

**INSTRUCTIONS
AIR HEATERS SEALED
WITH FLUEBOOSTER
CVI-IGNITION
TYPES WSP-A/C - UK/IR
Capacities 11 upto 100 kW**

Version: GB 54

INSTALLATION AND SERVICE INSTRUCTIONS SEALED AIR HEATER WITH FLUE BOOSTER

Heaters designated for United Kingdom/Ireland.

Intermittent pilot ignition (CVI)

Heater type: C12/C32/B22/C62

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 upto 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.(probe 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.
- 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 underpressure generated by the flow along the pressure probe will be 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 energized and followed by the opening of the gas control to the pilot flame, where the ignition is sensed by the ionisation electrode. If during this (safety) time the flame is not sensed by the ionisation electrode, the control box will lock-out and a manual reset is necessary. The same lock-out will occur 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 fan fails to operate) by a maximum thermostat and an over heating 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 lock-out 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 gas valve. All the burners will be ignited via the cross lighting strip. After several minutes the fan(s) are automatically switched on, transporting the warm air into the room to be heated. The switching on and off of the burner control is now controlled by the room thermostat.

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.

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 (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. 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 cms 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 the burner tray can be removed for maintenance. A ventilation gap of 30 cms 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 which is to be heated, 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 35°C please consult Winterwarm U.K. 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 turn the gas supply pipe of the heater when fitting parts to it.

When pressure testing the supply line the manual valve must be closed.

During operation of the burner the supply-pressure has to be a minimum of 17 mbar, measured at the gas control. The burner pressure can be checked at the pressure point situated on the elbow at the base of the gas supply pipe within 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, $\phi 80$, $\phi 100$ or $\phi 130$ mm depending on the size of heater used. See installation drawings. The maximum length of air supply pipe or the flue-pipe must not exceed 10 metres each excluding the CT or MK flue section. When 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 U.K. 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

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 U.K 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 stat, 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.

The electrical supply to the heater must not be interrupted by a room thermostat!

The constant electrical supply to the heater must only be interrupted for maintenance purposes.

All heaters are provided with terminals for operation of the fan(s) for (summer) ventilation (230 Volt switch!). The heaters with electronic ignition are provided with terminals for a possible remote lock-out indication.

Check all wiring before switching on electrical supply! Wiring errors may lead to blow-out of the burner-control! Do not run wiring from terminal 8 and 9 together with power cables and do not make them longer than 10 metres.

Also the installation has 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.

**Technical details axial/centrifugal Heater type: C12/C32/B22 Category:II2H3P
: B22/C62 (for type 11 and 18)**

Natural gas

	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 (Nett)	kW	12,0	20,5	26,4	32,3	38,6	45,1	51,7	58,0	77,5	110,6
Burnerpress.(G20)	mbar	8,5	8,5	8,5	8,5	8,5	8,5	8,5	8,5	8,5	8,5
Supply pressure	mbar	20	20	20	20	20	20	20	20	20	20
Burners	quan.	3	5	4	5	6	7	8	9	12	17
Gas consumption	m ³ /h	1,3	2,2	2,8	3,4	4,0	4,8	5,5	6,2	8,2	11,7
Gasconnection	diam.	1/2"	1/2"	3/4"	3/4"	3/4"	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	3,00

Technical details axial fan

	Type	11	18	24	29	35	41	47	53	70	100
Air output	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
Elect.connection	V	230	230	230	230	230	230	230	230	230	230
Power consumption:	Watt	135	250	250	250	300	350	350	350	500	650

Technical details centrifugal fan

	Type	11	18	24	29	35	41	47	53	70	100
Power consumption:	6mm WG	-	-	380	380	380	520	650*	910*	1140*	1530*
	9mm WG	380	380								
	12mm WG	-	-	610	610	650*	650*	910*	910*	1140*	1530*
Air output at 15°C	m ³ /h	1000	1690	2100	2600	3150	3650	4200	4700	6300	8900
Throw	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

* 3x 400 V connection, the other heaters are 1x 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
- disconnected 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-metel 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 U.K.

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

TROUBLE SHOOTING

1. Heater will not start:

- a. Is there a gas supply?
- b. Is there electrical supply and is there heat demand? The eventual LED on the printed circuit board should light.
- 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 lock-out condition with the red light on. Reset by pressing button.
- e. The maximum-temperature thermostat (STW) 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 (STW); one on each side of the heat exchanger.

- f. The overheating-thermostat (STB, see wiring diagram) has interrupted the electrical supply; this one can only be reset manually after cooling down of the heater, by depressing the button on the back. 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 underpressure in air hose; this must be about -2.0 mbar (cold conditions). This will be lower during running conditions. Pressure switch will stop burner under 0.5 mbar! For type 11 and 18 there are 2 hoses, check differential pressure, this should be 1.5 mbar

4. Pilot flame will not ignite; heater goes to lock-out.

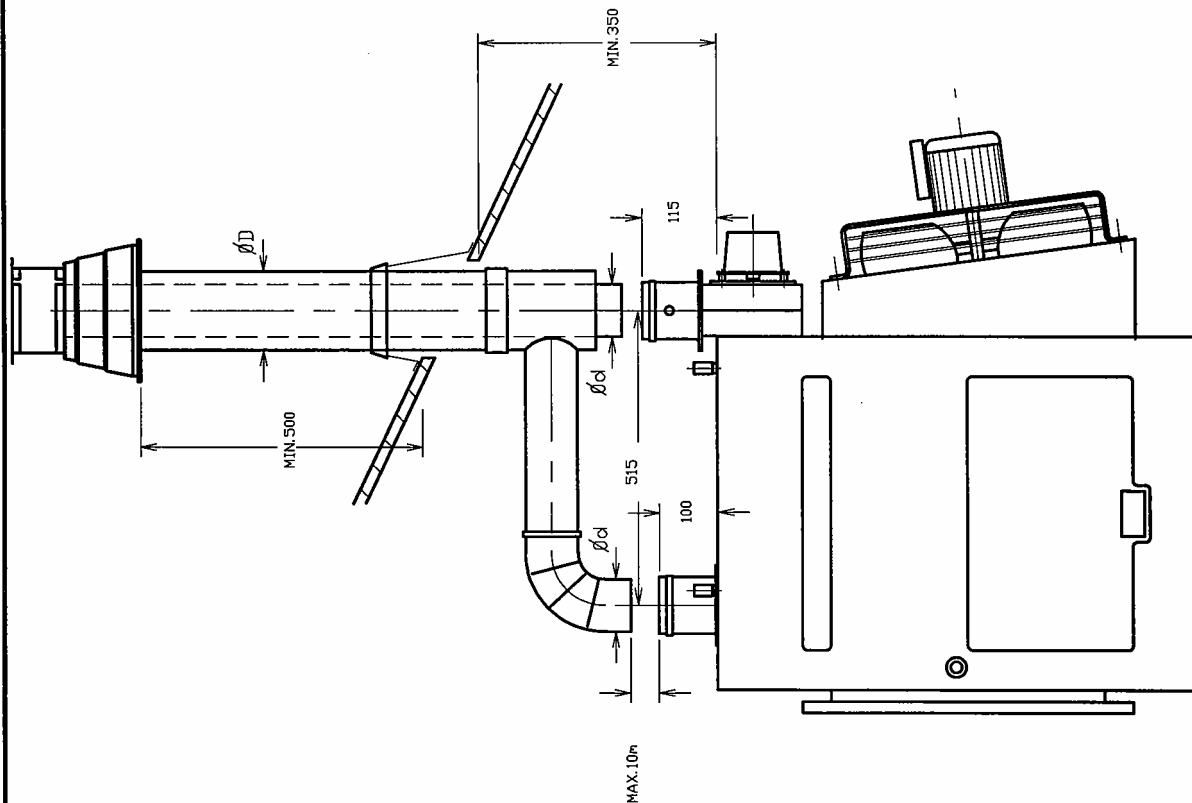
- No spark; try to ignite with a match during opening of pilot flame gas control. Pilot flame injector may be blocked. If necessary exchange control box or/and electrode.

5. Pilot flame ignites; heater goes to lock out.

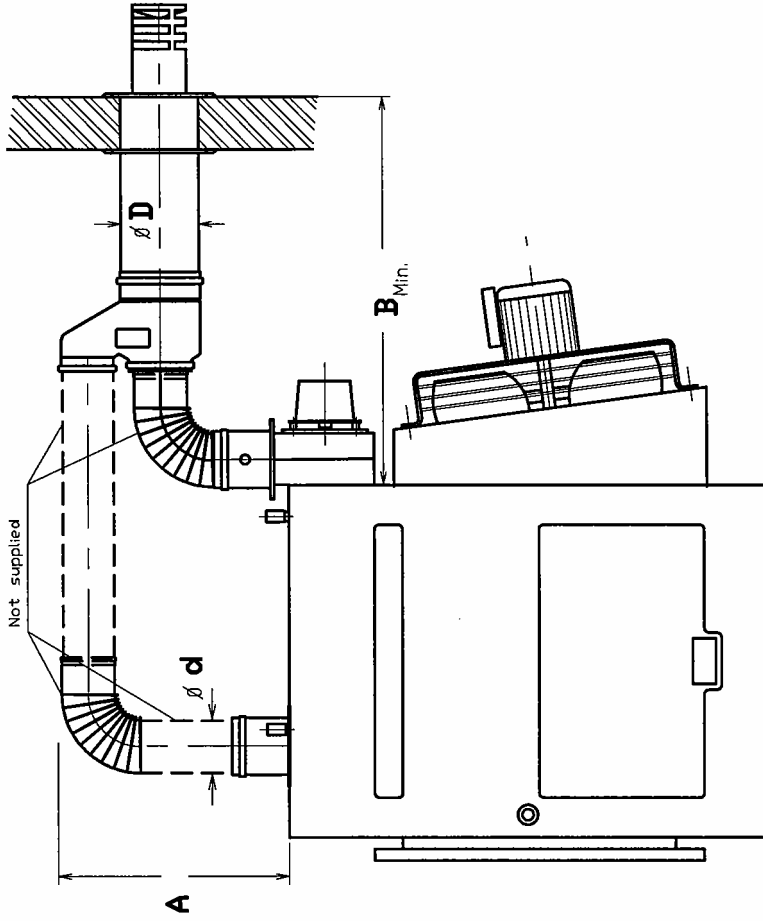
- If phase and neutral are interchanged control box cannot be sensed. Check with a multimeter. Change, when necessary electrode and/or control box.

6. Main burner burns normally but the fans switch on and off:

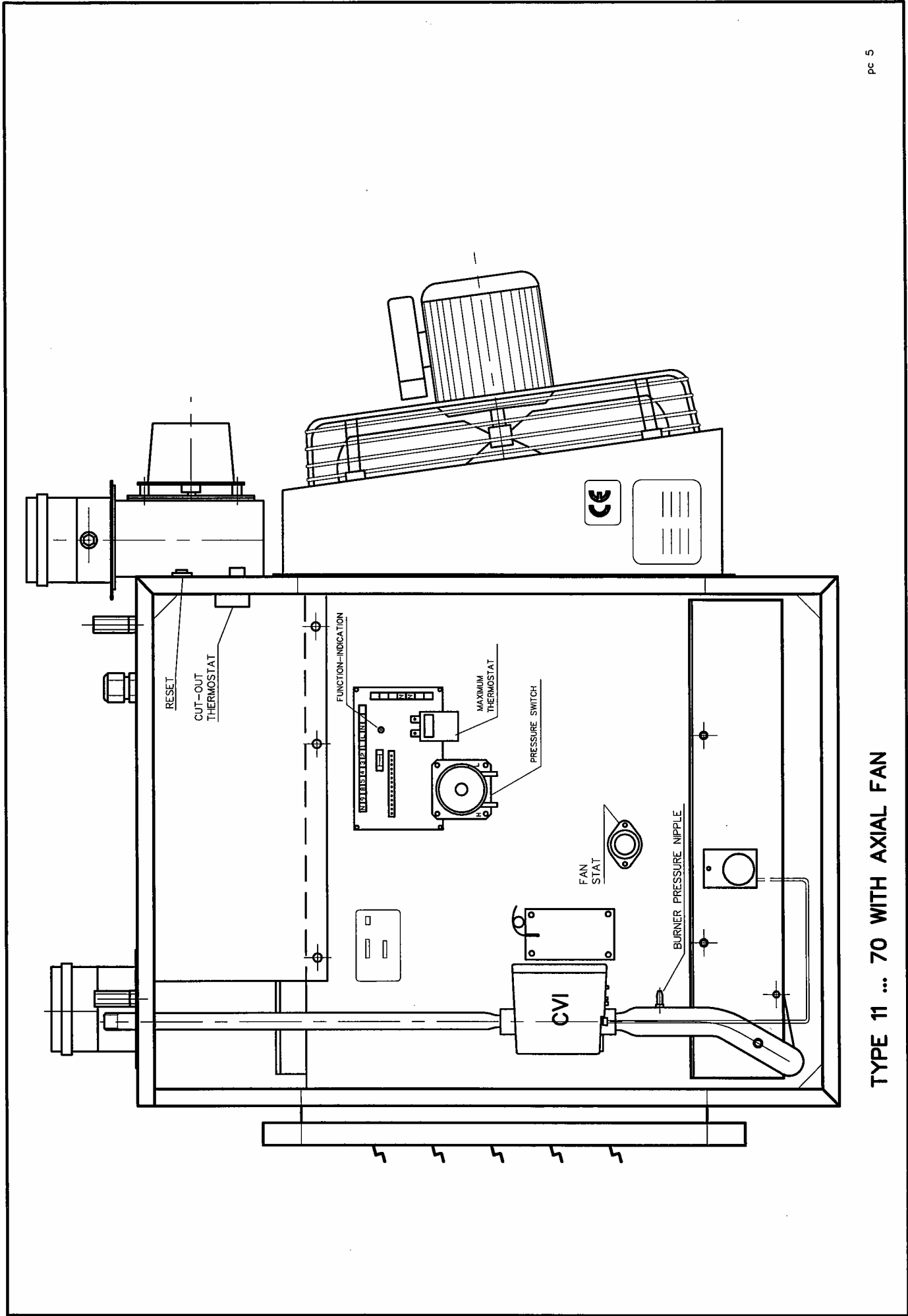
- The charge on the heater is too low. Check the gas consumption and/or burner pressure.
- Too much cold air is blown over the heat exchanger; this mainly plays a role with centrifugal fanned heaters; in that case also check the amperage of the motor.
- Fan thermostat is faulty.



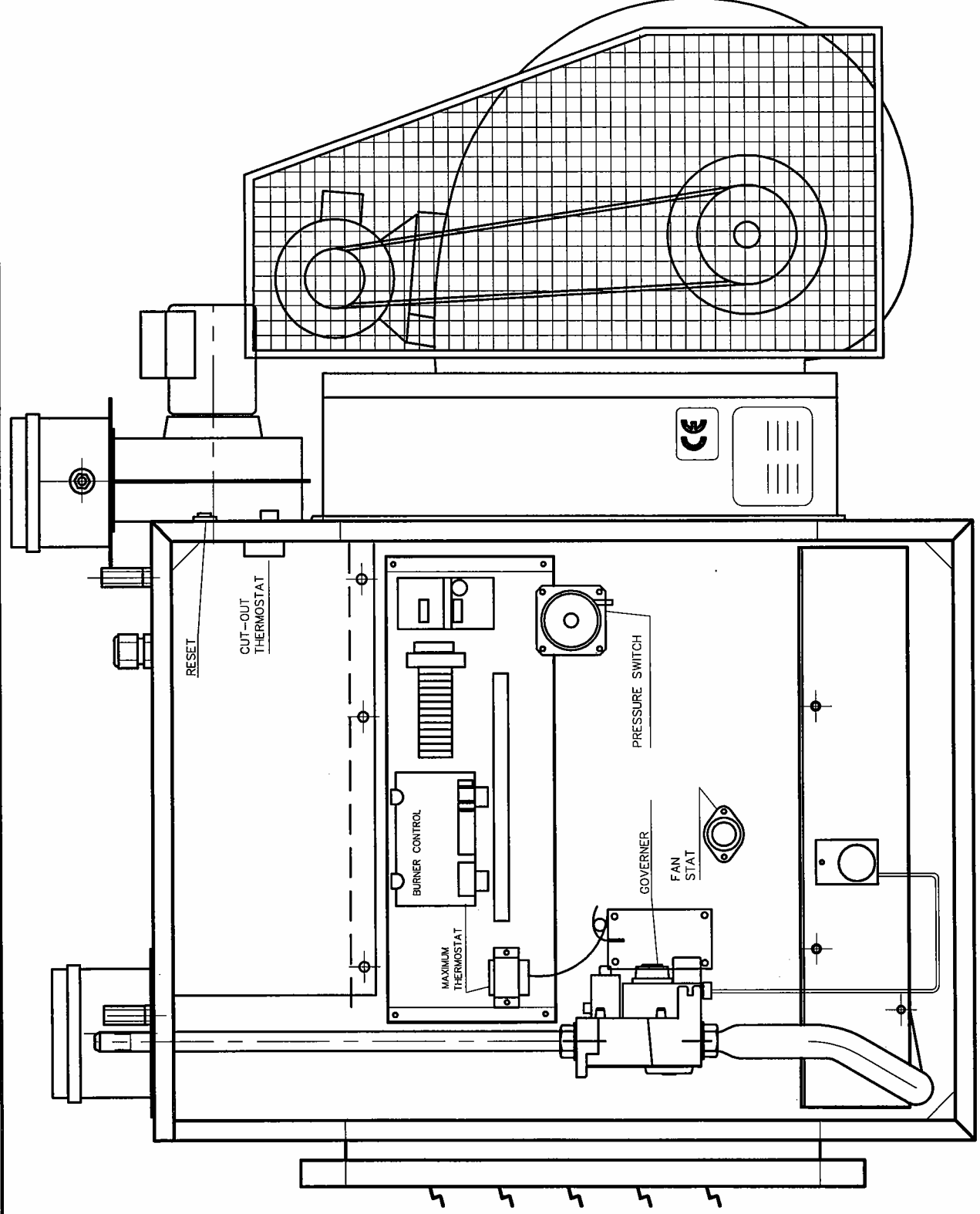
TYPE	24	29	35	41	47	53	70	100
ϕd (mm)	100	100	100	100	100	130	130	130
ϕD (mm)	150	150	150	150	150	200	200	200



TYPE	24	29	35	41	47	53	70	100
ϕd (mm)	100	100	100	100	100	130	130	130
ϕD (mm)	150	150	150	150	150	200	200	200
A(mm)	250	250	250	250	250	275	275	275
B(mm)	750	750	750	750	750	830	830	830



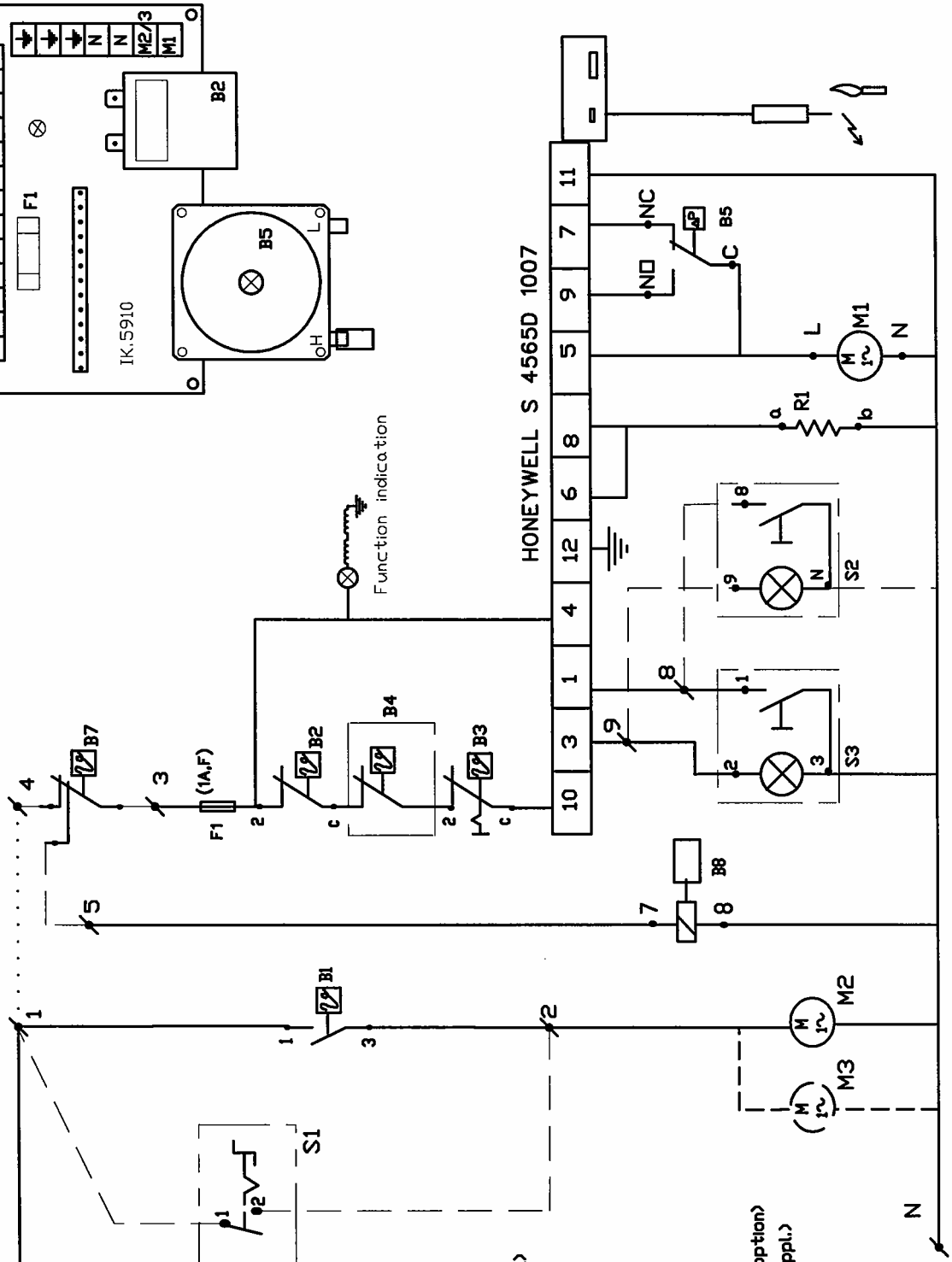
TYPE 11 ... 70 WITH AXIAL FAN



TYPE 100 WITH CENTRIFUGAL FAN

Remove jumper if direct supply to connector 3 and 5

Electrical connection: 230V, 50Hz, 1, N, \perp



- B1 Fan stat
- B2 Max. thermostat (autoreset)
- B3 Cut-off thermostat (handreset)
- B4 2°Max. thermostat (in case of M3)
- B5 Pressure switch
- B7 Roomthermostat (2-stage) (external)
- B8 Coil 'high' (only if 2-Stage burner)
- F1 Fuse (1A Fast,sandfilled)
- M1 Flue booster
- M2 Fan motor
- M3 Fan motor (only for type 70)
- R1 Heating resistor for B1
- S1 Ventilation switch (External,option)
- S2 Lock-out indication/Reset (External,option)
- S3 Lock-out indication/Reset (on the appl.)

ATTENTION!

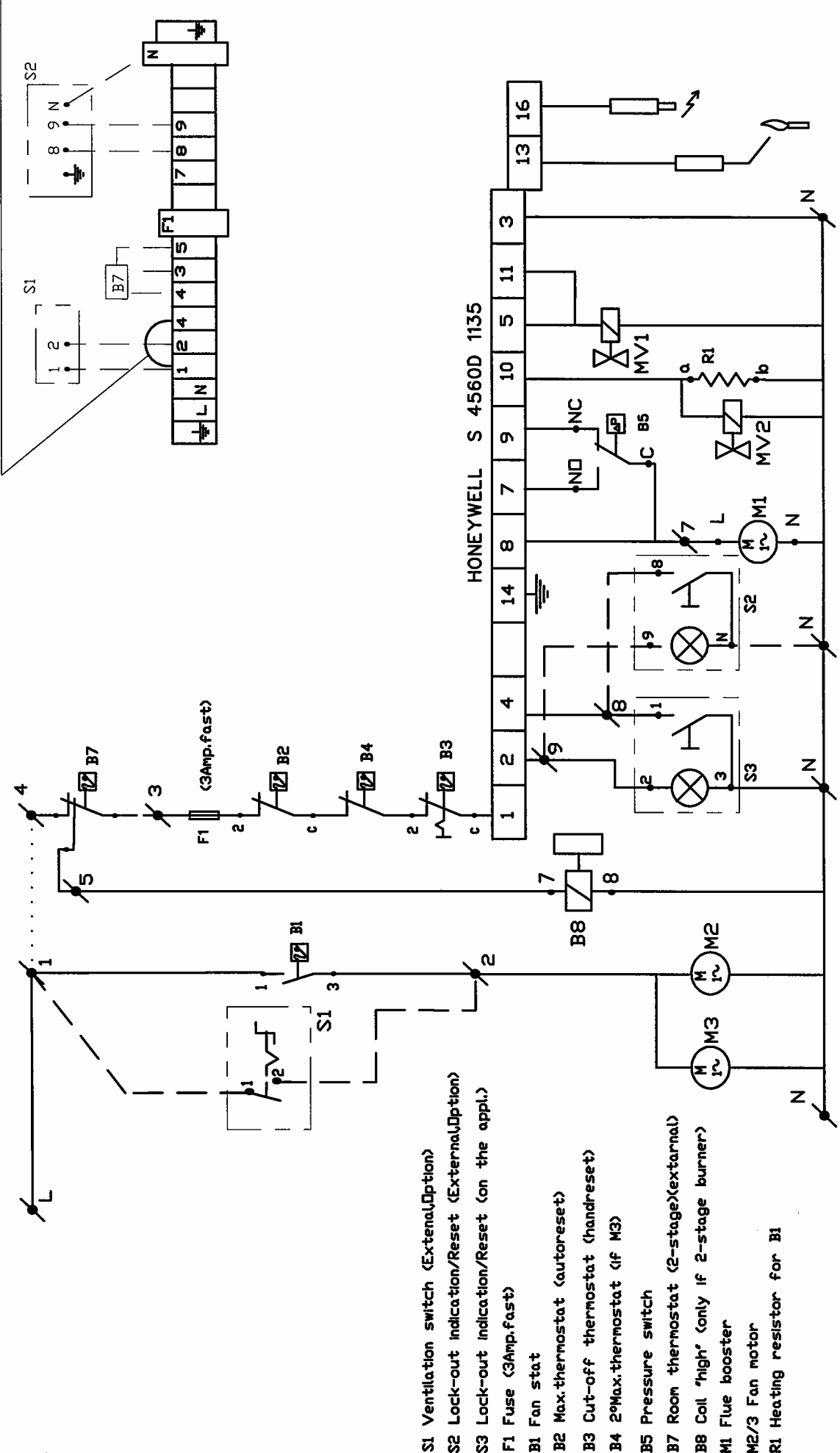
- Do not interchange live and neutral.
- Incorrect wiring will burn-out control box !!
- Do not run wires from connector 8 & 9 along power cables.

CVI
1F/230 Volt
with FLEU-BOOSTER
(2-STAGE BURNER)

TYPE 11...70 (axial)
 TYPE 11...29 (all centrif.)
 TYPE 35 & 41 (centrif. 6mm)

SCHEMA No: PR-868
 DAT.25/4/99
 ENGLISH

Electrical connection: 230V, 50Hz, 1, N, \perp



- S1 Ventilation switch (External Option)
- S2 Lock-out indication/Reset (External Option)
- S3 Lock-out indication/Reset (on the appl.)
- F1 Fuse (3Amp.fast)
- B1 Fan stat
- B2 Max.thermostat (autoreset)
- B3 Cut-off thermostat (handreset)
- B4 2°Max.thermostat (if M3)
- B5 Pressure switch
- B7 Room thermostat (2-stage)(external)
- B8 Coil 'high' (only if 2-stage burner)
- M1 Flue booster
- M2/3 Fan motor
- R1 Heating resistor for B1

ATTENTION!

-Do not interchange live and neutral
 -Incorrect wiring will burn-out control box !
 -Do not run wires from connector 8 & 9 along power cables

CVI
 (2-Stage burner)

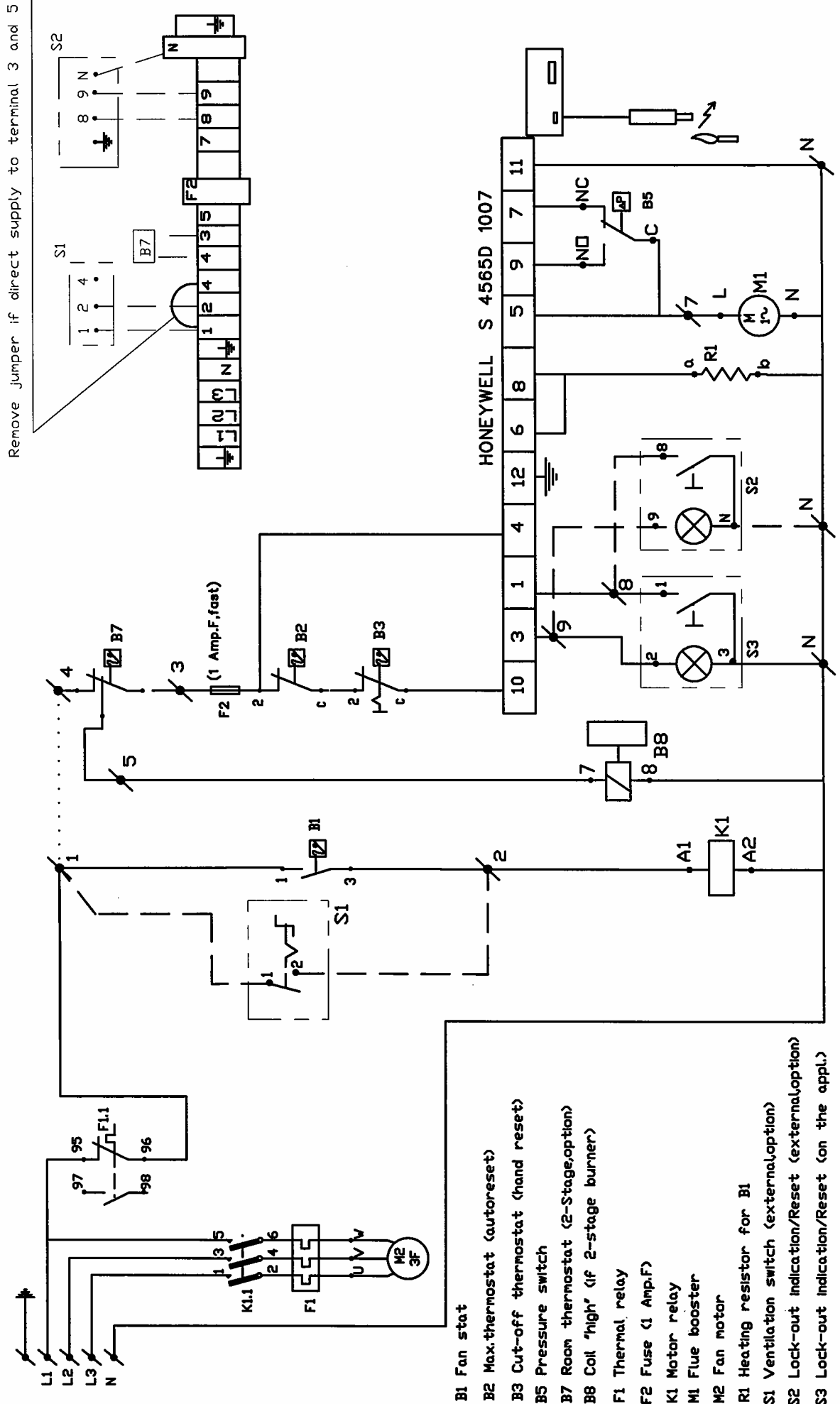
TYPE 100 Axial

SCHEMA No: PR-869
 DAT.20/5/99

GB

RA1

Electrical connection: 400V, 50Hz, 3,



- B1 Fan stat
- B2 Max thermostat (autoreset)
- B3 Cut-off thermostat (hand reset)
- B5 Pressure switch
- B7 Room thermostat (2-Stage,option)
- B8 Coil "high" (if 2-stage burner)
- F1 Thermal relay
- F2 Fuse (1 Amp.F)
- K1 Motor relay
- M1 Flue booster
- M2 Fan motor
- R1 Heating resistor for B1
- S1 Ventilation switch (external,option)
- S2 Lock-out indication/Reset (external,option)
- S3 Lock-out indication/Reset (on the appl.)

ATTENTION:
 -Incorrect wiring will burn-out control box !
 -Do not run wires from terminal 8 and 9 along power cables

CVI
 3-phase
 (2-stage burner)

HONEYWELL S 4565D 1007

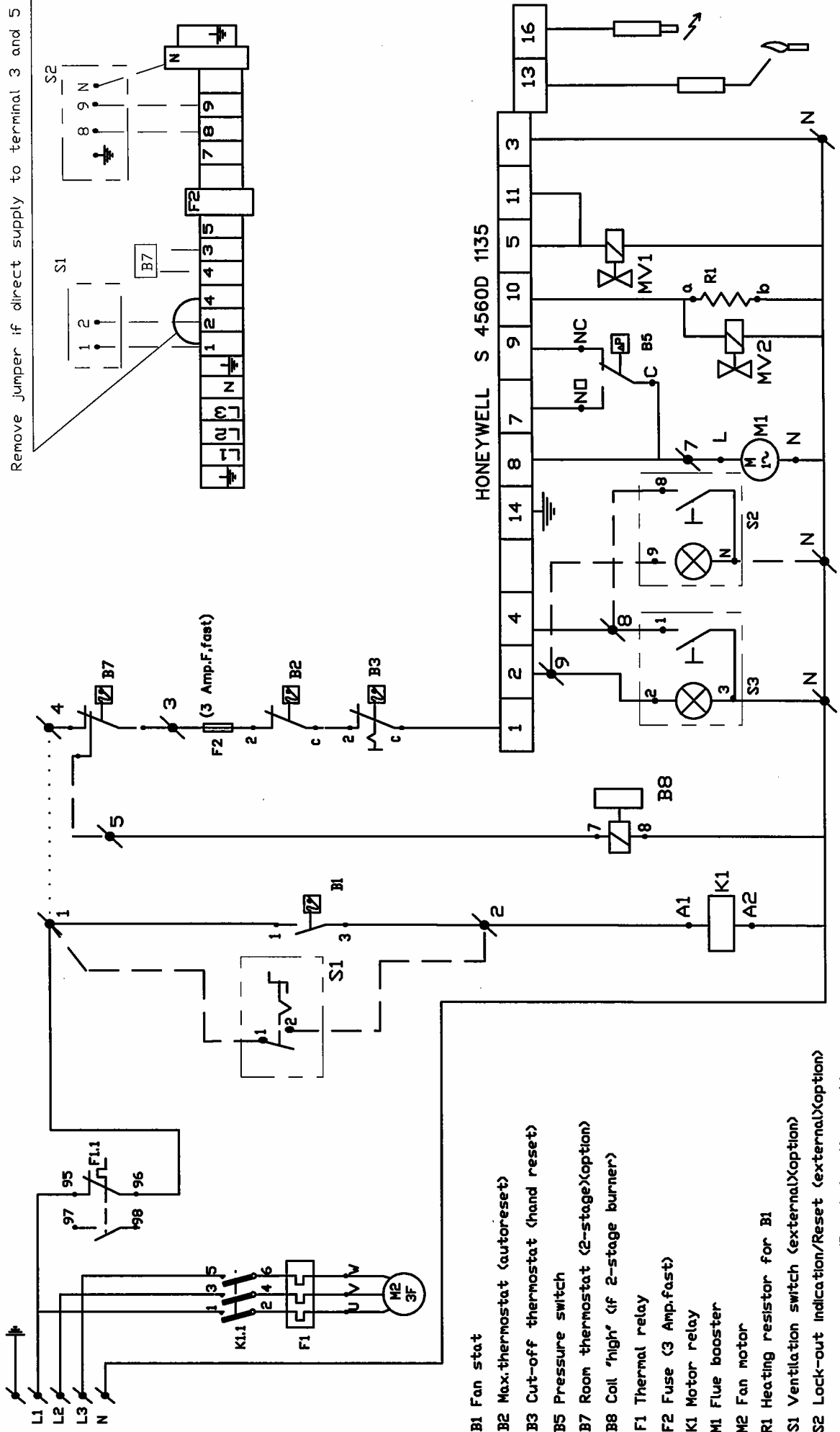
Remove jumper if direct supply to terminal 3 and 5

TYPE 47...70 (all pressures)
 TYPE 35 and 41 (12mm and higher)

SCHEMA No: PR-870
 DAT.16/2/99
 GB

197

Electrical connection: 400V, 50Hz, 3, N, N



Remove jumper if direct supply to terminal 3 and 5

- B1 Fan stat
- B2 Max.thermostat (autoreset)
- B3 Cut-off thermostat (hand reset)
- B5 Pressure switch
- B7 Room thermostat (2-stage)(option)
- B8 Coil 'high' (if 2-stage burner)
- F1 Thermal relay
- F2 Fuse (3 Amp.fast)
- K1 Motor relay
- M1 Flue booster
- M2 Fan motor
- R1 Heating resistor for B1
- S1 Ventilation switch (external)(option)
- S2 Lock-out indication/Reset (external)(option)
- S3 Lock-out indication/Reset (on the appl.)

ATTENTION:

-Incorrect wiring will burn-out control box !
 -Do not run wires from terminal 8 and 9 along power cables.

CVI
 with FLUE BOOSTER

TYPE 100 CENTRIFUGAL

SCHEMA No PR-871
 DAT.11/5/99

GB

12/7