

Clarke®



Infrared Diesel Heater **Model No: IRD40**

PART NO: 6920415

OPERATING & MAINTENANCE INSTRUCTIONS



GC0611

INTRODUCTION

Thank you for purchasing this CLARKE Diesel Infrared Heater.

Before attempting to use the heater, please read this manual throughout and follow the instructions carefully. Thoroughly familiarise yourself with its operation in order to ensure the safety of yourself and others around you. In doing so you can look forward to the heater giving you long and satisfactory service.

GUARANTEE

This product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt which will be required as proof of purchase. This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for its intended purpose.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission. This guarantee does not effect your statutory rights.

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GENERAL SAFETY PRECAUTIONS

GENERAL

1. ALWAYS read and ensure you fully understand the following precautions and the hazards associated with this type of heater. Do not allow anyone who has not read these instructions to operate this heater.
2. ALWAYS check for damage before using the heater. Check for breakages and any other condition that may affect the function of the heater. Any damage should be properly repaired or the part replaced. If in doubt, DO NOT use the heater and consult your local Clarke dealer.
3. NEVER carry out any modifications to this product. If experiencing difficulty of any kind consult your local dealer.
4. Use the heater in accordance with any applicable fire regulations.

WORK AREA

1. NEVER leave a heater plugged in without adult supervision if children or animals are likely to be present.
2. Do not expose the heater or power cable to rain or wet conditions. Any water entering the heater will increase the risk of electric shock.
3. NEVER use the heater where petrol, paint thinners or other highly flammable vapour or where high levels of airborne dust may be present.
5. ONLY use in well ventilated areas. NEVER use the heater in living or sleeping areas.
6. NEVER locate the heater facing combustible materials such as screens, workshop furniture etc.
7. DO NOT locate the heater close to an adjacent wall or ceiling. Allow a distance of at least 3 metres from a wall or ceiling. Avoid placing the heater directly below socket outlets.
8. ALWAYS locate the heater on a level, flat, fireproof floor. Ensure that the heater is correctly and safely positioned as described on page 8.
9. ALWAYS ensure that ample ventilation is present if the heater is being lit following a long period without use.
10. Disconnect the heater from the power supply when not in use.
11. NEVER leave a heater unsupervised while operating - someone should always be made responsible for monitoring it.
12. NEVER place anything on the burner.
13. NEVER move, handle, replenish the fuel supply or adjust the heater when it is hot, or operating. Turn it off and wait for it to cool down first.
14. NEVER attach any duct work to the front of the heater.

15. ALWAYS ensure that people and animals are at least 3M away from the front of the heater when in operation.
16. This heater will be hot when in operation and should not be touched until it has fully cooled down after shutting off.
16. NEVER cover or impede air flow into or out of the heater.
17. Use only clean Diesel Oil. NEVER use gasoline, kerosene, paint thinners, alcohol or other highly flammable fuels.

ELECTRICAL SAFETY

1. Electrical appliances must match the power outlet. Never modify the plug in any way. Do not use adaptor plugs with earthed (grounded) appliances. Correct plugs and outlets will reduce the risk of electric shock.
2. Do not abuse the electrical cable. Never use the cable for pulling or unplugging the heater. Keep the cable away from sources of heat, oil, sharp edges or moving parts. Damaged or tangled cables increase the risk of electric shock.
3. Keep the mains cable well away from machines and ensure an adequate electrical supply is close at hand so that the operation is not restricted by the length of the cable.
4. ALWAYS disconnect from the mains supply before moving the heater or performing any maintenance tasks.
5. Inspect the mains cable regularly for signs of damage. DO NOT use if it is damaged and ALWAYS keep it away from the source of heat.

SERVICE & REPAIRS

1. Check the heater for damage before use. DO NOT use if the heater is damaged. Any damage should be properly repaired or the part replaced. If in doubt, DO NOT use the heater. Consult your local dealer.
2. When necessary, have your heater serviced or repaired by a qualified person using identical replacement parts. This will ensure that the safety of the heater is maintained.

Please keep these instructions in a safe place for future reference.

ELECTRICAL CONNECTIONS



WARNING! Read these electrical safety instructions thoroughly before connecting the product to the mains supply.

Before switching the machine on, make sure that the voltage of your electricity supply is the same as that indicated on the rating plate. This product is designed to operate using 230 VAC mains power. Connecting it to any other power source may cause damage.

This product may be fitted with a non-rewireable plug. If it is necessary to change the fuse in the plug, the fuse cover must be refitted. If the fuse cover becomes lost or damaged, the plug must not be used until a suitable replacement is obtained.

If the plug has to be changed because it is not suitable for your socket, or due to damage, it should be cut off and a replacement fitted, following the wiring instructions shown below. The old plug must be disposed of safely, as insertion into a mains socket could cause an electrical hazard.



WARNING! The wires in the power cable of this product are coloured in accordance with the following code:

Blue = Neutral

Brown = Live

Yellow and Green = Earth

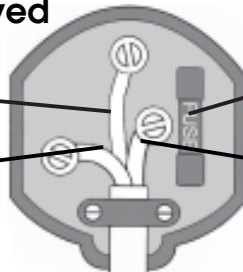
If the colours of the wires in the power cable of this product do not correspond with the terminal markings of your plug, proceed as follows.

- The wire which is coloured **Blue** must be connected to the terminal which is marked N or coloured **Black**.
- The wire which is coloured **Brown** must be connected to the terminal which is marked L or coloured **Red**.
- The wire which is coloured **Yellow and Green** must be connected to the terminal which is marked E or  or coloured **Green**.

Plug must be BS1363/A approved

Earth
(Green and Yellow)

Neutral
(Blue)



Always fit a 13 Amp fuse.

Live
(Brown)

Ensure that the outer sheath of the cable is firmly held by the clamp

We strongly recommend that this machine is connected to the mains supply via a Residual Current Device (RCD).

If in doubt, consult a qualified electrician. DO NOT attempt repairs yourself.

OVERVIEW OF THE IRD40 HEATER

The IRD40 Infrared Diesel Heater is ideal for the following applications:

- Heating work areas in large, well ventilated rooms or outbuildings.
- Dust-free drying of components.
- Drying out and de-icing of construction areas, concrete, walls etc
- Defrosting large machines and buildings.

FUNCTIONAL DESCRIPTION

A pump draws fuel from the tank and drives it to the burner under pressure. Fuel is sprayed and atomised by the nozzle and then ignited by the burner ignition device. A built-in radial blower provides combustion airflow while air and fuel forms a combustion mixture. The flames heat up the front plate and guard, thus releasing heat by radiation.

The metal front guard acts as a catalyser, completing the combustion of hydrocarbons and reducing emission pollution. The unit can be tilted at up to 20° upwards or downwards to direct heat at a particular target. The burner pre-heater warms up the fuel before start-up and the post-ventilation function cools down the chamber after each use. No flue or exhaust pipe is required as all combustion gasses are catalysed during operation.



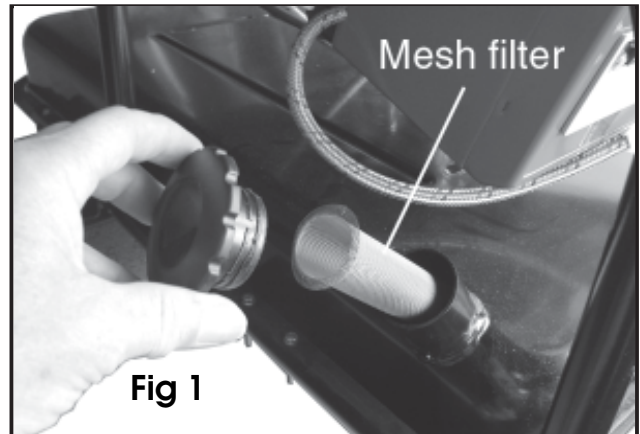
PREPARATION

When unpacking, check the heater for any damage that may have occurred in transit and notify your Clarke dealer immediately should any be apparent.

Fill the tank with clean, water-free diesel oil. When refilling, inspect the mesh filter inside the filler neck for any trapped contamination.

Note: The burner has been designed for use with diesel fuel oil having a maximum viscosity of 35 seconds Redwood No1 at 100°F.

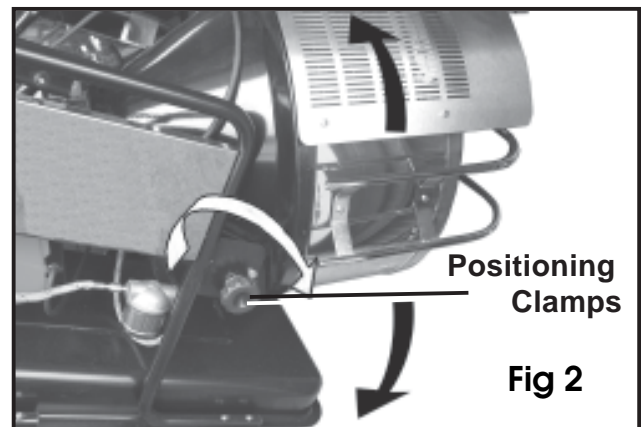
Plug the heater into any suitably earthed mains power supply.



POSITIONING THE HEATER

The heater must be located on a hard, level surface to minimise the risk of accidental tipping or running forward. Chock the wheels if there is any possibility of movement.

Set the heater in position by loosening and re-tightening the positioning clamps on either side to achieve the required angle of tilt.



MATERIAL CLEARANCES

It is important that the heater be positioned with at least 3 m clearance at the front between the heater and any obstruction including walls or other combustible surfaces. Always position the heater facing the centre of the room. Never place any objects on, or against the heater.

Any equipment or workshop furniture should be a safe distance away as they could be adversely affected by heat.

VENTILATION

The heater must only be installed in a room which is well ventilated. Ensure that sufficient air is available for combustion via windows and doors, especially if there will be people staying in the room for any length of time. Constant occupation is not advised although the heater should be monitored periodically.

- Ventilation is essential to reduce the dangers of oxygen depletion.

HEATER OPERATION WITHOUT PEOPLE IN THE ROOM

Ensure that sufficient air is available via windows and doors for complete combustion. The heated volume (m³)/ heat output (kW) ratio must be at least 10:1, and personnel should not stay permanently in the heated room.

HEATER OPERATION WITH PEOPLE REMAINING IN THE ROOM

If people are to remain in the room for any length of time, the heated volume (m³) /heat output (kW) must be at least 30:1. Air circulation must be ensured through windows and doors or permanent openings near the floor and ceilings, whose total open area (m²) is at least 0.003 times the total heat output (kW).

OPERATION

In normal operation, operating the ON/OFF switch will illuminate the red LED and the green and orange warning lights. After two minutes, when the fuel warming operation is completed, the orange warning light and the red LED go out and the motor starts.

The following table shows the main operating phases.

	Pre-heater		Operation		Post-ventilation		Stand-by	
	Green	Orange	Green	Orange	Green	Orange	Green	Orange
ON								
OFF								
	Switch I (ON)		Switch I (ON)		Switch O (OFF)		Switch O (OFF)	

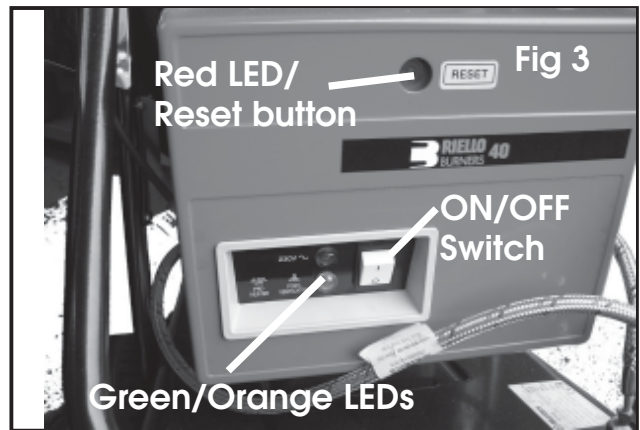
LIGHTING THE HEATER / START-UP

To start the heater;

1. Check that there is diesel in the fuel tank.
2. Switch the ON/OFF switch to ON.
 - The green and orange LEDs will light up for the duration of the pre-heating time.
 - Ignition does not take place immediately but after a pre-heating time followed by a 'pre-purge' time of about 30 seconds.

- If no fuel flows to the burner within 4 seconds, the heater automatically goes into 'lockout' mode. In this case, check and eliminate possible causes of 'lock-out', referring to TROUBLESHOOTING, then press the RESET button to restart the heater.

If the heater does not start, check it is not directly aimed towards a bright light, which could interfere with the operation of the burner control photocell.



POSSIBLE FAULTS ON STARTUP

A technical fault on start-up usually makes the "Lock-out" lamp illuminate. This is built into the reset button on the front of the control box as shown in Fig 3.

When this happens, the controls of the burner are at 'lock-out'. The burner can only be lit after pushing the reset button and if, after this, the burner operates correctly, the lock-out can be attributed to a temporary fault such as a fluctuation in voltage.

If the lock-out continues, the cause must be determined & a solution found. Request a qualified heater service technician to investigate the problem.

Refer to the following tables for a list of possible faults and their cause.

TURNING THE HEATER OFF

1. To stop, set the ON/OFF switch to off.
- The fan will continue running for a pre-set time while the heater cools down.



WARNING; NEVER SWITCH OFF THE HEATER BY DISCONNECTING IT FROM THE POWER SUPPLY.

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Heater fails to start when the switch is set to ON.	No electrical supply.	Check mains, switch and fuses.
	Defective on/off switch	Request your service technician to replace on/off switch.
	Burner Lock-Out.	Reset burner. If lock-out repeats, reset after 4-5 minutes.
	Defective motor/capacitor.	Request your service technician to check motor/capacitor & replace if necessary.
Heater starts but malfunctions almost immediately.	No fuel in tank. Air in the fuel line. Fuel filter clogged. Burner locked out.	Refill fuel tank. Check fuel line for leaks. Replace fuel filter cartridge. Request your service technician to inspect burner.
Heater operates but the combustion is smokey.	Lack of fuel in tank. Moisture in the fuel.	Fill the tank completely with clean fuel.
	Fuel filter is clogged.	Clean out the filter.
	Airlock in fuel line.	Tighten fuel line connections.
	Blocked nozzle.	Request your service technician to clean/replace nozzle.
	Contamination in main filter.	Request your service technician to replace oil pre-heater
	Defective solenoid valve.	Request your service technician to replace.
Burner fan continues running after the heater has been switched off and has cooled down.	Defective post-ventilation relay.	Request your service technician to replace post-ventilation relay.
All LEDs are off and the burner does not start when the switch is set to on.	Lack of electrical supply.	Check mains, switch and fuses. Request your service technician to check the 7-pin plug and check the thermostat is not locked out.
	Incorrect connections in the control box.	Request your service technician to check the connections
	Burner is locked out.	Reset the burner. If lockout repeats, reset after 4-5 minutes.
	Defective motor/capacitor.	Request your service technician to check motor/capacitor. Replace if necessary.

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Orange LED remains on and burner will not start.	Heater and start thermostat are faulty.	Request your service technician to replace defective item.
Green LED is on and the burner remains in the pre-purge phase.	The photoelectric sensor sees a false light.	Eliminate the daylight.
Burner runs normally in the pre-purge and ignition cycle but locks out after approx 5 seconds.	The photo-resistance is dirty or defective.	Request your service technician to clean or replace it.
	Flame too far away from fuel or flame goes out.	Request your service technician to check for delivery of fuel. Check air output. Change nozzle. Check the coil of the solenoid valve.
Burner starts but with delayed ignition.	Ignition electrodes wrongly positioned.	Request your service technician to adjust them.
	Air output is too high.	Request your service technician to reset the air output.
	Nozzle dirty or worn.	Request your service technician to clean or replace it.

CLEANING AND MAINTENANCE



WARNING: ALWAYS ENSURE THE HEATER HAS COOLED DOWN BEFORE PERFORMING ANY MAINTENANCE TASKS

Before carrying out any adjustment or maintenance, ensure the heater is switched OFF, disconnected from the mains supply, and has been given adequate time to cool down.

CLEANING

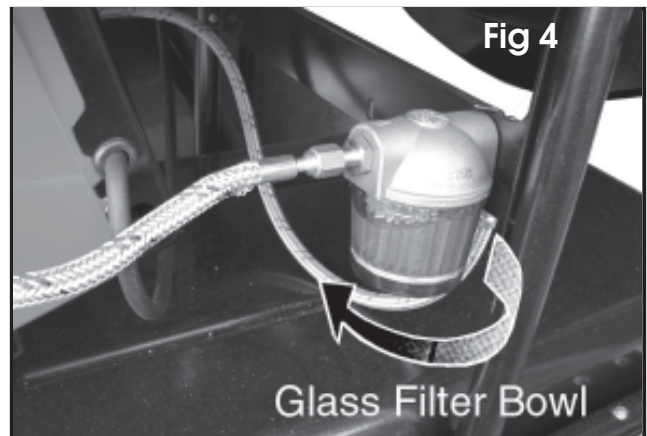
1. Use a damp cloth wrung out in a solution of soapy water to clean the exterior of the heater. Use household cleaners on difficult spots.
2. Never use abrasive cleaners as they may damage the paint finish.
3. The internal heating surfaces and combustion chamber of the burner should be cleaned at least annually.

GENERAL MAINTENANCE

Correct maintenance is vital for smooth operation of the burner in order to avoid wasting fuel and causing atmospheric pollution.

1. This heater should be inspected, cleaned and serviced annually by a qualified service engineer. Unauthorised persons should not attempt to carry out repairs of the burner components.
2. Replace the fuel filter cartridge if water or dirt particles can be seen in the glass filter bowl and at approx 200-300 operating hours.
3. Empty the tank and refill with fresh fuel if you suspect the fuel has become contaminated with dirt or water.

In the event of damage or broken components, replacements are available from Clarke Parts & Service.



STORAGE

1. For long term storage, always store the heater in a well ventilated area away from combustibile materials. Cover the heater and keep the unit dry and dust free.
2. Store the heater in a level position when filled, or fuel leakage may occur.

TECHNICAL SPECIFICATION

IRD40	
Part Number	6920415
Weight	54.5 kg (empty)
Dimensions (L x W x H)	971 x 630 x 1000 mm (burner horizontal)
Burner tilt angle from horizontal	20° up/down
Fuel	Diesel Oil only
Fuel Consumption	3 kg/h + 4%
Max Rated Thermal Output	38.3 kW (130685 BTU)
Duty Cycle	S1 (continuous)
Fuel Pump Pressure	Factory set @ 9 bar
Nozzle	0.85 gph 80°H (Danfoss type H)
Air Lock (damper valve) Adjustment	Factory set @ 2.75 on scale
Electrical Supply	230 V 50 Hz 1 ph
Protection Degree	IP40
Absorbed Power	185 W
Rated Current	0.75 A
Rated Motor Speed	2850 rpm

Please note that details and specifications contained herein, are correct at the time of going to print. However, CLARKE International reserve the right to change specifications at any time without prior notice.

ENVIRONMENTAL PROTECTION



If disposing of this product or any damaged components, do not dispose of with general waste. This product contain valuable raw materials Metal products should be taken to your local civic amenity site for recycling of metal products.

DECLARATION OF CONFORMITY



Clarke[®]
INTERNATIONAL

Hemnall Street, Epping, Essex CM16 4LG

DECLARATION OF CONFORMITY

This is an important document and should be retained.

We hereby declare that this product(s) complies with the following directive(s):

- 2004/108/EC *Electromagnetic Compatibility Directive.*
- 2006/42/EC *Machinery Directive.*
- 2006/95/EC *Low Voltage Equipment Directive.*
- 2002/95/EC *Restriction of Hazardous substances.*

The following standards have been applied to the product(s):

EN 14121, EN 13842, EN 60335-1, EN 60335-2-102, EN 55014

The technical documentation required to demonstrate that the product(s) meet(s) the requirement(s) of the aforementioned directive(s) has been compiled and is available for inspection by the relevant enforcement authorities.

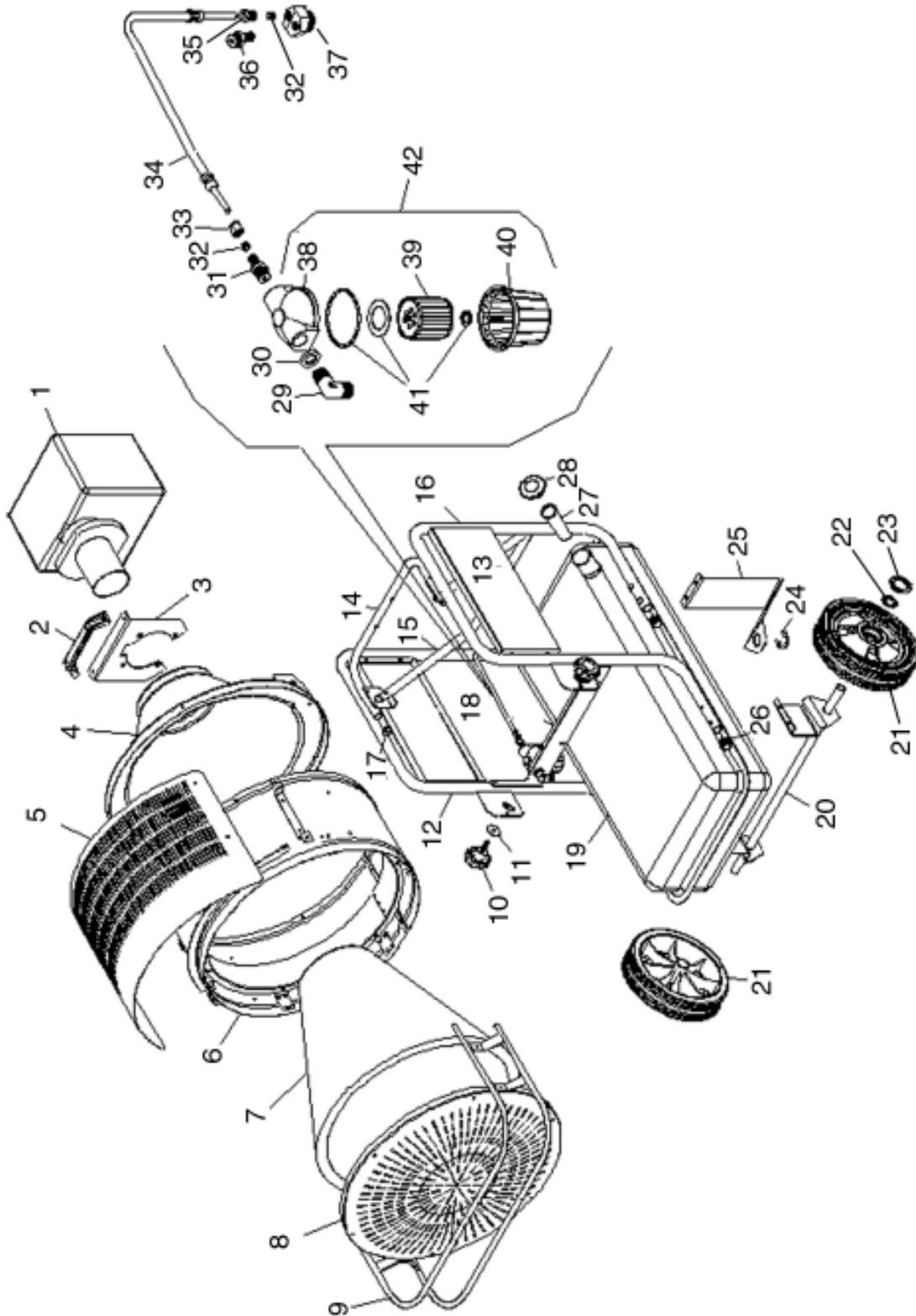
The CE mark was first applied in: 2011

Product Description: Infrared Diesel Heater
Model number(s): IRD40
Serial / batch Number: N/A
Date of Issue: 24/05/2011

Signed:

J.A. Clarke
Director

GENERAL PARTS DIAGRAM

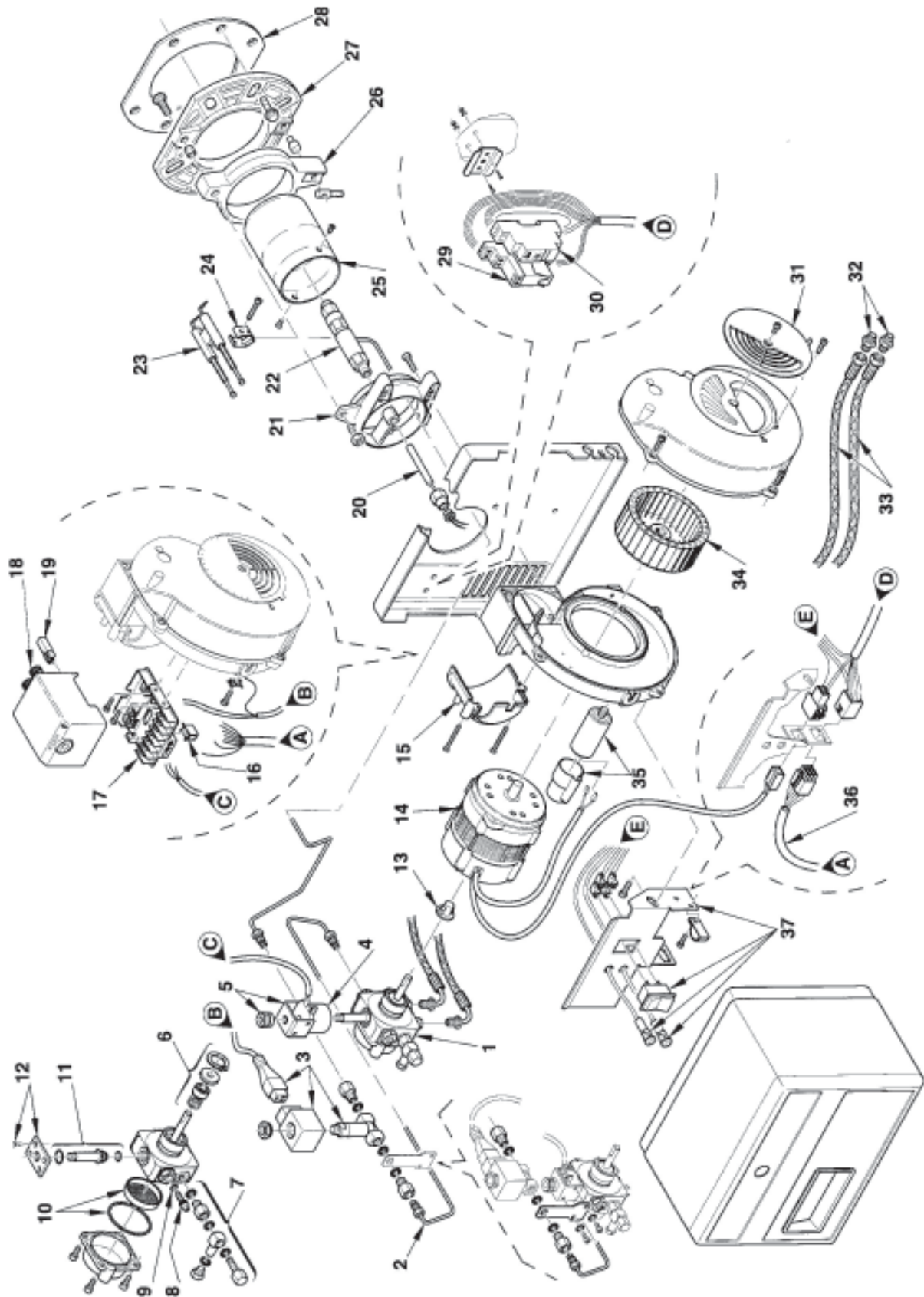


GENERAL COMPONENTS PARTS LIST

No	Parts List	Part No
1	Oil Burner Assembly	AX20590036
2	Handle	AX20010006
3	Bracket	AX20630274
4	Exterior Cone	AX20620947
5	Cover	AX20620942
6	Cone Support Ring	AX20620937
7	Insulating Cone	AX20060023
8	Radiation Guard	AX20240043
9	Front Guard Frame	AX20610107
10	Knob	AX20010069
11	Washer	AX20230136
12	Left Frame	AX20610115
13	Side Panel	AX20630270
14	Upper Handle	AX20610109
15	Lower Handle	AX20610111
16	Right Frame	AX20610113
17	Cap	AX20050006
18	Filter Bracket	AX20630271
19	Tank	AX20630160
20	Axle	AX20630221
21	Wheel	AX20040013
22	Circlip	AX20230219

No	Parts List	Part No
23	Wheel Cap	AX20050015
24	Spring	AX20230227
25	Tank Foot	AX20630020
26	Cap	AX20050010
27	Filler Filter	AX20190005
28	Cap	AX20050000
29	Fitting	AX20120001
30	Nut	AX20100008
31	Fitting	AX20100005
32	Olive	AX20120049
33	Nut	AX20100007
34	Suction Hose	AX20160032
35	Fitting	AX20100006
36	Fitting	AX20100040
37	Suction Fitting	AX20100002
38	Filter Cover	AX20650003
39	Filter Cartridge	AX20190002
40	Filter Glass	AX20010004
41	Gasket Kit	AX20800000
42	Oil Filter	AX20190001
	'Reset' Label	AX20290045
	'Do Not Touch' Label	AX20290101
	UK Power Cable	AX20390066

BURNER PARTS DIAGRAM



BURNER COMPONENTS PARTS LIST

No	Parts List	Part No
1	Pump	AX20800093
2	Tube	AX20800102
3	Needle Valve	AX20800184
4	Coil	AX20420030
5	Shell & Knob	AX20800075
6	Pump Seal	AX3000439
7	Connector	AX3020267
8	Regulator	AX3007202
9	O-Ring	AX3007028
10	Filter O-Ring	AX20800185
11	Needle Valve	AX20800078
12	Plate	AX3007203
13	Joint	AX20800256
14	Motor	AX3008865
15	Cover	AX3006556
16	Auxiliary Clamp	AX3002295
17	Terminal Board	AX20800178
18	Control Box 539SE	AX20800058
19	P.E.Cell	AX20800176

No	Parts List	Part No
20	Pre-Heater	AX20800183
21	Collar	AX20800072
22	Nozzle Holder	AX20800101
23	Electrode Assembly	AX20800100
24	Electrode Bracket	AX3006552
25	Cup-shaped Head	AX3002533
26	Spacer	AX20800046
27	Flange	AX20800062
28	Gasket	AX20800063
29	Relay	AX20800186
30	Timer	AX20800187
31	Air Damper	AX3007204
32	Connector	AX3009068
33	Flexible Oil Hose	AX20800094
34	Fan Assembly	AX3005708
35	Capacitor 4uF	AX3007479
36	Lead	AX3020023
37	Terminal	AX3020024
---	Nozzle 0.85 GPH 80H	AX20210070

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WATER PUMPS

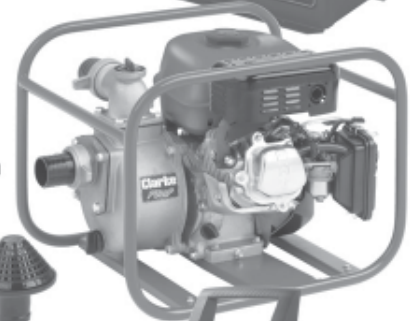
Submersible, electric and engine driven for DIY, agriculture and industry.

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Angle grinders, cordless drill sets, saws and sanders.

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All sizes for car and commercial use.



PARTS & SERVICE: 0208 988 7400

E-mail: Parts@clarkeinternational.com or Service@clarkeinternational.com

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