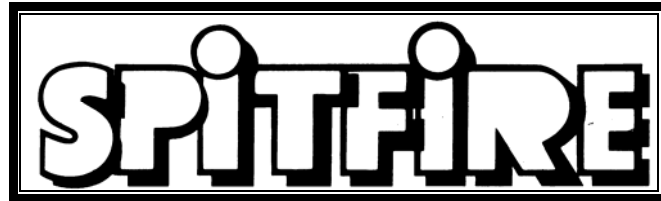


# OPERATING & MAINTENANCE MANUAL

## INDUSTRIAL DIRECT FIRED DIESEL/KEROSENE HEATERS



DC10 DC15 DC25  
DC40 DC45



NOT FOR DOMESTIC USE – SPACE HEATING ONLY

Made By:

 **SPITWATER  
AUSTRALIA**

Spitwater Australia Pty Ltd  
953 Metry St  
North Albury , NSW , Australia

WARNING:

FAILURE TO FOLLOW OPERATING, SAFETY AND MAINTENANCE  
INSTRUCTIONS LISTED IN THIS MANUAL RELEASES THE  
MANUFACTURER FROM ANY RESPONSIBILITY FOR ACCIDENTS OR  
DAMAGES TO BOTH HUMANS AND OBJECTS AND MAY RENDER  
ANY WARRANTY VOID



## TECHNICAL DATA

MODEL		DC10	DC15	DC25	DC40	DC45
Fuel Supply		Diesel Kerosene	Diesel Kerosene	Diesel Kerosene	Diesel Kerosene	Diesel Kerosene
Heat Output	kW kcal/h	18.40 15.900	20.12 17.290	26.00 22.340	40.50 35.000	45.65 38.350
Air Pressure	bar	0.32	0.30	0.34	0.40	0.40
Fuel Consumption	kg/h	1.56	1.7	2.2	3.43	3.76
Air Flow	m <sup>3</sup> /h	300	350	400	900	1100
Electricity Supply	V/∅/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Motor	W/A/RPM	180/1.4/2800	180/1.4/2800	180/1.4/2800	180/1.4/2800	300/2.5/2800
Limit Thermostat	°C	200±5	200±5	200±5	200±5	200±5
Minimum Room Volume	m <sup>3</sup>	108	215	269	333	398
Tank Size	L	15	15	33	41	41
Weight	kg	20	23.8	30.5	36.1	38.5
Dimensions L x W x H	mm	715x275x485	742x370x495	815x520x535	965x520x570	965x520x630

The manufacturer reserves the right to modify design features and technical data without notice.

## INTRODUCTION

The SPITFIRE range of portable heaters has been designed to give safe, efficient and reliable service when the correct operating sequences are followed and proper attention is given to cleaning and maintenance procedures. This manual is to provide up to date information necessary to the user/serviceperson for operating, cleaning and servicing the heaters, together with fault-finding techniques and general specifications details and diagrams. Please note that the information given herein after may be subject to revision in compliance with the policy of continual improvements.

The SPITFIRE range of heaters should only be used in the manner and purpose for which they were intended and in accordance with the recommendations and safety precautions detailed in the following Manual and in the Operating Instructions stickers on the unit itself.

All SPITFIRE heaters undergo rigorous safety and operational tests before being despatched into the marketplace however it is still imperative that prior to use, all operators have read and understood all information and instructions provided and are aware of possible hazards.

## IMPORTANT SAFETY INSTRUCTIONS & PRECAUTIONS

This booklet contains important information for the use and safe operation of this heater. Please read and understand all warnings before you start using the unit.

**WARNING: When using this heater:**

1. Read all instructions before using this heater.
2. Know how to start and stop the unit. Be quite familiar with the controls.
3. Follow the maintenance procedures and fault-finding techniques outlined in the manual.
4. Do not restrict under any circumstances either the inlet or outlet end of the heater.
5. Do not operate this heater in basements or below ground.
6. Permanent ventilation to the outside atmosphere must be provided. Allow 6.5cm<sup>2</sup> for every 293W input divided equally between floor and high levels.
7. Not for domestic use space heating only.
8. The heater must not be used in close proximity to combustible material. A guard must be placed 900mm away from the heater outlet to prevent the approach of combustible materials.
9. Read carefully the instructions concerning Electricity and Fuel Supply.
10. Use only clean filtered diesel or kerosene as fuel. Do not refill the fuel tank while the heater is running.
11. Do not operate the heater with the top cover removed.
12. Allow a minimum room size as listed in the technical specifications.
13. Do not pull on the electrical cord in order to unplug the unit.
14. Do not effect temporary repairs on worn or damaged electrical cords and plugs. Have worn, cut or damaged cords and plugs replaced by an authorised service person/electrician.
15. To prevent injury always disconnect the power plug before disassembling any part of the heater, effecting any servicing or when the unit is not in use.
16. Local regulations should be followed as to the installation of industrial heaters.

## ELECTRICITY SUPPLY

The SPITFIRE range of heaters is designed to run off 220-240V Single-Phase 50Hz electrical supply. The unit should be plugged into a 10A outlet.

**WARNING: This appliance must be earthed.**

Note: If the Plug needs to be replaced to suit local requirements a qualified electrician should carry out the replacement taking care to earth the unit and maintain the correct phase connection as per the wiring diagram.

## FUEL SUPPLY

Please only use the following fuel types in the heater: **Kerosene with viscosity of 1.3 cst or Diesel with viscosity of 1.5cst**

**WARNING: Under no circumstances should any other fuel type be used. Do not fill the fuel tank while the heater is running.**

## INSTALLATION AND OPERATING INSTRUCTIONS

### INSTALLATION (All Models)

1. Identify your unit from the model description on the serial number label affixed to the heater and the exploded views contained in this manual. (ALL NUMBERED REFERENCES APPLY TO EXPLODED VIEW OF UNIT)
2. Where necessary. Fit wheels (105) on axle ( ) using the clips and cover (104) supplied. Fit axle assembly ( ) and support ( ) to the tank using the bolts supplied.
3. Fill the Fuel Tank (109) using clean filtered fuel.
4. Connect Power Plug to Mains Power Outlet

### OPERATING INSTRUCTIONS

#### TO START & USE

1. WHERE FITTED. This unit can be fitted with a thermostat. If required please contact your service agent for further information. Set operating temperature to the desired position on the thermostat.
2. Turn power switch (45) to the On (I) position. This will start the ignition cycle.

#### TO STOP (NORMAL OPERATION)

1. Turn power switch (45) to the Off (0) position.
2. Remove the plug from the electrical outlet.

## MAINTENANCE AND FAULT FINDING PROCEDURES

**WARNING: ALWAYS ISOLATE UNIT FROM THE ELECTRICAL SUPPLY BEFORE ATTEMPTING ANY REPAIRS OR MAINTENANCE.**

### TROUBLESHOOTING GUIDE

FAULT	CAUSE
<b>A</b> The fan motor never starts	1-2-3-4-5-6-7-14
<b>B</b> The fan motor starts but unit goes into lockout	8-9-10-11-12-13-14-15-17
<b>C</b> Heater runs but excessive smoke/smell is emitted	4-8-11-15-16-17
<b>D</b> Heater runs but flames exit from front guard	15-16-17

#### REMEDY

**ALL REPAIRS / MAINTENANCE WORK SHOULD BE CARRIED OUT BY A QUALIFIED TECHNICIAN.**

#### CAUSE

1.	Electricity Supply is faulty	<ul style="list-style-type: none"> <li>• Check the power plug is plugged in.</li> <li>• Check that electricity supply is available and wiring connections are secure</li> </ul>
2.	The motor is blocked/faulty	<ul style="list-style-type: none"> <li>• Check and replace as necessary</li> </ul>
3.	The fan is blocked/damaged	<ul style="list-style-type: none"> <li>• Check and replace as necessary</li> </ul>
4.	The compressor assembly is blocked/damaged	<ul style="list-style-type: none"> <li>• Check and adjust or replace as necessary</li> </ul>
5.	Switch/switch connections is/are faulty/loose	<ul style="list-style-type: none"> <li>• Check and replace as necessary</li> </ul>
6.	If fitted: <ul style="list-style-type: none"> <li>✱ The thermostat setting is incorrect</li> <li>✱ The thermostat/thermostat connection is loose/faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust thermostat accordingly</li> <li>• Check and replace as necessary</li> </ul>

7.	Limit thermostat is faulty	<ul style="list-style-type: none"> <li>• Check for continuity in Limit thermostat connection</li> </ul>
8.	Diesel flow absent /low	<ul style="list-style-type: none"> <li>• Check that the fuel tank is full. Fill if necessary.</li> <li>• Check fuel filter for blockages. Clean/replace as necessary.</li> <li>• Check fuel line for blockages. Clean or replace as necessary.</li> <li>• Check air line for blockages/leaks. Tighten/clean or replace as necessary.</li> <li>• Check air filters. Clean and replace as necessary</li> <li>• Check the compressor assembly for correct operation. Adjust and replace as necessary.</li> </ul>
9.	Diesel nozzle Blocked /faulty	<ul style="list-style-type: none"> <li>• Check and clean/replace as necessary</li> </ul>
10.	Photocell flame detection unit dirty or not working properly	<ul style="list-style-type: none"> <li>• Check, clean and adjust or replace as necessary</li> </ul>
11.	Inlet/outlet grill or inside of heater is dirty or partially blocked	<ul style="list-style-type: none"> <li>• Check and clean as necessary</li> </ul>
12.	Limit thermostat cuts in interrupting the heater	<ul style="list-style-type: none"> <li>• Check if the inlet/outlet grill are dirty or blocked, clean as necessary</li> <li>• Check that airflow in and out of the heater is not impeded</li> </ul>
13.	Diesel is not igniting	<ul style="list-style-type: none"> <li>• Check Transformer and replace if necessary</li> <li>• Check High Tension leads and adjust/replace as necessary</li> <li>• Check electrodes and adjust and replace as necessary</li> </ul>
14.	Burner Control box faulty	<ul style="list-style-type: none"> <li>• Check and replace if necessary</li> </ul>
15.	Pressure adjustment is incorrect	<ul style="list-style-type: none"> <li>• Check and adjust/clean compressor regulating valve as necessary (Follow pressures listed in the technical specifications an see maintenance instructions)</li> <li>• Check compressor for correct operation and wear. Adjust/replace as necessary.</li> <li>• Check air line for blockages/leaks. Tighten/clean or replace as necessary.</li> </ul>
16.	Nozzle O' Ring is damaged	<ul style="list-style-type: none"> <li>• Check and replace as necessary</li> </ul>
17.	Fuel is contaminated/bad quality	<ul style="list-style-type: none"> <li>• Drain tank and replace fuel</li> </ul>

## MAINTENANCE

### General

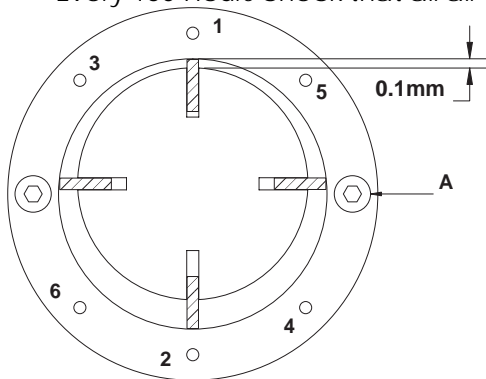
- Every 150 hours wash inlet filter (33) with mild detergent and dry. **Filter must be thoroughly dry before replacing and must not be oiled.**
- Outlet filter (2):  
Clean and if necessary replace the outlet filter after the first 30 hours of running in.  
Every 150 hours clean by blowing air from the inside surface out. **Do not wash or use oil on this filter**  
If when reassembling the gasket (3) is damaged replace it. **Do not use sealants**
- Every 300 hours clean and check fuel nozzle (19) and nozzle o' ring (17) for wear. If worn or damaged replace.
- Every 500 hours drain the fuel tank (109) and flush it using clean fuel.
- Twice per season make sure the Fan (13) is clean. Make sure fan is dry before operating.
- Once per season make sure the combustion chamber and head are clean and free from dust. Use compressed air to clean

### Electrical

- Once per season check that electrodes (22) gap is 2.5mm. Make sure that the transformer(31) and transformer leads(24) are in good condition
- Once per season check that the motor fixing bolts are tight and make sure that the fan fixing screw at the fan boss is tight.
- Once per season check the limit thermostat junction for continuity.
- Once per season check that all electrical connections are tight and in good condition.

### Compressor / Air lines/Air Pressure

- Every 150 Hours check that all air lines are tight and in good condition.



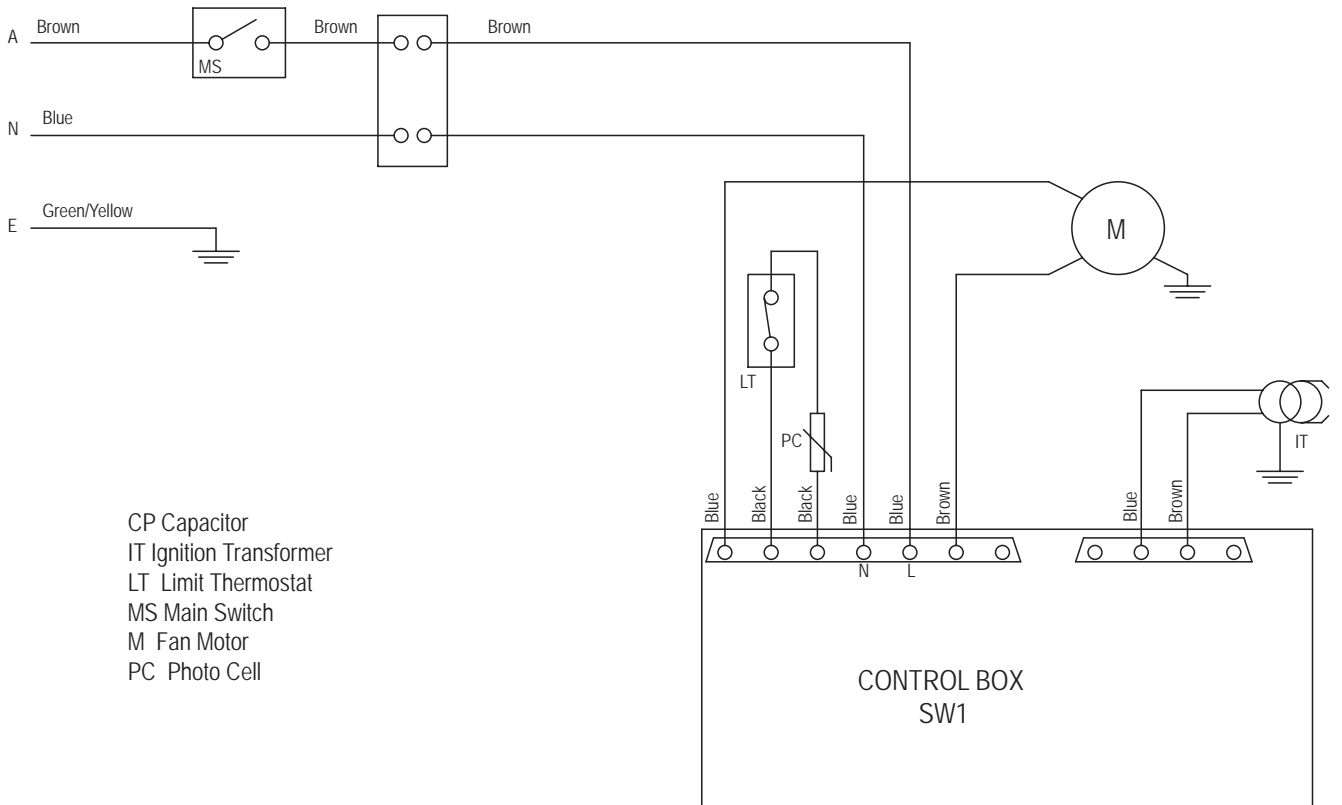
- Once per season check the compressor rotor (6) and blades (7). When handling make do not drop the units and store them in a clean dry place, as any dirt/moisture will damage the compressor. If worn replace the rotor and blades (all four blades have to be replaced as a set even though only one might be damaged). Reassemble making sure that the notch on the blades is towards the centre of the rotor and that there is a 0.1mm gap between the rotor and the ring (8) as shown in figure below. Re tighten the compressor plate slowly with the motor running following the numerical sequence shown below.
- Once Per season make sure that the operating pressure is as listed in the technical specifications by fitting a pressure gauge in port (38). If necessary adjust the pressure by acting on valve (37) and relock using locknut (36).

### Safety

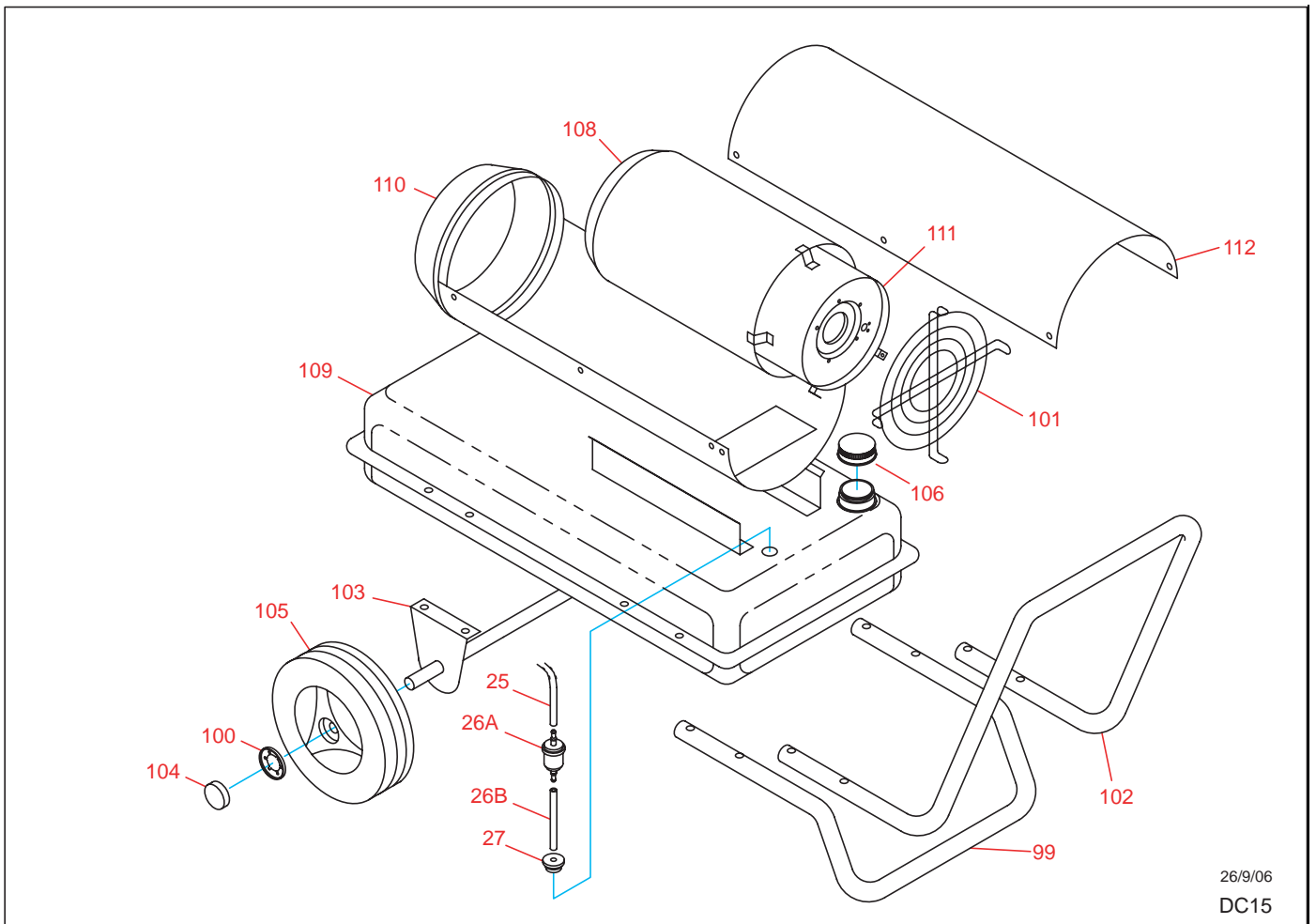
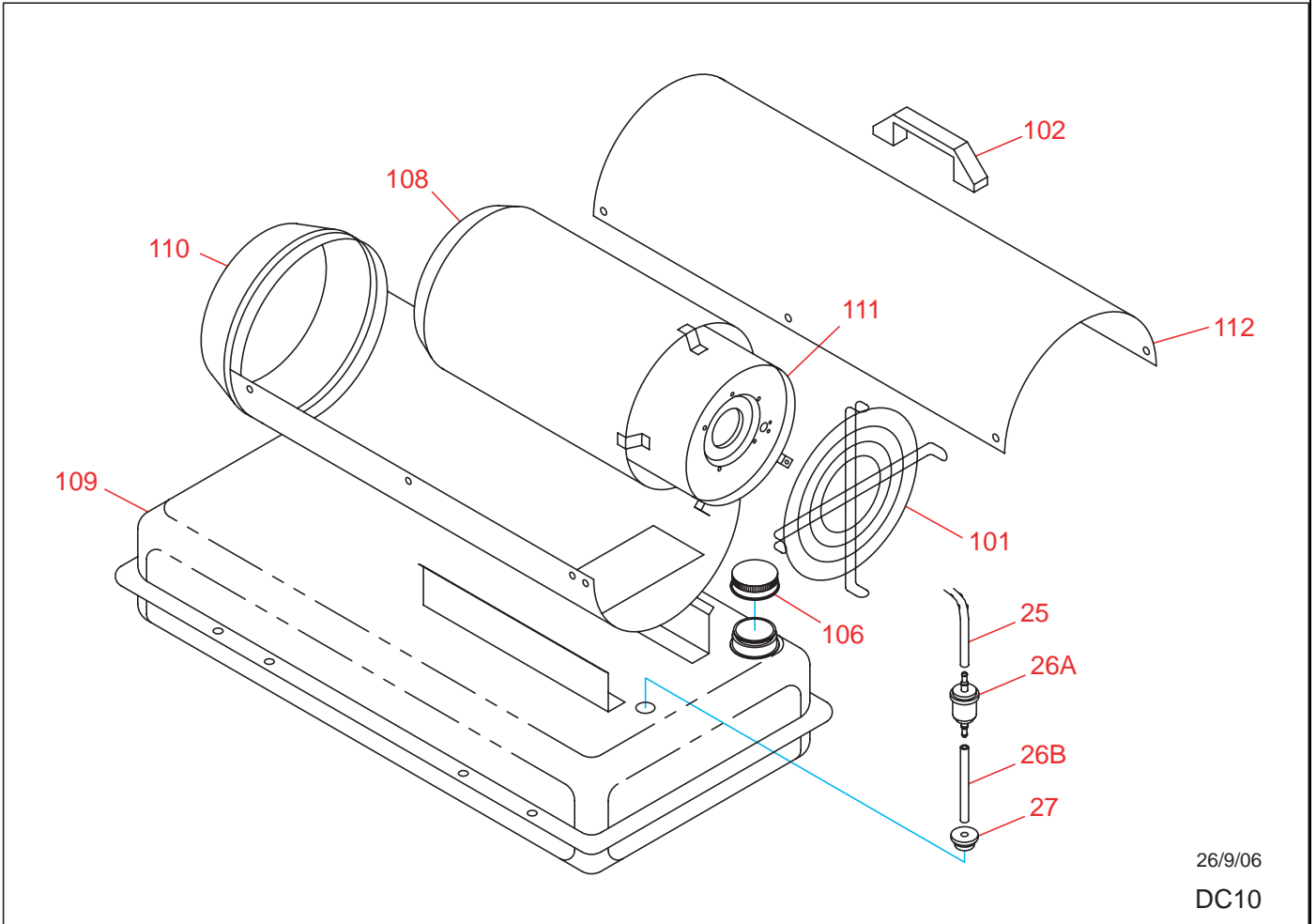
- After every major maintenance procedure or at least once per season check heater for correct operating sequence and that all safety mechanisms are operating correctly (Photocell, limit thermostat etc)

# WIRING DIAGRAM

DC10, D15, DC25, DC40, DC45



# EXPLODED VIEWS





## SPARE PARTS LISTING

POS	DESCRIPTION	DC 10	DC 15	DC 25	DC 40	DC 45
		SD06	SD03	SD04	SD05	SD07
1	FILTER HOLDER	100141	100141	100141	100141	100141
2	OUTLET FILTER	100130	100130	100130	100130	100130
3	CORK GASKET	100156	100156	100156	100156	100156
4	COMPR. PLATE	100125	100125	100125	100125	100125
5	COMPR.DOG	100123	100123	100123	100123	100123
6	ROTOR	100149	100149	100149	350115	350115
7	COMPR. BLADE	100150	100150	100150	350116	350116
8	COMPR.RING	100151	100151	100151	350117	350117
10	MOTOR	100142	100143	100143	100143	100144
12	CAPACITOR	100135/A	100135/A	100135/A	100135/A	100135
13	FAN	20105	250113	250114	400108	450003
14	NOZZLE HOLDER	100197	100197	100197	100197	100197
15	BURNER HEAD/2 EL.	100194	100194	100194	100195	100195
17	NOZZLE SEAL	100199	100199	100199	100199	100199
18	NOZZLE WASHER	70200/DA	70200/DA	70200/DA	70200/DA	70200/DA
19	SIPHON NOZZLE	100140	150110	250121	400109	450004
20	NOZZLE SPRING	100200	100200	100200	100200	100200
21	NIPPLE 1/8-6mm BARB	44541	44541	44541	44541	44541
22	ELECTRODE	100225	100225	100225	100225	100225
24	HIGH/V.CABLE-mm.4	100184	100184	100184	100184	100184
25	TOP FUEL TUBE	100250/A	100250/A	100251	100252/A	100253/A
26	BOTTOM FUEL TUBE	150112/B	150112/B	100204/B	100204/B	100204/B
26	FILTER	100211/B	100211/B	100211/B	100211/B	100211/B
27	GASKET	100210	100210	100210	100210	100210
29	AIR TUBE	150114/A	150114/A	250106/A	400105/A	450006/A
30	PHOTOCELL PROTEC.	100119	100119	100119	100119	100119
31	TRAFO 2 EXIT-mm.4	100221	100221	100221	100221	100221
32	ELBOW 1/8M-1/8F	100183	100183	100183	100183	100183
33	INLET FILTER	100129	100129	100129	100129	100129
34	AIR REG.BALL	100131	100131	100131	100131	100131

POS	DESCRIPTION	DC 10	DC 15	DC 25	DC 40	DC 45
		SD06	SD03	SD04	SD05	SD07
35	AIR REG.SPRING	100132	100132	100132	100132	100132
36	NUT 1/8	100155	100155	100155	100155	100155
37	AIR REG.VALVE	100133	100133	100133	100133	100133
38	PLUG 1/8	100134	100134	100134	100134	100134
39	TERMINAL BLOCK	33121	33121	33121	33121	33121
39	TERMINAL BLOCK	33356	33356	33356	33356	33356
40	CABLE GLAND	48417/E	48417/E	48417/E	48417/E	48417/E
41	PHOTOCELL	300006/A	300006/A	300006/A	300006/A	300006/A
42	LIMIT THERMOSTAT	33041/A	33041/A	33041/A	33041/A	33041/A
43	CONTROL BOX NEW	300132	300132	300132	300132	300132
45	SWITCH	33124/A	33124/A	33124/A	33124/A	33124/A
47	ELECTRICAL BOX	100122/F	100122/F	100122/F	100122/F	100122/F
48	COVER ELEC.BOX	100124*	100124*	100124*	100124*	100124*
53	RELAY	=	=	=	=	33253
99	TROLLEY	=	150103	250125	250125	250125
100	HUB CUP	=	33230/B	33230/B	33230/B	33230/B
101	GRILLE	100159/A	100159/A	100159/A	100160	100161
102	HANDLE	33273	150105/A	250122/A	250122/A	250122/A
103	AXLE WITH BRACKET	=	150111	100163	100163	100163
104	HUB CUP COVER	=	33230/C	33230/C	33230/C	33230/C
105	WHEEL	=	33230	33231	33231	33231
106	TANK CAP	44720/A	44720/A	44720/A	44720/A	44720/A
108	OUTER CYLINDER	100105	150102	100103	400112	450011
109	TANK	100106/N	100106/N	250103/N	400101/N	450010/N
110	BOTTOM CASING	100107	150106	250104	400102	450007
111	COMB.CHAMBER	100108	150113	250126	400111	450008
112	TOP COVER	100109	150107	250105	400103	450009
113	DRAIN PLUG	=	=	100157	100157	100157
114	CABLE	33018*	33018*	33018*	33018*	33018*

