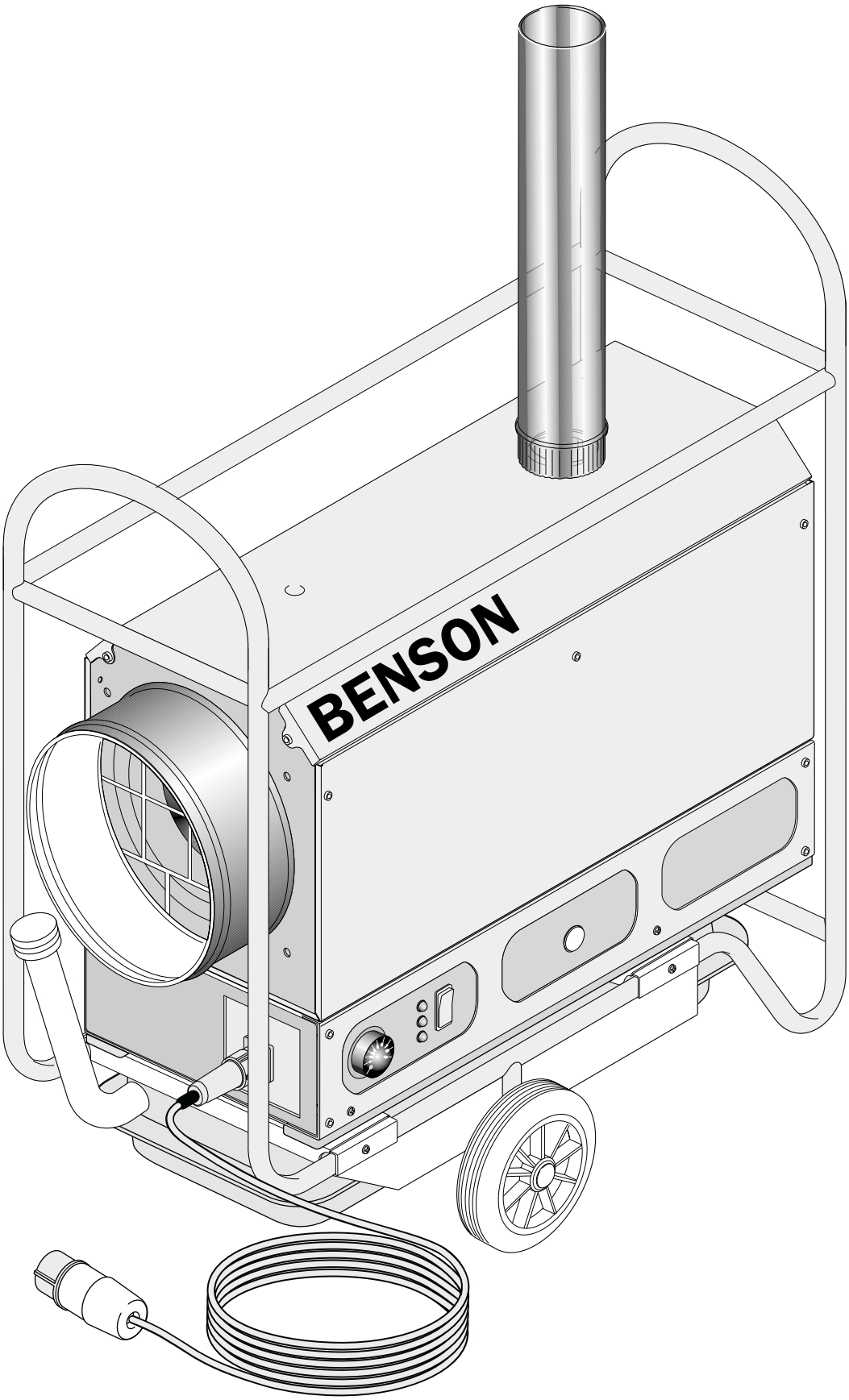
PORTABLE HEATER PARTS LIST AND SERVICE MANUAL



BENSON HEATING LTD

The **C.S.H** heater is designed and manufactured within the quality guidelines of ISO 9001
Care should be taken to ensure that the information used from this manual is applicable to the model of heater.
This manual provides the necessary information for the safe operation, cleaning, and servicing of the C.S.H. Heater.

Whilst every care is taken to ensure that the information in this manual is correct Benson Heating accept no liability for misuse or from any loss, damage, or injury caused by errors in, or omissions from the information supplied.

HEALTH AND SAFETY AT WORK ACT 1974
Under section 6 of the Health & Safety at work act 1974 the manufacturer has taken reasonable and practical steps to ensure that the Benson range of appliances are safe and without risk when properly used.
These Heaters should therefore only be used in the manner and purpose for which they were intended and in accordance with the recommendations detailed herewith.
The Heaters have been designed, manufactured, assembled, and inspected with safety in mind, there are certain basic precautions which the user should be aware of and the user is therefore strongly advised to read the operating instructions before operating the Heater

Contained within the text of this manual the words **CAUTION** and **WARNING** are used to highlight certain points.

CAUTION is used when failure to adhere to the instruction could result in premature failure or damage to the heater.
WARNING is used when failure to heed or implement the instruction can lead to component damage or risk of personal injury.

SAFETY INFORMATION FOR HEATER OPERATION

This equipment should only be used by a competent person who has read and understood the following instructions
Do not use this equipment if you are ill feeling tired or under the influence of alcohol or drugs.
WARNING
Keep animals and children away from heater **NEVER** leave them alone when heater is in use
Never use the heater if highly flammable vapours are present, or in a dusty environment.
Never stack or lean objects on or against the heater whilst in operation
Never restrict the air supply to the heater
Ensure the operating area is well ventilated restricted combustion can cause carbon monoxide – concentrated carbon monoxide kills
Never Operate the heater near vehicle exhaust fumes
Never fill the heater whilst it is hot or running
Always wear protective clothing when filling heater (Gloves Goggles etc)
Never smoke or allow naked light into the area when refueling
Always mop up any spillage immediately
Never breathe any unburnt gas oil vapours

Always ensure heater is standing on a firm level non-combustible surface
Never move the heater whilst it is in operation

WARNING Before carrying out any work on the heater ensure that electrical supply is isolated 110 Volt heaters plug into a standard 110 volt generator ensure flex and plugs are undamaged. Uncoil extension leads fully
Never run leads through water or over sharp objects
Never carry or pull heater by the electrical cable

WARNING use of electrical equipment in damp or wet conditions can be dangerous

Ensure that the sections on Heater Controls and Heater Operation are read and understood before operation of this equipment.

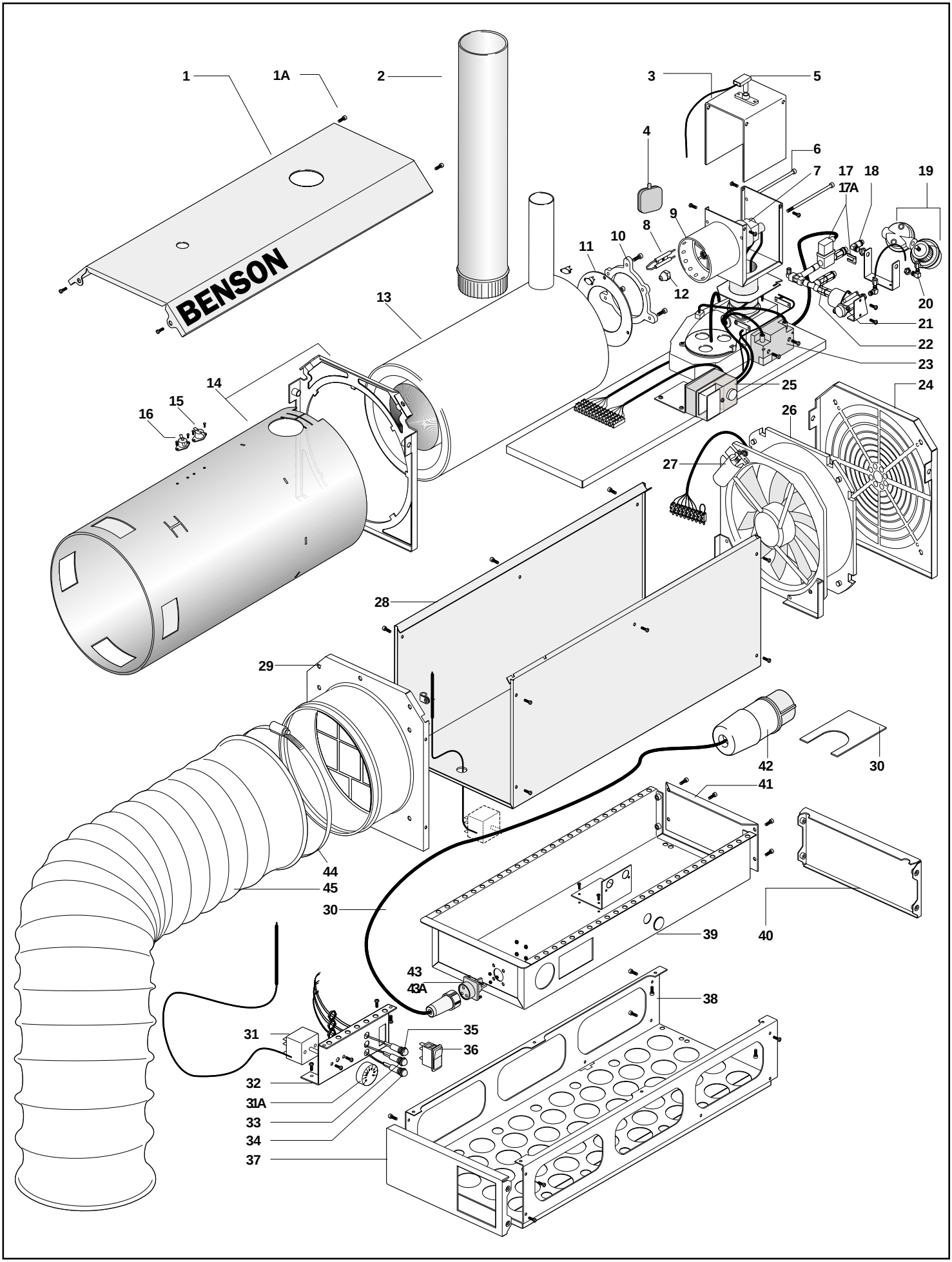
For further information contact and advice contact
Spares / Service Depts. at Knighton Powys
TELEPHONE 01547 528534 FAX 01547 520399

CONFINED SPACE HEATER.

(DIESEL)

Heat Output	11 Kw (37,500Btu)
Air Delivery (cold)	@ 7mtrs 0.202m^3/s @ 14mtrs 0.185 m
Temperature Rise through Unit	@ 7mtrs 40^{0}C @ 14mtrs 30^{0}C
Nozzle size	Danfoss 0.30 Usg x 60^0 H
Pump Pressure (Diesel)	90 Psi
Max Fuel Throughput	1.3 ltrs/hr
Sound Level (D.b.a.)	70 D.b.a.
Electricity Supply	110Volt /50Hz
Motor size	2550 Rpm 220 Watts
Start current	4.5 Amp
Run current	2.0 Amp
Weight	48 Kgs
Fuel Type	Diesel
Tank Capacity	16 Lts

PARTS LIST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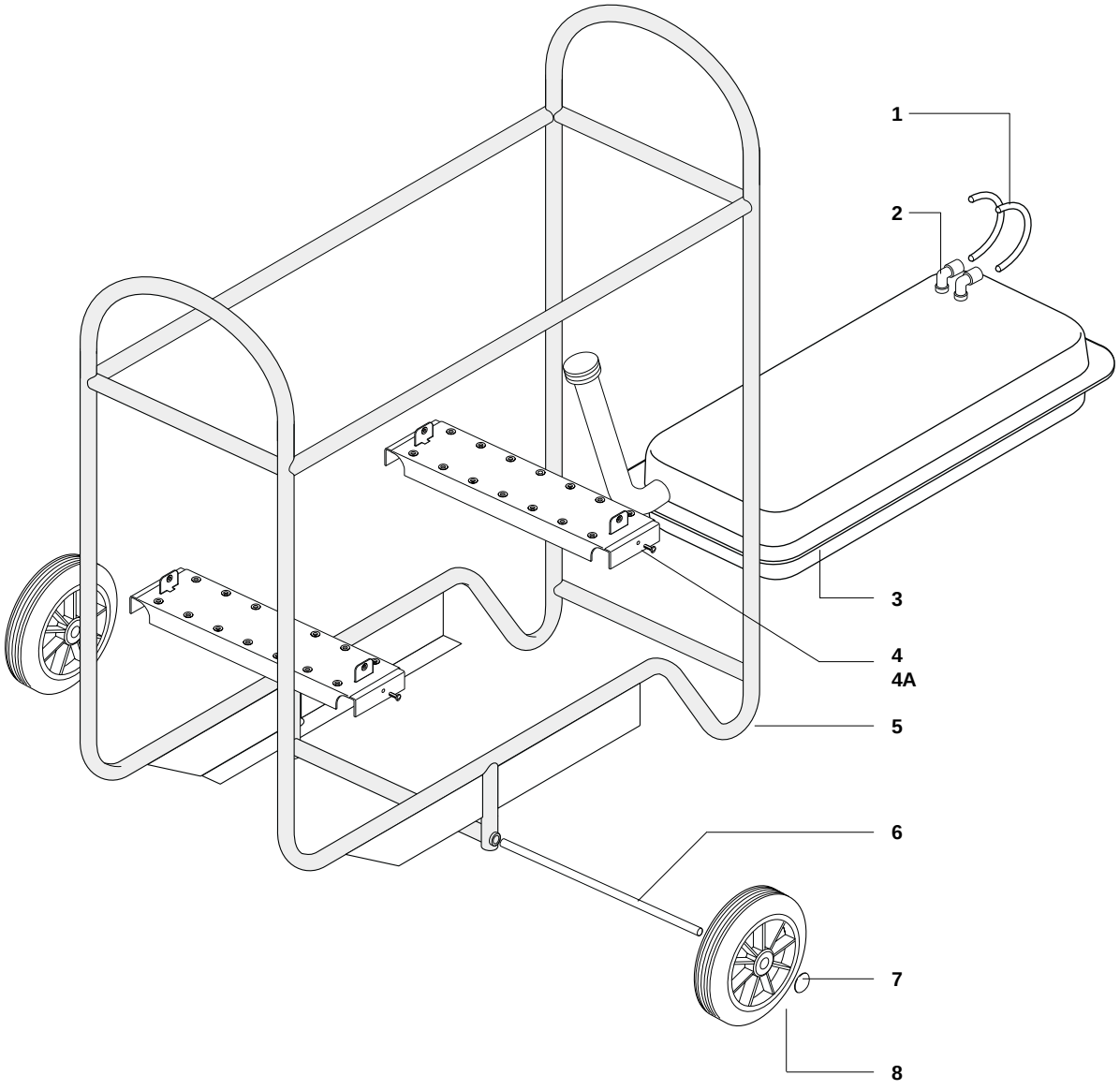
BENSON

PARTS LIST

Item No	Parts Description	No Off	Part No
1	Top cover outer casing	1	21-30-011
2	Flue Pipe assembly	1	21-30-057
3	Burner cover	1	
4	Pressure switch	1	E8010810000100
5	Photocell	1	E8010610000000
6	Allen screws - hexagon head	2	E8040017320000
7	Burner assembly including base	1	
8	Electrode assembly	1	E8020003000001
9	Blast tube	1	E8000400100400
10	Blast tube mounting collar	1	E8000100500101
11	Burner Gasket	1	21-30-061
12	Nozzle	1	
13	Heat exchanger	1	21-30-001
14	Heat shield assembly	1	
15	Thermostat	1	28-16-049
16	Thermostat - reset type	1	28-16-050
17	Inlet valve solenoid assembly	1	E80010403110300
18	Quick release valve	1	E8030120220200
19	Filter bowl complete with filter cartridge	1	E9030310110100
19A	Filter cartridge	1	
20	Elbow	3	E8030010420100
21	Fuel pump	1	
22	Quick release valve	1	E8030110430100
23	Ignition unit	1	E8010203210000
24	Fan cover assembly	1	21-30-012
25	Control Box	1	E8010511003500
26	Fan and motor	1	28-09-070
27	Capacitor	1	
28	Outer cover base panel	1	21-30-010
29	Outlet spigot assembly	1	21-30-022
30	3 core cable 110 Volt Yellow	1	28-02-184
31	Thermostat	1	28-16-047
32	Thermostat mounting plate	1	21-30-030
33	Neon - Yellow	1	28-50-022
34	Neon - Green	1	28-50-021
35	Neon - Red	1	28-50-020
36	Switch ON/OFF	1	28-40-127
37	Base cover - outer power inlet	1	21-30-032
38	Base mounting frame	1	21-30-023
39	Burner casing Lower panel	1	21-30-024
40	Base blanking panel	1	21-30-031
41	Front cover - Lower inner	1	
42	110 Volt 3 pin connection plug - transformer	1	28-06-044
43	110 Volt 3 pin connection plug - heater	1	28-06-039
43A	110 Volt 3 pin socket - heater	1	28-06-035
44	Terry clip - Air ducting	1	28-01-079
45	Air ducting - Flexible	1	28-01-077

PARTS LIST



PARTS LIST

Item No	Parts Description	No Off	Part No
1	Fuel pipes	2	28-08-009
2	Fuel Elbows	2	29-00-258
3	Fuel tank	1	21-30-071
4	Heater mounts	2	21-30-070
5	Frame	1	21-30-045
6	Spindle	1	21-30-067
7	Locking dome - wheel	2	A30-01-030
8	Wheel	2	A30-01-002

1 MOBILE HEATERS FUEL SUPPLY

All Mobile Heaters are set to operate on a two-pipe system .
In order to promote trouble free operation it is necessary that the oil does not fall below the cold filter plugging point with class D fuel this is –4°C Summer grade and –12°C Winter grade

All pipe work and fittings must be sealed so as to prevent the ingress of air.

ELECTRICAL SUPPLY

110 Volt electrical supply connection is made to the heater via the generator

.

THERMOSTAT CONNECTION

A temperature control thermostat located within the heater air discharge spigot can be adjusted to the required temperature via the dial located on the heater control panel.

FLUE INSTALLATION

C.S.H. Mobile Heaters are dispatched with the requisite stack spigot and flue pipe.

It is recommended that 0.5mm stainless steel flue be fitted
In general each indirect heater should have its own flue, which should terminate approximately 500mm above the heater.

When siting the heater and flue the proximity of other buildings and obstacles should be considered.

FLEXIBLE DUCTING

IMPORTANT The flexible ducting supplied with the heater should be fitted with the direction of flow which is indicated by an arrow on the duct pointing away from the heater
It should be secured to the outlet spigot with the pull strap provided.

HEATER CONTROLS

1. **THREE POSITION SWITCH (HEAT / OFF/ VENT)**
110 Volt supply indicated by a green Neon light on panel
(Heat position) Operates the burner control circuit to the control box
(Off position) Breaks the burner control circuit to the control box
(Vent position) operates the fan only for ventilation purposes

2. **THERMOSTAT CONTROL KNOB**
Enables the temperature in the air ducting to be regulated to the desired temperature. The **orange** neon light on the panel (burner run light) will be on until the desired temperature is reached and the burner switches off.

3. **CONTROL BOX**
Situated on the control panel, monitors the combustion process of the heater to ensure that all components are operating correctly, it will shut down the heater if a fault occurs, a **red** light showing in the center of the Satronic Control Box will flash periodically as the box monitors the burner operation
If this light is permanently on it indicates that there is a fault with the operation of the burner and it has gone to lockout the red button should be pressed (**LOCKOUT RESET**)
See fault-finding chart in burner manual.

4. **OVERHEAT THERMOSTAT**
Located on the heat shield is a safety overheat thermostat, this thermostat will operate if the combustion chamber becomes to hot in the event of a fan failure or restricted air flow.
The thermostat when it operates will immediately shut down the burner and a **red** ** neon light will be illuminated on the control panel.
The thermostat can be reset by pushing the plastic reset button located on the top cover , the **red**** neon will go out when reset .
IT MUST BE MANUALLY RESET AND THE CAUSE OF THE OVERHEAT SHOULD BE INVESTIGATED

The above **red** ** neon is dual purpose see also operating instructions.

The heater should be positioned on firm ground ensuring that the air intake is clear of vehicle exhaust fumes and other hazardous conditions :

Connect the 110 Volt supply cable from the generator to the heater.
The **green** neon will be illuminated .

Ensure fuel supply is clean .
Connect the ducting to the duct spigot on the heater using pull strap provided ensuring the correct direction of flow
Fit the flue pipe to the top of the heater

The heater is now ready for use

To **VENT** only, put three position switch to vent position, the fan only will operate

To **HEAT,** put three position switch in heat position

The main fan will run and the **red**** neon on the control panel will illuminate indicating that the pre heater fitted to the burner is operating and pre heating the fuel prior to the burner start .

NOTE the red neon will indicate pre heat at initial start up only, if the neon is illuminated at any other time the heater is at overheat.**

After approximately 150 seconds the **red**** neon will go out and the burner will fire, the **orange** neon on the control panel will illuminate.
The heater will now operate controlled by the thermostat .

To **STOP** put three position switch to off position.
The burner ON **orange** neon will go off, and the main fan will continue to run for a further 5 minutes to sufficiently cool the combustion chamber the fan will then switch off . Only then may the electrical supply be safely disconnected .

WARNING
Failure to cool the heater sufficiently will cause damage to the combustion chamber and lead to nuisance overheat lockout problems.

COMMISSIONING PROCEDURE

1 Ensure heater has fuel supply.
2 Ensure thermostat is at desired temperature
3 Connect electrical supply
4 Switch to heat position
5 Ensure lockout button on control box is reset, burner sequence should start immediately
6 Run heater for approx.15 minutes
7 Switch heater to **OFF** check operation of overrun thermostat
8 Restart heater to check correct operation of thermostat

MAINTENANCE INSTRUCTIONS

WARNING
Before carrying out any maintenance work on the heater ensure that electrical supply is isolated and fuel supply disconnected.

FUEL SYSTEM

FILTERS

All heaters are supplied with a filter located in the fuel line the paper filter cartridge cannot be cleaned and must be totally replaced during servicing or when contaminated,

FUEL PUMP PRESSURE ADJUSTMENT

Ensure electrical supply is off and disconnected.
Remove rear lower base cover on heater
Remove vent plug located on the end of the brass extension pipe on the pump body (in the center when viewed from rear of heater)
Fit pressure gauge to brass extension
Re connect electrical supply
Switch Burner **ON** observe reading on gauge
Set pressure to (90 psi) diesel only
If adjustment is required situated above the fuel inlet connection (left side when viewed from rear) is a screw and locknut undo the locknut insert Phillips screw driver into the screw head adjuster, turn clockwise to increase anticlockwise to decrease the pressure.
When the pressure is correctly set tighten locknut disconnect the electrical supply, remove gauge and replace bleed screw and ensure it is tightly located

Replace rear cover

BURNER MAINTENANCE

Burner Maintenance should only be carried out by competent personnel
and will require the complete removal of the Burner from the combustion chamber

BURNER ASSEMBLY

see pages 15 & 16 for further detail
Disconnect the electrical supply to the heater
Disconnect fuel supply
Carefully roll heater on to its side and remove the 4 x M5 Screws from the base return unit to upright position
Remove top cover of heater 6 X M5 Screws
Remove bottom rear panel 4 x M5 Screws
Remove fan assembly Screws 4 X M5 (lower two can be accessed by inserting screw driver through the holes in the base of the heater)
and lift fan assembly out
Disconnect the wires from the block at the rear of the burner head
Remove the thermostat capillary from the securing clips in nose cone and lower into the heater base through the hole provided.
Remove the blanking panel 4 X M5 Screws
Remove the two screws securing the burner to the combustion chamber flange
The burner, blast tube, and control base can now be completely removed through the rear of the heater.
Maintenance of the Burner is detailed in the Installation and Service Manual supplied separately.

Clean soot or carbon deposits from diffuser, end ring, or electrode tips
Clean and inspect electrodes for cracks replace if necessary
Reset electrodes to dimensions shown in Burner manual do not over tighten securing screw

A new Nozzle should be fitted every 12months or if existing nozzle is damaged or worn.

Reassemble taking care that all parts are clean and dry.

Ensure fuel pipe is kept free from dirt whilst burner head is dismantled

PHOTOCELL

Ensure that the photocell is clean (wipe clean with a soft cloth)

CONTROL BOX

The control box cannot be repaired if the box is faulty it should be replaced with a new box

WARNING
The control box should not be reset more than twice before the fault is located and corrected, or any surplus oil emitted into the chamber has been mopped out through the burner entrance.

HEAT EXCHANGER REMOVAL

Remove complete burner assembly

If required the combustion chamber can be removed by bending up the chamber retaining clips and sliding the chamber towards the rear of the heater

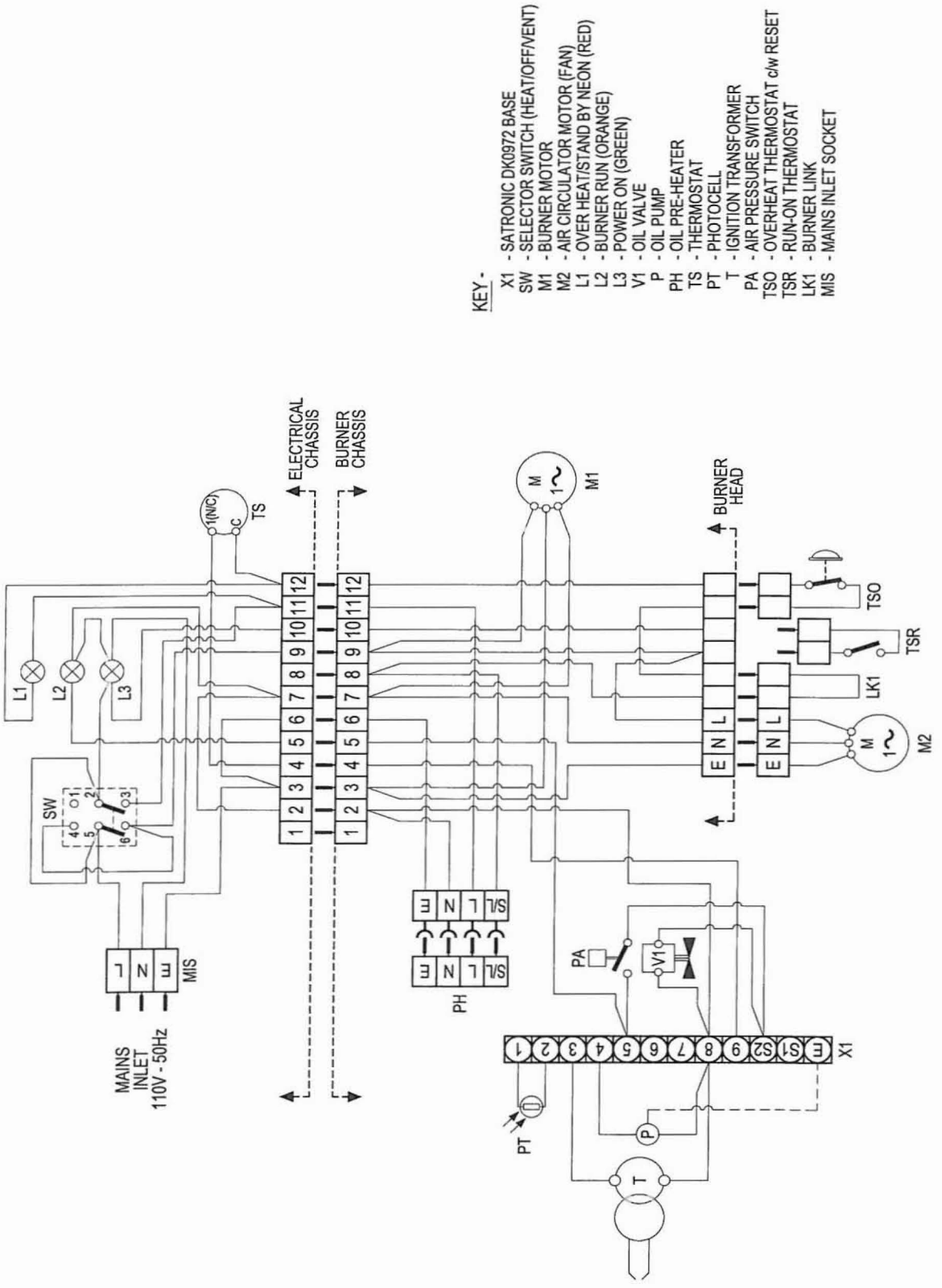
Chamber can now be cleaned by tapping the outside of the chamber with a hide hammer or piece of wood. Care should be taken not to damage the burner flange.
Remove any loose soot, carbon through the draught tube aperture or the flue stack spigot

Re assemble in reverse order of above instruction.

FAULT FINDING

Fault	Cause	Remedy
Heater Fails to start when heat is switched ON Thermostat calling for heat	(a) No Electricity Supply (b) Switch fan to manual (c) Faulty Thermostat (d) Overheat thermostat tripped	Check Supply Fan runs supply correct Check thermostat Reset red button on trip, Investigate cause
Red light showing on satronic control box	(a) No fuel (b) Air lock in fuel supply (c) Photocell not detecting flame (d) Faulty electrodes (e) Faulty control box	Check fuel Bleed Fuel system Check & clean Photocell Check electrode for cracks, check ignition leads
Heater runs for short period does not light control box goes to lockout	(a) Photocell not detecting flame (b) No fuel (c) Ignition failure (d) Fuel pump failure (e) Faulty solenoid valve	Check photocell Check fuel supply Check ignition leads Check electrodes are clean & gap set correctly Check solenoid valve Check electrical connection to valve
Red neon light on fan not working	(a) Heater gone to overheat	Reset overheat thermostat
Heater attempts to light up but Burner Control box goes to lockout	(a) Photocell not detecting light (b) Faulty photocell connection in control box (c) Faulty control box (d) Air pressure switch not operating solenoid	Check photocell operation Check wiring connection Change control box Check switch
Heater runs but emits black smoke from stack box	(a) Air control incorrectly set (b) Nozzle loose or incorrect (c) Incorrect fuel pressure (d) Exhaust stack restricted (e) Excess carbon in the draught tube	Reset air control Check nozzle Check fuel pressure Clear stack Clean carbon from draught tube
Heater runs but fan overrun does not work when switched off****** In order to check this fault the heater should be run to ensure the combustion chamber is hot enough	(a) Loose wire on the overrun device (b) Overrun device faulty	Check wiring Replace overrun device
Heater runs but flame is intermittent	(a) Air in the fuel supply (b) Heater running out of fuel (c) Filter blocked (d) Dirty nozzle	Check fuel pipe for cracks, check pipe unions are tight Check fuel supply Clean filter Check nozzle

WIRING DIAGRAM



1 TO REPLACE THE FAN UNIT AND/OR CAPACITOR AND/OR TEMPERATURE CONTROL THERMOSTATS

NOTE:
FOR ALL SERVICE PROCEDURES EXCEPT PRESSURE TESTING THE HEATER MUST BE REMOVED FROM THE TRANSPORT CRADLE. REMOVE THE 4 PHILIPS HEAD SCREWS HOLDING THE HEATER TO THE CRADLE.

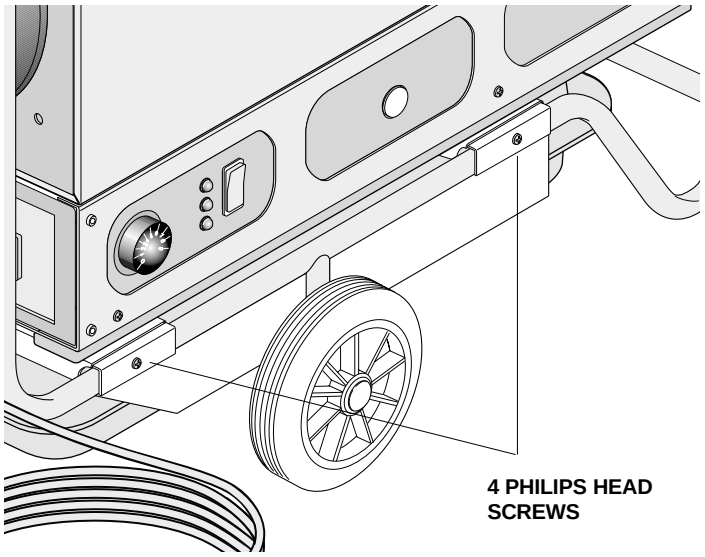


FIG. 1

1:1 BEFORE REMOVING THE HEATER FROM THE TRANSPORT CRADLE REMOVE THE LOWER REAR COVERS (FIG. 2), BY REMOVING THE 4 ALLEN SCREWS ON THE OUTER COVER TO GAIN ACCESS TO THE FUEL SUPPLY AND RETURN PIPES, AND UNCLIP THE PIPES (FIG. 3), AND CAREFULLY FEED THEM THROUGH THE CASING.

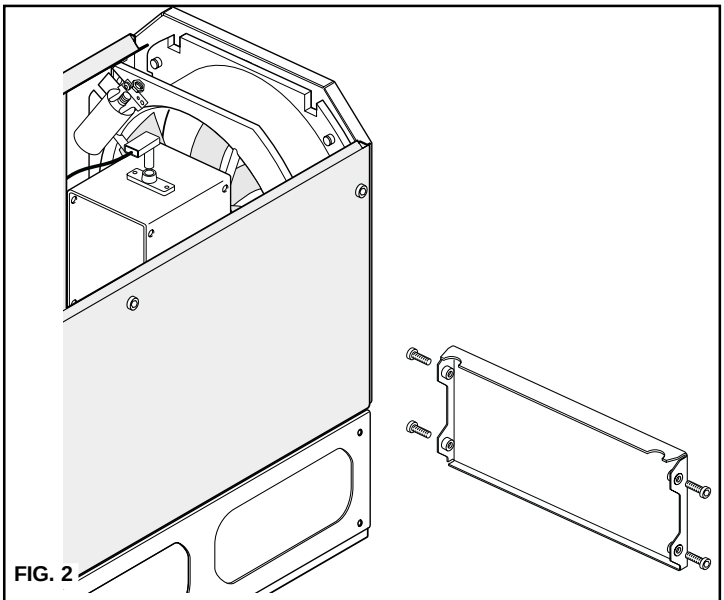


FIG. 2

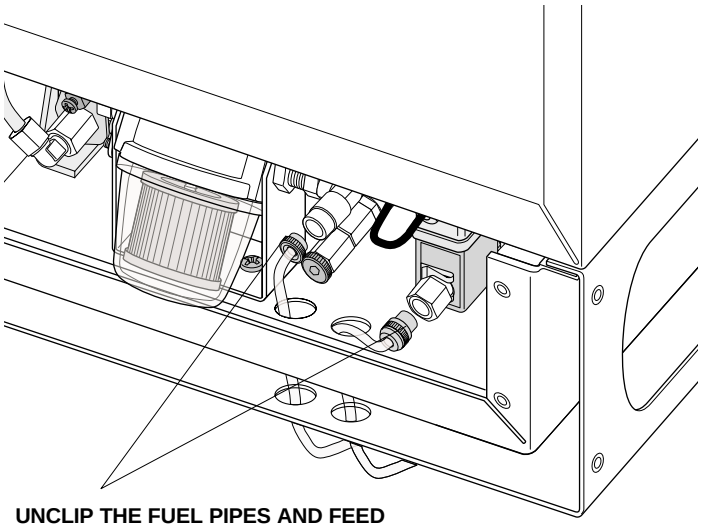


FIG. 3

1:2 REMOVE THE FLUE COVER (FIG. 4) BY LIFTING OVER THE FLUE

1:3 REMOVE THE TOP COVER (FIG. 4), BY REMOVING THE 4 ALLEN SCREWS

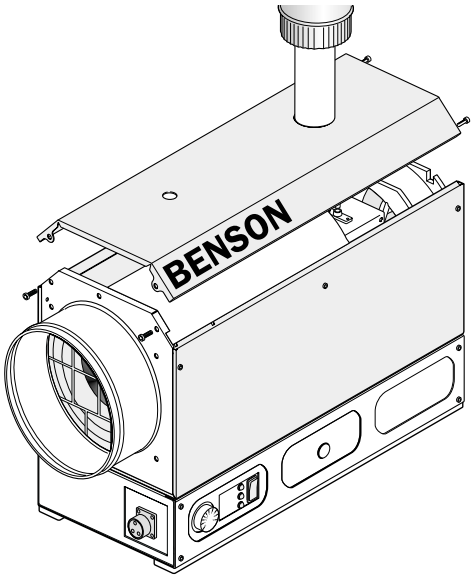


FIG. 4

1:4 TO REMOVE/REPLACE THE CAPACITOR, REMOVE ITS LOCATION NUT, AND WIRING FROM THE TERMINAL BLOCK.

REPLACE WITH A NEW UNIT AND CONNECT ALL WIRING, AND REPLACE ALL COVERS.

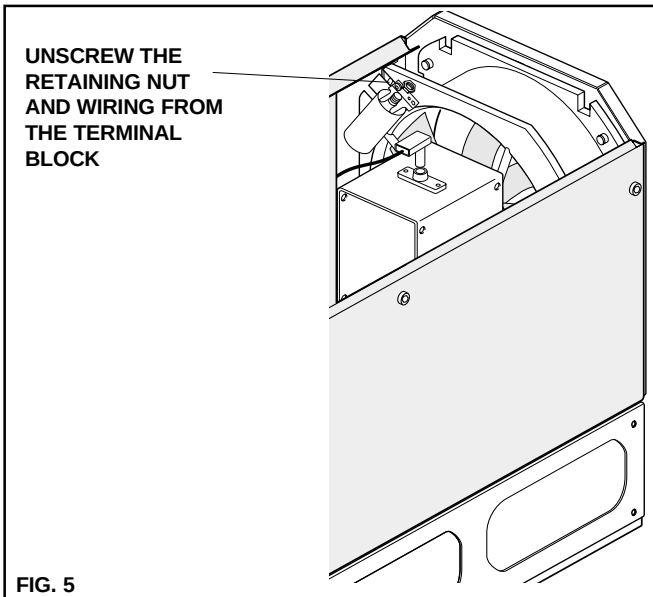


FIG. 5

1:5 TO REMOVE/REPLACE THE THERMOSTATS, REMOVE THE LOCATION SCREWS, AND SPADE CONNECTORS, AND REMOVE THE THERMOSTATS (FIG. 6).

REPLACE WITH A NEW UNITS AND CONNECT ALL WIRING, AND REPLACE ALL COVERS.

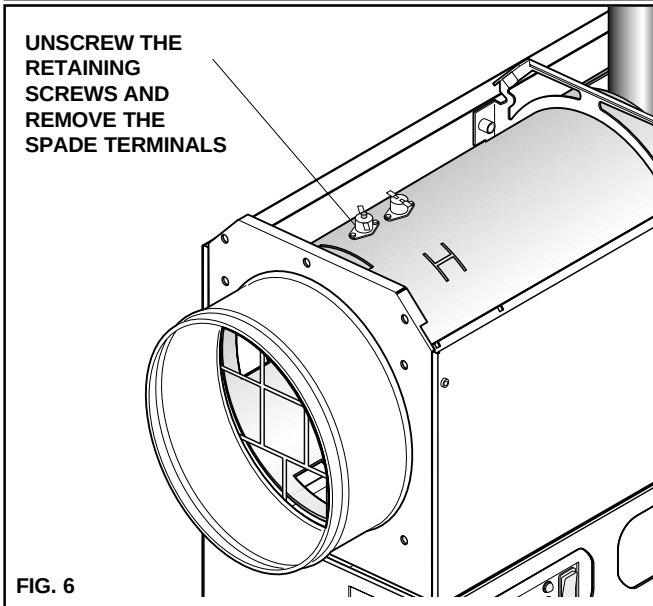


FIG. 6

1:6 TIP THE HEATER ON ITS SIDE TO EXPOSE THE 2 LOWER FAN RETAINING SCREWS, AND REMOVE THE TWO SCREWS (FIG. 7)

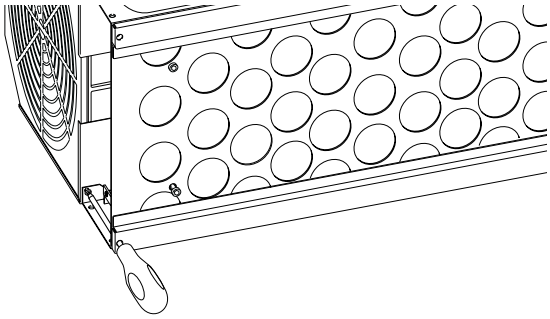


FIG. 7

1:7 PLACE THE HEATER IN ITS NORMAL POSITION AND REMOVE THE REMAINING 2 ALLEN SCREW (FIG. 8)

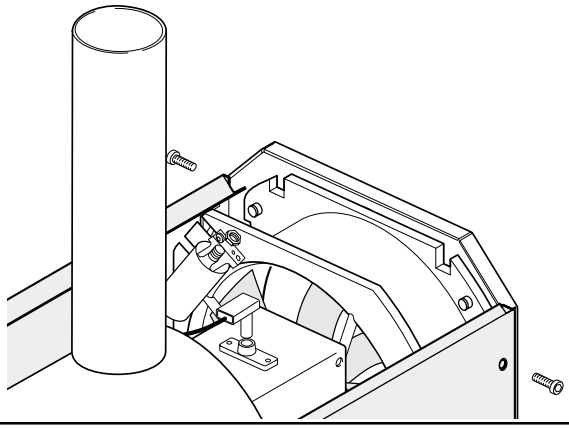


FIG. 8

1:8 UNPLUG THE MULTI WAY CONNECTOR AND THE 4 THERMOSTAT LEADS (2 ORANGE 2 YELLOW)

1:9 UNPLUG THE PHOTOCELL (FIG. 9)

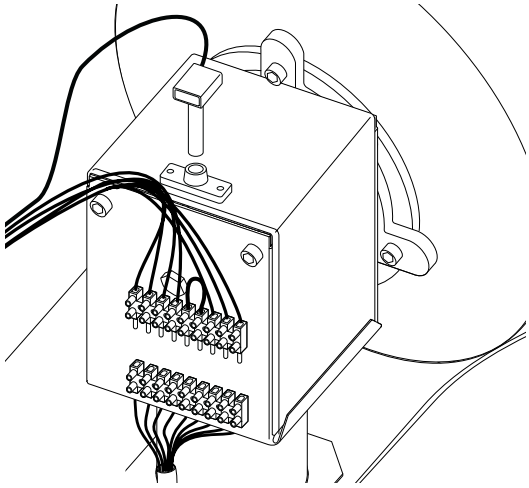


FIG. 9

1:10 CAREFULLY REMOVE THE FAN AND COVER (FIG. 10) ASSEMBLY FROM THE CASING, AND THEN REMOVE THE FAN FROM THE REAR SLOTTED COVER BY REMOVING THE 4 ALLEN SCREWS.

1:11 REPLACE WITH A NEW UNIT.

1:12 RE ASSEMBLE BY REVERSING THE STRIP DOWN PROCEDURE
(NOTE WHEN REPLACING THE PHOTOCELL UNIT- IT ONLY FITS ONE WAY, DO NOT USE EXCESSIVE FORCE WHEN REPLACING - IT COULD BE DAMAGED)

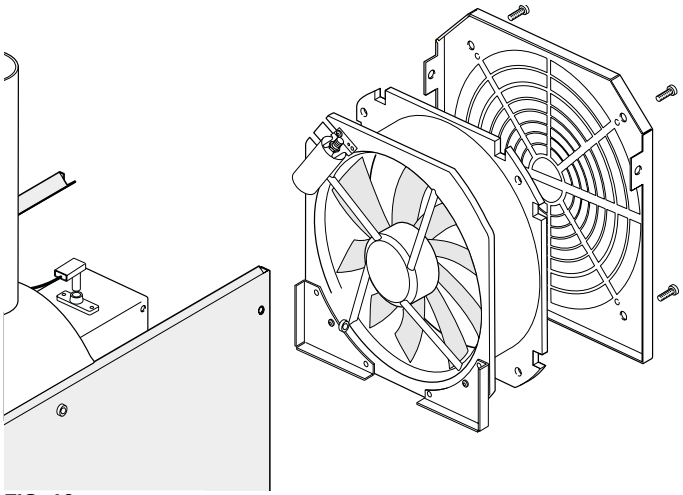


FIG. 10

2 TO REPLACE THE INJECTOR

FOLLOW THE PROCEDURE FOR REMOVING THE FAN (1:1 TO 1:9)

2:1 ROTATE THE HEATER ON TO ITS SIDE AND REMOVE THE 4 ALLEN SCREW HOLDING THE BURNER TRAY ASSEMBLY INTO POSITION (FIG. 11).

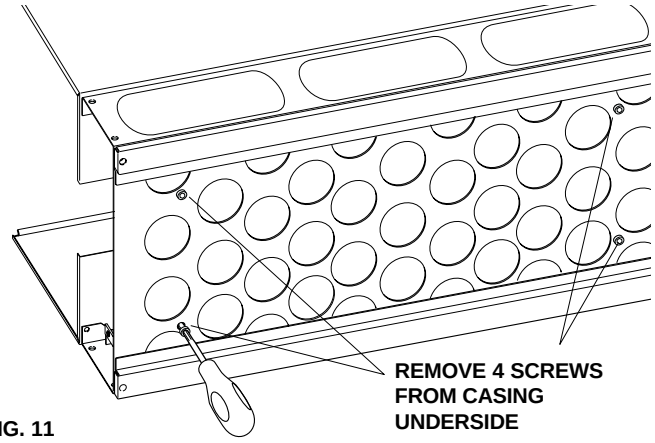


FIG. 11

2:2 REMOVE THE 2 LONG ALLEN SCREWS HOLDING THE BURNER ON TO THE HEAT EXCHANGER (FIG. 12).

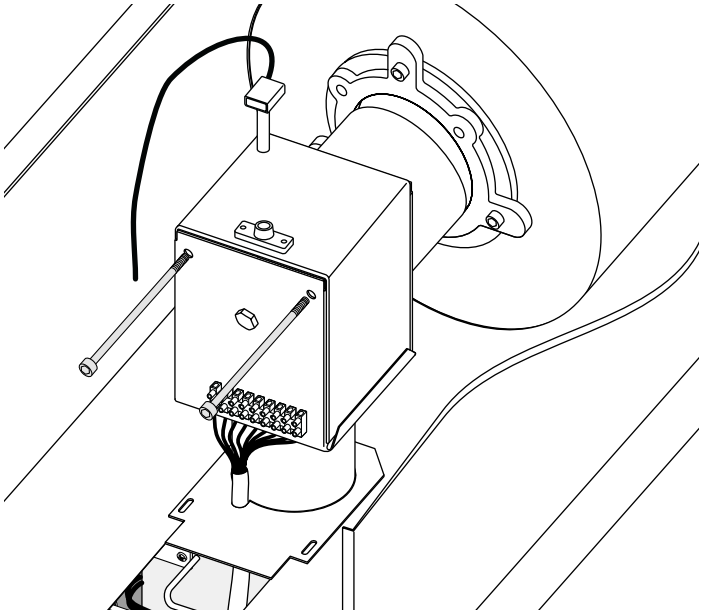


FIG. 12

2:3 REMOVE THE 'P' CLIP FROM THE GUARD, AND REMOVE THE CAPILARY TUBE. FROM THE CASING (FIG. 13), AND CAREFULLY SLIDE THE COMPLETE BURNER TRAY ASSEMBLY OUT OF THE BOTTOM TRAY.

WHEN THE TRAY IS REMOVED THIS GIVES ACCESS TO ALL OTHER SERVICEABLE ITEMS (FIG. 13)

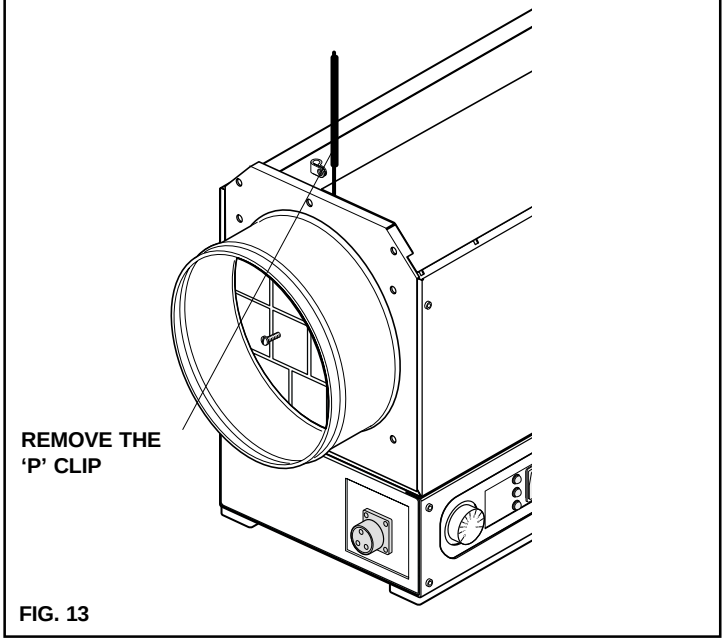


FIG. 13

2:3 REMOVE THE 3 SCREWS HOLDING THE BLAST TUBE IN POSITION. (FIG. 14)
NOTE: THE BURNER TRAY PRESSING IS SHOWN CUT AWAY FOR CLARITY

2:4 REMOVE THE INJECTOR, USING A 16MM LOCK SPANNER AND A 14MM SPANNER. CARE MUST BE TAKEN NOT TO DAMAGE THE IGNITION ELECTRODES WHEN REMOVINGAND REPLACING THE INJECTOR.

REPLACEMENT IS THE REVERSAL OF REMOVAL

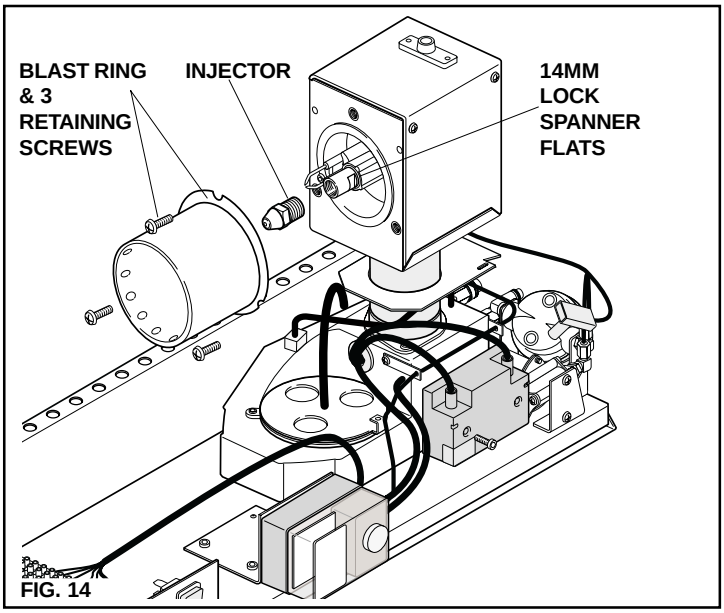


FIG. 14

3 TO REPLACE THE IGNITION ELECTRODES

FOLLOW STEPS FOR REMOVING THE FAN AND INJECTOR

3:1 REMOVE THE BURNER COVER, BY UNSCREWING THE 4 ALLEN SCREWS (FIG. 14)

3:2 REMOVE THE COVER RING (A), BY UNSCREWING THE SINGLE BUTTON HEAD ALLEN SCREW (FIG. 15), TO GAIN ACCESS TO THE INJECTOR.

3:3 UNCLIP THE IGNITION LEADS AND REMOVE THE ALLEN SCREW, AND REMOVE AND REPLACE THE ELECTRODE ASSEMBLY.

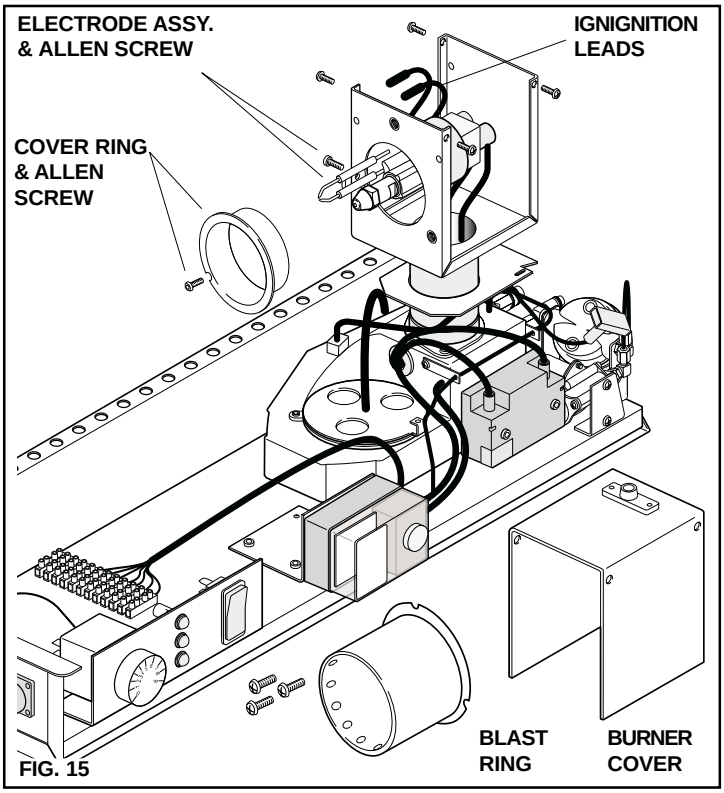


FIG. 15

4 TO REPLACE THE IGNITION UNIT

FOLLOW STEPS FOR REMOVING THE INJECTOR

4:1 UNPLUG THE IGNITION LEADS (FIG. 16)

4:2 REMOVE THE 2 ALLEN SCREWS AND REPLACE WITH A NEW UNIT

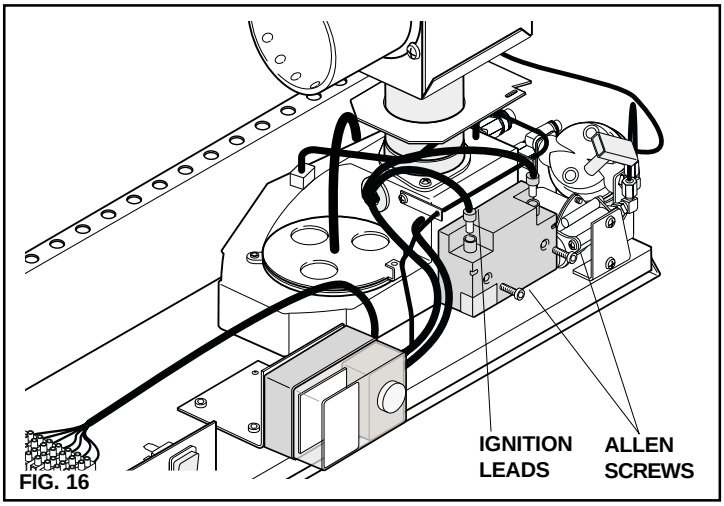


FIG. 16

5 TO REPLACE THE CONTROL BOX

FOLLOW STEPS FOR REMOVING THE INJECTOR

5:1 TAKE OFF THE 2 ALLEN SCREWS HOLDING THE CONTROL BOX ASSY TO THE BASE (FIG. 17)

5:2 REMOVE THE SINGLE SCREW RETAINING THE CONTROL BOX TO THE BASE MOULDING

5:3 REPLACE CONTROL BOX AND RE-ASSEMBLE ALL COMPONENTS

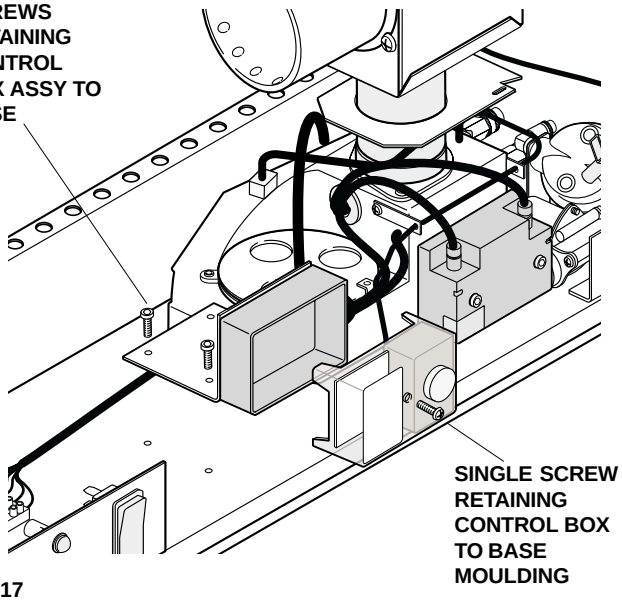


FIG. 17

6 TO REPLACE THE THERMOSTAT, NEONS AND ON/OFF SWITCH

FOLLOW STEPS FOR REMOVING CONTROL BOX

6:1 TO REMOVE THE THERMOSTAT, REMOVE THE CONTROL KNOB, AND UNSCREW THE 2 RETAINING SCREWS. REPLACE WITH A NEW UNIT, AND REFIT ALL ITEMS (FIG. 18).

6:2 TO REMOVE AND REPLACE A NEON. UNSCREW YTHE LEADS AT THE CONNECTOR BLOCK (THEY ARE FLYING LEADS), NOTING THEIR TERMINAL NUMBERS. UNSCREW THE RETAINING NUT, WITHDRAW THE NEON, AND REPLACE.

6:3 TO REPLACE THE ON/OFF SWITCH. UNPLUG ALL WIRES FROM THE SWITCH, NOTING THEIR TERMINAL NUMBERS, UNCLIP THE SWITCH, AND FIT A REPLACEMENT. REFIT ALL WIRES, AND OTHER COMPONENTS.

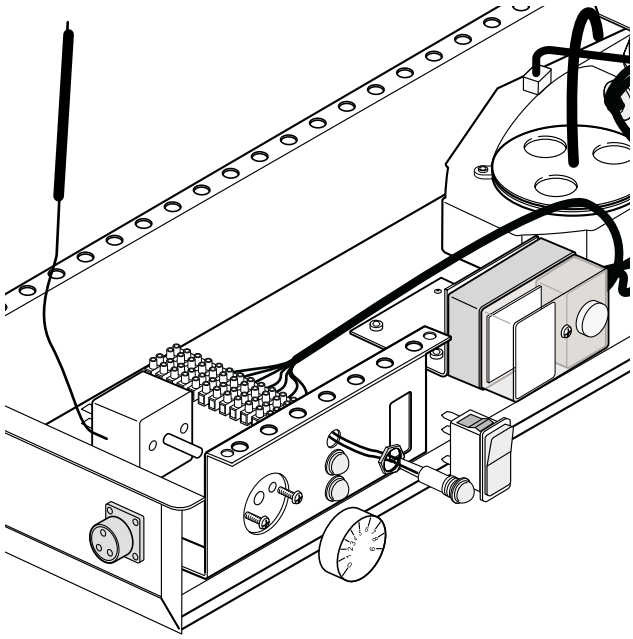


FIG. 18

7 TO REPLACE THE POWER INPUT SOCKET

FOLLOW STEPS FOR REMOVING CONTROL BOX

7:1 TO REMOVE THE POWER INPUT SOCKET, NSCREW THE 3 POWER RING TERMINALS/ WIRES FROM THE SOCKET, AND THEN UNSCREW THE 4 NUTS HOLDING THE SOCKET IN PLACE (FIG. 19). REPLACE WITH A NEW ITEM, REFIT REVERSING THE REMOVAL PROCEDURE.

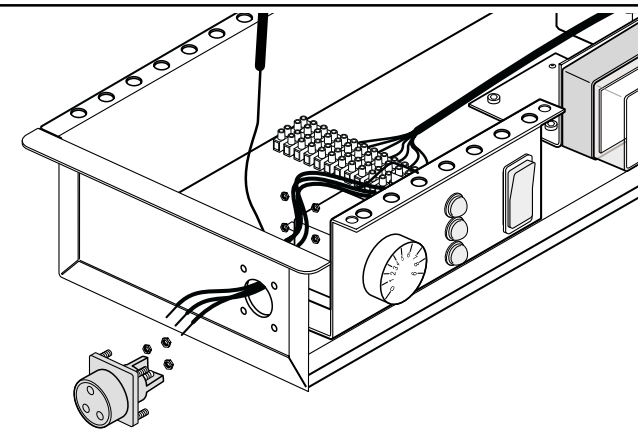


FIG. 19

8 TO REPLACE THE PRESSURE SWITCH

FOLLOW STEPS FOR REMOVING THE INJECTOR, BUT DO NOT REMOVE THE INJECTOR.

8:1 TO REMOVE THE PRESSURE SWITCH, REMOVE THE NEGATIVE AND POSITIVE PRESSURE TUBES FROM THE SWITCH - NOTING THAT THE POSITIVE TUBE GOES TO THE REAR INLET ON THE SWITCH (FIG. 20).

8:2 UNSCREW THE SINGLE SCREW AND REMOVE THE SWITCH SO THAT THE COVER CAN BE REMOVED.

8:3 REMOVE THE COVER, AND REMOVE THE POWER LEADS - NOTING THAT BROWN GOES TO COMMON AND BLUE TO 'NORMALLY OPEN' (NO ON SWITCH).

3:4 REPLACE ALL COMPONENTS - REVERSING THE STRIP DOWN PROCEDURE.

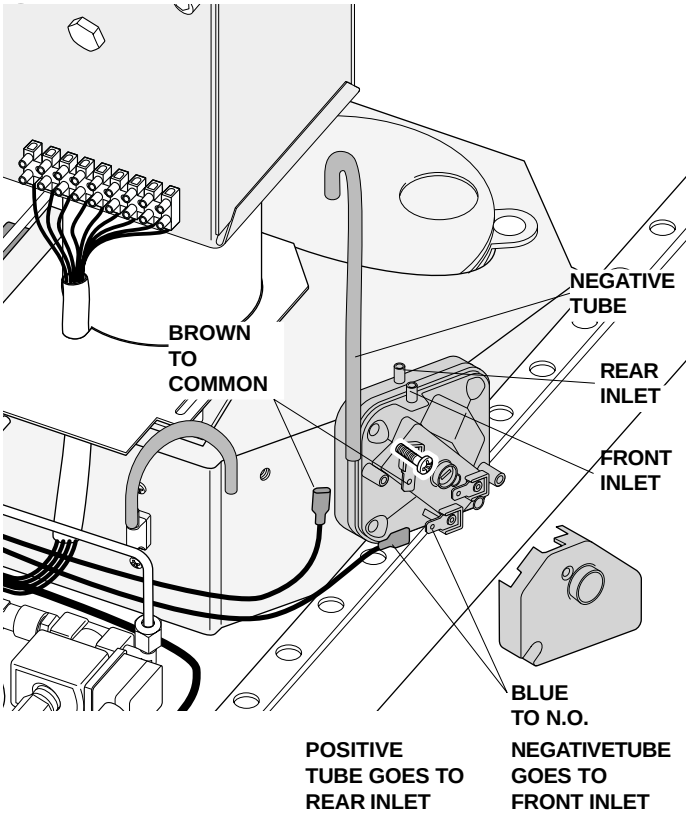


FIG. 20

9 TO REPLACE THE SOLENOID

FOLLOW STEPS FOR REMOVING THE INJECTOR, BUT DO NOT REMOVE THE INJECTOR.

9:1 UNPLUG THE 3 WAY SOCKET FROM THE SOLENOID (FIG. 21).

9:2 REMOVE THE FUEL INLET CONNECTOR UNIT

9:3 REMOVE THE SOLENOID RETAINING CIRCLIP

9:4 SLIDE THE SOLENOID OFF THE FUEL INLET

9:5 REPLACE THE DEFECTIVE UNIT AND REFIT ALL COMPONENTS, REVERSING THE STRIP DOWN PROCEDURE

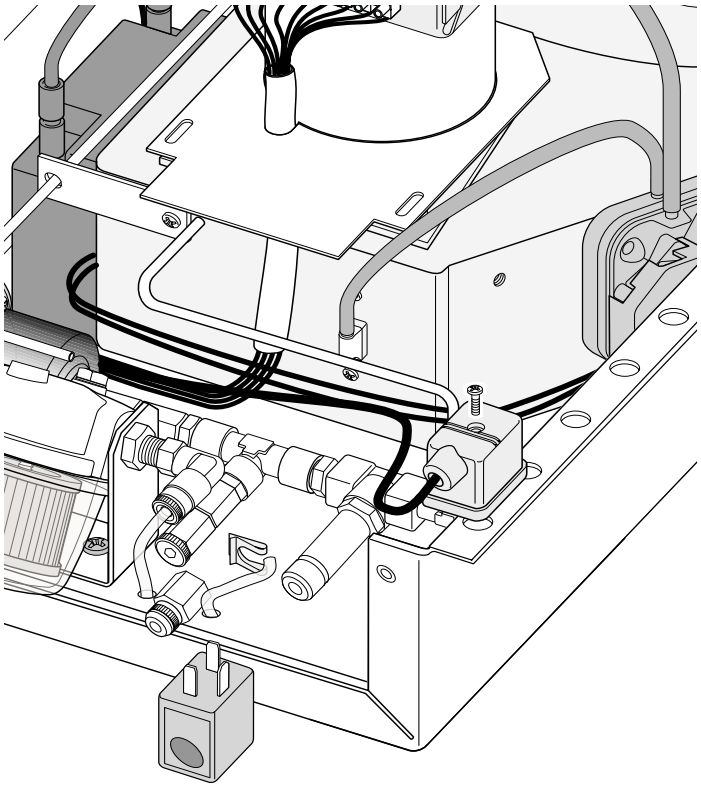


FIG. 21

10 TO REPLACE THE SOLENOID VALVE

FOLLOW STEPS FOR REMOVING THE INJECTOR, BUT DO NOT REMOVE THE INJECTOR.

10:1 UNPLUG THE 3 WAY SOCKET FROM THE SOLENOID (FIG. 22, 23)

10:2 REMOVE THE FUEL INLET CONNECTOR UNIT

10:3 REMOVE THE SOLENOID RETAINING CIRCLIP

10:4 SLIDE THE SOLENOID OFF THE FUEL INLET

10:5 UNFASTEN THE BURNER NOZZLE FUEL INLET FROM THE SOLENOID VALVE USING A 10MM AF OPEN ENDED SPANNER

10:6 REMOVE THE SOLENOID VALVE USING A 12MM AF OPEN ENDED SPANNER

10:5 REPLACE THE DEFECTIVE UNIT AND REFIT ALL COMPONENTS, REVERSING THE STRIP DOWN PROCEDURE

NOTE ON THE UNDERSIDE OF THE VALVE THERE IS AN ARROW - THE VALVE MUST BE FITTED WITH THIS POINTING TO THE NOZZLE INJECTOR FUEL PIPE

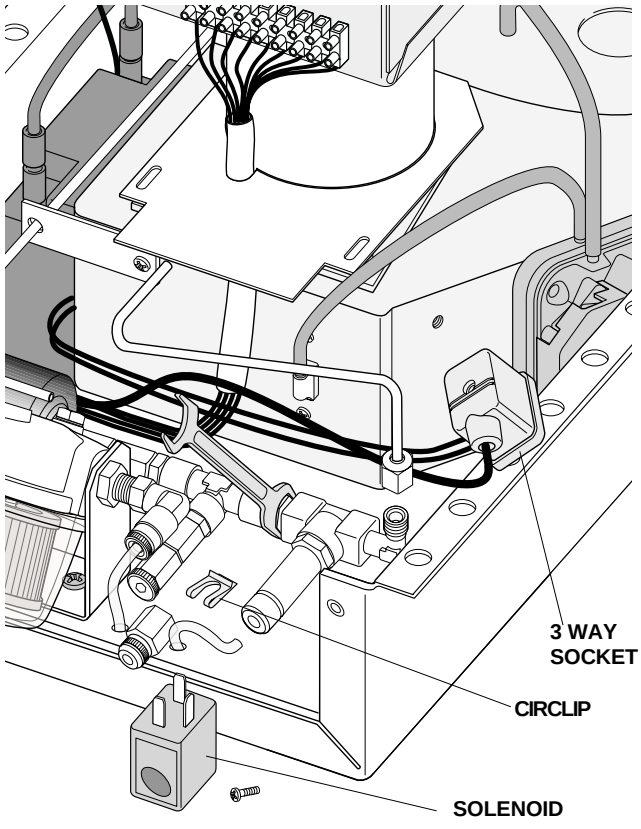


FIG. 22

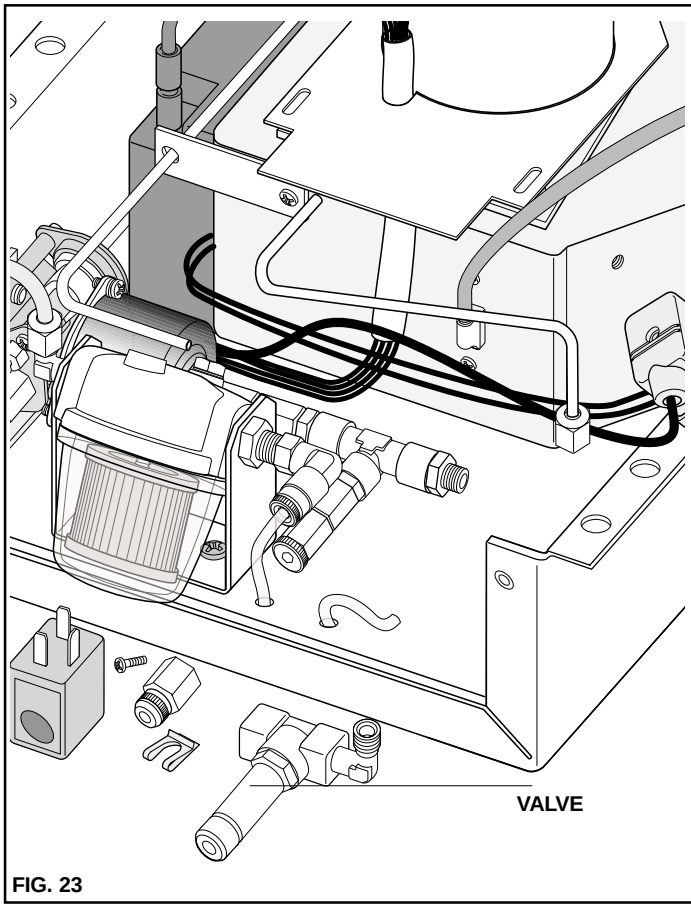


FIG. 23

11 TO REPLACE THE FUEL PUMP
NOTE THIS IS A NON SERVICEABLE ITEM AND MUST BE REPLACED AS A UNIT
FOLLOW STEPS FOR REMOVING THE SOLENOID AND VALVE

11:1 TO REMOVE THE FUEL PUMP, UNSCREW THE 2 ALLEN SCREWS FASTENING THE PUMP TO ITS MOUNTING BRACKET (FIG. 24).

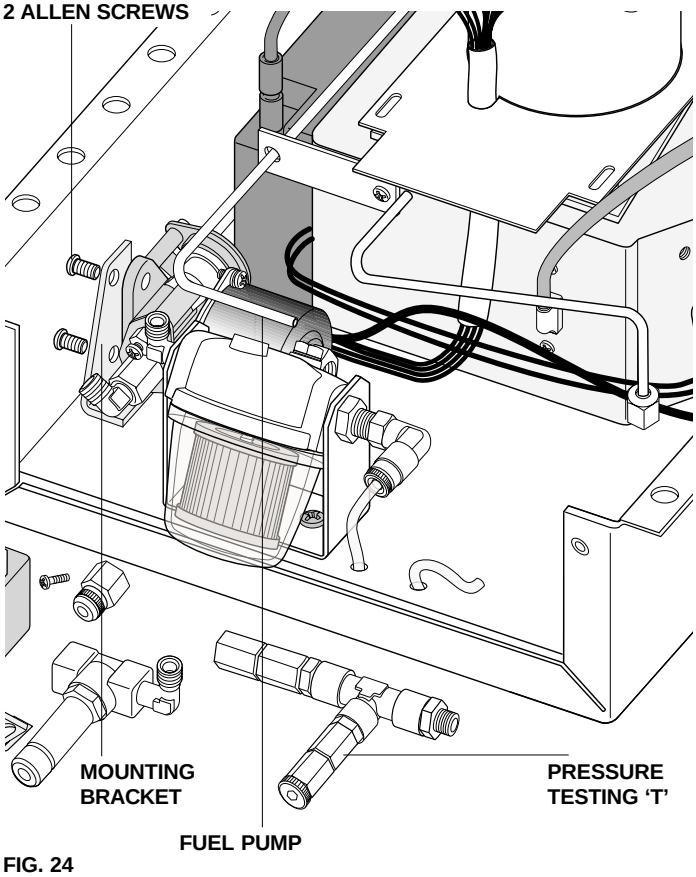


FIG. 24

12 TO REPLACE THE FUEL FILTER.
NOTE:
THE HEATER CAN REMAIN IN ITS TRANSPORT CRADLE FOR THIS OPERATION.

12:1 REMOVE BOTH REAR INNER AND OUTER BOTTOM PANELS (FIG. 25).

12:2 UNSCREW THE FILTER BOWL, REMOVE THE FILTER, CLEAN THE BOWL IF DIRTY AND FIT A NEW FILTER.

12:3 REFIT THE BOWL/FILTER ASSEMBLY, ENSURE IT IS ADEQUATELY TIGHTENED TO AVOID LEAKS, AND REPLACE BOTH BOTTOM PANELS.

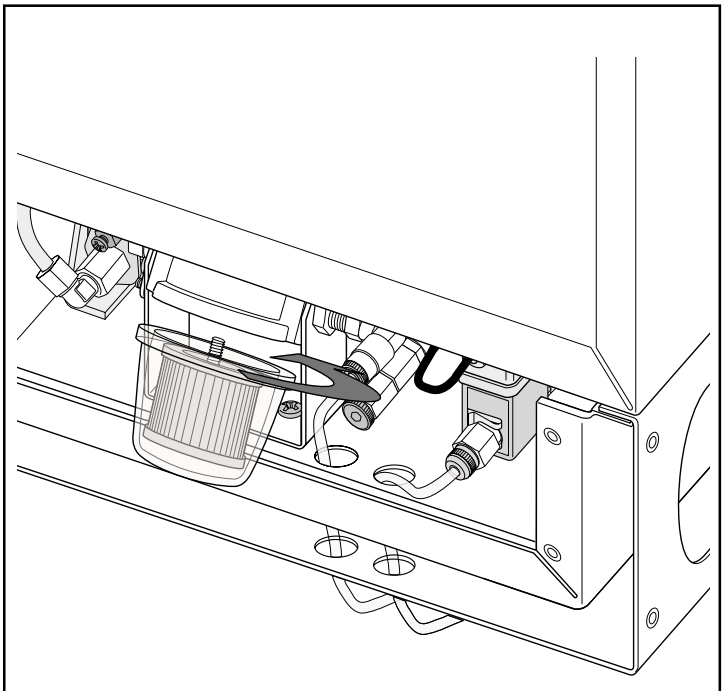


FIG. 25

13 TO TEST FUEL PUMP PRESSURE

NOTE: FOR THIS OPERATION THE HEATER MUST BE ON ITS CRADLE WITH THE FUEL LINES CONNECTED.

13:1 REMOVE BOTH REAR INNER AND OUTER BOTTOM PANELS.

13:2 UNSCREW AND REMOVE THE PRESSURE TESTING POINT BLANKING PLUG (FIG. 26)

13:3 CONNECT THE FUEL FEED PIPES

13:4 SCREW IN THE PRESSURE TESTING GAUGE

13:5 TO ADJUST THE PRESSURE UNLOCK THE LOCK NUT (A) AND ADJUST THE SCREW (B) IN OR OUT TO ACHIEVE THE REQUIRED PRESSURE. THE CORRECT PRESSURE 90 PSI.

13:6 WHEN THE PRESSURE IS CORRECTLY SET RE -FIT ALL COMPONENTS

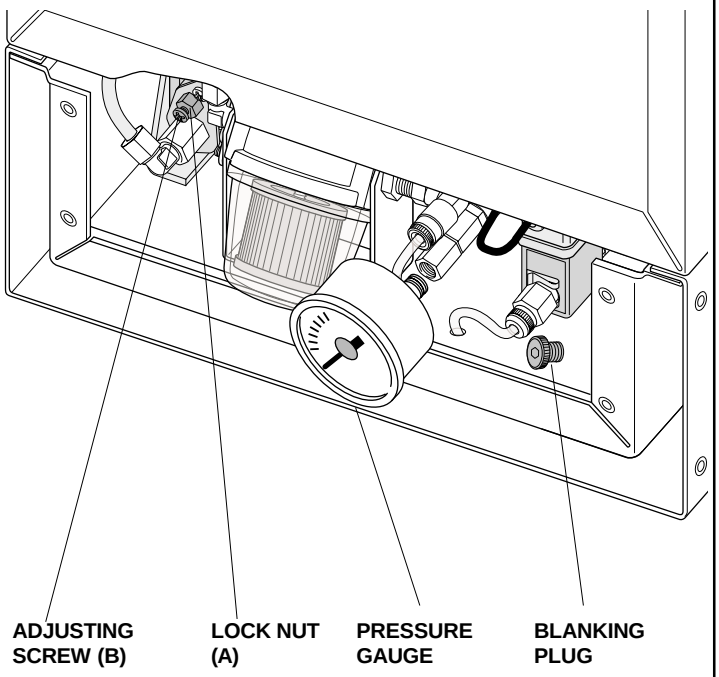


FIG. 26

BENSON HEATING LTD

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POWYS
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