

Direct Drive Compressors



Compressor

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Introduction / Warranty

FOR YOUR SAFETY AND THE SAFETY OF OTHERS ALWAYS READ FULLY THESE INSTRUCTIONS BEFORE OPERATING THIS COMPRESSOR

Introduction

Congratulations on the purchase of your SIP direct drive compressor. These compressors have been designed and manufactured to the highest standards and has been tested according to European Standards for a safe and trouble free operation.

Warranty

This Compressor is guaranteed against manufacturing defects for a period of 12 months from the date of purchase. Unless otherwise stated.

In order to give a satisfactory service the compressor **MUST** be correctly assembled, installed, maintained and used. The warranty against manufacturing defects depends on the user ensuring that the correct procedures are followed.

Always...

Ensure the correct power supplies are used. If the compressor is fitted with a 13A 3-pin plug, then it may be used on any domestic supply. See '*Setting up*' on page 6

Inspect the compressor regularly and replace wearing parts and consumables as necessary. See '*Maintenance*' on page 8

This warranty does not cover items, which are considered to be consumable, i.e. Air intake filters, or items worn through general wear and tear. Nor defects caused by incorrect assembly, installation, maintenance or use.

ALL WARRANTY CLAIMS MUST BE ACCOMPANIED WITH RECEIPT OF PURCHASE

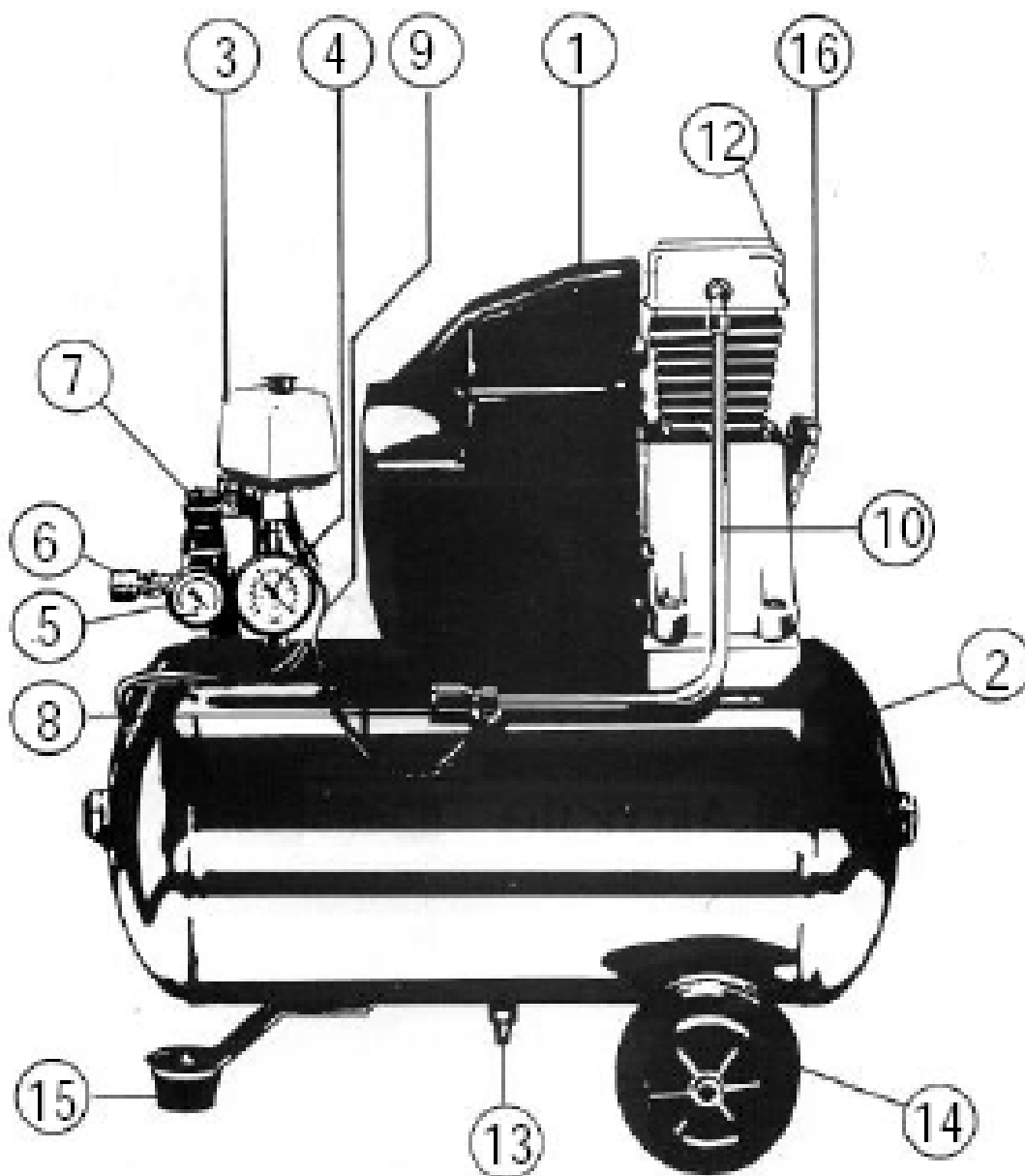
This manual and air receiver test certificate must be kept in a safe place and offered to everyone called to inspect, maintain or install your machine.

Standard Components

1. **MOTOR/PUMP UNIT:** Provides the power and compresses air to the desired pressure.
- 2.* **RECEIVER:** Air storage providing pulsation free air on demand.
- 3.* **PRESSURE SWITCH:** Monitors the air pressure in the receiver and starts and stops the compressor automatically according to pressure level. Also acts as the compressor on/off switch.
- 4.* **RECEIVER PRESSURE GAUGE:** Indicates Air pressure in the receiver.
5. **OUTLET PRESSURE GAUGE:** Indicates air pressure being used/ delivered down the airline.
6. **AIR OUTLET VALVE:** Some models have more than one outlet valve and can be regulated or unregulated.
- 7.* **REGULATOR:** Enables air pressure to be regulated to the outlet valve.
8. **NON-RETURN VALVE:** Prevents the air pressure stored in the receiver from returning back to the pump unit.
- 9.* **BLEED PIPE:** When the pressure switch turns off the motor any back pressure in the delivery pipe and pump unit is exhausted down this bleed pipe.
- 10.* **DELIVERY PIPE:** Delivers the compressed air from the pump to the receiver.
11. **SAFETY VALVE:** In the event of excessive pressure build up this valve will release the excess pressure to the atmosphere.
12. **AIR INTAKE FILTER:** Filters the intake of air to protect the pump unit from damage of air born debris. On some models the filter is integrated into the pumps head.
13. **DRAIN VALVE:** Allows the draining of moisture build up inside the air receiver. This is a manual operation and must be done daily.
- 14.* **WHEELS:** For portability.
- 15.* **RUBBER FEET:** To reduce vibration.
- 16.* **OIL DIP STICK:** To measure oil level also fill port for oil. Not on oil free models

- Items marked with asterisks indicate that some compressors may not have this component.

Compressor Layout



Setting Up

Your compressor arrives assembled and works tested, ready for installation and connection to your mains supply. On some models wheel mounting kits are supplied, follow the instructions supplied with the wheel kit.

FOUNDATIONS: Direct Drive air compressors are supplied either with rubber feet or wheel mounted. The feet and wheel absorb vibration; the compressor must not be fixed rigidly to the floor and should be positioned on firm level ground.

SITING AND VENTILATION: Good access and headroom should be provided around the compressor for servicing. Adequate protection from the weather must also be provided. Good ventilation is vital, for maximum efficiency. Intake air should be as clean as possible. Air impurities, abrasive dust and corrosive gases are particularly harmful to the compressor.

MAINS CONNECTION: The compressor should be located as close to the mains supply as possible. Check that this supply is the same voltage as marked on the motor rating plate and that the wiring conforms in all respects to local regulations.

VOLTAGE DROP:

If the compressor is moved a long way from the mains supply, the motor may appear to be sluggish, slow, buzz or unable to start. This is due to VOLTAGE DROP caused by the extended lead to the compressor. This can be prevented, by increasing the size of the cable. Incorrect voltage at the motor will invalidate any guarantee.

BEFORE STARTING CHECK:

That the compressor is correctly installed and that the supply voltage is correct and all fuses are correctly rated and intact. Also, that all maintenance checks have been carried out and the contents of this manual have been read and fully understood, by all appropriate persons.

PRESSURE SWITCH STARTER BUTTON:

Most machines are fitted with a black pressure switch combining a STOP/START button on the top. In the 'UP' position the motor will start, in the 'DOWN' position the motor will stop and the switch will bleed the pump head. If it is necessary to stop the machine before the normal cut - out pressure is reached this button should be depressed to stop it. NB: Some models may have a rotary switch instead of a push button.

The Tn1.5/25-O models have a red rocker switch this if for STOP/START an internal port performs the bleed function.

AUTOMATIC RUNNING: Once started your compressor stops and starts automatically. This is controlled by the pressure switch which is preset at the factory to stop the motor when the pressure in the tank reaches it's maximum working pressure and to automatically restart the motor when the pressure in the tank decreases to a predetermined pressure (about 35psi below maximum working pressure). If for some reason you want to stop the compressor, and immediately start again, the compressed air above the piston must be bled, to unload the compressor on start up (see STARTING section above).

PRESSURE REGULATION: Your compressor may be fitted with a pressure regulator or combined air filter and pressure regulator. Simply turn the pressure control knob to adjust the outgoing pressure, clockwise to increase the pressure and anticlockwise to reduce it, the outlet pressure is shown on the regulator gauge.

Maintenance

Cleanliness.

Always keep your compressor clean internally and externally. For oil lubricated models change the oil regularly and keep all external surfaces clean. A clean inside leads to good mechanical efficiency, a clean outside means better dissipation of heat to the circulating air.

Pressure switch unloader valve. (not on fitted on all models)

On most pressure switches (usually black in colour) there is either a button or rotary switch, which is used to turn the compressor on and off. This switch also activates the unloader valve to relief pressure in the delivery pipe and cylinder head to allow the motor to restart off load. Depress this button or turn the rotary switch from time to time to ensure that the valve is working properly and exhausting the air.

Suction Action (only on models with external air filters)

Gently place your hand over the air inlet filter, the change in inlet suction noise should be heard. Poor suction would suggest a block air filter or damaged valves. Also causing excessive load onto the motor.

Spare part lists and exploded drawings are available from your local distributors or by calling the SIP technical support desk.

All warranty claims must be accompanied by proof of purchase.

Scheduled Maintenance

Regular maintenance will ensure maximum efficiency for the longest period.

DAILY

Oil - check the crankcase oil level, and top up with oil if required. Use SIP compressor oil. Investigate high oil consumption; this indicates a possible pump problem.

If your compressor is not used daily, check crankcase oil level before starting up. The initial oil should be drained after 50 hours running or 1 week and thereafter every 500 hours or (4 months) whichever is sooner.

Water - should be drained from the air receiver by means of the drain valve located underneath the receiver. Simply unscrew the knurled ring to release the water, and re-tighten finger tight. Failure to drain the air receiver will invalidate the receiver warranty.

Leaks - check for leaks from the compressor, fittings, delivery lines and couplings re-tighten or re-seal as necessary. Remember, even small leaks can cause significant wastage of compressed air costing you both for extra energy used and reduced compressor life.

Cylinder head bolts (not oil free models) - these should be checked and re-tightened with a torque wrench to 10Nm after the first days running, after 50 hours, and thereafter every 500 hours or four months, whichever is the sooner. The cylinder head needs to be completely cold before carrying out this operation.

Air Filter (external filter models) - check and clean by reverse blowing with compressed air, if badly contaminated, replace the cartridge.

WEEKLY OR AFTER 50 HOURS RUNNING (WHICHEVER SOONER)

Pressure Switch - observe that the compressor is cutting out at the correct maximum pressure, and back in approximately 35psi lower. If adjustment is necessary contact SIP for guidance.

Safety Valve - this is set to protect in case of pressure switch malfunction. With the receiver pressure at maximum, the centre shaft can be lifted with ease to check its function. Wear eye and ear protection during this check.

Safety

DO NOT:

1. Use compressed air for cleaning clothing.
2. Apply compressed air directly onto the skin
3. Use compressed air for breathing apparatus or charging breathing air cylinders, unless the air has been filtered using filters designed specifically for this purpose.
4. Use an open-air line, this will cause 'whip' and could cause injury.
5. Use flammable liquids to clean the compressor.
6. Use naked flames to inspect the interior of the compressor or pressure vessel.
7. Allow children or inexperienced people to operate or go near the compressor.
8. Touch the air compressor with wet hands.
9. Move the compressor when in operation.
10. Move the compressor in any other method than the way in which it has been designed.

DO:

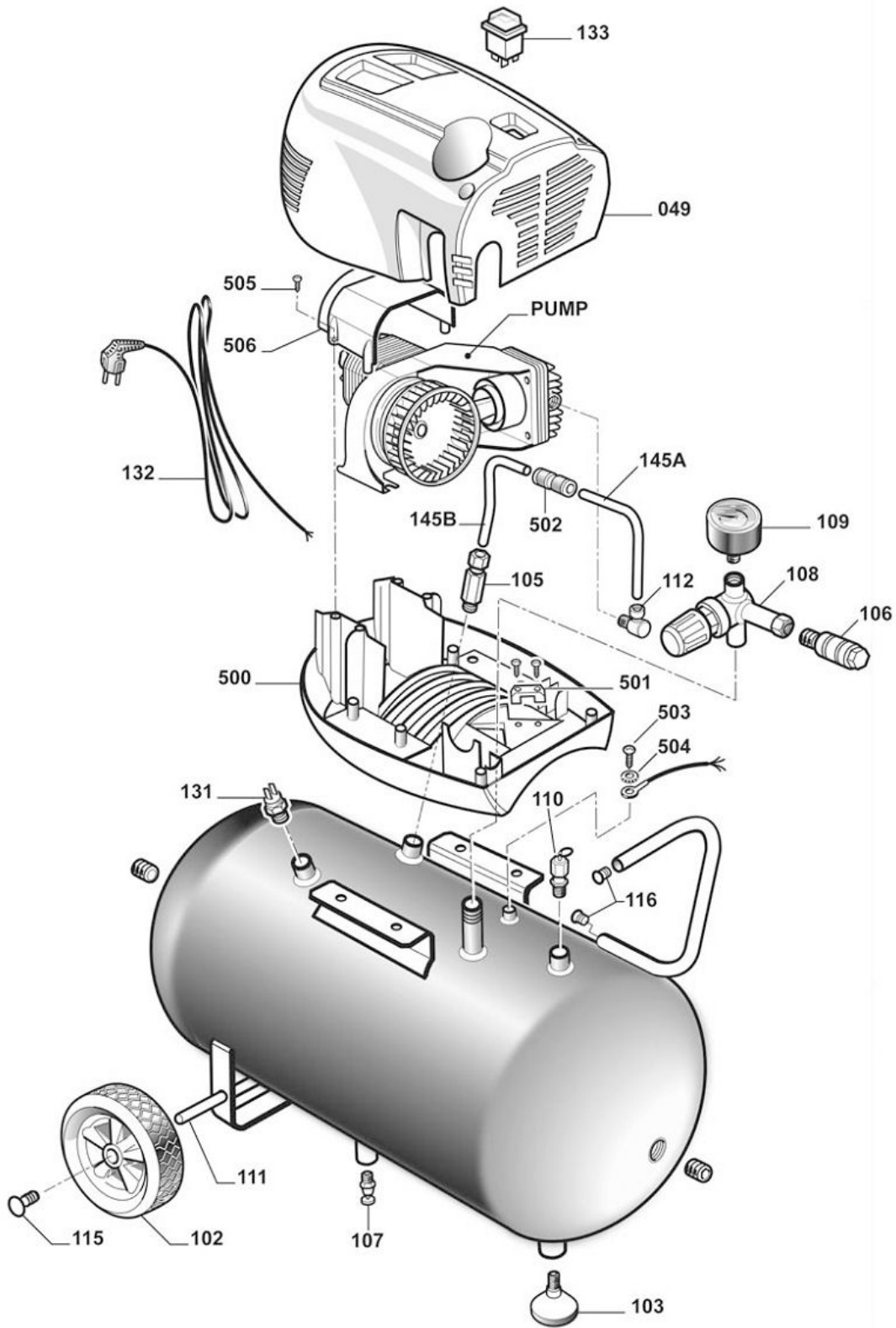
1. Use eye protection when using compressed air to clean equipment.
2. Ensure dirt is not blown towards other people; always use a blow gun for cleaning.
3. Ensure all ancillary equipment is in good condition and correctly rated for the job.
4. Check regularly that covers and guards are secure and in position.
5. Fit a non-return valve or shut off valve in the delivery line if the compressor is to be coupled in parallel with another compressor or connected to an airline system.
6. Ensure that all pipe work and hoses connected to the compressor are the correct size and suitable for the working pressure. Also in good condition.
7. Switch off the compressor and isolate from the mains supply and discharge any stored air from the receiver or airline system, before carrying out maintenance.
8. Install the compressor so that an adequate supply of cooling air can circulate around the pump unit, and that air passage through the cover and motor fan inlets is not restricted.
9. Ensure all safety rules and regulations are complied with, in all aspects applicable to the working environment in which the compressor operates.
10. Always read the manual fully before operating this equipment.

Fault Analysis

FAULT SYMTOMS	Possible Cause
Pumping Oil	1, 6, 8, 10, 18, 19
Knocks and Rattles	14, 15, 16, 17
Reduced air delivery	1, 4, 15, 18, 19
Motor tripping out or drawing excess current	7, 12, 13, 15, 17, 19, 23
Rusting Cylinders	10,11
Excessive stopping and starting	2,4,5
Compressor running very hot	3,5,9,15
Compressor not coming up to speed	12,21,27
Lights flicker when compressor runs	12,13
Abnormal piston, ring or cylinder wear	6,9,10, 20
Motor will not run	12,13,21,22,23,24

FAULT CHART

1. Clogged air intake filter.
2. Receiver needs draining.
3. Fan blocked or obstructed.
4. Air leaks in pipe work on or off compressor.
5. Receiver safety valve leaking.
6. Oil viscosity too low.
7. Oil Viscosity too high.
8. Oil Level too high.
9. Oil level too low.
10. Incorrect oil being used. Try SIP Compressor oil.
11. Extremely light duty use, or located in damp environment.
12. Check for good connections and voltages at motor terminals and starter box.
13. Poor power regulation.
14. Carbon on top of piston.
15. Leaking, broken, carbonised or loose valves or restricted airways.
16. Worn or scored connecting rod bearings.
17. Loose motor fan, defective bearings on crankshaft.
18. Broken piston rings.
19. Cylinders scratched or worn.
20. Dusty atmosphere, dirty inlet filter.
21. Faulty motor capacitors
22. Faulty pressure switch.
23. Faulty non-return valve.
24. Overload tripped.



TN1.5/250 diagram