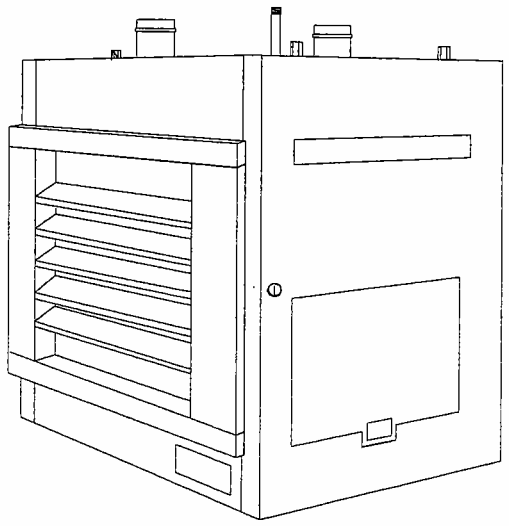
Heaters designated for United Kingdom/Ireland/Denmark
Intermittent pilot ignition
Heater type: C12/C32/ C62 and B22 Category:II2H3P

DESCRIPTION OF THE AIR HEATER

The Winterwarm gas fired unit air heater is of an "indirect" fired type. The heaters have an output ranging from 11 kW up to 100 kW.

The make-up of the heater consists of individual units, each consisting of: injector/atmospheric burner/heat exchanger-member. Depending on the capacity, the heater is made up of between 3 and 17 of these units and joined together to form one heater. Each heater also contains all of the following:

- A gas train with several (combined) safety valves with a pressure-regulator for the adjustment of the burner pressure.
- A built-in combustion-chamber with downstream a flue booster, including a flow-proofing system.(probes and pressure switch)
- An air circulating fan; axial model for free blowing applications, or a centrifugal model for use in a ducted system. Example, a ducting-system at the in- or/and outlet side of the heater.
- A flame failure device with flame ionisation system (pilot flame is ignited / supervised by spark / ionisation electrode).
- Electrical components and terminal block for connection to a P.C.P.2 or similar control panel or a room thermostat.
- A sheet steel casing.
- A combined combustion-air inlet / flue-gas outlet device.



Functioning of the heater:

By the demand of the room thermostat (and the heater is not in a lock-out condition), the control box will power up the flue booster fan after having controlled that the pressure switch is in 'rest' position. The differential-pressure generated by the flow through the flue gas restriction will be detected by the probes and is sensed by the pressure switch, which in turn will send a signal back to the control box. This takes approximately 30 seconds, which allows time for the combustion chamber to be purged. After the purge process, the spark plug is energised and followed by the opening of the gas control to the pilot flame, where the ignition is sensed by the (same) ionisation electrode. If during this (safety) time the ionisation electrode does not sense the flame, the control box will make in total five ignition attempts, but eventually locks out and a manual reset is necessary. The control box will not start up the heater if the flame signal is already present during pre-purge. If there is a flame failure during the run, the control will make one restart attempt.

The fan-thermostat takes care of the delayed switching on of the warm-air fan, this thermostat will operate the fan when sufficient heat is detected within the heat exchanger.

The air heater is protected from over-heating (which may happen if the system fan fails to operate) by a maximum thermostat and an overheating thermostat. During which the latter, when switching off, locks itself. This then has to be reset manually.

AIR HEATER OPERATION

The operation of the heater prior to heating:

1. Check the main valve in the gas line is open.
2. Check the horizontal louvres are open.
3. Make sure both door panels are closed.
4. Set the room thermostat to the desired room temperature.
5. Switch on the electrical supply.

If the room temperature is lower than the set value of the room thermostat, the burner control starts to operate. It is possible that the burner control is on lockout condition in this case simply press the reset on the burner control.
This may only be possible after a short delay. The spark electrode creates ignition on the pilotflame and these will ignite the first burner as the burner control opens the main gasvalve. All the burners will be ignited via the cross lighting strip. After several minutes the system fan(s) are automatically switched on, transporting the warm air into the room to be heated. The room thermostat now controls the switching on and off of the burner control.

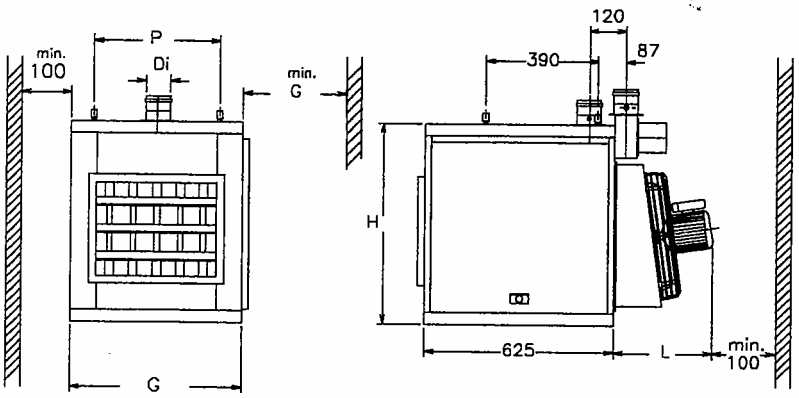
Shutting the heater down for long periods:

1. Set the room thermostat in the lowest position. If the room temperature is higher than the value set, the burner will stop immediately. After several minutes the fan(s) will stop automatically.

2. Wait until the fan has stopped and then switch the electrical supply off. After this, close the main valve in the gas supply pipe.

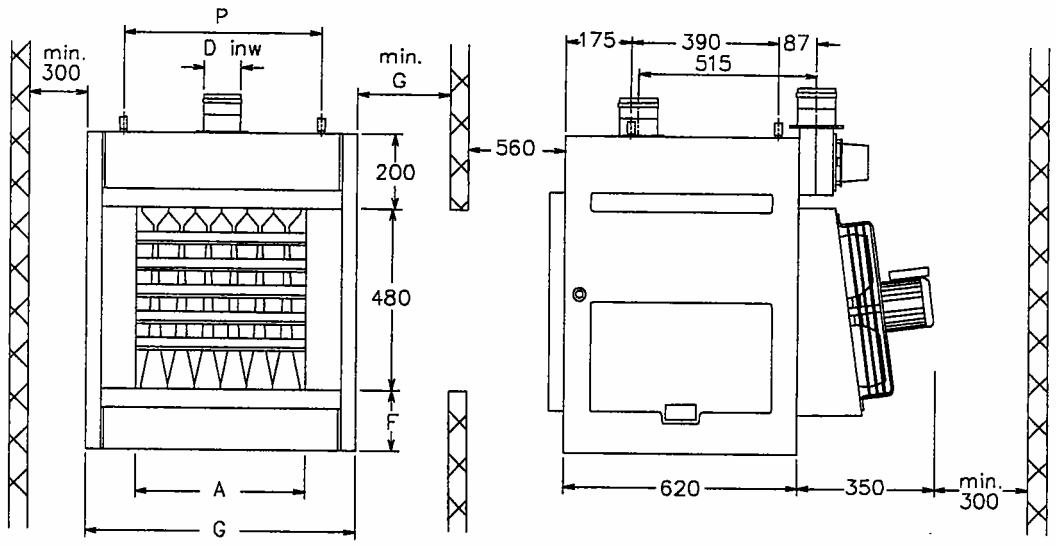
Dimensions (axial fan)

type 11 en 18 (in mm)



Type	Di	G	H	L	P
11	80	435	660	220	285
18	80	573	660	350	420

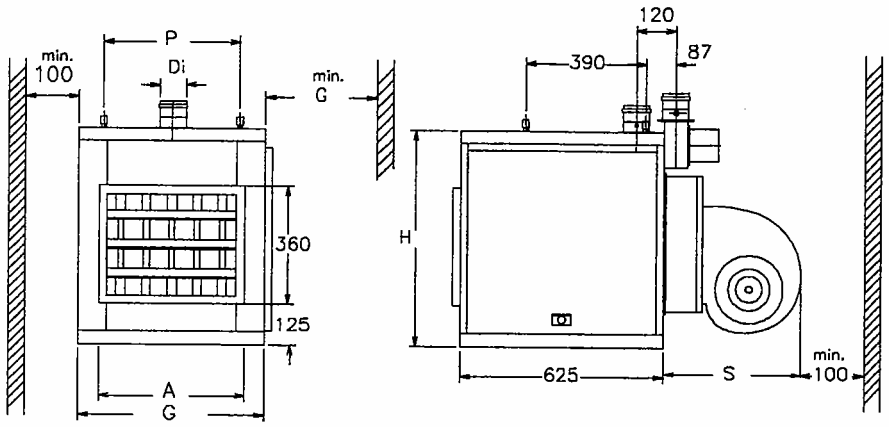
type 24 t/m 100 (in mm)



Type	A	F	G	P	Dinw
24	310	160	580	352	100
29	380	160	650	422	100
35	450	160	720	492	100
41	520	160	790	562	100
47	590	160	860	632	100
53	660	160	930	702	130
70	870	210	1140	912	130
100	1220	210	1490	1262	130

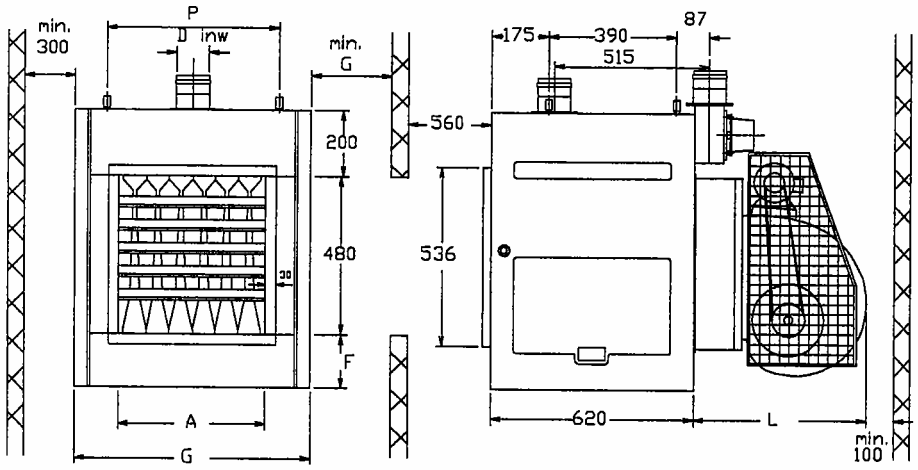
Dimensions (Centrifugal fan)

type 11 en 18 (in mm)



Type	A	Di	G	H	P	S
11	310	80	463	660	285	475
18	450	80	573	660	420	475

type 24 t/m 100 (in mm)



Type	A	F	G	P	L	D inw
24	310	160	580	352	500	100
29	380	160	650	422	500	100
35	450	160	720	492	540	100
41	520	160	790	562	610	100
47	590	160	860	632	610	100
53	660	160	930	702	610	130
70	870	210	1140	912	610	130
100	1220	210	1490	1262	610	130

INSTALLATION INSTRUCTIONS FOR AIR HEATERS WITH FLUE BOOSTER

The installation of the air heater must be in accordance with the relevant requirements of the Gas Safety regulations (for example; The Institute of Gas Engineers IGE UP/1 and 2), building regulations and the IIE regulations also incorporating the gas safety (installation and use) regulations 1984. Other national and/or local regulations may apply! The competent installer must make sure the heater operates correctly and instruct the user about the safe operation of the heater.

The air heater can be suspended via the four M12 sockets situated on top of the heater. The heater can also be sited on top of steel profiles of min. 5 cm high, allowing ventilation to the underneath of the heater. The surface under the steel profiles must be protected against the heat generated by the burners.

Maintain minimum distances as to dimension sheets. Make sure it is possibly that the burner tray can be removed for maintenance. A ventilation gap of 30 cm is required from the top and bottom of the heater to any flammable materials.
If this heater is drawing its combustion air from within the room in where it is located, the necessary combustion ventilation requirements must be allowed for as per the gas safety regulations. In the event of any corrosive or explosive vapours present, high moisture or dust concentrations, negative pressures or temperatures higher than 30°C please consult Winterwarm or your supplier. The air heater has a protection degree of IP20, this means for use in a dry and not very dusty environment. This is also the case for many room-thermostats. When the air to be passed over the heat exchanger is drawn from outside, a stainless steel heat exchanger must be used.

Gas connection

The gas supply line has to meet the national valid requirements and possibly the local requirements of the building inspector, police or fire brigade.
A manual valve in the supply line must be placed within reach of the heater, and all gas lines must not be mounted under a stress situation. Be careful not to rotate the gas supply pipe of the heater when fitting parts to it.
When pressure testing the supply lines the manual valve at the heater must be closed.
During operation of the burner the supply pressure has to be a minimum of 17 mbar, measured at the gas control. This burner pressure can be checked at the pressure point situated on the elbow at the base of the gas supply pipe inside the heater.

Combustion flue connection

The combined combustion-air supply / combustion-gas outlet device (MK or CT) has to be used. There are three sizes, Ø80, Ø100 or Ø130mm depending on the size of heater used. See installation drawings. The maximum length of either the air supply pipe or the flue pipe ,must not exceed 10 metres each, excluding the CT or MK flue section. Whenever bends are used the resistance is greater and therefore a 90° bend will count as 2 metres and a 45° bend as 1 metre. All flue pipes must be of the same diameter as the flue spigots on the heater, and all flue joints must be sealed. For further information regarding the flue system please contact Winterwarm or your supplier. Make sure the roof outlet (MK) is at least 0,5m above roof level . Check for compliance with local / national regulations.

Adjustment of the centrifugal fan

(if fitted)
To prevent an overload of the electric motor the fan has been adjusted in the factory to the correct number of revolutions per minute, which corresponds to the static pressure, ordered. The "available pressure" is stated on the identification-plate. If the resistance in the air heating system is different than this pressure, the volume of the air moved would also be different creating an overload situation on the motor. Check with 3-phase motors the direction of the rotation!

If the current strength is too high, lower the fan-speed!
The speed of the fan can be adjusted with an adjustable pulley on the motor spindle (only with single-phase motors, not type 11 and 18). To adjust the fan speed remove the pulley, undo the fastening screws which in turn will increase the opening between the two flanges. When reducing the opening, the number of revolutions gives a change in speed to 8 to 10%. After adjustment tighten and adjust the V-belt tension. Check the electrical current and if necessary re-adjust. If the pulley is not adjustable the resistance in the ducting has to be increased or other V-belt pulleys should be used.

Important
If a heater is intended for connection onto a ducting system with a considerable static pressure, the heater may never be applied free blowing. This will irrevocably lead to the burning of the electro-motor. Please contact Winterwarm in such situations. For air movement and available static pressures with centrifugal heaters, see technical details.

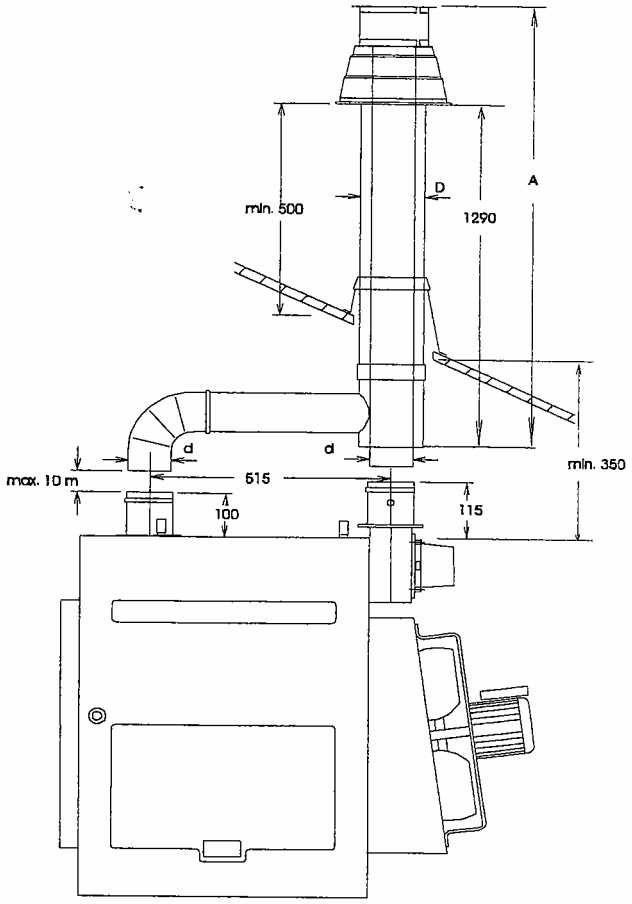
Electrical connection

The unit heater is delivered completely wired internally, where controls of any type are to be added (eg. room thermostat, P.C.P.2) the relevant wiring diagrams must be adhered to. The connection to the electrical supply also has to be done in accordance with the wiring diagram. A room thermostat must not interrupt the electrical supply to the heater!
The constant electrical supply to the heater must only be interrupted for maintenance purposes. Install therefore an isolation switch (min.3mm contact opening gap) or a power plug close to the heater.
All heaters are provided with terminals for operation of the fan(s) for (summer) ventilation (230-Volt switch!). The heaters are provided with terminals for a possible remote lockout indication and remote reset .
Check all wiring before switching on electrical supply! Wiring errors may lead to blowout of the burner-control! Do not run wiring from terminal 9 together with power cables and do not make them longer than 10 metres, or use shielded cable.
Also has the installation to comply with the national and/or local regulations, and the I.E.E. Regulations for electrical installations.

N.B: Switching tension thermostat: 230 Volt.

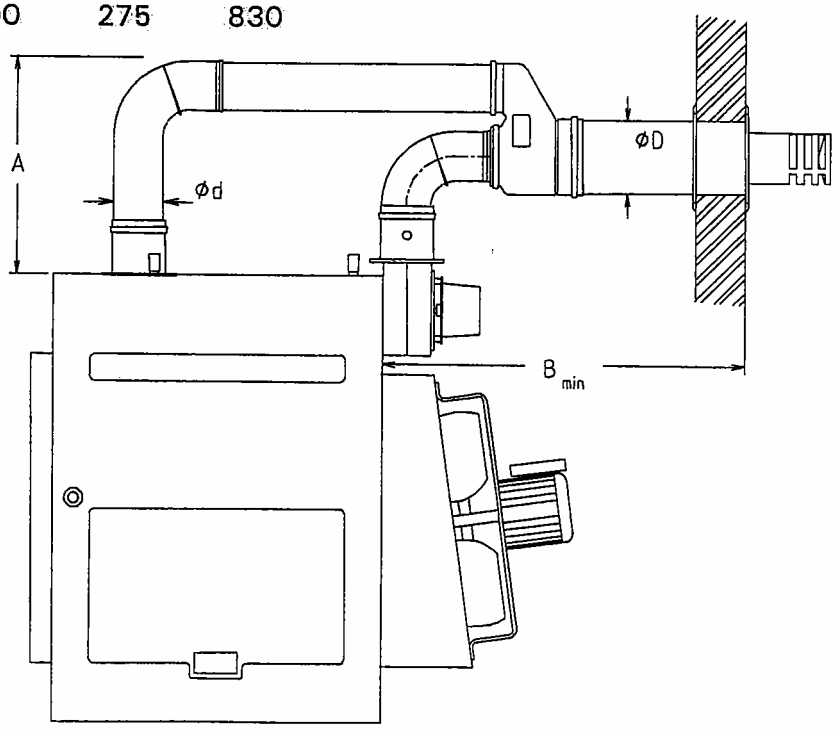
Dimensions vertical flue system
(in mm)

Type	∅ d	∅ D	A
24	100	150	1535
29	100	150	1535
35	100	150	1535
41	100	150	1535
47	100	150	1535
53	130	200	1785
70	130	200	1785
100	130	200	1785



Dimensions horizontal flue system

Type	∅ d	∅ D	A	B
24	100	150	250	750
29	100	150	250	750
35	100	150	250	750
41	100	150	250	750
47	100	150	250	750
53	130	200	275	830
70	130	200	275	830
100	130	200	275	830



Setting of the high / low burner pressures

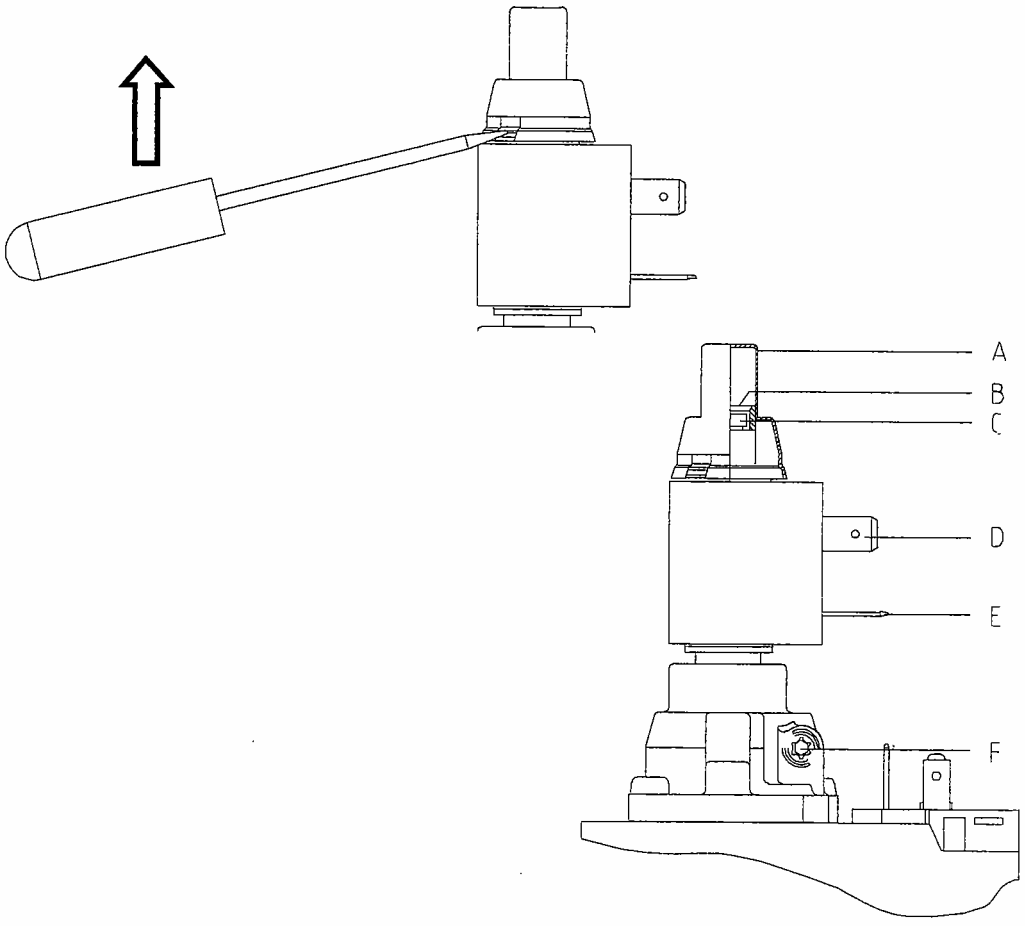
(Not for propane!)

The burner pressures for each stage are set in the factory at the final control See dataplate for correct pressure. The burner pressures can be adjusted as follows:

- Remove cover from gascontrol with the help of a (small) screwdriver.

- Start the unit and first set the high burner pressure by turning screw 'B' (external 8mm). High / low coil must be energised !
- De-energise coil (disconnect wire) and set low burner pressure by turning screw 'C' (slot for screwdriver) Do not set lower than 4.5 mbar to avoid problems with inter-lightning of burnerstrips.

Attention: Always check each burner pressure after any adjustment, as they influence each other.



Technical details axial/centrifugal

Heater type: C12/C32/B22: B22/C62 (for type 11 and18)
Category: II2H3P

type		11	18	24	29	35	41	47	53	70	100
Nom. Capacity	kW	10.7	17.5	23.2	28.3	33.8	39.6	45.3	51.0	68.0	97.0
Nom. Load (Gross)	kW	13.3	22.8	29.3	35.8	42.8	50.1	57.3	64.5	86.0	122.8
Nom. Load (Nett)	kW	12.0	20.5	26.4	32.3	38.6	45.1	51.7	58.0	77.5	110.6
Gas consumption G20**	m^3/h	1.3	2.2	2.8	3.4	4.0	4.8	5.5	6.2	8.2	11.7
Gas consumption G31 (propane)	kg/h	0.95	1.62	2.1	2.6	3.0	3.6	4.1	4.6	6.1	8.8
Supply pressure G20	mbar	20	20	20	20	20	20	20	20	20	20
Burner pressure G20	mbar	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Burner pressure G31 (propane)	mbar	34	34	34	34	34	34	34	34	34	34
Number of burners		3	5	4	5	6	7	8	9	12	17
Gas connection	Diam	½"	½"	3/4"	3/4"	¾"	3/4"	3/4"	3/4"	3/4"	3/4"
Minimum suspension height (from bottom heater)	m	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	3,0

** 15°C, 1013mbar

Technical details axial fan

	Type	11	18	24	29	35	41	47	53	70	100
Air output 15°C	m^3/h	1000	1800	2200	3000	3600	4300	4600	5200	6900	9800
Throw max.	m	10	14	16	21	23	25	26	28	29	32
Temp. increase ΔT	°K	29	29	32	29	29	29	30	30	30	30
Weight	kg	45	65	75	82	90	97	105	122	150	200
Electric connection	V	230	230	230	230	230	230	230	230	230	230
Power consumption	W	135	245	245	245	245	335	335	335	435	615

Technical details centrifugal fan

	Type	11	18	24	29	35	41	47	53	70	100
Air output 15°	m^3/h	1000	1690	2100	2600	3150	3650	4200	4700	6300	8900
Throw max.	m	10	13	15	18	19	21	24	24	25	28
Temp. increase ΔT	°K	29	31	33	33	33	33	33	33	33	33
Weight	kg	55	75	85	92	100	110	120	135	165	215
Power consumption											
6mm WG	W	-	-	380	380	380	520	650*	910*	1140*	1530*
9mm WG	W	375	375	-	-	-	-	-	-	-	-
12mm WG	W	-	-	610	610	650*	650*	910*	910*	1140*	1530*

* 3x 400 V connection, the other heaters are 1 x 230V connection

MAINTENANCE

It is strongly recommended to have the heater cleaned and serviced once a year by a registered gas installer. This not only improves the safe functioning of the heater it also prolongs the life span of the appliance.

To clean the burner and the heat exchanger, proceed as follows:

- Shut off the gas supply
- Switch off electrical supply.
- Disconnect the gas pipe (4 screws from the top flange of the gas valve).
- Remove the electrical connections from the gas valve.
- Remove now the complete burner tray from the heater (2 screws M6).
- Remove panel above warm air outlet by removing various sheet-metal screws.
- Remove the combustion gas collection box by first removing the M6 bolts, lift the backside of the box a little and pull the whole assembly forwards. It may be necessary to remove the V-shaped restrictors from the heat exchanger.(Not for type 11 and 18)

The inside can now be cleaned from the top with a brush; by means of a vacuum cleaner dirt can be removed from the bottom if necessary.
The burners and the injectors can be cleaned without dismantling with compressed air or by a vacuum cleaner. Do not disassemble injectors!
Also clean the blades of the axial fan and if necessary the fan guard.
In case of heaters with a centrifugal fan, clean, if necessary the fan and check (if present) the tension of the V-belt.
When replacing any parts that have been removed attention must be given to any joints or seals, and checked accordingly. Injectors must NOT be altered without consultation to Winterwarm.

After maintenance always check burnerpressure and the safe operation of the unit.

Main spare parts:

N°	Description	for Type
IK.3554	Burner control SIT DBC577	all
IK.3310	Gascontrol on/off	11 ... 70
IK.3390	Gascontrol on/off	100
IK.5916	Printed Circuit Board (no rectifier)	100
IK.5914	Printed Circuit Board (with rectifier)	11 ... 70
IK.3411	Pilot burner SIT cmpl. (nat gas)	all
IK.3428	Pilotinjector (propane)	all
IK.34112	Ignition/Ionisation electrode SIT	all
IK.3458	Cable for electrode	all
IK.5294	Resetbutton/Lockout indication	all
IK.3930	Fan thermostat	all
IK.3906	Max.thermostat LS 3 90-110°	11
IK.3918	Max. Thermostat LS 3 65-80°	18 100
IK.3994	Pressure switch HUBA 98 Pascal	11,18,41 and 47
IK.3996	Pressure switch HUBA 75 Pascal	24,29,35,53,70 and 100
IK.4510	Flue booster	11 ... 35
IK.4540	Flue booster	41 ... 70
IK.4520	Flue booster	100

TROUBLE SHOOTING

1. Heater will not start:

a. Is there a gas supply?
b. Is there electrical supply and is there heat demand? Live tension on terminal 3 ?
c. Has the gas line been purged correctly? (Contact registered gas installer) Is the heater connected in accordance with the enclosed wiring diagram?
d. Control box is in a lockout condition with the red light on. Reset by pressing this same light (is reset button on heater front)
e. The maximum-temperature thermostat (B2, see wiring diagram) has interrupted the electrical tension to the gas control (see wiring diagram). This interruption is automatically discontinued after cooling down. Always find out cause of overheating and correct!
   NB. The models 70 and 100 with 2 axial fans are equipped with 2 maximum thermostats (B3 and B4); each on one side of the heat exchanger.
f. The overheat lock-out thermostat (B4) has interrupted the electrical supply; this one can only be resetted manually after cooling down of the heater, and well by depressing the reset button. This button is located underneath the black cover at the rear of the heater.

2. Extraction fan does not start.

- Pressure switch may not be in 'rest' position. Control fan by connecting it directly to mains.

3. Extraction fan runs, but no further action.

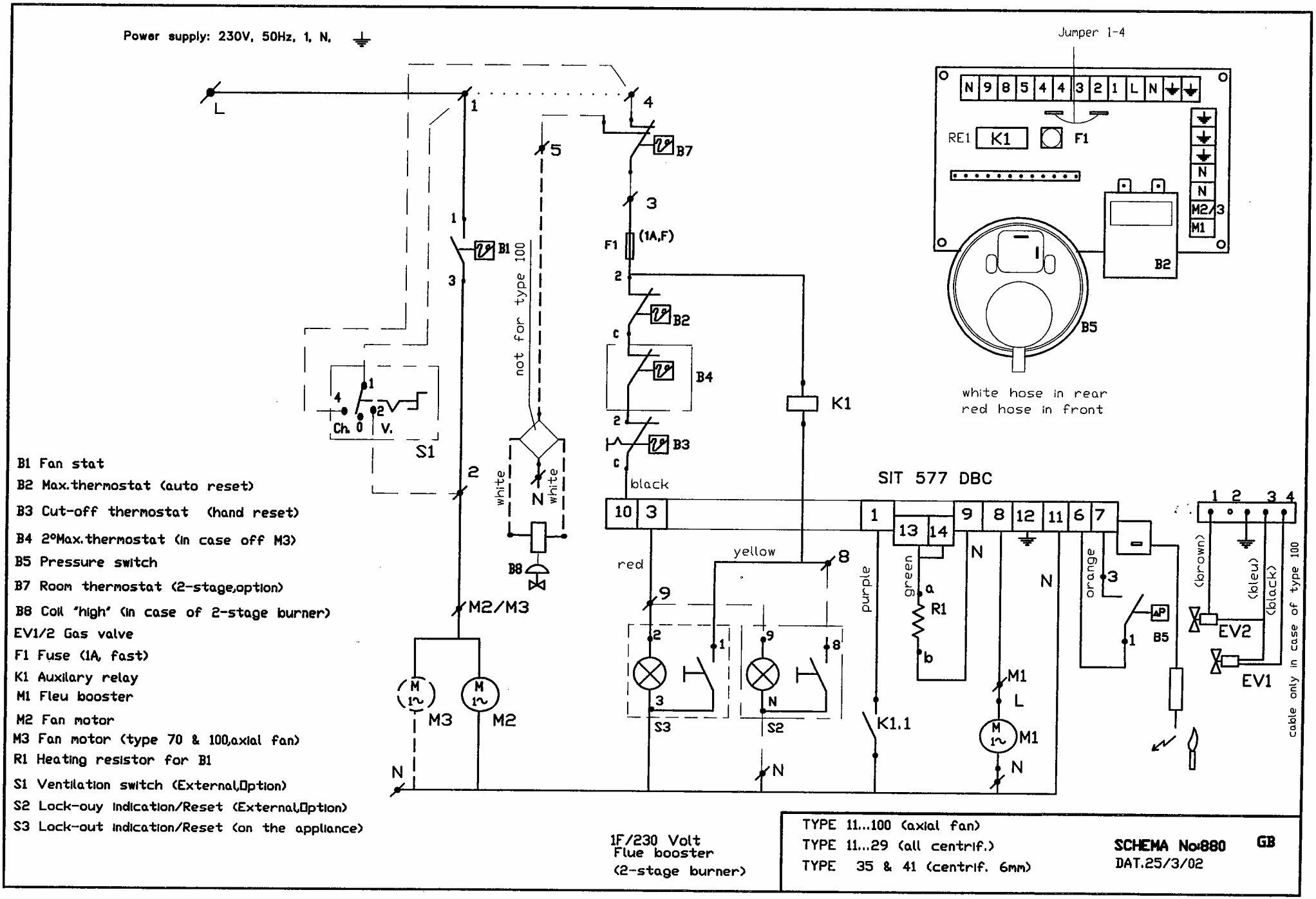
- Pressure switch may not switch to 'run' position. Check differential pressure in air hoses; this must be about 2.0 mbar (cold conditions). This will be lower during running conditions. Pressure switch will stop burner when differential pressure drops below 1.0 mbar! Do connect hoses in the right position, low-pressure (red) hose should be on the probe downstream of the flue booster and go to the P2 side of the pressure switch (in front of pressure switch)

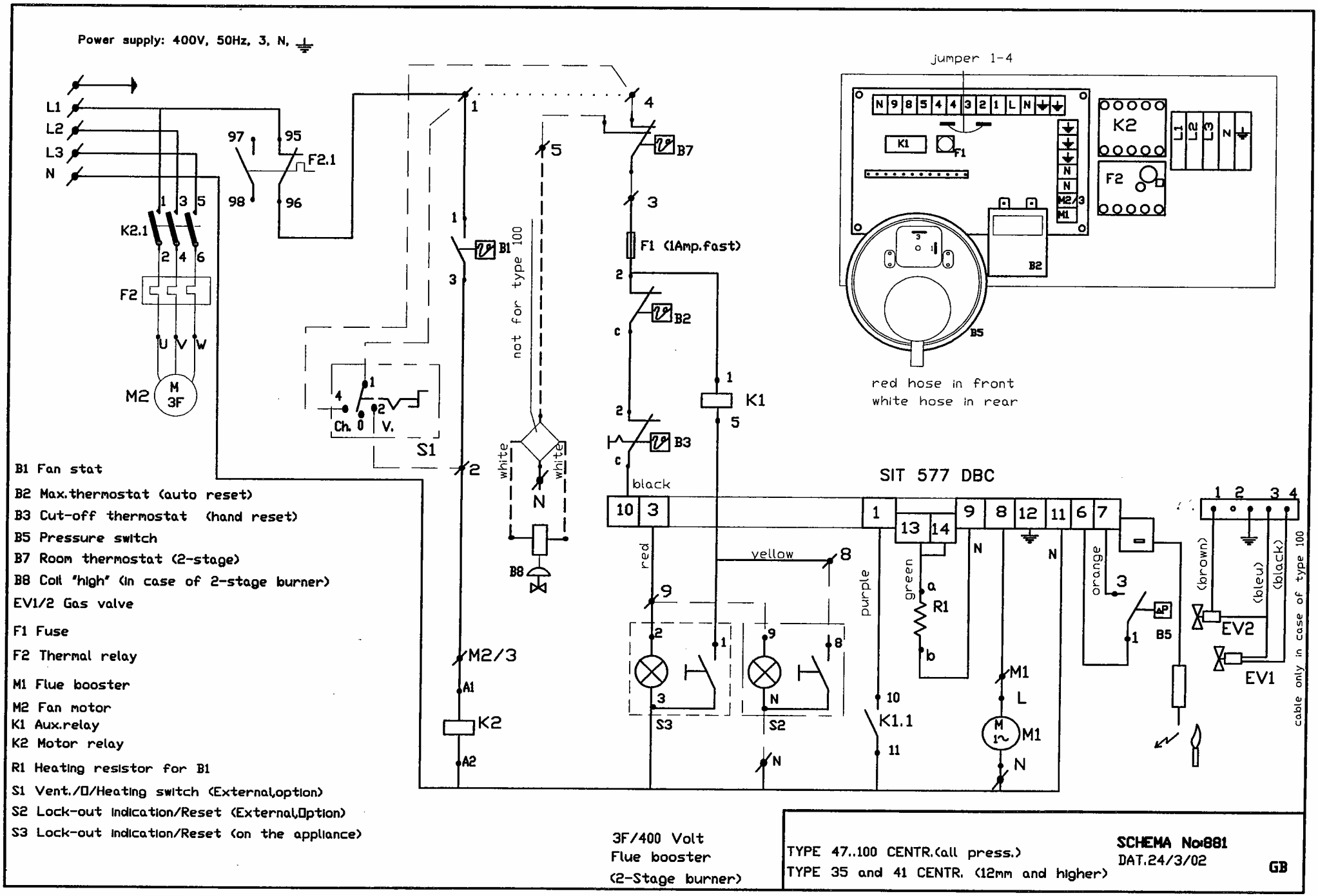
4. Pilot flame will not ignite; heater goes to lockout.

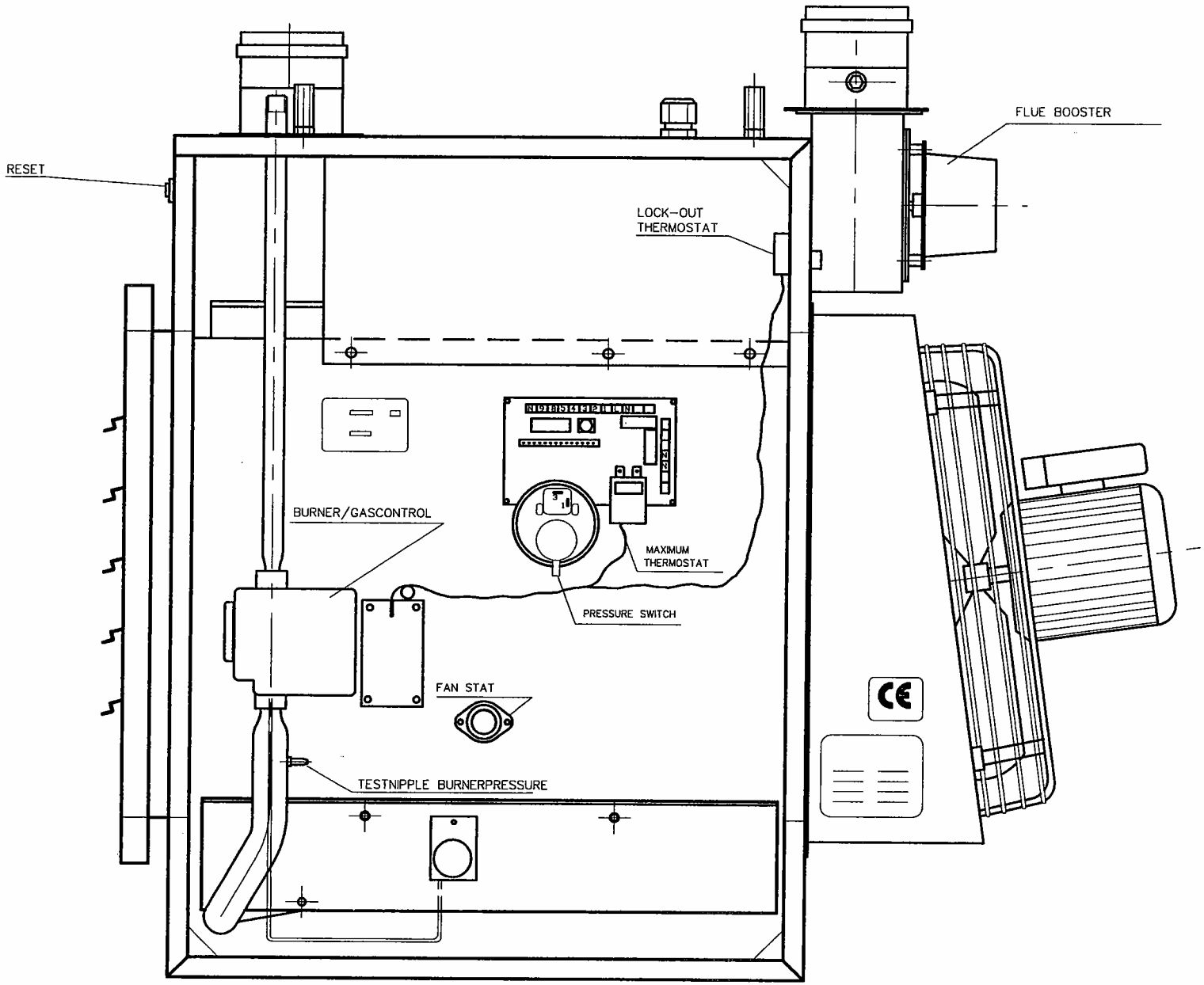
- No sparks (ticking sound); try to ignite the pilot burner with a gaslighther during opening of pilot gas by the gascontrol. Pilot flame injector may be blocked. Clean only with compressed air! (double orifice !) If necessary exchange controlbox or/and electrode.

5. Main burner functions normally but the fans switch on and off:

- The charge on the heater is too low. Check the gas consumption and / or burner pressure.
- Too much cold air is blown over the heat exchanger; this mainly plays a role with centrifugal fanned heaters; in that case also check the amperage of the motor.
- Fan thermostat is faulty.


Power supply: 230V, 50Hz, 1, N,
L
1
4
5
3
B7
F1 (1A,F)
B1
not for type 100
B2
B4
B3
K1
black
white
white
N
B8
S1
Ch. 0 V.
M2/M3
M3
M2
N
SIT 577 DBC
10 3
1
13 14
9 8 12 11 6 7
red
yellow
purple
green
orange
R1
a
b
N
M1
L
K1.1
S3
S2
B5
EV2
EV1
(brown)
(bleu)
(black)
1 2 3 4
cable only in case of type 100
Jumper 1-4
N 9 8 5 4 4 3 2 1 L N
RE1
K1
F1
M2/3
M1
B2
B5
white hose in rear
red hose in front
B1 Fan stat
B2 Max.thermostat (auto reset)
B3 Cut-off thermostat (hand reset)
B4 2°Max.thermostat (in case off M3)
B5 Pressure switch
B7 Room thermostat (2-stage,option)
B8 Coil 'high' (in case of 2-stage burner)
EV1/2 Gas valve
F1 Fuse (1A, fast)
K1 Auxilary relay
M1 Fleu booster
M2 Fan motor
M3 Fan motor (type 70 & 100,axial fan)
R1 Heating resistor for B1
S1 Ventilation switch (External,Option)
S2 Lock-ouy indication/Reset (External,Option)
S3 Lock-out indication/Reset (on the appliance)
1F/230 Volt
Flue booster
(2-stage burner)
TYPE 11...100 (axial fan)
TYPE 11...29 (all centrif.)
TYPE 35 & 41 (centrif. 6mm)
SCHEMA No:880
DAT.25/3/02
GB


Power supply: 400V, 50Hz, 3, N,
L1
L2
L3
N
97
95
F2.1
98
96
K2.1
1 3 5
2 4 6
F2
U V W
M2
M 3F
S1
Ch. 0 V.
not for type 100
B1
B7
B2
B3
F1 (1Amp.fast)
K1
white
white
N
B8
black
red
yellow
purple
green
orange
M2/3
A1
K2
A2
S3
S2
K1.1
R1
M1
L
N
B5
EV2
EV1
(brown)
(bleu)
(black)
cable only in case of type 100
SIT 577 DBC
jumper 1-4
red hose in front
white hose in rear
B1 Fan stat
B2 Max.thermostat (auto reset)
B3 Cut-off thermostat (hand reset)
B5 Pressure switch
B7 Room thermostat (2-stage)
B8 Coil "high" (in case of 2-stage burner)
EV1/2 Gas valve
F1 Fuse
F2 Thermal relay
M1 Flue booster
M2 Fan motor
K1 Aux.relay
K2 Motor relay
R1 Heating resistor for B1
S1 Vent./0/Heating switch (External,option)
S2 Lock-out indication/Reset (External,Option)
S3 Lock-out indication/Reset (on the appliance)
3F/400 Volt
Flue booster
(2-Stage burner)
TYPE 47..100 CENTR.(all press.)
TYPE 35 and 41 CENTR. (12mm and higher)
SCHEMA No:881
DAT.24/3/02
GB



HEATER TYPE 24...70 with AXIAL FAN