A SELECTION FROM THE VAST RANGE OF

Quality Products

Air Compressors
From DIY to Industrial. Plus Air Tools,
spray guns and accessories.

Generators
Prime duty or emergency standby
for business, home and leisure.

Power Washers
Hot and cold, electric and engine
driven - we have what you need.

Welders
Mig, Arc, Tig and Spot. From DIY to
auto/industrial.

Metalworking
Drills, grinders and saws for DIY and
professional use.

Woodworking
Saws, Sanders, lathes, mortisers
and dust extraction.

Hydraulics
Cranes, body repair kits,
transmission jacks for all types of
workshop use.

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

Power Tools
Angle grinders, cordless drill sets,
saws and sanders.

Starter/Chargers
All sizes for car & commercial use.

Clarke International
For spare parts and servicing, please contact your nearest dealer, or Clarke International on
020 - 8988 - 7400
e-mail: Parts@clarkeinternational.com e-mail: Service@clarkeinternational.com

Clarke

Air

Air Compressor
Installation and Maintenance
Instructions

Essential reading for all users
Clarke air
COMPRESSIONS
INSTALLATION AND MAINTENANCE INSTRUCTIONS

These instructions will help you to obtain many years of reliable service from your air compressor. Do read them carefully and thoroughly before installation/use. If attention is required, ensure that the engineer or electrician is properly qualified to undertake the work. If in doubt about installation or maintenance refer to our service department on 0181-556 4443, spares department on 0181-558 6696 or consult your local dealer.

CONTENTS

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Precautions</td>
<td>3</td>
</tr>
<tr>
<td>Noise Levels</td>
<td>3</td>
</tr>
<tr>
<td>Installation</td>
<td>4</td>
</tr>
<tr>
<td>Suggested Fuse Ratings</td>
<td>4</td>
</tr>
<tr>
<td>Electrical Connections</td>
<td>5</td>
</tr>
<tr>
<td>Lubrication</td>
<td>6</td>
</tr>
<tr>
<td>Before Starting Compressor</td>
<td>5</td>
</tr>
<tr>
<td>To Start Compressor</td>
<td>6</td>
</tr>
<tr>
<td>To Stop Compressor</td>
<td>6</td>
</tr>
<tr>
<td>Maintenance Chart</td>
<td>6</td>
</tr>
<tr>
<td>General Arrangement - Stationary</td>
<td>7</td>
</tr>
<tr>
<td>General Arrangement - Portable</td>
<td>8</td>
</tr>
<tr>
<td>Air Receiver Pressure Adjustments</td>
<td>9</td>
</tr>
<tr>
<td>Outlet Pressure Adjustments</td>
<td>10</td>
</tr>
<tr>
<td>Trouble Shooting</td>
<td>11-15</td>
</tr>
<tr>
<td>Parts and Service</td>
<td>15</td>
</tr>
</tbody>
</table>

GARANTEE

Clarke International guarantee this product for 12 months from the date of purchase against faults arising through any defect in manufacture. This does not affect your statutory rights.

However, do please note the following:-

Warranty repairs must only be carried out by Clarke International or their authorised representative.

Any faults must be reported promptly as soon as they occur.

The sales receipt (or similar document) should be retained as proof of purchase.

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>PROBABLE CAUSES</th>
<th>REMEDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condensation at outlet points.</td>
<td>Piping installation incorrect.</td>
<td>Consult your local dealer.</td>
</tr>
<tr>
<td></td>
<td>Compressor taking in air which is too warm.</td>
<td>Obtain better fresh-air supply for compressor.</td>
</tr>
<tr>
<td></td>
<td>Delivery temperature of air from air receiver too high.</td>
<td>a) Use a larger air receiver.</td>
</tr>
<tr>
<td>Electric Motor too hot:</td>
<td>Operational voltage too low.</td>
<td>Call electrician.</td>
</tr>
<tr>
<td>maximum temperature</td>
<td>Faults in electrical installation or electric motor.</td>
<td>Call electrician.</td>
</tr>
<tr>
<td>90 C (194 F)</td>
<td>Cooling fins of electric motor blocked by dirt.</td>
<td>Clean cooling fins.</td>
</tr>
</tbody>
</table>

Machine running but not pumping air into receiver (10 HP and above):
Air exhausting from solenoid after starter has changed from star to delta.
Check solenoid valve. Call an electrician to check starter.

IF IN DOUBT ABOUT INSTALLATION, MAINTENANCE OR SPARES REFER TO OUR SERVICE DEPARTMENT ON 0181-556 4443 OR CONSULT YOUR LOCAL DEALER

Parts & Service
For spare parts and servicing, please contact your nearest dealer, or Clarke International on one of the following telephone numbers:

CLARKE INTERNATIONAL
PARTS AND SERVICE DEPT
TEL 020 8988 7400

OTHER PRODUCTS WITHIN OUR RANGE
In addition to Air Compressors from 3-80 cfm, we offer a vast range of air tools and airline equipment. Please ask your local dealer for details of our range or a copy of our Power Products Catalogue.
<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>PROBABLE CAUSES</th>
<th>REMEDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressor unit starts and stops more frequently than usual.</td>
<td>Large amount of condensation in air receiver. Leaks in control unit or inspection cover. Too little pressure differential.</td>
<td>Drain off condensation at least once a week. Locate leaks (by means of soapy water) and repair. Adjust pressure switch (see fig.4).</td>
</tr>
<tr>
<td>Compressor unit starts when no air is being used.</td>
<td>Leaks in pipework system.</td>
<td>Locate and repair leaks.</td>
</tr>
<tr>
<td>Oil in the air delivered.</td>
<td>Sump over full. Cylinder worn. Governor controlled unit running off load for too long a period. Intake air filter blocked.</td>
<td>Reduce oil to correct level. Replace worn parts or send compressor pump for an overhaul. Convert to automatic control. Change air filter.</td>
</tr>
<tr>
<td>Oil level rises although no oil has been put in.</td>
<td>Condensation in oil pump.</td>
<td>Compressor overdimensioned.</td>
</tr>
<tr>
<td>Condensation in crank case (especially in 2-stage compressors).</td>
<td>Compressor overdimensioned (operational periods too short in relation to resting periods).</td>
<td>a) Frequent oil changes. b) Reduce cooling of crank case (e.g. by shielding it from air stream). c) Reduce RPM of pump.</td>
</tr>
</tbody>
</table>

### SAFETY PRECAUTIONS

Before using your compressor it is in your own interest to read and pay attention to the following safety rules:

1. **COMPRESSED AIR IS DANGEROUS** - Never direct a jet of air at people or animals.
2. Do not operate your air compressor with any guards removed.
3. Electrical or mechanical repairs should only be carried out by a qualified electrician/engineer. If you have a problem, contact your local dealer, or our Service Department on 0181-556 4443.
4. Before attempting any repair ensure pressure is expelled from the air receiver and disconnect from electrical supply.
5. Do not leave pressure in air receiver overnight or when transporting.
6. Do not adjust or tamper with any safety valves. The maximum working pressure of the compressor is clearly stated on the machine.
7. Exercise caution when transporting the machine to avoid tipping the machine over.
8. Do not operate in a wet/damp environment.
9. Locate your air compressor on a firm flat surface and ensure an adequate supply of clean air is available to the pump unit.
10. Do not exert any strain on electrical cables and ensure that air hoses are not tangled or wrapped around machinery etc.
11. The cylinder head and delivery pipes of your compressor become quite hot during operation. Do not touch. After switching off remember to leave an adequate cool-down period before touching.
12. Ensure that any equipment/tool used in conjunction with your compressor has a safe working pressure exceeding the output pressure of the machine.
13. When disconnecting air hoses or other equipment from your compressor ensure that the air supply is turned off at the machine outlet and expel all pressurised air from within the air hose and other equipment attached to it.
14. If using your compressor for paint spraying:
   a) Never spray close to any source of flame or heat.
   b) Always ensure that the spraying area has adequate fresh air ventilation.
   c) Hazardous paints require special apparatus (see paint manufacturers recommendations).
15. Never let anyone operate the compressor unless they have had the necessary instructions.
16. Permanently installed pipework systems should be designed and installed by a competent engineer.

### NOISE LEVELS

These machines produce noise levels in excess of 70dB(A). Persons working in the vicinity of the machine must be provided with suitable ear protection.
INSTALLATION

Before installing your machine, check that its air output is sufficient for the equipment to be used. The air output from the compressor must be more than the volume of air required.

We recommend the following:
1) Firm and level site, and the use of floor mountings for stationary compressors. (Do not bolt machines directly to the floor).
2) Dust and damp free environment.
3) Adequate ventilation for:
   a) Air intake to compressor pump (in order to draw in clean air).
   b) Cooling to compressor pump, engine or electric motor.
   c) Engine exhaust gases.
4) Do not operate compressor in the vicinity of combustible materials.
5) To allow sufficient access for servicing, a minimum clearance of 500mm must be allowed round the machine.
6) The power cable from the main supply must be large enough to carry the starting and running load of the electric motor. This is particularly relevant if the compressor is some distance from the source of supply.
7) Electrical installations should be completed by a qualified electrician.
8) Electrical connection to the mains supply must be via a suitably fused (see table below) approved plug or isolator (allowing sufficient capacity for motor starting). If using a circuit breaker in place of fuses, ensure it is Motor Rated and of sufficient size to allow for motor starting.
9) Compressors should be connected to mains electricity supply via an earth leakage protection device (RCD), particularly if used outdoors.

SUGGESTED FUSE RATINGS

<table>
<thead>
<tr>
<th>MOTOR SIZE</th>
<th>SINGLE PHASE</th>
<th>THREE PHASE MOTORS 415V</th>
</tr>
</thead>
<tbody>
<tr>
<td>KW</td>
<td>MOTOR D.O.L. 240V</td>
<td>D.O.L.</td>
</tr>
<tr>
<td>0.75</td>
<td>13 amp</td>
<td>10 amp</td>
</tr>
<tr>
<td>1.1</td>
<td>13/15 amp</td>
<td>10 amp</td>
</tr>
<tr>
<td>1.5</td>
<td>20 amp</td>
<td>10 amp</td>
</tr>
<tr>
<td>1.9</td>
<td>20 amp</td>
<td>10 amp</td>
</tr>
<tr>
<td>2.2</td>
<td>30 amp</td>
<td>16 amp</td>
</tr>
<tr>
<td>3.0</td>
<td>40 amp</td>
<td>20 amp</td>
</tr>
<tr>
<td>4.0</td>
<td>50 amp</td>
<td>25 amp</td>
</tr>
<tr>
<td>5.5</td>
<td>7.5</td>
<td>25 amp</td>
</tr>
<tr>
<td>7.5</td>
<td>10.0</td>
<td>25 amp</td>
</tr>
<tr>
<td>11.0</td>
<td>15.0</td>
<td>30 amp</td>
</tr>
<tr>
<td>15.0</td>
<td>20.0</td>
<td>35 amp</td>
</tr>
</tbody>
</table>

SYMPTOM     PROBABLE CAUSES                                                                 REMEDY
Unusual noise from compressor.     Bolts loose.      Tighten bolts.
                                      V-Belt flywheel or cooling coil touching belt guard.  Find place of contact and remedy fault.
                                      Flywheel loose.  Tighten flywheel.
                                      Unit installed on an unsuitable base.  Move unit to a more solid base.
                                      Bearings, piston rings or cylinder worn. Replace worn parts or change compressor pump.
                                      Valve broken.  Change valve parts.
                                      Bearings of electric motor worn. Have motor bearing replaced.

Compressor becomes too hot. Insufficient ventilation. See that sufficient air is supplied to flywheel or fan of compressor and that hot air is properly vented.
                                      Oil level too low (check 2 or 3 times after stopping). Fill with oil - see Page 3.
                                      Wrong direction of rotation.
                                      Fault in valves (machine not stopping). Cooling air from flywheel fan must blow against compressor.
                                      Blown head gasket (machine not stopping). Check, clean/replace.
                                      Dirt on cooling fins or suction filter. Check and replace gasket.
                                      Unit working at too high a pressure.
                                      Not fully unloading (Governor control machines only).
                                      Non-return valve partly blocked.
                                      Compressor being overworked and running continuously. Clean cooling fins and suction filter.
                                      Reset to correct working pressure detailed on unit.
                                      Check pressure unloading genie, adjust if necessary, check valve(s).
                                      Clean or thaw out non-return valve.
                                      Connect to a supplementary compressor or install a larger model.
ELECTRICAL CONNECTIONS

IMPORTANT - SINGLE PHASE MACHINES ONLY

The wires in the mains lead of this machine are coloured in accordance with the following code:

- Green and Yellow - Earth
- Blue - Neutral
- Brown - Live

As the colours of the wires in the lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

The wire which is coloured green and yellow must be connected to the terminal which is marked with the letter E or by the earth symbol (--; ) or coloured green or green and yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

WARNING: This machine must be earthed.

LUBRICATION:

- Pump: Use Clarke compressor oil, as indicated on machine plate.
- Engine: (Petrol or diesel) refer to maker's handbook.

BEFORE STARTING COMPRESSOR CHECK:-

1) Compressor Pump Oil Level
   (a) Dipstick (to level marked)
   or (b) Sight glass (see fig.1)

   ![Fig.1](image)

   Engine oil and fuel levels (where applicable) see manufacturers handbook for details.

2) (a) Automatic Control: Pressure switch is off with button in depressed position (Fig.2, Item 22).
   (b) Genie Control: Ensure bleed valve is open.
   (See Fig.5, Item 2).

WARNING

1. Before starting compressor, open all outlet valves.
2. The following start and stop instructions must be followed in the correct sequence to avoid serious damage to the compressor/motor.
TO START COMPRESSOR - ELECTRIC MACHINES
1. Switch on isolator (mains supply).
2. Press green or black button (direct on line starters only).
3. Switch on pressure switch (lift knob). (Fig.2, item 22)
4. Check rotation (Flywheel/Fan blows air over pump).
5. Run compressor for 10 minutes with outlet valves open (first time of operation only).
6. Close valves and check that pressure does not exceed maximum working pressure (stamped on machine plate), adjust if required (see 'Pressure Adjustments' later in this manual).

TO START COMPRESSOR - ENGINE DRIVEN MACHINES
1. Open bleed valve (fig.5, item 2). N.B. since the CFP9BH does not have a bleed valve (only a small bleed hole) ensure no equipment is connected to the air compressor outlet, and that the pressure adjusting knob (fig.6, item 1) is set to minimum.
2. Start engine in accordance with engine manufacturers instructions.
3. Close bleed valve and allow compressor to run for 10 minutes (first time of operation only).
4. Close valves and check that pressure does not exceed maximum working pressure (stamped on machine plate), adjust if required (See 'Pressure Adjustments' later in this manual).

TO STOP COMPRESSOR - ELECTRIC MACHINES
1. Switch off pressure switch (Push knob down). (Fig.2, item 22)
2. Switch off starter (Press red button - Direct on line starter only).
3. Switch off isolator (Mains Supply).
4. Drain air receiver (release drain tap).

TO STOP COMPRESSOR - ENGINE DRIVEN
1. Allow machine to run for 2 minutes off load (with outlet valves open).
2. Switch off engine (see manufacturers handbook).
3. Drain air receiver (release drain tap).

WARNING: Compressor pumps, delivery pipes etc., and engines will remain hot for some time after use.

MAINTENANCE CHART

<table>
<thead>
<tr>
<th>CHECK LIST</th>
<th>DAILY</th>
<th>WEEKLY</th>
<th>6 MONTHLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Level</td>
<td>Check</td>
<td>Change</td>
<td>Replace if necessary</td>
</tr>
<tr>
<td>Air receiver</td>
<td>Drain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intake filter</td>
<td>Check/Clean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil breather</td>
<td>Clean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fan and Cooling Fins</td>
<td>Check/Clean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inlet and Outlet valves</td>
<td>Check</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-return valve</td>
<td>Check</td>
<td></td>
<td>Replace if worn</td>
</tr>
<tr>
<td>Belt tension</td>
<td>Clean</td>
<td></td>
<td>Replace if worn</td>
</tr>
<tr>
<td>Big end bearings</td>
<td>Check/Adjust</td>
<td></td>
<td>Replace if not drive</td>
</tr>
<tr>
<td>Main bearings</td>
<td>Check</td>
<td></td>
<td>Replace if worn</td>
</tr>
<tr>
<td>Piston rings</td>
<td>Check</td>
<td></td>
<td>Replace if worn</td>
</tr>
</tbody>
</table>

TROUBLE SHOOTING CHART

IMPORTANT!
1. Any remedial work that may be required must be carried out by a qualified electrician/engineer.
2. Switch off current before removing any parts from the compressor.
3. Empty Air Receiver of Air before dismantling any part of the compressor unit's pressure system.
4. If your compressor develops a fault do not use until the fault has been rectified.

**SYMPTOM** | **PROBABLE CAUSES** | **REMEDY**
-------------|---------------------|------------------
Compressor will not start automatically. | Fault in electrical installation.
(a) current supply failure.
(b) voltage drop.
(c) motor starter faulty.
(d) motor incorrectly connected or faulty.
(e) starter overload has tripped out.
(f) Pressure switch defective.
Fuse blown. | Replace with reference to chart on page 2.

Fuses keep blowing. | Inadequate size fuse installed.
Fault in motor. | Consult an electrician.

Compressor unit starts, but stops again after only a few revolutions. | Non-return valve leaking (compressor unit is on load during start).
Non-return valve blocked, possibly frozen up.
Solenoid valve leaking or defective (only applies to 10 hp machines and above). | Switch off current and empty air receiver. Clean or replace non-return valve.
Thaw non-return valve out (Unit must be installed in frost-free place). | Let an electrician inspect electrical installation in accordance with diagram supplied with starter (10 hp and above).
OUTLET PRESSURE ADJUSTMENTS
CFP9BH

1. Pressure Adjusting Knob
2. Lock Nut
3. Air Outlet
4. Bleed Hole

To adjust outlet pressure slacken lock nut (2). Turn Pressure Adjusting Knob (1) clockwise to increase outlet pressure, anti-clockwise to decrease. Tighten lock nut (2) when correct pressure is obtained.

NOTE: When Compressor reaches pressure air will bleed from bleed hole (4).

NOTE: Item (3) quick fit nut can be removed if required and hose can be fitted using 1/4 BSP nut.

PORTABLE COMPRESSORS
1. Pressure Adjusting Knob
2. Outlet Taps
3. Quick Fit Nuts
4. Pressure Gauge

To adjust outlet pressure:
To increase pressure turn knob (1) clockwise. To decrease pressure turn knob (1) anti-clockwise.
Outlet taps, slide knurled section away from body to open, push towards body to close.

NOTE: Pressure Gauge (4). Pressure shown will differ by approximately 1 bar depending on whether the outlets are open/closed.

STATIONARY COMPRESSORS
These machines are not supplied with the facility to adjust outlet pressure. A comprehensive range of airline accessories is available from your local CLARKE stockist.

1. Air Compressor Pump
2. Electric Motor
3. Belt & Pulley Guard
4. Pressure Switch
5. Pressure Gauge
6. Safety Valve
7. Air Outlet Valve
8. Drain Tap
9. Inspection Plug
10. Non-Return Valve
11. Air Bleed Valve
12. Oil Drain Plug
13. Saddle
14. Air Intake Filter
15. Oil Filler/Breather
16. Oil Level Sight Glass
17. -
18. -
19. Air Delivery Pipe
20. Air Bleed Pipe
21. Air Receiver
22. On/Off Button

N.B. 1) On some electric driven and all petrol/diesel models, item 10 is replaced by a pressure unloading device for constant run operation. In this case items (4), (11) and (20) are deleted.

2) On automatic machines 10 H.P. & above a solenoid valve is fitted to the delivery pipe.
GENERAL ARRANGEMENT

PORTABLE

1. Air Compressor Pump
2. Petrol/Diesel Engine (or electric motor)
3. Belt & Pulley Guard
4. Pressure Gauge
5. Oil Drain Plug
6. Safety Valve
7. Air Outlet Valve
8. Drain Tap
9. Inspection Plug
10. -
11. Air Bleed Valve
12. Air Governor (see Fig.5)
13. Saddle
14. Air Intake Filter
15. Oil Filler Breather
16. Oil Level Sight Glass
17. Air Filter/Regulator (see Fig.7)
18. Outlet Air Pressure Gauge
19. Air Delivery Pipe
20. -
21. Air Receiver

N.B. On Electric Portable Machines items 11 and 12 are replaced with a Non-Return Valve and a Pressure Switch, as shown on page 7.

AIR RECEIVER PRESSURE ADJUSTMENTS

WARNING: THE SAFETY VALVE (ITEM 6, FIG. 2 & 3) FITTED TO THIS COMPRESSOR IS FACTORY SET AND MUST NOT BE ADJUSTED.

If it is necessary to alter the pressure settings on the compressor please remember that increasing the pressure will NOT increase the volume of air supplied.

Any adjustments must be made with the compressor at working pressure.

ELECTRIC MACHINES (See the illustration below).

WARNING: DISCONNECT FROM ELECTRICITY SUPPLY BEFORE REMOVING ANY COVER.

NEMA Pressure Switch (shown with cover removed).

PRESSURE ADJUSTMENT: To increase the cut out pressure, turn the hexagon (A) on top of the pressure switch clockwise. To reduce the cut out pressure, turn it anti-clockwise.

RANGE ADJUSTMENT: To increase the pressure differential between cut in and cut out, turn the toothed wheel (B) situated under the large spring anti-clockwise, using a screwdriver. In it's present position, the PRESSURE SWITCH is set to the minimum range.

NOTE: These operations must always be performed with the PRESSURE SWITCH under pressure.

ENGINE DRIVEN MACHINES (Except CFP9BH - see page 10)

Air Governor - Pressure unloading genie

1. Air Delivery Pipe from Compressor Pump
2. Bleed Valve
3. Exhaust Filter
4. Pressure Adjustment Knob
5. Lock Nut

To adjust pressure slacken lock nut (5).

Turn pressure adjusting knob (4) clockwise to increase pressure, anti-clockwise to decrease. Tighten lock nut (5) when correct pressure is obtained.

WARNING: Do not exceed the maximum working pressure of the machine, as marked on the CLARKE AIR specification plate.