AIR COMPRESSOR BELT DRIVE OILLESS 3HP 70 LITRE

TSACBO1

www.thetoolshed.co.nz

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Thank You

For the purchase of this ToolShed product. We try our hardest to supply customers like you with the best quality products available, at the best price possible. We cant wait to continue working together in the future.

Please contact us for any servicing, replacement parts, or questions you might have about your ToolShed product by visiting our website, or calling: 0800 948 665.

PRODUCT DETAILS

Product Model	*ToolShed Air Compressor Belt Drive Oilless 3HP 70 Litre*
Product Code	*TSACBO1*

DISTRIBUTED BY:

Note:

This manual is for your reference only. Due to the continuous improvement of the ToolShed products, changes may be made at any time without obligation or notice.

Warranty:

This product may be covered under The ToolShed warranty. For more information, see our Terms & Conditions at www.thetoolshed.co.nz

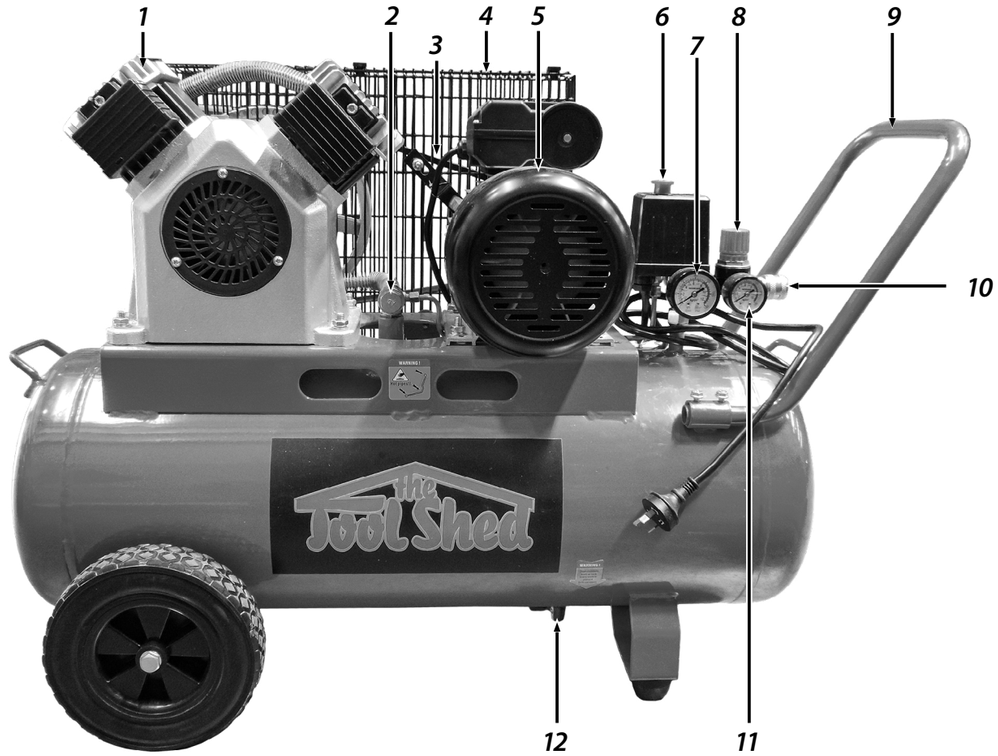
SPECIFICATIONS

Voltage	230 Volts | 50 Hertz
Tank Size	70 Litre
Free Air Delivery	200 LPM | 7.1 CFM
Displacement	300 LPM | 10.6 CFM
Maximum Power	3.0 HP
Maximum Pressure	8 bar | 116 PSI
Maximum Amperage:	9.5 Amps
Motor Speed	2850 RPM
Pump Speed	1100 RPM
Net Weight	61 kg
Gross Weight	66 kg
Package Size	1040 x 420 x 740mm

Intended Use

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. Due to its Oil-Free operation, it also can be used in other areas such as medical care, laboratory equipment, scientific research, industrial production and daily life where clean air is demanded.

PRODUCT IDENTIFICATION



1	Air Filters
2	Non Return Valve (NRV)
3	V Belt
4	Safety Cage
5	Electric Motor, Air Intake
6	Pressure Switch On/Off
7	Tank Pressure Gauge
8	Pressure Regulator
9	Transportation Handle
10	Quick Connector
11	Output Pressure Gauge
12	Drain Cock

SAFETY GUIDELINES

WARNING

READ ALL SAFETY WARNINGS & INSTRUCTIONS. Failure to follow instructions and warnings could lead to serious injury, electric shock, or fire.

Work Area Safety

- **Ensure that your work area is kept well lit and clean.** Lack of visibility and clutter greatly increase the risk of accident when using tools.
- **Keep bystanders, pets, and children clear when operating a power tool or machine.** They can cause distraction or risk injury to themselves.
- **Ensure you are not operating the power tool or machinery in the presence of dust, liquids, flammable gases, or anything that creates an explosive atmosphere.** Power tools and machinery can create sparks which can lead to ignition and fire hazards in working environments.

Personal Safety

- **Always wear personal protective equipment (PPE).** Eye protection, ear protection, dust masks, and other protective equipment will help to reduce the risk of personal injury or long-term illnesses.
- **Dress appropriately. DO NOT wear loose clothing that can get caught in moving parts.** Keep hair, loose clothing, jewellery, and anything else that could be of risk, away from moving parts in the machine, or they could be caught therein.
- **Always remain alert and DO NOT operate power tools or machinery under the influence of any substances like alcohol or drugs, including prescription medications.** Lack of focus could lead to injury or accident while operating these power tools and machinery.
- **Always ensure proper footing and balance.** Overreaching can lead to slipping and falling which can result in injury or accident.
- **Ensure the power switch is in the OFF position before connecting any battery, or power source to the power tool or machinery.** This can cause injury as tools and machinery can suddenly fire incidentally when live, causing accidents.
- **Use all provided dust collection and extraction attachments, if included.** This equipment, along with the use of PPE dust masks, can help keep you safe from dust, and keep your work site clear from hazards.
- **Ensure loose parts such as wrenches or adjusting keys are removed before starting the power tool or machinery.**

SAFETY GUIDELINES

Electrical Safety

- **DO NOT use the power tool or machinery in raining conditions or wet areas where the power tool or machinery could get wet.** Water in the power tool or machinery can lead to electric shock.
- **Only use the power tool or machinery when the plug correctly matches the power outlet.** Modifying plugs greatly increases the risk of electric shock.
- **Keep the power cord away from anything that could damage it such as sharp edges, moving parts or heat.** A damaged power cord increases the risk of electric shock.
- **Only operate outdoors with the use of an outdoor extension lead.** Not all extension leads are suited to outdoor use and using one which is not can greatly increase the risk of electric shock.
- **Avoid body contact with grounded or earthed surfaces.** Surfaces such as radiators, ranges, pipes, and refrigerators can increase the risk of electric shock due to your body being earthed or grounded.
- **Never carry the compressor by the cord, or yank the cable from the power outlet.** This can damage the internal wiring and may become a hazard.

WARNING

Electric shock can cause serious injury or, in some cases be fatal.

Power Tool & Machinery Use & Care

- **Use the correct tool for the job.** Forcing a tool to do a job it was not designed for increases the risk of accident or injury.
- **Disconnect tools and machinery from power, or remove batteries before making any changes or adjustments, or before storing the tools and machinery.** This reduces or removes the risk of a power connection that causes the tool or machinery to accidentally fire, which can help prevent injury or accident.
- **Check the general condition of the power tool for damage or any problems that could affect the way the tool or machine works.** An unrepaired tool or machine can lead to accident and injury. Only have your tool or machine repaired with genuine parts from The ToolShed.
- **Only use the power tool and machinery with genuine parts or accessories that are designed to be used with the power tool and machinery.** Failure to do so could result in accident or injury or damage your tool or machinery.
- **Store your tool or machinery out of reach of children, and away from untrained personnel when not in use.** Use by somebody untrained, or a child, could lead to accident or serious injury.

SAFETY GUIDELINES

Pneumatic Safety

- **Never attempt to ingest or expel the compressor air internally to yourself or other persons or animals.**
- **Never aim at yourself, others, or animals:** Always keep the tool pointed away from any body parts while operating. Be mindful of the tool's expelling direction and potential recoil or kickback. **Never** attempt to block the air outlet with your finger or any part of your body.
- **Wear personal protective equipment (PPE):** Always wear appropriate PPE, such as safety goggles or a face shield, hearing protection, gloves, and sturdy footwear. Pneumatic tools can generate high-speed projectiles or create loud noise.
- **Check the tool condition:** Inspect your tools before each use to ensure they are in good working condition. Look for any signs of damage, loose parts, or leaks.
- **Use the correct air pressure:** Adjust the air pressure according to the manufacturer's recommendations for the specific tool. Using excessive or less pressure can lead to tool failure or cause accidents.
- **Securely connect hoses and fittings:** Ensure that all hoses, fittings, and connections are properly secured and tightly fastened.
- **Use proper technique and grip:** Hold the tool firmly and use both hands when operating it.
- **Disconnect the tool when not in use:** Before performing any maintenance or adjustments, or when taking breaks; always disconnect the tool from the air supply.

Lubrication of Compressor

- This air compressor is OIL FREE. Therefore there is NO oil used for lubrication, reducing maintenance and preventing oil contamination, making it ideal for clean-air applications.
- The eco-friendly, oil-free design eliminates waste oil disposal and risks of spills, creating a cleaner, safer workspace.
- Ensure proper ventilation to prevent overheating, replace air filters regularly, and inspect belts and fittings to keep the unit in top condition.

Safety with the Compressor

- Before attempting to operate this air compressor the following basic safety precautions should be taken to reduce the risk of fire, electric shock and personal injury. It is important to read the instruction manual and to understand applications, limitations and potential hazards associated with the air compressor. This air compressor is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety

SAFETY GUIDELINES

Service

- **Have your tools and machinery serviced at The ToolShed with ToolShed replacement parts.** This will ensure that the safety of the power tool or machine is maintained.

⚠ WARNING

The warnings and precautions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be under stood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

Always Use Common Sense

- It is not possible to cover every conceivable situation you can face. Always exercise care and use your common sense. If you get into a situation where you feel unsafe, stop and seek expert advise. Contact the ToolShed, service agent, or an experienced user. Do not attempt any task you feel unsure of!

⚠ WARNING

Death or serious injury could result from improper use of this compressor. To avoid these risks, please follow the instruction manual.

Compressor Specific Safety

- **Know your air compressor.** Read the operator's manual carefully. Learn its applications and limitations, as well as the specific hazards.
- **Never touch the moving parts of the compressor during operation.** Never place your hands, fingers, or other body parts near the moving parts of the compressor.
- **Never operate this compressor without all the guards and safety features in place and in proper working order.** If maintenance or servicing requires the removal of guards or safety features, ensure they are replaced before resuming general operations with the compressor.
- **Always wear safety goggles or equivalent as a minimum PPE requirement.** Compressed air must never be aimed at anyone, or any part of the body, or animals.
- **Protect yourself against electric shocks.** Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigeration enclosures. Never operate the compressor in wet or damp locations.
- **Disconnect the Compressor.** Always disconnect the compressor from the power source and remove compressed air from the tank prior to servicing, inspecting, maintaining, cleaning, replacing, or checking parts.
- **Avoid unintentional starting.** Do not carry the compressor while it is connected to its power source, or when the air tank is filled with compressed air. Ensure the knob of the pressure switch is in the **"OFF"** position before connecting the compressor to its power source.

SAFETY GUIDELINES

- Store the compressor properly. When not in use, the compressor should be stored in a dry, locked place.
- Always ensure your compressor is level and stable. Using your compressor on uneven or unstable ground may cause it to tip over.
- Always move the air compressor only using the handles and/or wheels.
- Always use the correct type of tool for the operation to be carried out.
- This air compressor is designed to compress normal air. Never use it to compress any other types of gases.
- This air compressor is not to be used for filling scuba or oxygen air bottles or tanks.
- If the compressor appears to be operating unusually, making strange noises, or otherwise appears defective, stop using it immediately and contact your nearest ToolShed for servicing or part replacement advise.
- Protect material lines and air lines from damage or puncture.
- Check hoses for weak or worn condition before each use, making certain all connections are secure. Do not use if a defect is found.
- Keep hose and power cord away from sharp objects, chemical spills, oil, and solvents.
- Release all pressures within the system slowly. Flown dust and debris may be harmful.
- Never leave a tool unattended with the air hose attached.
- Inspect tank annually for rust, pin holes, or other imperfections that could cause it to become unsafe.
- Never weld or drill holes in the air tank.
- Drain the tank of moisture when it is at 20PSI or less. If the compressor will not be used for a while, it is best to leave the drain valve open until it will be used again. This will allow moisture to completely drain out and help prevent corrosion on the inside of the tank.
- For the risk of bursting: Do not adjust the regulator to result in an output pressure greater than the marked maximum pressure of the attachment you are using.
- Use the air compressor only for its intended use. Do not alter or modify the unit from the original design or function.
- Always keep the motor air vent clean. The motor air vent must be kept clean so that air can flow freely at all times. Check for dust and build-up frequently.
- Do not use extension cords. Using an extension lead on a compressor can cause voltage drop, overheating the motor and leading to appliance damage, or even fire.

Efficient Usage Tips

- For efficient operation of the compressor at full continuing load and at maximum operating pressure, make sure the temperature of the work environment does not exceed 25°C.
- We advise you to use the compressor at 70% maximum duty per hour at full load, as this ensures efficient operation of the compressor long-term. (Meaning: If the compressor's cycle time is 10 Minutes; 7 Minutes ON motor pumping and 3 Minutes OFF, motor not pumping). When the motor is pumping the attached air tool can not be used. Only use the attached air tool while the compressor is not pumping.

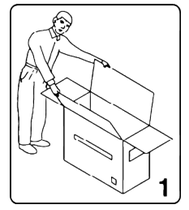
ASSEMBLY

NOTE

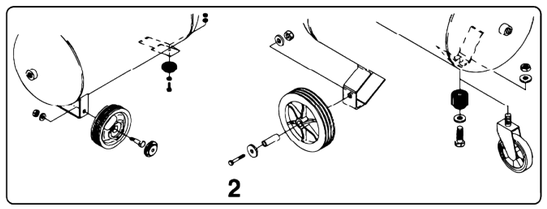
The information contained in this instruction manual is designed to assist you in the safe operation and maintenance of this compressor. Some illustrations in this manual may show details or attachments that differ from those on your own compressor.

Installation

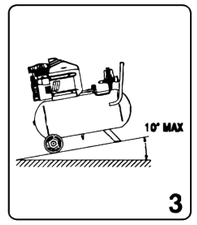
- Remove the compressor from its packaging (Fig.1). Ensure it is in perfect condition and no damaged occurred during transport.



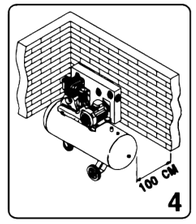
- Fit the wheels and rubber tabs on the tanks, following Fig.2. Only tilt the compressor slightly to fit the wheel and axle to the mounting hole. Do not lay the compressor on its side.



- Position the compressor on a flat surface, or with a maximum tilt angle of 10°, as shown in Fig.3. Ensure set up is in a well-ventilated area, protected against the elements.

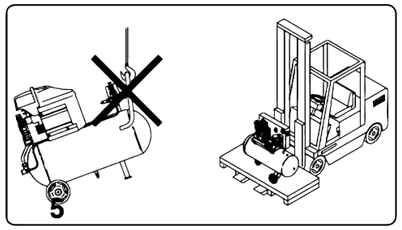


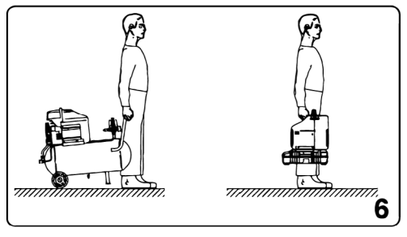
- To ensure good ventilation and efficient cooling, the compressors belt guard must be at least 100cm away from any wall (Fig.4).



Usage Instructions

- Take care when transporting or moving the compressor, ensuring you do not overturn it, or lift it with hooks or ropes.





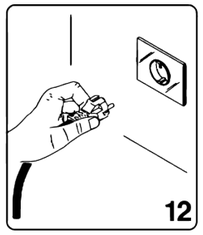
OPERATION

⚠ CAUTION

Always check the air requirement of the tool you wish to use to ensure that it is within the range of this air compressor's air output.

Electrical Connections

- **Single-Phase Compressors** are supplied with an electrical cable and a two-pole + earth plug. The compressor must be connected to a grounded power socket (Fig.12).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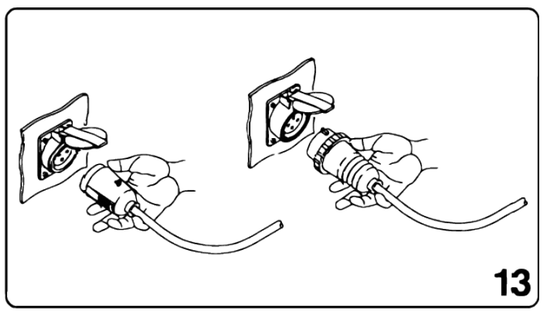
- **Three-Phase Compressors** (L1+L2+L3+PE) must be installed by a specialised technician. Three-phase compressors are supplied without a plug. Connect a plug, with screw-on grommets and securing collar, to the cable, as per Fig.13.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Adequate Power Supply is Essential

- The compressor must be connected to a grounded circuit of adequate capacity.

Shut Tank Drain if Pressure won't Build Up

- **Drain air tank — When at 20PSI or Less.**
- A drain valve is fitted to the air receiver tank to permit the release of water condensation that would otherwise corrode the tank and damage pneumatic devices.
- Loosen the drain cock and allow any condensed water to escape, once all the air and moisture has been released, tighten (finger tighten only) the drain valve.

Don't Turn the Compressor On/ Off at the Wall

- The pressure switch automatically controls the power to the motor and operates the pressure relief valve. It also allows for manual operation via the push/pull on/off switch on top of the pressure switch.
- Failure to vent the pressurised air between the pump and the tank will cause excessive current draw on start-up, this can lead to motor failure. For this reason, always turn the compressor on and off via the pressure switch.

Only Operate the Compressor on a Flat Surface

- Do not operate the compressor on inclines, on a rooftop, or elevated position that could allow the unit to fall or be tipped over. Always disconnect the power before moving.

OPERATION

Prior to Starting

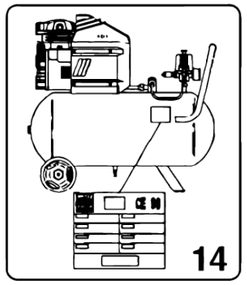
- Before operating the air compressor, always check first to ensure that there is no damage or missing parts. If so, rectify these issues before proceeding further.
- Check that the outlet valve, if fitted, is closed.
- Any connected air hose(s) and/or distribution pipe(s) should not be open to the atmosphere. This is to prevent any injuries from 'hose whip' and/or high-pressure air discharge. In the event that an air line is cut or broken, the air supply must be immediately closed off at the compressor. Do not attempt to "catch" the loose end of a discharging air hose.
- Check the tank drain air valve is closed.
- 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.

Run In Procedure

- When starting for the first time, leave the air compressor to run for 10 minutes without load. Leave the air cock completely open. After 10 minutes, check the drain cock is closed, and shut the main air cock. As tank pressure increases, check that the compressor stops automatically once maximum pressure is reached.

Starting the Compressor

- Check that the mains power matches that indicated on the electrical data-plate (Fig.14). The permissible tolerance range is +/- 5%.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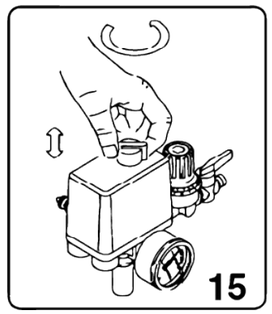
- When first starting a compressor that's operating on three-phase voltage, check the rotation direction of the cooling fan by comparing it with the direction of the arrow on the belt guard or on the protective housing.
- Turn or press to position **"0"** the knob located on the top of the compressor (Fig.15). Depending on the type of pressure switch fitted on the appliance.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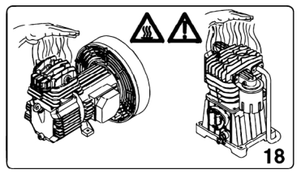
- Fit the plug in the power socket (Fig.12–13) and start the compressor, turning the pressure switch knob into the **"I"** position.
- The compressor is fully automatic and is controlled by the pressure switch which stops automatically when the tank pressure reaches a maximum value. The pressure difference between the maximum and minimum values is usually about 2 Bar/29PSI.

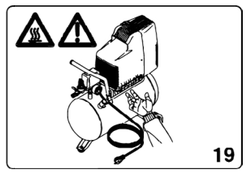
OPERATION

Starting the Compressor (Cont.)

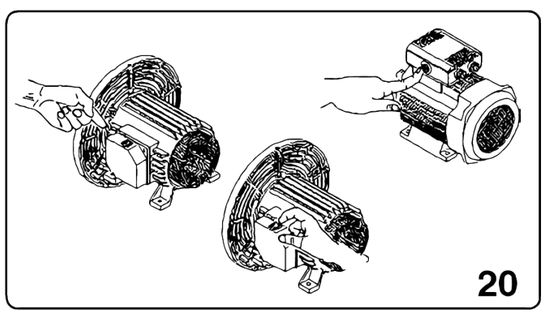
- E.G. the compressor will stop when it reaches 8 Bar/110 PSI (as the maximum operating pressure) and will restart automatically when the pressure inside the tank drops to 6 Bar/87 PSI.
- After connecting the compressor to the power line, load it to maximum pressure to ensure the machine is operating as it should.

NOTE: The head/cylinder/delivery tube unit can reach high temperatures. Take care when working near these parts that you do not touch them to avoid possible burns and injury (Fig.18–19).



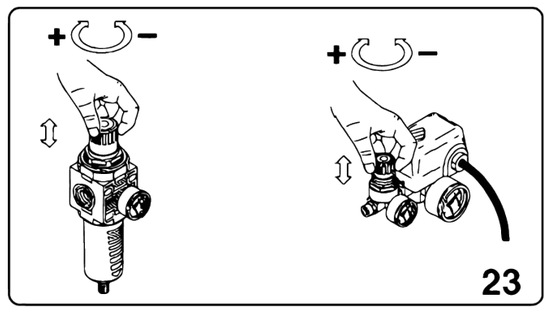


IMPORTANT: The motor of this compressor is supplied with a manually resetting automatic thermal-breaker, located outside the terminal board cover. When the breaker is tripped, wait a few minutes, then reset the breaker manually (Fig.20).



Adjusting Operating Pressure

- You do not have to use the maximum operating pressure at all times. On the contrary; the pneumatic tool being used generally requires less pressure. On compressors supplied with a pressure reducer, operating pressure must be correctly adjusted.
- Release the pressure reducer knob by pulling it up, adjust pressure to the required value by turning the knob clockwise to increase pressure, and counter-clockwise to reduce it.
- Once you have obtained the optimum pressure, lock the knob by pressing it downwards (Fig.23).



- For pressure reducers equipped without a pressure gauge, the set pressure can be seen on the graduated scale located on the reducer body.
- On pressure reducers equipped with a pressure gauge, pressure can be seen on the gauge itself.

NOTE

Some pressure regulators do not have a "Push to Lock" button, therefore simply turn the knob to adjust the pressure.

MAINTENANCE

- Before cleaning or performing any maintenance, you must ensure the tool is switched off and disconnected from the power supply.
- Compressed air is the most effective way to clean this tool. Always wear PPE safety goggles when cleaning tools with compressed air.
- Ventilation openings and switch levers must be kept clean. DO NOT attempt to clean by inserting pointed objects through openings.
- Do not use chemicals when cleaning this tool, especially on plastic parts as this may cause damage or cracking.
- If you discover any damaged or broken parts, consult your nearest ToolShed for replacements and advise.

Before Performing Maintenance

Before attempting any type of maintenance job or servicing on the compressor, make sure of the following:

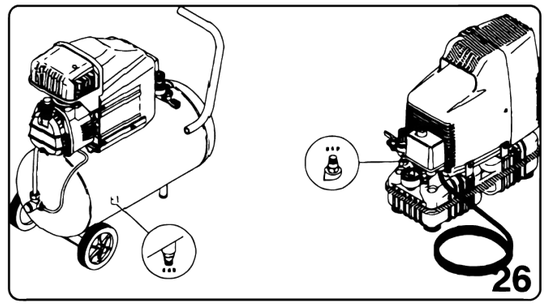
- The master power switch is in the **"0"** OFF position.
- The Pressure switch and the control unit switches are all OFF, in the **"0"** position.
- Ensure the compressor is disconnected from the power source completely to prevent accidental starting.
- Ensure there is no pressure in the air tank.

No Oil Changes Required

- Your oil-free compressor eliminates the need for oil changes, thanks to its self-lubricating design. Reducing maintenance, preventing oil leaks, and ensuring clean, eco-friendly operation.

Draining the Tank

- The compressor generates condensate water which accumulates in the tank. It is recommended the condensate in the tank should be drained when the tank is at 20PSI or less.
- This is done by opening the drain cock (Fig.26) on the underside of the tank.
- Take care if there is any remaining compressed air in the tank, the condensate may release with considerable force.



- Recommended pressure: 1–2 Bar maximum.
- Leave the drain tap open when the compressor is not in use for extended periods of time, so all moisture can continue to drain.
- **Close the valve prior to the next use.**

Storage

- Ensure the compressor is unplugged and the power switch is in the **OFF** position.
- Run the air tool to relieve pressure in the hose, then remove the air hose and the tool, or release the pressure from the tank by the drain valve.
- Drain the condensate water from the tank. Leave the valve open until the next usage.
- Ensure the compressor is stored in a dry and protected area, where it cannot be used by children or other unauthorised persons.

TROUBLESHOOTING

FAULT	POSSIBLE CAUSE	SUGGESTED SOLUTION
Motor Will Not Start, Runs Slowly or Repeatedly Trips Out Overload Protection.	Pressure switch not turned on.	Turn on pressure switch.
	Air receiver tank pressure above cut-in pressure.	Nil (no fault). Unit will start when pressure drops.
	No voltage at the pressure switch.	Check electricity supply including all fuses, circuit breakers, switches, and wiring.
	No voltage at the electric motor.	Repair or replace pressure switch.
	No voltage on one or two phases of power supply.	Check voltage on all 3 phases of power supply.
	Low supply voltage.	Check no load and full load supply voltage. Upgrade power supply circuit if required. Disconnect any other appliances on the same supply circuit.
	Nil or restricted discharge air flow through non-return valve.	Repair or replace non-return valve.
	Damaged motor cowl and/or fan, other motor faults.	Replace cowl and/or fan, replace motor.
	V-Belts too tight or misaligned.	Adjust belts to proper tension & alignment.
	Compressor pump partially or totally seized.	Repair or replace compressor pump.
Compressor Pump does not Come up to Speed.	Loose motor pulley, loose compressor flywheel or loose/worn V-belts.	Tighten or replace pulleys as required, check alignment and adjust V-belt tension.
	Low supply voltage.	Check no load and full load supply voltage. Upgrade power supply circuit if required. Disconnect any appliances on the same supply circuit.
	Damaged or worn.	Replace compressor pump valves and or blown head gaskets.
	Compressor pump partially seized.	Repair or replace compressor pump.

TROUBLESHOOTING

FAULT	POSSIBLE CAUSE	SUGGESTED SOLUTION
Slow Pressure Rise or Unable to Reach Cut-Out Pressure.	Air demand exceeds compressor pump capacity.	Reduce air demand or use larger or additional compressor(s).
	Air leaks.	Tighten, refit, or replace leaking connections or components.
	Blocked or dirty inlet air filters.	Clean or replace air filter elements.
	Loose motor pulley, loose compressor flywheel pulley or loose/worn V-belts.	Tighten or replace pulleys as required. Check alignment and adjust V-belt tension.
	Head unloaders not fully retracting (usually indicated by air blowing out from air filter inlets).	Repair or replace head unloaders.
	Damaged or worn compressor pump valves and/or blown cylinder head gaskets.	Replace compressor pump valves and/or cylinder head gaskets.
	Damaged or worn piston rings and/or cylinders.	Replace components or entire compressor pump.
	Faulty non-return valve.	Repair or replace non-return valve.
Compressor Pump Runs Excessively Hot (Potentially Melts the Air Filter Enclosures).	Incorrect direction of rotation.	Check compressor pulley turns in correct direction. Change electric motor wiring connections if incorrect.
	Ambient temperatures too high or insufficient ventilation.	Reduce ambient and/or improve ventilation.
	Excessive cycle duty.	Reduce air demand.
	Damaged or worn compressor pump valves and/or blown cylinder head gaskets.	Replace compressor pump valves and/or cylinder head gaskets.
Excessive Cycling Between Pumping Mode and Off Mode.	Excessive duty cycle.	Reduce air demand.
	Air leaks.	Tighten, refit, or replace leaking connections or components.
	Excessive condensation in air receiver tank.	Drain air receiver tank more regularly.
Water Discharge in Air.	No fault, this is normal operation. Condensation quantity will increase with duty cycle and humidity.	Install automatic drain tank valve or manually drain tank more often.

TROUBLESHOOTING

FAULT	POSSIBLE CAUSE	SUGGESTED SOLUTION
Compressor Does Not Switch Off and Safety Valve Discharges.	Faulty pressure switch.	Replace pressure switch.
	Faulty safety valve (use tank pressure gauge to help diagnose fault).	Replace pressure valve
Low Suction or Air Blowing Out At Air Filter Inlets During Pumping Mode.	Damaged or worn compressor pump inlet valves and/or blown cylinder head gaskets.	Replace compressor pump inlet valves and/or cylinder head gaskets.
No Short Discharge of Air From the Pressure Switch After Reaching Cut Out Pressure or Being Manually Switched Off.	Faulty unloader valve in pressure switch.	Replace unloader valve or complete pressure switch.
	Blocked or damaged unloading line.	Clean or replace unloading line.
	Blocked or faulty non-return valve.	Clean, repair or replace non-return valve.
Continuous Discharge of Air From the Pressure Switch After Reaching Cut-Out Pressure or Being Manually Switched Off.	Faulty non-return valve.	Repair or replace non-return valve.
Air Receiver Tank Does Not Hold Pressure When Compressor is Off and Discharge Outlet Valve is Closed.	Faulty non-return valve.	Repair or replace non-return valve.
	Air leaks.	Tighten, refit, or replace leaking connections or components.
Excessive Noise (Including Knocking and Rattling) or Vibration.	Loose motor pulley, loose compressor pulley. V-belts too tight or misaligned.	Tighten or replace pulleys as required. Check alignment and adjust V-belt tension.
	Pistons hitting cylinder heads.	Remove cylinder heads and check for foreign matter on top of pistons.
	Damaged or worn crankshaft bearings, crankshaft, con-rods, piston pins, pistons, cylinders and/or valves.	Replace components or entire pump.
	Faulty non-return valve.	Repair or replace non-return valve.
	Loose fasteners.	Check and tighten fasteners.