CROMMELINS
AIR COMPRESSOR


# Instruction Manual

**Introduction**

Thank-you and congratulations for purchasing a high quality Crommelins belt-drive, reciprocating air compressor set. It has been designed and manufactured to provide many years of safe and reliable service if installed, operated and maintained in accordance with these instructions.

Please read and understand this manual before operating the compressor. Failure to do so could result in death, severe injury or substantial property damage.

If after reading this manual you still have any questions or concerns about your compressor, please contact your local authorised Crommelins dealer or Crommelins Machinery before operating the unit.

This manual should be considered a permanent part of the compressor and should remain with it if resold.

**Disclaimers**

All information, illustrations and specifications in this manual are based on the latest information available at the time of publishing. The illustrations are intended as representative reference views only. Due to our policy of continuous product improvement, we may modify information, illustrations or specifications to explain or exemplify a product, service or maintenance improvement.

We reserve the right to make any change at any time without notice. Your compressor may differ slightly from the models pictured, including optional accessories.

**Contents**

## 1.0 Safety

The air compressor set should only be operated by authorised persons. All users should follow the instructions and safety warnings as (a) described in this instruction manual, (b) shown on any decals affixed to the unit and (c) described in the Plant Risk Assessment that's also available from the manufacturer.

Read and understand the separate instruction manual for the compressor's petrol or diesel engine, if so equipped, before operating the unit.

You must take reasonable care for the health and safety of both yourself and any others who may be affected by your actions. You should understand and follow all of the safety rules and working instructions described herein. You should also use your own good judgement and common sense.

All users of the compressor and any other workers likely to be in the vicinity thereof should undergo training to achieve the requisite minimum level of operator competence before placing the unit into service.

Do not permit anyone to operate the compressor without proper instruction.

The compressor should be installed or operated in a horizontal position on a firm, level and stationary foundation such as a concrete floor that is strong enough to support its weight. The unit should not impede pedestrian or vehicular traffic.

Do not locate the compressor where chemicals, dust, dirt, fibres, oil, salt, water, or flammable or explosive liquids, gases or dusts may be present. The area should not be wet or damp. The unit should be kept away from other heat sources.

Engines, motors and electrical equipment can cause heat, sparks or flames that may ignite a flammable gas or vapour. Do not operate or repair the compressor in or near a flammable gas or vapour. Do not store flammable liquids or gases in the vicinity of the compressor.

High voltage electricity can cause death or serious injury. All electrical installation, maintenance or repair work should be performed by a licensed electrician.

Electric-powered compressors should be installed in a well-ventilated area preferably indoors. If it has to be located outdoors, the unit should be provided with weather protection against precipitation and direct sunlight.

Electric-powered compressors should be connected to a properly grounded electrical supply of adequate capacity. The electricity supply circuit should comply with the AS/NZS 3000:2018 Wiring Rules. It should include a fixed setting residual current device (RCD) with a rated operating residual current not exceeding 30 mA.

Do not operate an electric-powered compressor in wet conditions. Store it indoors.

Petrol or diesel engine-powered compressors should only be installed or operated outdoors in a well-ventilated area away from building doors, windows and vents.

Petrol and diesel fuels are flammable and poisonous and can cause death or serious injury. Do not smoke or allow flames or sparks close to the engine.

Always refuel an engine-powered compressor outdoors in a well-ventilated area. Do not remove the fuel cap or refuel the compressor while the engine is running. Always turn engine off and allow it to cool down before refuelling. Do not overfill the fuel tank; leave room for the fuel to expand. Check for fuel leaks after refuelling. Do not operate the engine if a fuel leak is discovered. Equip the operating area with a Class ABE or BE portable fire extinguisher.

Petrol or diesel engine exhaust gas contains poisonous carbon monoxide that can cause death or serious injury. Ensure adequate ventilation and do not operate the engine in a closed garage or confined space.

The engine's 12 Volt battery, if so equipped, gives off explosive gases and its electrolyte contains corrosive acid, either of which can cause death or serious injury. Keep sparks, flames and cigarettes away from the battery and provide adequate ventilation when charging. Do not allow the electrolyte to contact body or clothing.

Do not use the unit to compress any gas other than air.

Compressed air can contain carbon monoxide, hydrocarbons or other poisonous contaminants that can cause death or serious injury. The compressor is not designed, intended or approved for breathing air. Do not use compressed air for breathing air applications without proper treatment.

Before operating the compressor, check the safety of any hoses, piping and pneumatic equipment connected to the discharge air outlet coupling or valve. Use only hoses, piping, fittings, air receivers, air tools, etc. connected to the compressor's discharge outlet that are safe for the unit's maximum discharge pressure (as marked on the air receiver tank's nameplate) and temperature (i.e. 100°C).

The compressor should not be operated beyond its specified design parameters, especially the maximum discharge pressure. Do not bypass or disable any of the unit's safety features.

Do not modify the compressor without written permission from the manufacturer.

Do not operate the compressor with any of its components damaged, malfunctioning, or partially or wholly removed.

Monitor the compressor and downstream compressed air system for any excessive noise, vibration, leaks or other abnormalities and repair any faults immediately.

Moving parts can cause serious injury. Keep clear of the compressor during operation. Do not operate with the drive guard removed. The compressor may start automatically. Disconnect the power supply or switch-off engine before servicing.

Hot surfaces can cause serious injury. Do not touch the metal surface of any compressor component (including piping and tank) during or shortly after operation. Allow to cool before servicing.

Do not stand on the compressor or use it as a handhold.

High pressure air can cause death or serious injury. Do not bypass, modify or remove the safety valve. Do not operate the compressor with a faulty safety valve or pressure gauge. Do not direct a compressed air discharge stream onto a person's body. High pressure air can stir up dust and debris that may be harmful. Release air slowly when draining condensate water or depressurising the compressor. Do not connect the compressor to air handling parts that cannot withstand the compressor's maximum design pressure (refer to tank nameplate).

Rusted, cracked or damaged air receiver tanks can explode and cause death or serious injury and must be replaced. Drain tank daily or after each use through valve located at bottom of tank. Release compressed air from the tank before servicing. Do not weld, drill or otherwise modify the air receiver tank.

Drain condensate from the air receiver tank only when it's depressurised. Monitor the drained condensate to check whether it poses a slip hazard, e.g. excessive condensate discharged onto a smooth, non-porous floor.

Keep children, pets and unauthorised persons away from the compressor at all times.

Before attempting to install, maintain, repair, store or transport the compressor, isolate and tag-out the power supply or disconnect the engine's spark plug, carefully release any residual air pressure from the air receiver tank and any connected air hoses or piping, and close the air outlet valve or disconnect the outlet air hose. And, if possible, allow the unit to cool down if it has been running.

During maintenance work, take care to prevent any body parts, clothing or tools from touching any hot or moving components of the compressor.

Carry out preventative maintenance on the compressor in accordance with the recommended schedule using only genuine spare parts.

Clean up any leak or spill of fuel or oil immediately.

Clothing sleeves should be tight fitting, long hair should be tied back, jewellery and other loose articles should be removed, and loose gloves should not be worn when operating or maintaining the compressor.

Wear body protection such as tight-fitting gloves, long sleeves and safety boots and also eye protection such as glasses when performing any maintenance work on the compressor.

Wear eye protection such as glasses if working close to pressurised compressed air plant.

Wear protection such as a filter respirator and goggles when blowing down with compressed air. Minimise the generation of dust by compressed air blowing.

Wear personal protection equipment such as safety glasses, ear muffs and gloves when operating the compressor or using compressed air. Wear a face mask or respirator when spraying, blowing down or otherwise creating airborne mists or dust.

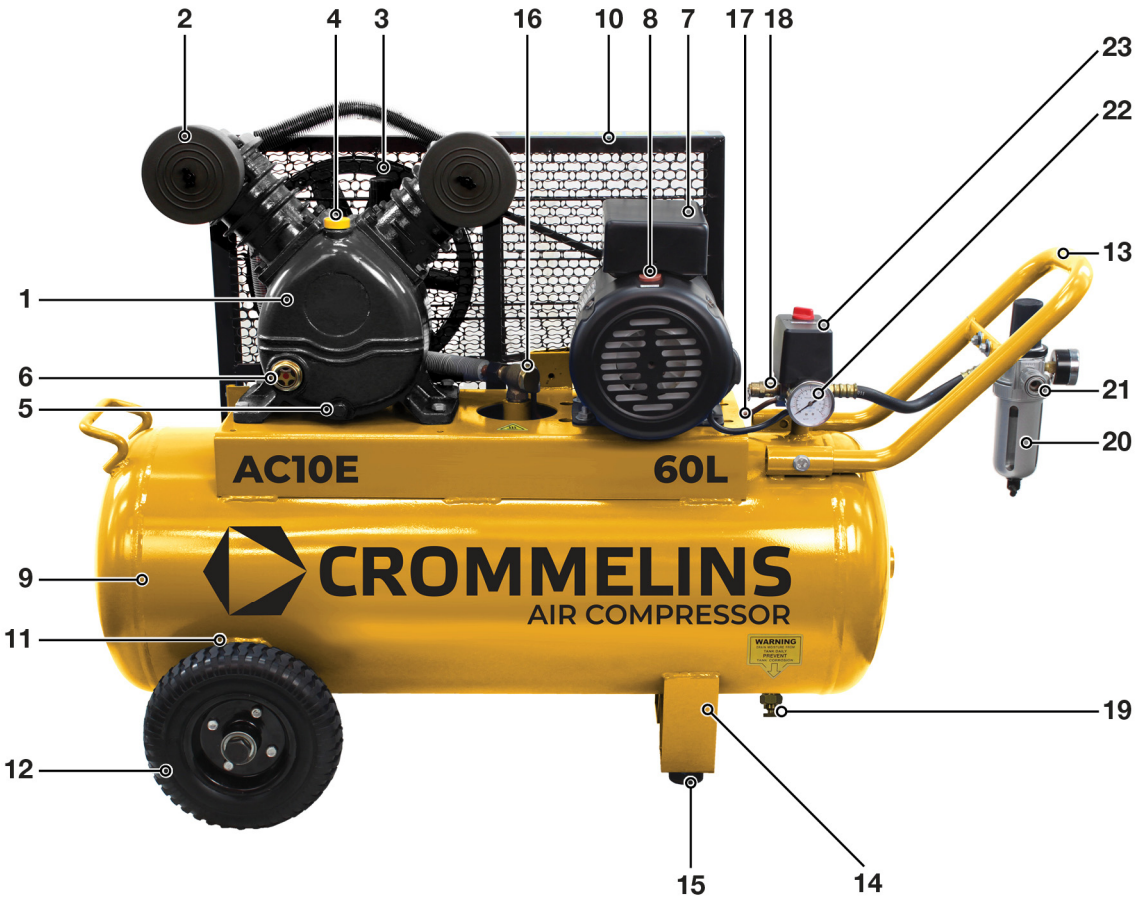
Wear appropriate eye, respiratory and body protection when spraying paint or other chemicals with compressed air. Refer to the chemical's MSDS for specific personal protective equipment (PPE) recommendations.

Do not spray flammable liquids in a confined area. Do not smoke while spraying and do not spray where sparks, flames or other ignition sources (including the compressor) are present.

Do not direct paint or other sprayed material at the compressor. Locate compressor as far away from the spraying area as possible to minimise overspray accumulating on the compressor or clogging its air filter(s).

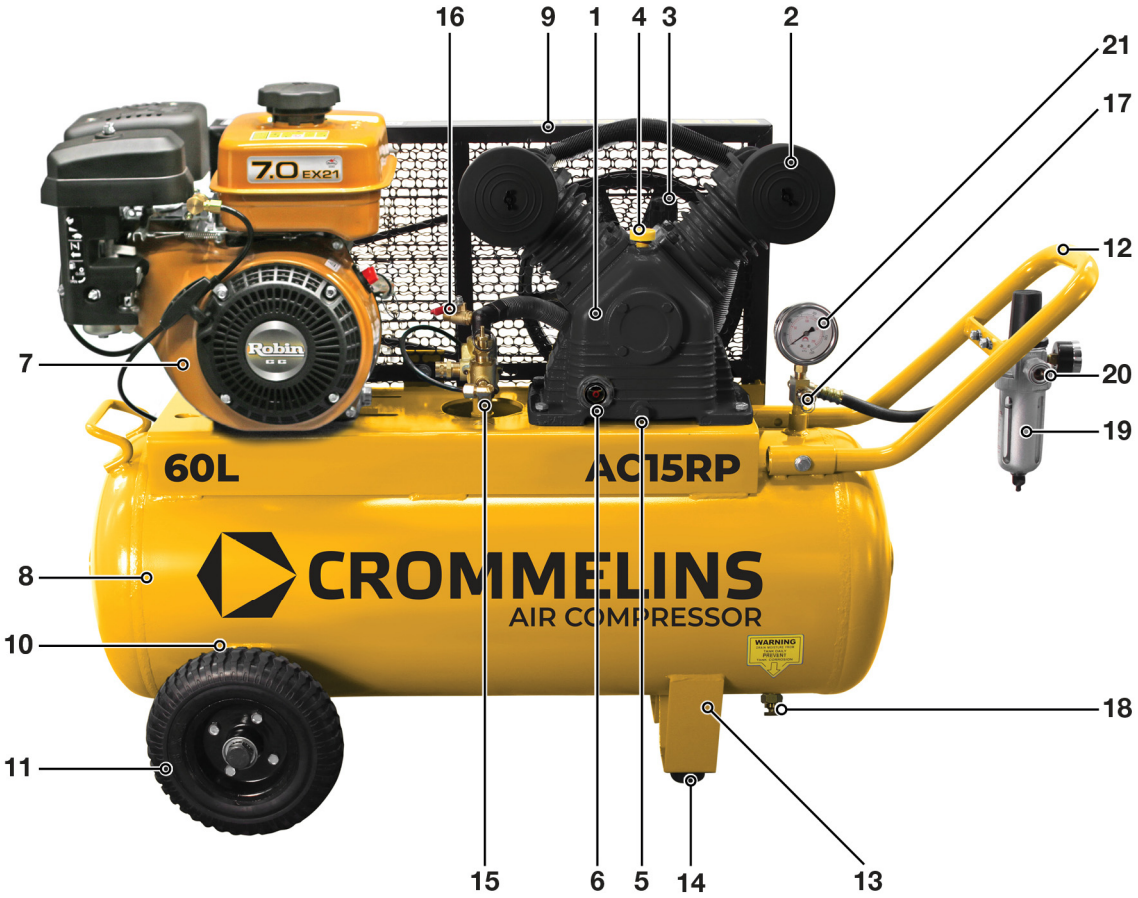
## 2.0 Product Familiarisation

The major components and primary controls of the various compressor types within the Crommelins range are identified in Figures 2-1 to 2-3 below. Users should familiarise themselves with their own compressor's features.



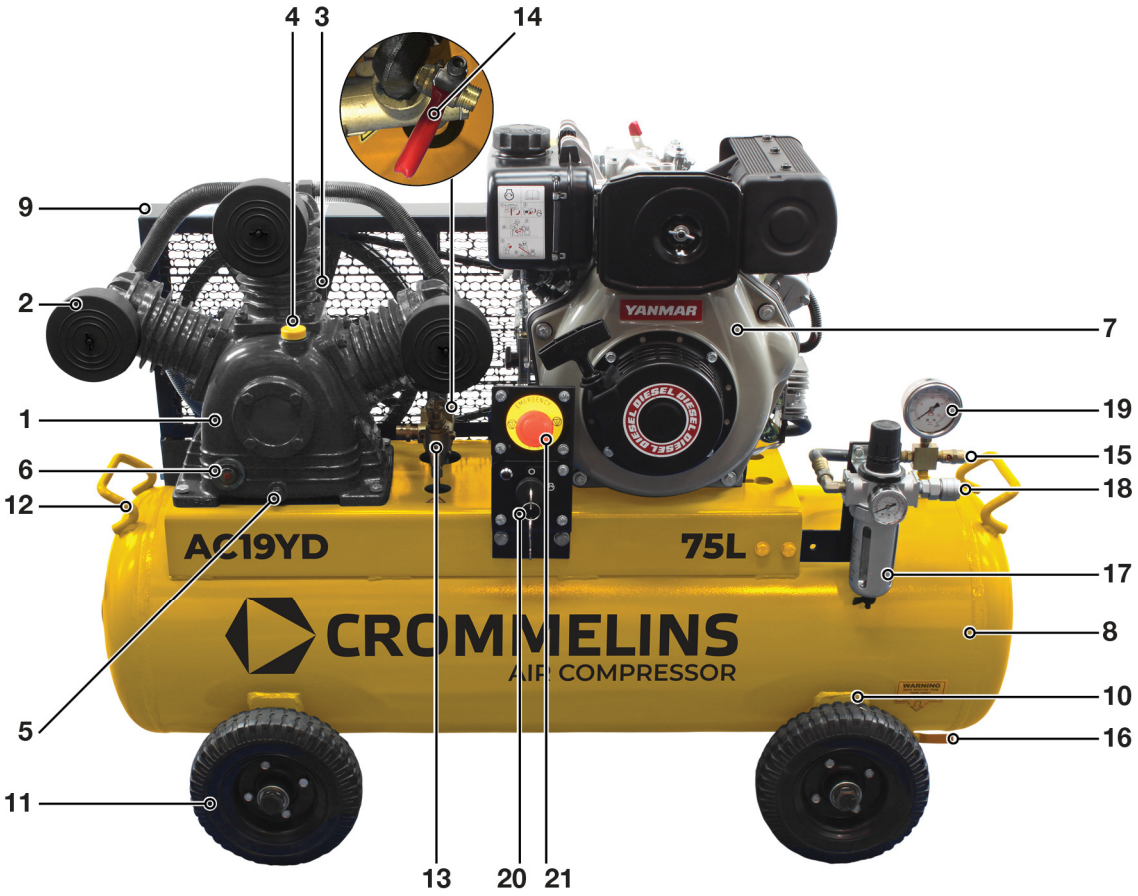

| Item | Description | Item | Description |
|---|---|---|---|
| 1 | Compressor Pump | 13 | Handle |
| 2 | Air Filter | 14 | Foot Mounting Bracket |
| 3 | Crankcase Breather | 15 | Rubber Foot Mount |
| 4 | Oil Fill Cap | 16 | Non-Return Valve |
| 5 | Oil Drain Plug | 17 | Unloading Line |
| 6 | Oil Level Sight Glass | 18 | Safety Valve |
| 7 | Electric Motor | 19 | Drain Valve |
| 8 | Overload Reset Button | 20 | Filter-Regulator |
| 9 | Air Receiver Tank | 21 | Discharge Outlet Coupling |
| 10 | V-Belt Drive Guard | 22 | Air Receiver Pressure Gauge |
| 11 | Wheel Mounting Bracket | 23 | Pressure Switch |
| 12 | Wheel | | |

**Figure 2-1 240 Volt Air Compressor**




| Item | Description | Item | Description |
|---|---|---|---|
| 1 | Compressor Pump | 12 | Handle |
| 2 | Air Filter | 13 | Foot Mounting Bracket |
| 3 | Crankcase Breather | 14 | Rubber Foot Mount |
| 4 | Oil Fill Cap | 15 | Continuous Run Vent Unloading Valve |
| 5 | Oil Drain Plug | 16 | Easy-Start Valve |
| 6 | Oil Level Sight Glass | 17 | Safety Valve |
| 7 | Petrol Engine | 18 | Drain Valve |
| 8 | Air Receiver Tank | 19 | Filter-Regulator |
| 9 | V-Belt Drive Guard | 20 | Discharge Outlet |
| 10 | Wheel Mounting Bracket | 21 | Air Receiver Pressure Gauge |
| 11 | Wheel | | |

**Figure 2-2 Robin Petrol Air Compressor**




| Item | Description | Item | Description |
|---|---|---|---|
| 1 | Compressor Pump | 12 | Handle |
| 2 | Air Filter | 13 | Continuous Run Vent Unloading Valve |
| 3 | Crankcase Breather | 14 | Easy-Start Valve |
| 4 | Oil Fill Cap | 15 | Safety Valve |
| 5 | Oil Drain Plug | 16 | Drain Valve |
| 6 | Oil Level Sight Glass | 17 | Filter-Regulator |
| 7 | Diesel Engine | 18 | Discharge Outlet |
| 8 | Air Receiver Tank | 19 | Air Receiver Pressure Gauge |
| 9 | V-Belt Drive Guard | 20 | Key Start Panel |
| 10 | Wheel Mounting Bracket | 21 | Emergency Stop Button (If Fitted) |
| 11 | Wheel | | |

**Figure 2-3 Yanmar Diesel Air Compressor**

## 3.0 Application and Function

Your Crommelins air compressor is an air cooled, reciprocating type. It is fitted with an oil lubricated compressor pump that features single-stage compression. It is supplied as a compact, self-contained, air receiver tank mounted unit that is automatically regulated and driven by an electric motor or internal combustion engine through V-belts.

The compressor is intended to provide compressed air in a multitude of applications, for example, to power pneumatic tools, operate air dusters and spray guns, inflate tyres, and supply air for pneumatic valves and actuators. It is commonly used as the primary source of compressed air for home garages, workshops, service stations, tyre shops, farms, mobile service vehicles, and so on. Supplementary duties can include furnishing compressed air at an isolated location not serviced by the regular shop air system, and standby service when larger compressors are shut down.

Air discharged from an oil lubricated compressor contains small amounts of oil, water and particulates amongst other contaminants. Virtually all applications require treatment of the compressor's output air to make it suitable for the end use. Air quality treatments such as filtration and drying are the most common requirements together with pressure regulation. The use of compressed air lubricators to protect pneumatic tools is also commonplace nowadays. Failing to install appropriate compressed air treatment equipment will likely result in damage to pneumatic devices or spray-painted finishes.

Where installed, compressed air filtration or drying equipment should be located downstream from the air receiver tank and ahead of any pressure regulator. Lubricators, on the other hand, should be installed as the last stage of treatment and located behind or downstream from any pressure regulator.

Please contact your Crommelins dealer or Crommelins Machinery for specialist advice about compressed air treatment products.

The basic principle of the compressor's operation is as follows:

- On the downward suction stroke of the compressor pump piston, air at atmospheric pressure enters the cylinder through the inlet air filter and the inlet valve located in the cylinder head.

- On the upward compression stroke, the piston compresses the air to the final discharge pressure and forces it out through the outlet valve in the cylinder head, past the non-return valve or continuous run vent unloading valve and then into the air receiver tank.

The requisite power to drive the compressor pump is provided by the prime mover, i.e. electric motor, petrol engine or diesel engine, through a V-belt drive transmission.

On electric models, the pressure switch turns on the motor when the air receiver tank is at or below the minimum "cut-in" pressure. The compressor then operates continuously until the tank pressure reaches the maximum "cut-out" level whereupon the pressure switch turns off the motor. Air can then be heard leaking out from underneath the pressure switch for a short time while the unloader valve releases air pressure trapped in the discharge line between the compressor pump and the non-return valve. This allows the compressor to re-start more easily without being under load at the outset.

The pressure switch on electric-powered, oil lubricated, single-stage compressors is factory pre-set

with cut-in and cut-out pressures of approximately 600 kPa (87 psi) and 800 kPa (116 psi), respectively. This range is ideal for the vast majority of compressed air applications supplied by an electric air compressor. Most pneumatic tools are designed for a supply pressure of only 620 kPa (90 psi). Unless absolutely necessary for a special application, compressor operation at higher pressures is not recommended because it increases electricity consumption and compressor pump wear and tear. For reference, these compressors can be adjusted up to a cut-out pressure not exceeding 900 kPa (130 psi).

On engine-driven models the continuous run vent unloading valve regulates the operation of the compressor pump to maintain the air receiver tank pressure between the pre-set cut-in and cut-out levels. Rather than turn off the engine when the cut-out pressure is reached, which would necessitate physically re-starting the engine if more compressed air is required, the continuous run vent unloading valve discharges the excess compressed air to the atmosphere in what is referred to as “unloading” mode operation. When the pressure drops to the cut-in value, the continuous run vent unloading valve stops dumping the compressed air and instead routes it into the air tank in what is called “pumping” mode operation.

An added feature to reduce fuel consumption, noise emission and wear and tear is the automatic throttle control system whereby engine speed is reduced to idle whenever the compressor is in unloading mode and subsequently increased to maximum revolutions when the compressor switches to pumping mode.

On engine-driven, single-stage compressors the continuous run vent unloading valve is factory pre-set with cut-in and cut-out pressures of approximately 800 kPa (116 psi) and 1,000 kPa (145 psi), respectively. This is the optimum range for most applications using an engine-driven air compressor and it should not be adjusted higher.

If the pressure switch or continuous run vent unloading valve does not shut off the compressor pump discharge into the air receiver tank at the cut-off pressure setting, the safety valve will protect the air tank against over pressurising by automatically releasing air when the pressure exceeds a pre-set value.

Crommelins air receiver tanks are designed and manufactured to comply with the requirements of the ASME Boiler and Pressure Vessel Code and all Australian Workplace Health and Safety Regulations. A copy of the pressure vessel Manufacturer’s Data Report is available from your Crommelins dealer or Crommelins Machinery upon request.

The non-return valve is a one-way valve that allows air to enter the tank from the compressor pump, but prevents the reverse of this flow. The continuous run vent unloading valve also incorporates this functionality.

The drive guard covers the V-belt(s), engine or motor pulley, and the compressor pump pulley. It is a critical safety device.

A drain valve is fitted to the bottom of the air receiver tank to permit the release of water condensate that would otherwise corrode the tank and damage pneumatic devices.

The pressure within the air receiver tank is indicated on its pressure gauge.

## 4.0 Receipt and Inspection

Ensure that adequate lifting equipment is available for unloading and moving the air compressor to the installation site. Lifting equipment, slings, etc. must be properly rated for the weight of the compressor.

Lift the compressor from the delivery vehicle by the shipping pallet only. Do not use the electric motor lifting eyebolt to lift the entire compressor. The motor lifting eyebolt is only to be used for removing the motor from the compressor unit.

Do not work or walk under the compressor while it is suspended in the air.

Inspect the compressor upon receipt for any shipping damage or missing parts. If any problems are apparent, make an appropriate note on the delivery receipt before signing and then contact your Crommelins dealer immediately. Do not operate unit if damaged during shipping, handling or use.

Read the compressor model label to verify it is the correct one as ordered. For electric compressors, check the motor nameplate to verify that it is compatible with the available electricity supply. Make sure that electrical enclosures and components are appropriate for the installation environment.

## 5.0 Installation

### 5.1 Handling

Remove the air compressor from its shipping carton and pallet before mounting. Do not use the timber shipping pallet for mounting the compressor.

Portable wheel-mounted compressors should only be lifted manually as a last resort and always as a joint lift by at least two persons. Avoid injury and do not attempt to lift a compressor by yourself. Use a mechanical lifting aid, such as a forklift or crane, whenever possible in conjunction with two rope or web slings wrapped under the air receiver tank.

Compressors have a high centre of gravity due to the elevated position of the compressor pump and engine or motor, which are relatively heavy components compared to the air receiver tank. Take care when attaching slings to ensure that the compressor does not tip over. Also, check that the slings do not damage any components especially including the piping, wiring, pressure switch or pilot valve, safety valve and pressure gauge.

### 5.2 Electric Air Compressors

Select a clean, dry and well-lit area most preferably indoors with plenty of space for proper ventilation, cooling air flow and accessibility. Locate the compressor at least 300 mm (1 ft) from walls for ventilation or preferably no less than 600 mm (2 ft) to allow for maintenance access. Ensure that the power supply is clearly identified and accessible. Always provide sunshade and shelter from moisture if the compressor has to be located outdoors.

Assemble the supplied axles and wheels onto the compressor. Apply a small amount of lubricant to the axle and wheel rubbing surfaces before tightening the axle bolts. Place the compressor on a firm, level surface that is strong enough to support its weight. Use wheel chocks to prevent movement of the compressor during operation and possible straining of the electricity supply cable or air hose. Do not place on an incline during use as this will interfere with the compressor pump’s splash lubrication system.

Some models are equipped with only two – rather than four – wheels and also two rubber foot mounts. Assemble the latter onto the foot mounting bracket with the supplied fasteners. These compressors also require their removeable carry handle to be attached using the supplied fasteners. And depending on the model, some also require the filter-regulator to be attached to this handle.

Portable type compressors may alternatively be installed for fixed stationary or mobile applications by bolting them down loosely without imparting any stress on the air receiver tank. Flexible vibration isolators must be used.

### 5.3 Petrol and Diesel Air Compressors

Keep the engine at least 1 metre (3 ft) away from building walls and other equipment to prevent a fire hazard and ensure that the exhaust does not blow onto any surface. An exhaust deflector is supplied with the compressor for use, if necessary. Install the compressor in a location with plenty of space for proper ventilation, cooling air flow and accessibility. Do not install or operate the compressor in a confined area. Provide sunshade and shelter from moisture wherever possible.

Assemble the supplied axles and wheels onto the compressor. Apply a small amount of lubricant to the axle and wheel rubbing surfaces before tightening the axle bolts. Use only the supplied rubber

wheels or equivalent vibration isolators. Place the compressor on a firm, level surface that is strong enough to support its weight. Use wheel chocks to prevent movement of the compressor during operation and possible straining of the air hose. Do not place on an incline during use as this will interfere with the compressor pump's splash lubrication system.

Some models are equipped with only two – rather than four – wheels and also two rubber foot mounts. Assemble the latter onto the foot mounting bracket with the supplied fasteners. These compressors also require their removeable carry handle to be attached using the supplied fasteners. And depending on the model, some also require the filter-regulator to be attached to this handle.

Portable type compressors may alternatively be installed for fixed stationary or mobile applications by bolting them down loosely without imparting any stress on the air receiver tank. Flexible vibration isolators must be used.

A vehicle or trailer-mounted compressor must only be operated when in a stationary, horizontal position.

Fill the fuel tank with petrol or diesel as appropriate and check the engine oil level and refill if necessary in accordance with the engine manufacturer's instructions.

### 5.4 Ambient Temperature

The air compressor is designed for operation in ambient temperatures of between 0°C (32°F) and 40°C (104°F).

Where possible in hot areas, the compressor should be operated in the shade to prevent additional heat load due to solar radiation.

In cold areas subject to sub-zero temperatures, take precautions to prevent water condensate freezing inside the compressor and possibly causing damage. Store the compressor indoors when not in use if possible. Drain the condensate daily from the air receiver tank and filter-regulator, if so equipped, and leave the drain valve(s) open when the compressor is not in use. Also, check that the safety valve is not frozen closed before using the compressor.

### 5.5 Noise Considerations

Check the State Workplace Health and Safety Regulations or Local Council Regulations regarding acceptable noise levels. To reduce excessive noise, use vibration isolators, fit intake silencers, install remote air inlets, relocate the compressor, or construct a ventilated enclosure or baffle walls.

### 5.6 Discharge and Condensate Piping

All piping, fittings, air receiver tanks, and so on connected to the compressor discharge must be certified safe for the unit's discharge pressure and temperature. Do not use PVC plastic in the compressed air discharge line.

Use pipe thread sealant on all threads and assemble joints tightly to prevent air leaks and energy wastage.

Mainline piping used to convey air throughout a system should be sized to accommodate the maximum flow rate of the compressor, which is also referred to as its free air delivery. A basic guide to the selection of minimum pipe size diameter for a given flow rate and pipeline length is given in

Table 5-1, or one can refer to the detailed selection guides that are available for the various types of proprietary compressed air piping systems. Branch piping should be sized in a similar manner, but the design flow rate should instead be based on the total air consumption of the tools or appliances running off that branch.

**Table 5-1**
**Recommended Minimum Pipe Size for Compressed Air Lines**
**(Schedule 40 Steel Pipe)**

| | Length of Pipeline (metres) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Flow (L/m)** | **7.5** | **15** | **22.5** | **30** | **45** | **60** | **75** | **90** |
| **142** | ½" | ½" | ½" | ½" | ½" | ½" | ½" | ½" |
| **283** | ½" | ½" | ½" | ¾" | ¾" | ¾" | ¾" | ¾" |
| **425** | ½" | ¾" | ¾" | ¾" | ¾" | ¾" | ¾" | ¾" |
| **566** | ¾" | ¾" | ¾" | ¾" | ¾" | ¾" | ¾" | ¾" |

To allow for vibration and to prevent piping stresses being transmitted to the compressor, the connection between the unit's discharge valve and the mainline piping system should be made using a flexible air hose or coupling.

The minimum air hose internal diameter (ID) can be selected in accordance with Table 5-2 or by referring to the hose manufacturer's guidelines, and again with consideration as to whether the hose is a main distribution line or a branch line.

**Table 5-2**
**Recommended Minimum Hose ID**
**for Compressed Air Lines**

| | Length of Hose (metres) | | |
|---|---|---|---|
| **Flow (L/m)** | **10** | **20** | **30** |
| **283** | ⅜" | ⅜" | ⅜" |
| **566** | ⅜" | ⅜" | ⅜" |

To convert metres to feet, multiply by 3.281. To convert L/min to cfm, divide by 28.3.

One should always err to the larger size when selecting compressed air pipes or hoses, as a too-small line increases pressure drop and energy loss. A larger air line is more energy efficient, provides additional air storage capacity and reduces the severity of air pressure fluctuations during use.

If installing a condensate discharge line from the tank drain valve, the piping must be at least one size larger than the connection, as short and direct as possible, and routed to a suitable drain point or waste container. Condensate contains traces of compressor lubricating oil and other substances that should not be discharged into drains or sewers without pre-treatment.

### 5.7 Electrical Connection

All electrical installation and service work must be performed by a licensed electrician in accordance with all applicable regulations.

The electric motor rating as shown on the motor nameplate and the power supply must have compatible voltage, phase and frequency characteristics.

The required size of electrical wiring between the power supply and the electric motor varies according to motor power and other factors. Adequately sized wiring must be installed to protect against excessive voltage drop during compressor start-up and running. If connecting other electrical equipment to the same circuit, consider the total electrical load when selecting the proper wire size. Overheating, short circuiting and fire damage may result from undersize wiring.

The compressor must be installed and operated with a power cord or cable that has a properly connected grounding wire of adequate size.

Portable electric generators are not recommended for operating compressors unless they have ample generating capacity to provide the requisite starting and running currents without appreciable voltage or frequency drop.

### 5.7.1 240 Volt Air Compressors

These models are shipped pre-wired with a compliant flexible electrical supply lead and three-pin plug ready for “plug and play” installation.

The compressor’s electrical supply lead should be plugged directly into a suitable power point. Avoid using extension leads because they can damage the electric motor due to under-voltage supply. This is the most common cause of compressor failure and is not covered by warranty. Always use additional air hose or pipe instead of an electrical extension lead.

Compressors fitted with a standard three-pin 10 Amp electrical plug (on which all three pins have the same cross-section) can be connected to a standard 10 Amp socket provided that there are no other electrical appliances connected to the same branch circuit. They can also be connected to a heavy duty 15 Amp socket.

Compressors fitted with a heavy duty three-pin 15 Amp plug (on which the earth pin is noticeably larger in cross-section than the other two pins) must only be connected to a heavy duty 15 Amp socket. No other electrical appliances should be connected to the same branch circuit. Under no circumstances should a 15 Amp plug be modified to fit into a 10 Amp socket. This is a dangerous practice and will void warranty on the motor.

The direction of motor rotation has been correctly pre-set at the factory during manufacture. If fitting a replacement motor, check that its direction of rotation is anti-clockwise when viewed looking onto the motor output shaft or compressor pump pulley.

Each 240 Volt motor is fitted with its own manual reset thermal overload protection device. In the event that it is activated due to an overload condition, it is necessary to allow the motor to cool down before the overload switch can be manually reset.

### 5.7.2 12 Volt Electric Start Petrol and Diesel Air Compressors

Robin electric-start petrol air compressors must be connected to a 12 Volt battery in order to utilise this feature; if no battery is connected, these models can still be pull-started manually and otherwise operate normally.

Yanmar electric-start diesel air compressors will not run unless connected to a 12 Volt battery irrespective of whether they’re manually or electrically started. This is because the engine is fitted with a fail-safe energise-to-run fuel solenoid that automatically shuts off the fuel flow if the 12 Volt battery power supply is disconnected or becomes excessively discharged (i.e. the battery voltage is

nil or too low).

Use a 12 Volt motor vehicle battery of sufficient capacity and cold cranking performance not less than that specified in Table 5-3. It is essential to use a sealed, maintenance free battery to prevent electrolyte loss due to vibration when the compressor is running or else during handling and transport. Ideally, it is recommended to use a performance matched Crommelins 12 Volt battery kit that is available from your local authorised Crommelins dealer.

For vehicle mounted applications, the compressor can instead be connected to the vehicle's 12 Volt electrical system by a qualified automotive electrician. Take care not to connect a heavy vehicle's 24 Volt power supply to your Crommelins compressor because it will cause damage to the Robin or Yanmar engine's electrical system that is not covered by warranty.

**Table 5-3**
**12 Volt Battery Requirements**

| Engine Make & Model | Capacity (Ah) | Cold Cranking Performance (CCA) |
|---|---|---|
| Robin EX17 & EX21 | 12 | Not Specified |
| Yanmar L48 | 18 | 100 |

Observe the following procedure for connecting the battery to your compressor:

(a) Connect the battery positive (+) cable to the starter solenoid terminal as shown in Figure 5-1.

(b) Connect the battery negative (−) cable to an engine mounting bolt, frame bolt, or other good engine ground connection as shown in Figure 5-2.

(c) Connect the battery positive (+) cable to the battery positive (+) terminal.

(d) Connect the battery negative (−) cable to the battery negative (−) terminal.

Take care not to connect the battery in reverse polarity as this may damage the battery charging system.

Check the battery cable connections to be sure the cables are tight and free of corrosion. Remove any corrosion, and coat the terminals and cable ends with corrosion-preventing grease.

Check that the battery cables cannot rub or chafe against any surface due to vibration from operation, handling or transport. Otherwise the battery cable insulation may wear through and allow the conductor to short circuit and cause damage.

Remove the cable from the battery negative (−) terminal before carrying out any maintenance.

The procedure for safely disconnecting the battery from your compressor is the reverse of the connecting procedure, i.e. proceed in the sequence of (d) → (c) → (b) → (a) per the above.

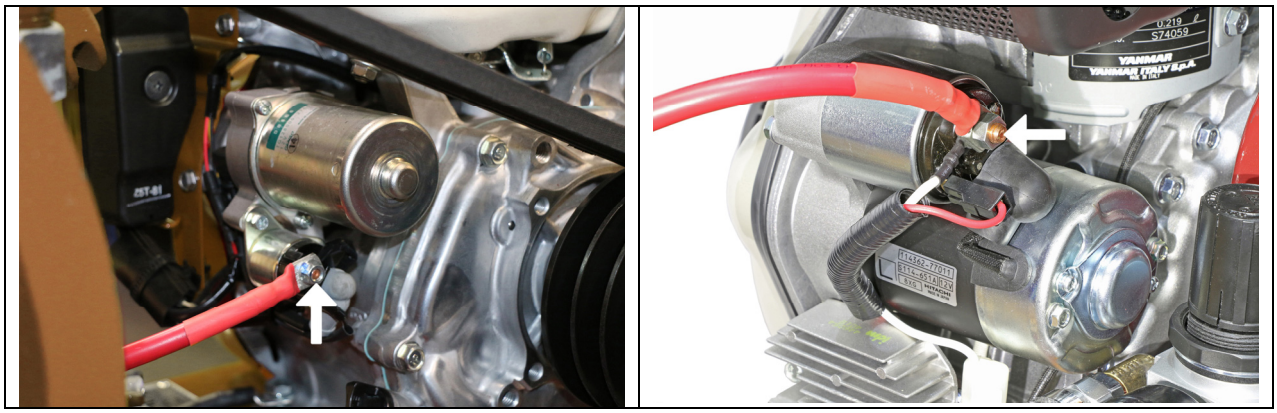


**Figure 5-1 Battery Positive (+) Cable Connection to Starter Solenoid**

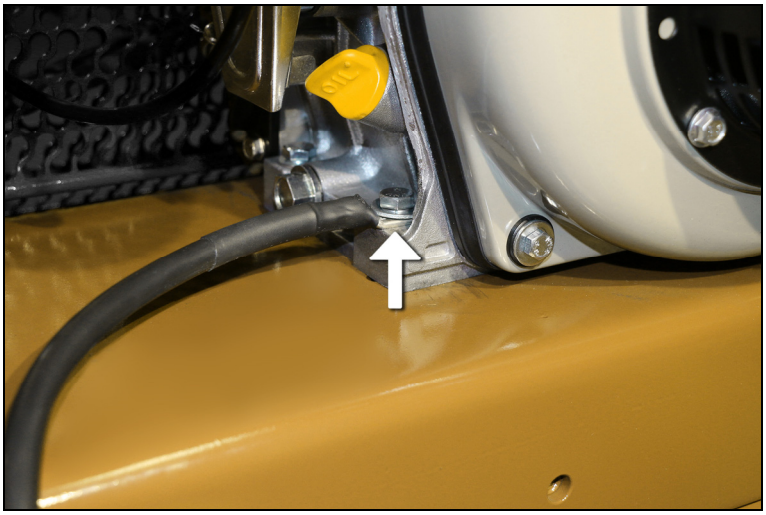


**Figure 5-2 Battery Negative (-) Cable Connection to Engine Mounting Bolt**

## 6.0 Operation

### 6.1 Precautions

Before operating the air compressor, always check first to ensure that it has been received, inspected and installed in accordance with the instructions herein. Rectify any discrepancies before proceeding further.

Check the compressor pump's oil level by looking at the sight glass. The oil level should be at the top of the red circle on the oil sight glass as shown in Figure 6-1. Add oil, if required, through the oil fill cap and only when the unit is not operating. Do not overfill with oil. Refer to the Maintenance and Repair section for recommended oil specifications.

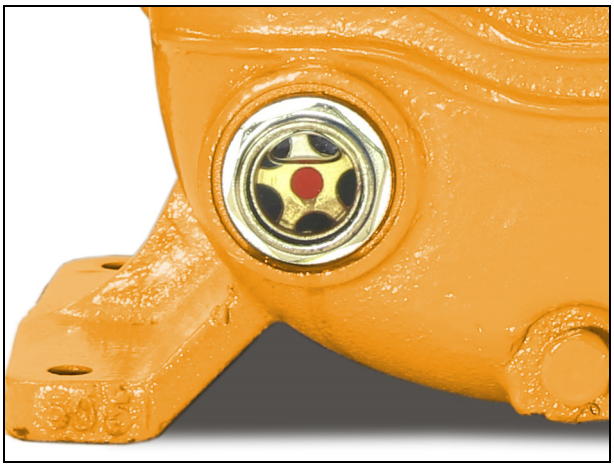


**Figure 6-1 Compressor Pump Full Oil Level**

Check that the outlet valve, if fitted, is closed. Any connected air hose(s) or distribution pipe(s) should not be open to the atmosphere; this is to prevent any injuries from "hose whip" or high-pressure air discharge and also to avoid unattended compressed air discharge to the atmosphere. In the event that an air line is cut or broken, the air supply must be immediately closed off at the compressor either by shutting the discharge outlet valve or switching off the compressor. Do not attempt to "catch" the loose end of a discharging air hose.

Check that the tank drain valve is closed.

If equipped with a filter-regulator, check that its drain valve is in the closed / semi-automatic position with the arrow symbol on its handle pointing vertically upwards (▲) as shown in Figure 6-2.

Take care when discharging air from the tank, i.e. from the safety valve, the drain valve or the air outlet, to ensure that it does not cause dirt, stones, metal swarf or other particles to be blown around.

Any unusual noise or vibration likely indicates a problem with the compressor. Do not continue to operate the unit until the source of the problem has been identified and corrected.

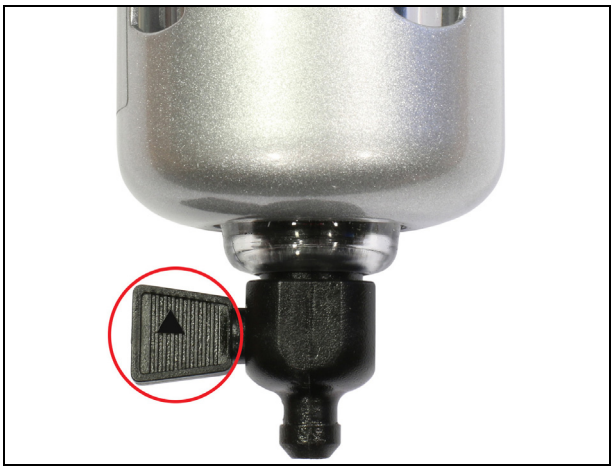


**Figure 6-2 Filter-Regulator Condensate Drain Valve in the Semi-Automatic Position**

## 6.2 240 Volt Air Compressors

Check that the electricity supply is turned off.

Check that the compressor's pressure switch is turned to the "OFF" position.

Connect an air hose to the compressor's discharge outlet coupling by pulling back the locking collar on the socket, inserting a compatible Nitto-style male plug (fitted to one end of the air hose) into the socket, and then releasing the locking collar. Check that the connection is secure by ensuring that the locking collar is fully engaged and also by trying to pull the air hose away from the coupling.

Plug in the compressor's electrical supply lead.

Switch on the electricity supply.

Turn the compressor's pressure switch to the "ON" position. The compressor will now start automatically whenever the air receiver pressure drops to or below the pre-set cut-in pressure of approximately 600 kPa (87 psi). It will also stop automatically whenever the air receiver pressure reaches the pre-set cut-out pressure of approximately 800 kPa (116 psi).

To adjust the output air pressure from a compressor fitted with a filter-regulator, lift the black knob on top of the filter-regulator to unlock it and then turn it to the desired setting by referring to its pressure gauge. Then push the knob back down to lock it.

When compressor operation is no longer required, always turn the pressure switch to the "OFF" position before switching off the electricity supply or unplugging the supply lead. Always use the pressure switch to turn the compressor on and off otherwise the electric motor may be damaged.

## 6.3 Petrol Air Compressors

Connect an air hose to the compressor's discharge outlet coupling, if fitted, by pulling back the locking collar on the socket, inserting a compatible Nitto-style male plug (fitted to one end of the air hose) into the socket, and then releasing the locking collar. Check that the connection is secure by ensuring that the locking collar is fully engaged and also by trying to pull the air hose away from the coupling.

Open the compressor's easy-start valve.

Move the engine fuel valve lever downwards to the ON position marked "I". If you're unsure of its location, refer to the separate instruction manual for the petrol engine.

Move the engine choke lever leftwards to the closed position. This may not be necessary if the engine is already warm or the ambient temperature is high.

Do not touch the engine's throttle control lever; it will operate automatically.

To start using the engine's recoil (or "rope") starter:

(a) Turn on the engine control switch clockwise to the "ON" position.

(b) Pull the starter handle slowly until resistance is felt and then pull it briskly. Do not allow the starter handle to snap back against the engine, but instead return it gently to prevent starter damage.

(c) If the engine doesn't start, repeat the previous step.

To start using the engine's electric starter, if fitted:

(a) Turn the engine control switch clockwise to the START position using the ignition key and hold it there until the engine starts. Release the key as soon as the engine starts. Do not engage the electric starter for more than five seconds at a time.

(b) If the engine doesn't start, release the key and wait 10 seconds before repeating the previous step.

As the engine warms up, gradually move the choke lever rightwards to the open position.

Close the easy-start valve.

The compressor will now operate automatically. Whenever the air receiver pressure drops to or below the pre-set cut-in pressure of approximately 800 kPa (116 psi), the engine will accelerate to full speed and the compressor will operate in normal "pumping" mode. Then, whenever the air receiver pressure reaches the pre-set cut-out pressure of approximately 1,000 kPa (145 psi), the engine will decelerate to idle speed and the compressor will operate in "unloading" mode. When operating in unloading mode, it is normal for air to discharge to atmosphere from the continuous run vent unloading valve.

To minimise mechanical wear and tear, fuel consumption, and exhaust and noise emissions, do not operate the compressor unnecessarily for extended periods in unloading mode. Switch off the engine instead.

To adjust the output air pressure from a compressor fitted with a filter-regulator, lift the black knob on top of the filter-regulator to unlock it and then turn it to the desired setting by referring to its pressure gauge. Then push the knob back down to lock it.

When compressor operation is no longer required, turn off the engine control switch before turning off the engine fuel supply valve.

### 6.4 Diesel Air Compressors

Connect an air hose to the compressor's discharge outlet coupling, if fitted, by pulling back the locking collar on the socket, inserting a compatible Nitto-style male plug (fitted to one end of the air hose) into the socket, and then releasing the locking collar. Check that the connection is secure by ensuring that the locking collar is fully engaged and also by trying to pull the air hose away from the coupling.

Check that the emergency stop button, if fitted, is released; this can be verified by turning the stop button head clockwise one-quarter of a turn.

Open the compressor's easy-start valve.

Turn the engine fuel cock to the "ON" position. If you're unsure of its location, refer to the separate instruction manual for the diesel engine.

Do not touch the engine throttle control lever; it will operate automatically.

To start using the engine's recoil (or "rope") starter:

(a) Turn the engine control switch clockwise to the "ON" position using the ignition key, if fitted.

(b) Pull the starter handle slowly until strong resistance is felt and then return it slowly.

(c) Push the engine decompression lever down and release it. The decompression lever will automatically return to its original position when the engine starts.

(d) Pull the starter handle briskly with both hands. Do not allow the starter handle to snap back against the engine, but instead return it gently to prevent starter damage.

(e) If the engine doesn't start, repeat the previous three steps.

To start using the engine's electric starter, if fitted:

(a) Turn the engine control switch clockwise to the "START" position using the ignition key and hold it there until the engine starts. Release the key back to the "ON" position as soon as the engine starts. Do not use the electric starter for more than 10 seconds at a time.

(b) If the engine doesn't start, release the key and wait 15 seconds before repeating the previous step.

Allow the engine to warm up and then close the easy-start valve.

The compressor will now operate automatically. Whenever the air receiver pressure drops to or below the pre-set cut-in pressure of approximately 800 kPa (116 psi), the engine will accelerate to full speed and the compressor will operate in normal "pumping" mode. Then, whenever the air receiver pressure reaches the pre-set cut-out pressure of approximately 1,000 kPa (145 psi), the engine will decelerate to lower speed and the compressor will operate in "unloading" mode. When operating in unloading mode, it is normal for air to discharge to atmosphere from the continuous run vent unloading valve.

To minimise mechanical wear and tear, fuel consumption, and exhaust and noise emissions, do not

operate the compressor unnecessarily for extended periods in unloading mode. Switch off the engine instead.

To adjust the output air pressure from a compressor fitted with a filter-regulator, lift the black knob on top of the filter-regulator to unlock it and then turn it to the desired setting by referring to its pressure gauge. Then push the knob back down to lock it.

When compressor operation is no longer required:

(a) For engines with a recoil starter only: Locate the fuel stop lever mounted on the lower left-hand side of the engine behind the oil filler cap / dipstick and pull it forwards. Hold firmly until the engine stops. Refer to Figure 6-3.

(b) For engines with an electric starter: Turn the ignition key anticlockwise to the “OFF” position.

(c) Turn the engine fuel cock to the “OFF” position.

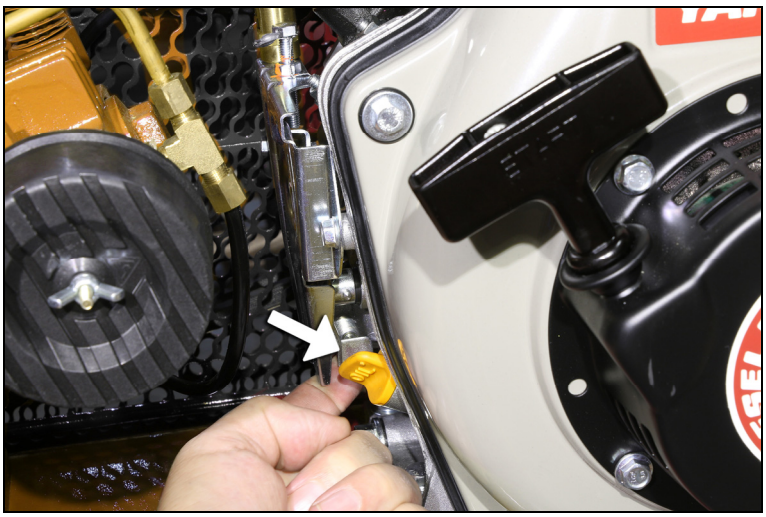


**Figure 6-3 Yanmar Diesel Engine Fuel Stop Lever**

## 6.5 Duty Cycle

To maximise service life, the air compressor should be adequately sized for its given application.

It should ideally operate in a repeating run-stop or pump-unload cycle, with total compressor “pumping” time not exceeding 75% or 45 minutes in every hour on average.

The elapsed time between the start and finish of any given pumping cycle (i.e. the continuous duration that the electric motor operates or the continuous duration that the petrol or diesel engine runs at full speed) should not exceed 10 minutes.

If the unit cannot supply the compressed air demand without exceeding the above duty cycle limits, then either the demand should be reduced or the compressor should be replaced with a unit having a larger free air delivery.

The duty cycle limit is intended to protect the compressor pump valves and heads against stabilised high operating temperatures that can cause premature pump failure.

In applications where multiple compressors are required to satisfy the total air demand, it is recommended that the compressed air distribution system be split into separate circuits each supplied by a single compressor operating within its recommended duty cycle limits. The parallel operation of individual compressors supplying a common air system can often result in very unbalanced duty cycles amongst the units unless they share a single controller.

## 7.0 Maintenance and Repair

### 7.1 Precautions

Before performing any maintenance or repair work on the compressor, isolate and tag-out the power supply or disconnect the petrol engine's spark plug, turn off the fuel supply (if engine-driven), carefully release any residual air pressure from the air receiver tank and any connected air hoses or piping, and close the air outlet valve or disconnect the outlet air hose. And, if possible, allow the unit to cool down if it has been running.

Refer to the separate instruction manual for maintenance and repair of the petrol or diesel engine, if fitted.

Use only genuine spare parts for maintenance and repair of the compressor to ensure its safe and reliable operation.

The maintenance tasks recommended herein can generally be undertaken by anyone with proficient mechanical ability and access to proper tools. Alternatively, your Crommelins dealer can carry out this work.

For best results, the following repair procedures should always be observed:

(a) Use new gaskets, seals and O-rings during reassembly.

(b) Use PTFE thread tape or Loctite® sealant on threaded joints subject to pressure.

(c) Use Loctite® retaining compound when fitting engine or motor pulleys onto their drive shafts.

### 7.2 Maintenance Schedule

The maintenance schedule shown in Table 7-1 has been developed for typical industrial applications in clean indoor environments. The service intervals should be shortened in harsher working conditions. Regular preventative maintenance is essential for the safety, reliability and performance of the compressor and will add years to its useful life.

| Table 7-1<br>Recommended Maintenance Schedule | | | | | | |
|---|---|---|---|---|---|---|
| | Elapsed Time or Operating Hours (whichever occurs first) | | | | | |
| **Activity** | **1 Day** | **1 Week** | **1 Month** | **3 Mths or 500 h** | **1 Year or 2,000 h** | **2 Years or 4,000 h** |
| Check Oil Level | ● | | | | | |
| Inspect for Oil Leaks | ● | | | | | |
| Drain Air Tank and Filter-Regulator | ● | | | | | |
| Check or Clean Air Filter(s) | | ● | | | | |
| Test Safety Valve | | ● | | | | |
| Inspect for Air Leaks | | ● | | | | |
| Check V-Belt(s) | | | ● | | | |
| Tighten Joints and Fasteners | | | ● | | | |
| Clean Unit | | | ● | | | |
| Replace Oil | | | | ● | | |
| Replace Air Filter(s) | | | | | ● | |
| Replace Filter-Reg. | | | | | | ● |
| Replace V-Belt(s) | | | | | | ● |

### 7.3 Lubricating Oil

Maintain the oil level at the top of the red circle on the oil sight glass fitted to the compressor pump as shown in Figure 6-1.

Remove the oil fill cap to add oil only when the compressor is switched off.

Use premium quality engine oil of monograde or multigrade viscosity that is appropriate for the ambient temperature range in which the compressor will be operating. The compressor pump has been filled at the factory with SAE 30 mineral based engine oil that is suitable for ambient temperatures from 5°C (41°F) to 40°C (104°F). Mineral based, semi-synthetic or fully synthetic oils may be used, but different types of oils should not be mixed together.

Regular oil changes in accordance with the recommended maintenance schedule are crucial to the service life of the compressor pump.

To change the oil, remove the oil fill cap and then remove the oil drain plug. An alternative to draining is to evacuate the oil through the oil fill hole by inserting a suction probe. Oil flows easier if the pump is warm, but do not touch the oil in case it is hot. Reinstall the oil drain plug tightly before adding the new oil and then finally screw the oil fill cap back in place.

If the oil changes to a white colour, this indicates water contamination. If it changes to a dark colour, this can indicate compressor overheating or that the oil is contaminated with wear and tear debris. Change the oil immediately in either case of discolouration.

Do not pollute the environment by improper or illegal disposal of waste oil.

New or rebuilt compressor pumps will discharge higher than normal amounts of oil until the piston rings are seated in, which can take approximately 100 operating hours. Some oil may also concurrently accumulate at the crankcase breather openings and this too will diminish with run time.

### 7.4 Air Receiver Tank

To drain condensate from the air receiver tank, slowly open the drain valve and allow the condensate to discharge. Do not pollute the environment by improper or illegal disposal of condensate that may contain lubricating oil or other contaminants.

Use extreme caution when opening the drain valve if the air receiver tank is pressurised. Thumbscrew drain cocks should not be opened more than one full turn. Lever operated drain valves can be fully opened with one quarter of a turn.

Certified external and internal inspections of the air receiver tank should be carried out by a licensed in-service inspector at intervals of no less than two and four years, respectively, in accordance with Australian and New Zealand Standard AS/NZS 3788:2006 or as otherwise specified by the Workplace Health and Safety Regulations in your jurisdiction.

Do not attempt to repair or modify an air receiver tank. Welding, drilling or any other modification will weaken the tank and may result in damage from rupture or explosion.

Always replace worn, cracked, corroded or damaged air receiver tanks immediately.

### 7.5 Filter-Regulator

The compressor's filter-regulator, if so equipped, is fitted with a semi-automatic drain valve underneath its condensate bowl.

With reference to Figure 6-2, the drain valve handle should normally be kept in the semi-automatic position with the arrow symbol pointing vertically upwards (▲); when there is no air pressure in the system, any condensate water will automatically discharge out through the bottom of the valve. And when the system is pressurised, the valve will automatically close internally.

If there's an excessive accumulation of condensate during compressor operation or the system is not depressurised after use, the condensate should be evacuated manually by turning the drain valve handle until the arrow symbol is pointing vertically downwards (▼).

Should it become necessary to clean out the condensate drain bowl, always depressurise the system before removing the bowl's outer guard.

The internal filter element will become clogged and contaminated after extended use and also the condensate bowl and various O-rings / seals will undergo some degradation. For optimal performance and safety, it is recommended to replace the entire filter-regulator periodically.

### 7.6 Air Filters

Do not operate the compressor without its air filter(s) installed or if the filter element(s) is clogged or damaged.

Each air filter element can be accessed by unscrewing the wing nut on the air filter casing. Refer to Figure 7-1.

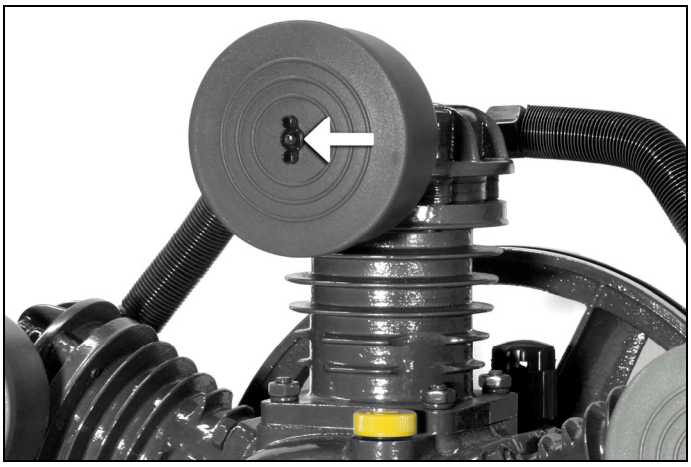


**Figure 7-1 Air Filter Element Cover Removal**

Remove the filter element away from the unit and use compressed air to gently blow it clean from the inside out, but do not wash or oil the element. If it cannot be blown clean or is otherwise torn or damaged, the filter element must be replaced. Wear eye and ear protection when blowing out the filter element.

## 7.7 Safety Valve

Regularly check the safety valve to verify that it's operating freely. While the air receiver tank is pressurised to at least 650 kPa (94 psi), pull the ring on the safety valve and allow it to snap back to its normal position. If air leaks out after the ring has been released, or the valve is stuck and cannot be actuated by pulling the ring, the safety valve is faulty and must be replaced before operating the compressor.

Take care when testing the safety valve as compressed air will discharge from the valve with high velocity and loud noise; wear eye and ear protection.

Do not tamper with the safety valve. It is designed to automatically release air if the tank pressure exceeds a pre-set maximum.

## 7.8 Air Tightness

While the air receiver tank is pressurised to at least 650 kPa (94 psi) and the compressor is switched off, listen for any audible air leaks. Squirt soapy water around any suspect joint and watch for bubbles indicating a leak.

De-pressurise the air receiver tank and all connected air hoses or air piping fully before commencing any repairs.

Disassemble the leaking joint and clean off all traces of thread tape or sealant using a wire brush. Apply PTFE thread tape or Loctite® 243 liquid sealant to the male threaded connection before reassembling and tightening the joint. Allow at least 30 minutes for the liquid sealant to cure, if used.

Re-pressurise the air receiver tank and check that the air leak has been rectified before putting the unit back into normal operation.

### 7.9 V-Belt(s)

V-belts will stretch in normal use and more particularly so on petrol and diesel engine-driven models.

When properly tensioned, a 2.25 kg (5 lb) force applied to each V-belt midway between the engine / motor and pump pulleys will cause a deflection of about 9.5 mm (3/8”) to 12.7 mm (1/2”).

The drive guard must first be removed before V-belt tension can be checked or adjusted. If tension adjustment is necessary, loosen the four fasteners holding the engine or motor to the baseplate. Then either move the engine or motor away from or closer to the pump to increase or decrease V-belt tension, respectively, and retighten the hold-down fasteners. Always use a straight edge to check that the engine / motor and pump pulleys are properly aligned and the V-belt(s) runs straight. Do not over-tension the V-belt(s).

V-belts of the same nominal size can vary in length from one make to another. Thus, for compressors with two or more V-belts, it is essential to replace the entire complement of them when necessary with a full set of the same size and make.

Always refit the drive guard before operating the compressor.

Note: The engine or motor pulley has been installed onto its shaft with a high strength Loctite® retaining compound and may need to be heated prior to removal. It may also be necessary to use a puller tool to remove the pulley.

### 7.10 Cleaning

Switch off the air compressor and use compressed air to blow dust and foreign matter off the compressor pump, motor or engine, piping and air receiver tank. Wear eye and ear protection while undertaking this task.

Oil and grease marks should be cleaned off using mild household surface cleaner and a soft rag. Do not use abrasive cleaners or strong solvents that can damage the compressor’s paint finish.

### 7.11 12 Volt Battery

If the compressor is equipped with a genuine Crommelins 12 Volt battery kit, the battery is a sealed-for-life type that requires no regular maintenance. It is automatically charged whenever the compressor is running.

The battery will self-discharge slowly when not in use and after some time it may have insufficient charge to start the compressor. To prevent this inconvenience, one can either run the compressor periodically to keep the battery charged sufficiently or otherwise charge it (when the compressor is not operating) using a mains-powered 12 Volt battery charger.

Ensure correct polarity whenever charging or re-connecting the battery as described in the Installation section.

### 7.12 Oil Fill Quantities

Please note that the values listed in Table 7-2 are approximate only. Always check the compressor pump’s oil level using the crankcase sight glass as described earlier in this section.

| Table 7-2<br>Compressor Pump Oil Fill Quantities | |
|---|---|
| **Pump Model** | **Oil Capacity (Litres)** |
| PG20 | 1.0 |
| PG31 | 0.5 |
| PG41 | 0.8 |

### 7.13 Engine Speed

The maximum engine speed on both petrol and diesel-powered models has been pre-set at approximately 3,600 rpm with the compressor in “loading” mode at 900 kPa. Do not adjust the engine speed higher as this may cause damage due to increased vibration, which is not covered by warranty.

Should it ever be necessary to re-set the maximum engine speed in accordance with the above specification, it is recommended to apply Loctite® threat sealant on the engine’s high idle set screw to prevent it from vibrating out of adjustment.

### 7.14 Fastener Torques

| Table 7-3<br>Recommended Assembly Torques | | | | |
|---|---|---|---|---|
| **Item** | **Thread Size (mm)** | **Spanner Size (mm)** | **Torque (Nm)** | **Torque (lbf-ft)** |
| PG20, PG31 & PG41 Cylinder Head Bolt | M6 | 5 * | 15 | 11 |
| Standard M5 Bolt Class 4.6 | M5 | 8 | 2.1 | 1.5 |
| Standard M6 Bolt Class 4.6 | M6 | 10 | 3.5 | 2.6 |
| Standard M8 Bolt Class 4.6 | M8 | 13 | 8.5 | 6.3 |
| Standard M10 Bolt Class 4.6 | M10 | 16 | 17 | 12.5 |
| Standard M12 Bolt Class 4.6 | M12 | 18 | 30 | 22.1 |
| Standard M5 Bolt Class 8.8 | M5 | 8 | 5 | 3.7 |
| Standard M6 Bolt Class 8.8 | M6 | 10 | 9 | 6.6 |
| Standard M8 Bolt Class 8.8 | M8 | 13 | 22 | 16.2 |
| Standard M10 Bolt Class 8.8 | M10 | 16 | 44 | 32.5 |
| Standard M12 Bolt Class 8.8 | M12 | 18 | 77 | 56.8 |

* Hex wrench size.

Note: Apply only 80% of the listed torque when tightening onto an aluminium alloy component.

## 8.0 Troubleshooting

### 8.1 Precautions

Before performing any inspection, test or repair work on the compressor, isolate and tag-out the power supply or disconnect the petrol engine's spark plug, turn off the fuel supply (if engine-driven), carefully release any residual air pressure from the air receiver tank and any connected air hoses or piping, and close the air outlet valve or disconnect the outlet air hose. And, if possible, allow the unit to cool down if it has been running.

Please refer to the troubleshooting guide shown in Table 8-1 for assistance with diagnosing and repairing any problem that might occur with your air compressor. Whilst many of the tasks can be undertaken by a mechanically proficient person with access to proper tools, all electrical work must by undertaken by a licensed electrician.

It is recommended for your convenience that this troubleshooting guide be consulted prior to contacting a Crommelins dealer or Crommelins Machinery for advice.

Please refer also to the separate instruction manual for troubleshooting of the petrol or diesel engine, if fitted.

**Table 8.1**
**Troubleshooting Chart**

| Symptom | Possible Cause | Corrective Action |
|---|---|---|
| Motor will not start, runs slowly or repeatedly trips out overload protection. | 1. Pressure switch not turned on. | 1. Turn on pressure switch. |
| | 2. Air receiver tank pressure above cut-in pressure. | 2. Nil (no fault). |
| | 3. No voltage at the pressure switch. | 3. Check electricity supply including all fuses, circuit breakers, switches and wiring. |
| | 4. No voltage at the electric motor (faulty pressure switch). | 4. Replace pressure switch. |
| | 5. Low supply voltage. | 5. Check no load and full load supply voltage. Upgrade power supply circuit if required. Disconnect any other electrical devices on the same supply circuit. |
| | 6. Use of extension lead. | 6. Do not use extension lead. Use longer air hose with larger diameter. |
| | 7. 240 V: Thermal overload switch on motor tripped. | 7. 240 V: Allow motor to cool down and manually reset overload switch. |
| | 8. Faulty pressure switch unloader valve (nil or restricted unloading air flow). | 8. Replace unloader valve or complete pressure switch. |

| Table 8.1<br>Troubleshooting Chart | | |
|---|---|---|
| **Symptom** | **Possible Cause** | **Corrective Action** |
| | 9. Nil or restricted discharge air flow through non-return valve.<br>10. 240 V: Blown start or run capacitors. Damaged motor cowl or fan. Other motor faults.<br>11. V-belts too tight or misaligned.<br>12. Compressor pump partially or totally seized. | 9. Repair or replace non-return valve.<br>10. 240 V: Check both capacitors and replace as required. Replace motor cowl or fan. Replace motor.<br>11. Adjust belts to proper tension and alignment.<br>12. Repair or replace compressor pump. |
| Engine will not start or cranks slowly. | 1. No fuel in tank.<br>2. Fuel supply valve closed.<br>3. Engine control switch off.<br>4. Low oil level.<br>5. 12 Volt battery not connected (to electric start diesel engine).<br>6. Emergency stop button activated (pushed in).<br>7. Engine not grounded properly.<br>8. Old fuel or water in fuel.<br>9. V-belts too tight or misaligned.<br>10. Compressor pump partially or totally seized.<br>11. Engine fault. | 1. Add fuel.<br>2. Open fuel supply valve.<br>3. Turn on control switch.<br>4. Add oil.<br>5. Connect 12 Volt battery to engine.<br>6. Release emergency stop button by a quarter turn clockwise.<br>7. Ground battery to engine as recommended.<br>8. Replace fuel and add fuel stabiliser.<br>9. Adjust belts to proper tension and alignment.<br>10. Repair or replace compressor pump.<br>11. See engine manual. |
| Compressor pump does not come up to speed. | 1. Loose engine or motor pulley, loose compressor pump pulley, or loose / worn V-belts.<br>2. Low supply voltage.<br>3. Use of extension lead.<br>4. Engine throttle control not opening fully or engine fault.<br>5. Damaged or worn | 1. Tighten or replace pulleys as required, check alignment and adjust V-belt tension.<br>2. Check no load and full load supply voltage. Upgrade power supply circuit if required. Disconnect any other electrical devices on the same supply circuit.<br>3. Do not use extension lead. Use longer air hose with larger diameter.<br>4. Adjust or replace throttle control. See engine manual for other action.<br>5. Replace compressor pump |

**Table 8.1**
**Troubleshooting Chart**

| Symptom | Possible Cause | Corrective Action |
|---|---|---|
| | compressor pump valves or blown cylinder head gaskets. | valves or cylinder head gaskets. |
| | 6. Compressor pump partially seized. | 6. Repair or replace compressor pump. |
| Excessive noise (including knocking and rattling) or vibration. | 1. Loose engine or motor or loose compressor pump pulleys. V-belts not tensioned correctly or misaligned. | 1. Tighten or replace pulleys as required, check alignment and adjust V-belt tension. |
| | 2. Low oil level. | 2. Add oil. |
| | 3. Pistons hitting the cylinder heads. | 3. Remove cylinder heads and check for carbon deposits or other foreign matter on top of pistons. |
| | 4. Damaged or worn crankshaft bearings, crankpin bearings, crankshaft, connecting rods, piston pin bearings, piston pins, pistons, cylinders or valves. | 4. Replace components or entire compressor pump. |
| | 5. Faulty non-return valve. | 5. Repair or replace non-return valve. |
| | 6. Loose fasteners. | 6. Check and tighten fasteners (including foot mounts). |
| | 7. Engine fault. | 7. See engine manual. |
| Slow pressure build-up or unable to reach cut-out pressure. | 1. Air demand exceeds compressor pump capacity. | 1. Reduce air demand or use larger or additional compressor(s). |
| | 2. Air leaks. | 2. Tighten, refit or replace leaking connections or components. |
| | 3. Blocked or dirty inlet air filters. | 3. Clean or replace air filter elements. |
| | 4. Loose engine or motor pulley, loose compressor pump pulley, or loose / worn V-belts. | 4. Tighten or replace pulleys as required, check alignment and adjust V-belt tension. |
| | 5. Continuous run vent unloading valve not switching fully to loading mode (indicated by air venting to atmosphere). | 5. Replace continuous run vent unloading valve. |
| | 6. Damaged or worn compressor pump valves or blown cylinder head | 6. Replace compressor pump valves or cylinder head gaskets. |

| Table 8.1<br>Troubleshooting Chart | | |
|---|---|---|
| **Symptom** | **Possible Cause** | **Corrective Action** |
| | gaskets.<br>7. Damaged or worn piston rings, pistons or cylinders.<br>8. Faulty non-return valve. | <br>7. Replace components or entire compressor pump.<br>8. Repair or replace non-return valve. |
| Compressor pump runs excessively hot (and possibly melts air filter enclosures). | 1. Incorrect direction of rotation.<br>2. Ambient temperature too high or insufficient ventilation.<br>3. Low oil level.<br>4. Excessive duty cycle.<br>5. Damaged or worn compressor pump valves or blown cylinder head gaskets. | 1. Check compressor pulley turns anti-clockwise (looking onto pulley). Change electric motor connections if incorrect.<br>2. Reduce ambient temperature or improve ventilation (e.g. move further away from walls or other equipment).<br>3. Add oil.<br>4. Reduce air demand or use larger or additional compressor(s).<br>5. Replace compressor pump valves or cylinder head gaskets. |
| Excessive duty cycle (> 75% loading ratio or continuous loading times > 10 minutes). | 1. Air demand is too high.<br>2. Air leaks. | 1. Reduce air demand or use larger or additional compressor(s).<br>2. Tighten, refit or replace leaking connections or components. |
| Excessive cycling between pumping mode and unloading or off mode. | 1. Maximum cycling occurs when air demand is at 50% of compressor output.<br>2. Air leaks.<br>3. Excessive condensate in air receiver tank. | 1. Nil (no fault). Cycling will reduce with either decreased or increased compressed air demand.<br>2. Tighten, refit or replace leaking connections or components.<br>3. Drain air receiver tank. |
| Excessive oil in discharge air. | 1. Blocked or dirty inlet air filters.<br>2. Overfilled with oil.<br>3. Low oil viscosity.<br>4. Excessive duty cycle.<br>5. Blocked or damaged crankcase breather. | 1. Clean or replace air filter elements.<br>2. Drain oil down to high level mark.<br>3. Replace with correct oil.<br>4. Reduce air demand or use larger or additional compressor(s).<br>5. Clean or replace crankcase breather. |

| Table 8.1<br>Troubleshooting Chart | | |
|---|---|---|
| **Symptom** | **Possible Cause** | **Corrective Action** |
| | 6. Damaged or worn intake valves, piston rings, pistons or cylinders. | 6. Replace components or entire compressor pump. |
| Water in discharge air. | 1. No fault. This is normal operation. Condensate quantity will increase with duty cycle and humidity. | 1. Install dryer or filter in discharge line. Manually drain air tank more often. Revise distribution piping system to ensure proper condensate drainage. |
| Compressor does not switch off and safety valve discharges. | 1. Faulty or incorrectly set pressure switch or continuous run vent unloading valve.<br>2. Faulty safety valve.<br>3. Note: Use tank pressure gauge to help diagnose fault. | 1. Adjust or replace pressure switch or continuous run vent unloading valve.<br>2. Replace safety valve. |
| Low suction or air blowing out at air filter inlets during pumping mode. | 1. Damaged or worn compressor pump inlet valves or blown cylinder head gaskets. | 1. Replace compressor pump inlet valves or cylinder head gaskets. |
| No short discharge of air from the pressure switch after reaching cut-out pressure or being manually switched off. | 1. Faulty pressure switch unloader valve.<br>2. Blocked or damaged unloading line.<br>3. Blocked or faulty non-return valve. | 1. Replace unloader valve or complete pressure switch.<br>2. Clean or replace unloading line.<br>3. Clean, repair or replace non-return valve. |
| Short initial discharge of air from the 240 Volt pressure switch during pumping mode after starting with nil or low pressure in the air receiver tank. | 1. Correct function of the “soft start” pressure switch unloading valve to reduce motor starting current. | 1. Nil (no fault). |
| Continuous discharge of air from the pressure switch after reaching cut-out pressure or being manually switched off. | 1. Faulty non-return valve. | 1. Repair or replace non-return valve. |
| Continuous discharge of air from pressure switch during pumping mode. | 1. Faulty pressure switch unloader valve. | 1. Replace unloader valve or complete pressure switch. |
| Air receiver tank does not hold pressure when compressor is off and discharge outlet valve is closed. | 1. Faulty non-return valve.<br>2. Air leaks. | 1. Repair or replace non-return valve.<br>2. Tighten, refit or replace leaking connections or components. |
| Engine stalls when compressor changes from unloading mode to pumping mode. | 1. Engine idle speed too low.<br>2. Engine throttle control not opening fully. | 1. Increase engine idle speed.<br>2. Adjust or replace throttle control. |

| Table 8.1<br>Troubleshooting Chart | | |
|---|---|---|
| **Symptom** | **Possible Cause** | **Corrective Action** |
| | 3. Other engine fault. | 3. See engine manual. |
| Engine stalls when compressor changes from pumping mode to unloading mode. | 1. Engine idle speed too low.<br>2. Continuous run vent unloading valve not fully exhausting air to the atmosphere.<br>3. Other engine fault. | 1. Increase engine idle speed.<br>2. Replace continuous run vent unloading valve.<br>3. See engine manual. |
| External oil discharge from compressor pump. | 1. Oil leaks. | 1. Tighten, refit or replace leaking connections or components. |
| Oil appears “milky” in sight glass. | 1. Water contamination in oil. | 1. Replace oil and move compressor to less damp or humid location. |
| Oil appears black in sight glass. | 1. Graphite carry-over from cast iron material (initial oil fill only).<br>2. Oil dirty or overheated (initial or subsequent oil fill). | 1. Replace oil.<br>2. Replace oil and check for compressor pump overheating. |

## 9.0 Transport

Always switch off the air compressor and de-pressurise the air receiver tank before transporting the unit. Turn the engine fuel valve off, if fitted, and always keep the compressor upright to prevent oil or fuel spillage.

Ensure that adequate lifting equipment is available for moving and loading the compressor. Lifting equipment, slings, etc. must be properly rated for the weight of the compressor.

Take care when attaching load restraining devices to ensure that the compressor does not tip over during transport, especially because of its high centre of gravity.

Check with the carrier whether lubricating oil or engine fuel must be drained out prior to transport. If so, ensure that the party receiving the compressor is notified accordingly.

Keep the compressor covered during transport to prevent the ingress of dust and debris.

## 10.0 Storage

Always switch off the air compressor and then de-pressurise and drain the air receiver tank before storing the unit.

Turn the engine fuel valve off, if fitted, and always keep the compressor upright to prevent oil or fuel spillage.

Store the compressor in a cool, dry and shaded place and keep it covered to prevent the ingress of dust and debris.

If storing the compressor for a long period, the following additional preparations should be made:

- Change the compressor pump lubricating oil and clean the entire unit in accordance with the maintenance instructions.

- Petrol air compressors: Check that the engine control switch is turned off and drain all petrol from the fuel tank and piping. Remove the spark plug and pour a tablespoon of clean engine oil into the cylinder. Crank the engine several revolutions to distribute the oil and then reinstall the spark plug. Remove the 12 Volt battery, if fitted, and recharge it once a month.

- Diesel air compressors: Check that the engine control switch is turned off and drain all diesel from the fuel tank and piping. Pull the starter handle slowly until strong resistance is felt and then return it slowly. At this point, the engine's inlet and exhaust valves should be closed during the compression stroke and this should help to prevent rust forming inside the cylinder while the engine is not is use. Remove the 12 Volt battery, if fitted, and recharge it once a month.

## 11.0 Dismantling and Disposal

There is no requirement for the air compressor to be dismantled during normal operation other than for major repair / overhaul or prior to final disposal at the end of its service life.

Dismantling should only be carried out by a mechanically proficient person with access to proper tools or alternatively by your Crommelins dealer.

Before dismantling the compressor, switch off the unit, disconnect the power supply, turn off the fuel supply valve, carefully de-pressurise and drain the air receiver tank, drain out the fuel tank and piping, and drain the lubricating oil from the compressor pump and engine.

Do not pollute the environment by improper or illegal disposal of the waste oil, fuel and condensate.

Air receiver tanks should be rendered unusable for pressure service prior to disposal, for example by cutting or massive deformation. This is to prevent their unauthorised and unsafe use by others.

Do not pollute the environment by improper or illegal disposal of the compressor either as a whole or dismantled. Take the unwanted unit or components to your local recycling centre instead. The compressor is made almost entirely of metal that can usually be sold to scrap metal recyclers.

## 12.0 Specifications

### 12.1 240 Volt Electric Air Compressor

| Model | Pump Model | Displ. (L/min) | FAD (L/min) | Cut-Out Pressure (kPa) | Max. Pressure (kPa) | Electric Motor (kW) | Tank Volume (L) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| AC10E | PG20 | 270 | 200 | 800 | 900 | 1.65 | 60 | 85 |

### 12.2 Robin Petrol Air Compressor

| Model | Pump Model | Displ. (L/min) | FAD (L/min) | Max. Pressure (kPa) | Tank Volume (L) | Weight (kg) |
|---|---|---|---|---|---|---|
| AC15RP | PG31 | 430 | 350 | 1,000 | 60 | 90 |

### 12.3 Yanmar Diesel Air Compressor

| Model | Pump Model | Displ. (L/min) | FAD (L/min) | Max. Pressure (kPa) | Yanmar Engine Model | Yanmar Engine Starter | Tank Volume (L) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| AC19YD | PG41 | 540 | 440 | 1,000 | L48 | Electric | 75 | 124 |

## 13.0 Warranty Against Defects

### 13.1 Record of Ownership

Please complete the following details about your air compressor for future reference concerning warranty, spare parts and service.

Date of Purchase: .....

Purchased From: .....

Tax Invoice Number: .....

Air Compressor Model Number: .....

Air Receiver Tank Serial Number: .....

Engine or Motor Type / Make / Size: .....

It is recommended that you keep a copy of the original tax invoice together with this manual.

### 13.2 Warrantor

Name: Crommelins Machinery (ABN 11008889656)
Address: PO Box 352, Bentley, WA 6982, Australia
Phone: (08) 9350 5588
Fax: (08) 9451 6381
Email: email@crommelins.com.au
Web: www.crommelins.com.au

### 13.3 Warranty Explained

Crommelins Machinery warrants their goods against defects in materials and workmanship under normal use and service.

The Crommelins warranty does not cover fair wear commensurate with the age of the product, any damage caused by accident, abuse, misuse, neglect or failure to observe proper operating instructions or proper machinery maintenance as described in the instruction manual.

It is the owner's responsibility to regularly maintain a product in accordance with the instruction manual and only use the equipment for its designed purpose.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

### 13.4 Consumer Advice

Any claim under these warranties must be made within warranty period from the date of purchase of the product.

To make a claim under the warranty, you must return the product (with proof of purchase) to the closest warranty agent or to the place of purchase.

Where a failure does not amount to a major failure, Crommelins is entitled to choose between providing you with a repair, replacement or refund. To obtain compensation, you would need to provide documentary evidence of the loss or damage suffered, and documentary evidence that such loss or damage was a reasonably foreseeable consequence of a failure by Crommelins Machinery to comply with a consumer guarantee under the Australian Consumer Law.

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### 13.5 Service Agents

There are over 185 national authorised service / repair agents available, visit our website at www.crommelins.com.au for their locations and contact details. For engine brands (other than Robin) please contact the manufacturer for service agents.

### 13.6 Crommelins Products

Crommelins takes pride in all products they sell and they live by their company Mission Statement; “To be the supplier of choice to Hire and Construction Industry by providing high quality portable powered products.”

### 13.7 3-Year Robin Engine Warranty

Robin Industrial Engines and Robin Imported Products (Pumps, Generators) come with a 3-year manufacturer’s warranty.

### 13.8 1-Year Manufacturer’s Warranty

All other products including CROMMELINS™, CROMTECH™, flexible drive products (i.e. FP2T), high pressure pumps, air compressors and imported products come with a 1-year manufacturer's warranty.

### 13.9 Other Brands Warranty

Other branded products come with warranties provided by their manufacturer, i.e. Golz, American Sanders, AR Blue Clean.

## 14.0 Record of Maintenance and Repair

| Date | Maintenance or Repair Activity |
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| Date | Maintenance or Repair Activity |
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