



Atlas Copco

CRS and CRP cast iron reciprocating compressors

Instruction book
Part # 2022209684



Atlas Copco
 CRS and CRP Cast Iron
 Reciprocating Compressors

Instruction Book

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Table of contents

Section 1 - Safety.....4

- Safety first..... 4
- Summary of changes to this manual 5

Section 2 - System dynamics6

- Description & application 6
- Principles of compression cycles 6
- Principles of lubrication systems 6
- Principles of cooling systems 6
- Principles of dryers & filters..... 6

Section 3 - Installation7

- Receiving delivery 7
- Freight damage 7
- Location..... 7
- Electrical supply requirements..... 8
- Wiring & Piping Schematics..... 9
- Mounting 17
- System components 17
- Induction system..... 18
- Compressed air discharge system..... 19

Section 4 - Start-up & operation22

- Pre-starting checklist 22
- Initial starting & operating..... 22
- Daily starting checklist..... 23

Section 5 - Maintenance & lubrication ..24

- Stopping for maintenance 24
- Maintenance schedule 24
- Maintenance schedule checklist sample..... 24
- Lubrication 25
- Pulley / sheave alignment & belt tension..... 26
- Pilot valve adjustments..... 28

Section 6 - Troubleshooting.....29

- Troubleshooting..... 29
- Atlas Copco standard warranty 32

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Section 1 - Safety

Safety first

At Atlas Copco Compressor safety is not only a primary concern, but a faithfully performed practice. Beginning with the design stage, safety is built into every Atlas Copco compressor. It is the intention of this manual to pass along the “safety first” concept to you by providing safety precautions throughout its pages.

“DANGER !”, “WARNING !”, and “CAUTION !” are displayed in large bold capital letters in the left hand column to call attention to areas of vital concern. They represent different degrees of hazard seriousness, as stated below. The safety precaution is spelled out in bold upper and lower case letters in the right hand column.

Danger!

Immediate hazards which will result in severe personal injury or death.

Warning!

Hazards or unsafe practices that could result in personal injury or death.

Caution!

Hazards or unsafe practices which could result in minor personal injury, product or property damage.

Each section of this instruction manual, as well as any instructions supplied by manufacturers of supporting equipment, should be read and understood prior to starting the compressor. If there are any questions regarding any part of the instructions, please call your local Atlas Copco Compressor distributor, or the Atlas Copco Compressor factory before creating a potentially hazardous situation. Life, limb, or equipment could be saved with a simple phone call.

Compressors are precision high speed mechanical equipment requiring caution in operation to minimize hazard to property and personnel. There are many obvious safety rules that must be observed in the operation of this type of equipment. Listed below are some additional safety precautions that must be observed.

- Transfer of toxic, dangerous, flammable or explosive substances using Atlas Copco Compressor products is at the user’s risk.

- All installation, maintenance and repair must be performed by a qualified technician and/or electrician.
- Turn off and lockout/tagout (per OSHA regulation 1910.147) the main power disconnect switch before attempting to work or perform any maintenance.
- Do not attempt to service any part of the unit while it is operating.
- Per OSHA regulation 1910.147, relieve the system of all pressure before attempting to service any part of the unit.
- Allow ample time for the compressor to cool before performing service procedures. Some surface temperatures exceed 350°F when the compressor is operating.
- Do not operate the unit with any of its safety guards, shields, screens, enclosure panels or doors removed.
- Do not remove or paint over any DANGER!, WARNING!, CAUTION!, or instructional materials attached to the compressor. Lack of information regarding hazardous conditions can cause property damage or personal injury.
- Periodically check all pressure relief valves for proper operation.
- Do not change the pressure setting of the pressure relief valve, restrict the function of the pressure relief valve, or replace the pressure relief valve with a plug.
- Do not install a shutoff valve in the compressor discharge line without first installing a pressure relief valve of proper size and design between the shutoff valve and the compressor.
- Do not use plastic pipe, rubber hose, or lead-tin soldered joints in any part of the compressed air system.
- Alterations must not be made to this compressor without Atlas Copco Compressor’s approval.
- Be sure that all tools, shipping and installation debris have been removed from the compressor and installation site prior to starting the compressor.
- Do not operate the compressor in excess of the ASME pressure vessel rating for the receiver or the service rating of the compressor, whichever is lower.

- Make a general overall inspection of the unit daily and correct any unsafe situations. All fasteners must be kept tight.
- Reckless behavior of any kind involving compressed air is dangerous and can cause very serious injury to the participants.
- Wear safety glasses and hearing protection during operation, service and maintenance procedures.
- Provisions should be made to have the instruction manual readily available to the operator and maintenance personnel. If for any reason any part of the manual becomes illegible or the manual is lost, have it downloaded and replaced immediately. The instruction manual should be read periodically to refresh one’s memory. It may prevent a serious or fatal accident.
- Never use a flammable or toxic solvent for cleaning the air filter or any parts.

Danger!

Air used for breathing or food processing must meet OSHA 29 CFR 1910.134 or FDA 21 CFR 178.3570 regulations. Failure to do so may cause severe injury or death.

Warning!

Oil and moisture residue must be drained from the air receiver daily or after each use. Accumulations of oil residue in the receiver can be ignited by embers of carbon created by the heat of compression, causing an explosion, damage to property and injury to personnel.

Caution!

When using battery cables to start engine driven units do not use more than a total of 40 ft. of #4 gauge cable (GND & HOT).

The owner, lessor or operator of any compressor unit manufactured by Atlas Copco Compressor is hereby warned that failure to observe the safety precautions and procedures outlined in this manual may result in serious personal injury, damage to property, and may void your warranty. Atlas Copco Compressor must authorize all warranty service. Before contacting your distributor or the factory, check the maintenance requirements and the troubleshooting guide for your compressor. Most warranty issues can be resolved by following proper maintenance procedures.

Atlas Copco Compressor neither states as fact, nor in any way implies that the above list of safety precautions is an all inclusive list, the observance of which will prevent all damage to property or injury

to personnel.

Every effort has been taken to ensure that complete and correct instructions have been included in this manual. However, possible product updates and changes may have occurred since this printing. Atlas Copco Compressor reserves the right to change specifications without incurring any obligation for equipment previously or subsequently sold.

Summary of changes to this manual

(First Edition)

Section 2 - System dynamics

Description & application

CRS Series compressors are heavy duty, splash lubricated, air cooled, belt driven compressors capable of delivering 175 PSIG of compressed air.

CRP Series compressors are heavy duty, air cooled, belt driven compressors. The CRP Series compressors are pressure lubricated and capable of delivering 175 PSIG of compressed air.

Principles of compression cycles

Single stage compressors

During the downstroke of a single stage compressor, air is drawn through an intake valve in the head of the compressor and into the cylinder. At the bottom of the stroke, the intake valve closes and air is trapped in the cylinder. The air is then compressed in the cylinder during the upstroke of the piston. Total compression, from atmospheric pressure to the final discharge pressure, is accomplished in one stroke of the piston.

Two stage compressors

During the downstroke of the piston of a two stage compressor, air is drawn through an intake valve in the head of the compressor into the low pressure cylinder and compressed during the upstroke of the piston.

The compressed air is then released through a discharge valve in the head of the compressor to an intercooler (usually finned tubing) where the heat resulting from compression is allowed to dissipate. The cooler compressed air is then drawn into a second compression cylinder, the high pressure cylinder, for compression to final pressure.

From there the compressed air is released through a discharge valve to an air receiver tank or directly to a network of compressed air supply lines. In one revolution of the crankshaft a compression cycle is completed.

Principles of lubrication systems

Splash Lubricated Compressors

With each stroke of the compressor, a dipper attached to the bottom of the connecting rod dips

into an oil bath at the bottom of the crankcase. This dipper splashes oil throughout the interior of the crankcase, lubricating all moving parts.

It is important with this system that the correct oil level be maintained. If the oil level is too high, excessive oil carryover could result. If the oil level is too low, or the compressor is not operated within the correct RPM range, the moving parts will not be adequately lubricated.

Pressure lubricated compressors (CRP series)

Moving parts within the crankcase are supplied with lubrication by a positive displacement, gerotor type oil pump. Oil is drawn up from the bottom of the crankcase to the oil pump through an oil sump strainer screen. The oil is then forced under pressure through the oil filter (if so equipped). Oil travels under pressure through drilled journals in the crankshaft and connecting rods to lubricate crankshaft bearings, connecting rod journals, wrist pin bearings and the cylinder walls.

Principles of cooling systems

These compressors are equipped with a compressor sheave with fan blades. The fan blades force ambient air across cylinder head and intercooler fins to cool the compressor. These compressors are designed to be operated with the compressor sheave turning in a counterclockwise rotation (as viewed "tummy to the sheave") operated in temperatures under 104°F.

Principles of dryers & filters

Moisture occurs naturally in air lines as a result of compression. Moisture vapor in ambient air is concentrated when pressurized and condenses when cooled in downstream air piping. Compressed air dryers reduce the moisture vapor concentration and prevent water formation in compressed air lines. Dryers are a recommended companion to filters, aftercoolers, and automatic drains for improving the productivity of compressed air systems.

Water and moisture vapor removal increases the efficiency of air operated equipment, reduces contamination and rusting, increases the service life of pneumatic equipment and tools, prevents air line freeze-ups, and reduces product rejects.

Section 3 - Installation

Receiving delivery

Immediately upon receipt of compressor equipment and prior to completely uncrating, the following steps should be taken:

Step 1

Inspect compressor equipment for damage that may have occurred during shipment. If any damage is found, demand an inspection from the carrier. Ask the carrier how to file a claim for shipping damages. (Refer to SECTION 3, Freight Damage for complete details). **Shipping damage is not covered by Atlas Copco Compressor warranty.**

Step 2

Ensure that adequate lifting equipment is available for moving the compressor equipment.

Warning!

Improper lifting can result in component or system damage, or personal injury. Follow good shop practices and safety procedures when moving the unit.

Step 3

Read the compressor nameplate to verify the model and size ordered.

Step 4

Read the motor nameplate to verify that the voltage, phase and hertz ratings are the same as the electrical power supply connecting to the motor. **NOTE: Do not use a triple voltage (115/208-230) single-phase motor or (208-230/460) 3-phase motor for 208 volts or lower. Use a 200 volt or 208 volt motor only.**

Step 5

Read the pressure relief valve nameplate to be sure it does not exceed the working pressure shown on the compressor or any other component in the system.

Step 6

Read and understand the safety precautions contained within this manual. The successful

and efficient operation of compressor equipment depends largely upon the amount of care taken to install and maintain the equipment. Atlas Copco Compressor strongly recommends that any or all person(s) in charge of installing, maintaining, or servicing one of our compressors read and understand the entire contents of this manual in order to perform such duties safely and efficiently.

Freight damage

It is extremely important that you examine every carton and crate as soon as you receive it. If there is any obvious damage to the shipping container, have the delivering carrier sign the freight bill, noting the apparent damage, and request a damage report.

If concealed damage is discovered at a later date, the carrier must be notified within 15 days of initial receipt of freight. Concealed shipping damage is not covered by Atlas Copco Compressor warranty. Contact the carrier as soon as possible, giving them an opportunity to inspect the shipment at the premises where the delivery was made. Do not move the damaged freight from the premises where the original delivery was made. Retain all containers and packing for inspection by the carrier.

A claim form can be requested from the carrier: Standard Form for Presentation of Loss and Damage Claims (form #3208). Your claim will need to be substantiated with the following documents:

- Form #3208
- Original bill of lading
- Original paid freight bill
- Original invoice or certified copy
- Other particulars obtainable in proof of loss or damage (photos, damage inspection, etc.)

The proper description and classification of our product in the National Motor Freight Classification 100-H, contained in item 118100, reads as follows: "Compressors, air, or air ends: with or without air tanks, hose or nozzles, mounted or not mounted."

We suggest that these instructions be circulated to your shipping and receiving personnel.

Location

Atlas Copco air compressors must be installed and operated in a secure, level, upright position in an area that is clean, dry, well lighted, adequately ventilated, and not less than 12 inches to a wall or

other compressor. (Note: A gas engine will produce carbon monoxide; always provide adequate ventilation)! Inspection and maintenance checks are required daily. Therefore, sufficient space needs to be provided around the compressor for safe and proper inspection, cleaning, and maintenance.

Ample circulation of air must be provided across the compressor cylinders, heads and cooler (if so equipped). If at all possible, the pulley drive system (i.e. motor pulley, compressor sheave, belts and guard) should face a wall to minimize any danger created by the drive system while the compressor is operating. Do not allow hot air from additional equipment to blow towards the compressor.

Atlas Copco compressors should be operated in temperatures under 104°F. In cold climates, the compressor should be installed in a heated building.

⚠ Caution!

Do not operate this compressor in ambient temperatures lower than 32°F. A crankcase heater is recommended for a compressor that is to operate in temperatures under 32°F.

⚠ Warning!

Under no circumstances should a compressor be used in an area that may be exposed to toxic, volatile, or corrosive atmosphere. Do not store toxic, volatile, or corrosive agents near the compressor.

Noise

Noise is a potential health hazard that must be considered. There are federal and local laws governing acceptable noise levels. Check with local officials for specifications.

Excessive noise can be effectively reduced through various methods. Total enclosures, intake silencers, baffle walls, relocating or isolating the compressor can reduce noise levels. Care must be taken when constructing total enclosures or baffle walls. If not properly constructed or positioned, they could contribute to unacceptable noise levels or overheating. Consult your local Atlas Copco distributor if assistance is required.

⚠ Warning!

Unusual noise or vibration indicates a problem. Do not operate the compressor until the source has been identified and corrected.

Electrical supply requirements

The electrical installation of this unit must be

performed by a qualified electrician in accordance with the National Electrical Code (NEC) or the Canadian Electrical Code (CEC), the National Electrical Safety Code (NESC), OSHA and/or state and local codes. Failure to abide by the national, state and local codes may result in physical harm and/or property damage.

Before installation, the electrical supply must be checked for adequate wire size and transformer capacity. Verify that the electrical supply voltage matches the requirements of the motor. A suitable circuit breaker or fused disconnect switch should be provided. When a 3 phase motor is used to drive a compressor, any unreasonable voltage imbalance between the legs must be eliminated and any high or low voltage corrected to prevent excessive current draw. **Note: This unit must be grounded.**

The data label on the CRS and CRP units shows general information about the unit. The Amps shown on this label are the maximum amps allowed for the motor size used on the unit per National Electrical Code. These amps may be greater than the motor nameplate used but, per the National Electrical Code, they can be used for wire and fuse sizing.

⚠ Danger!

High voltage may cause personal injury or death. Disconnect and lockout/tagout per OSHA regulation 1910.147 all electrical power supplies before opening the electrical enclosure or servicing.

⚠ Warning!

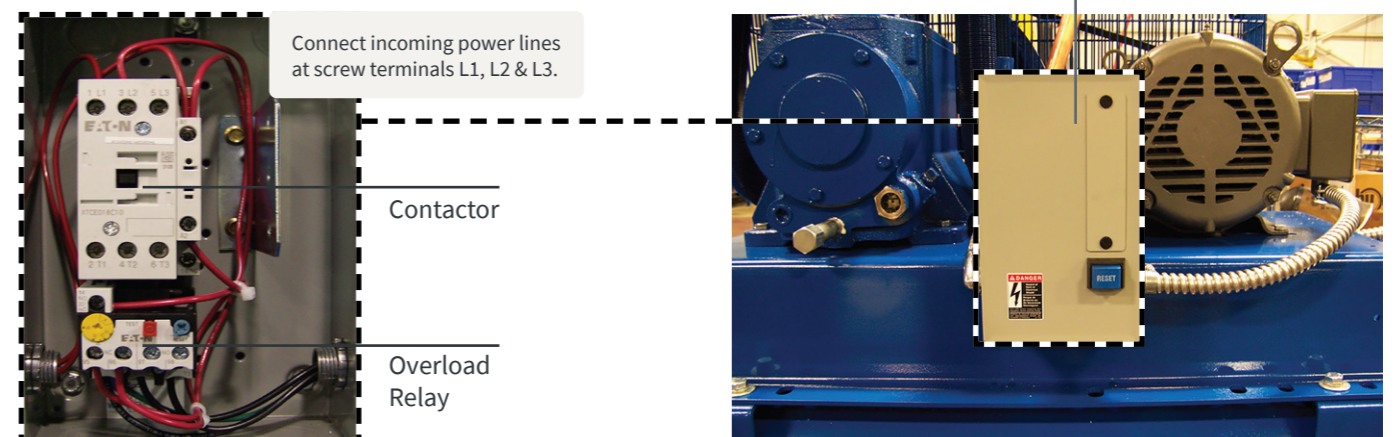
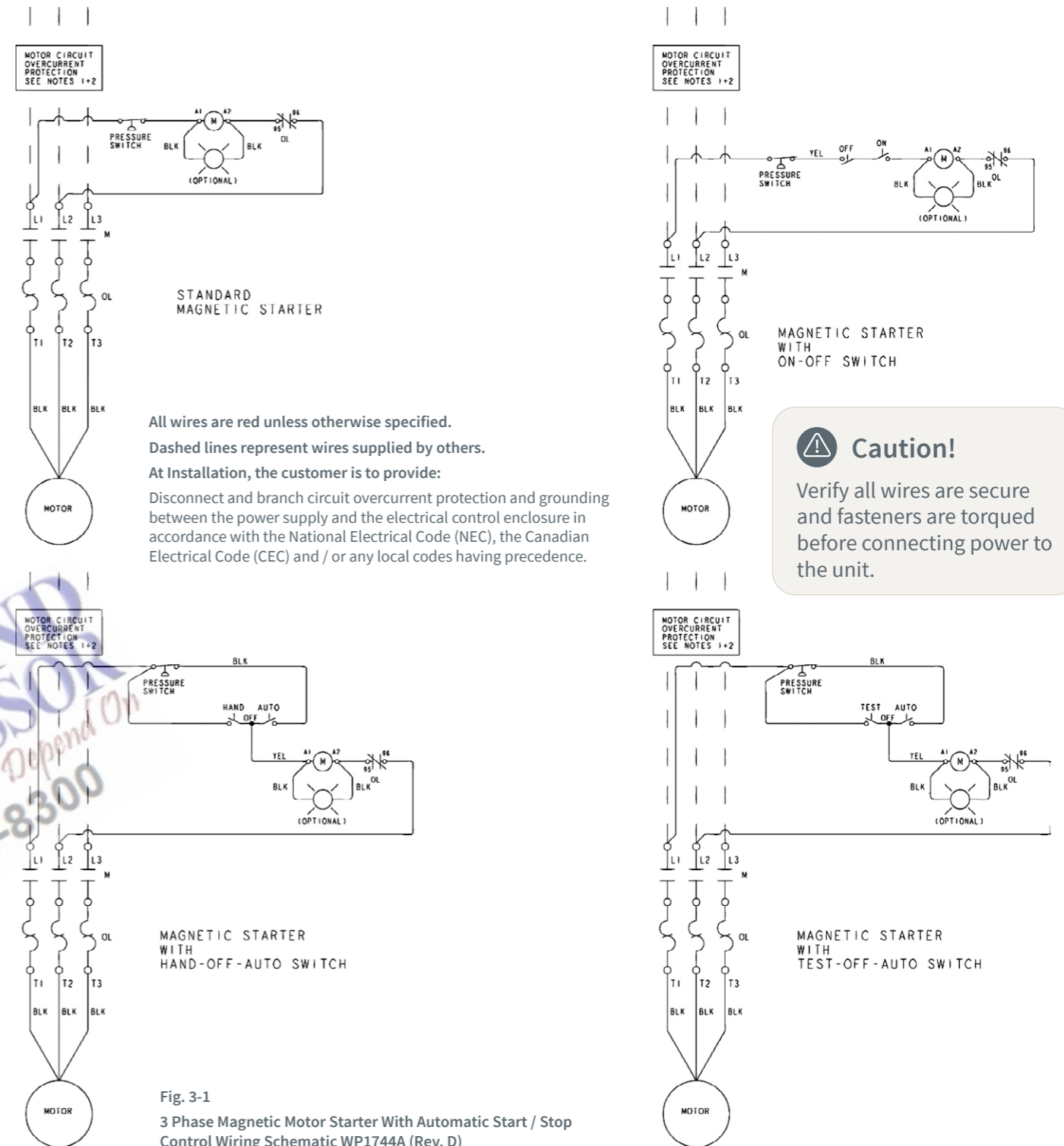
Never assume a compressor is safe to work on just because it is not operating. It could restart at any time. Follow all safety precautions outlined in SECTION 5, Stopping For Maintenance.

⚠ Warning!

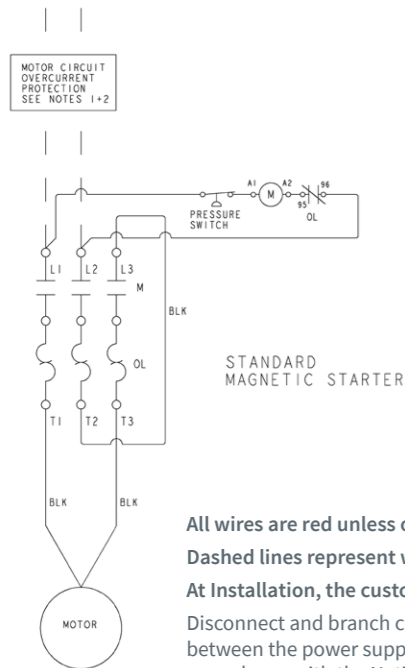
Electrical enclosures and components must be in compliance with NEMA environmental ratings for the areas in which they are being installed.

Overload relay

An overload relay monitors the compressor motor electrical current and turns the compressor motor off when an overload is sensed. It is mounted on the bottom of the motor starter. The overload relay is designed for motors with a 1.15 service factor. The overload relay setting should be adjusted to the motor nameplate amp rating. If the motor has a service factor rating other than 1.15, the overload relay setting must be adjusted to compensate.

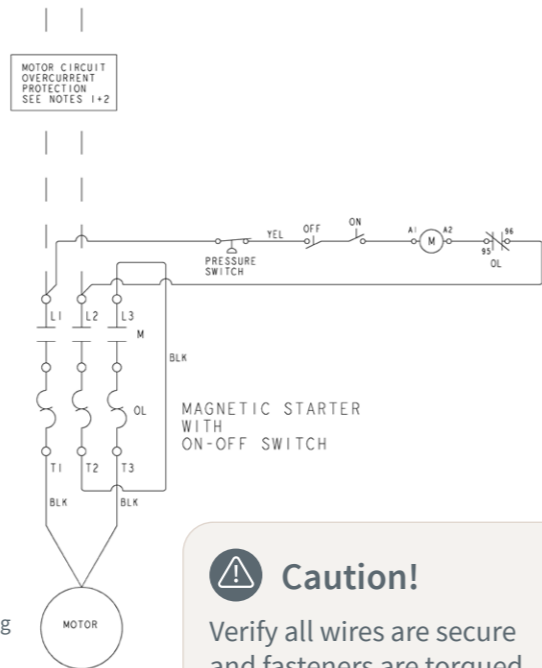


⚠ Caution!
Verify all wires are secure and fasteners are torqued before connecting power to the unit.



All wires are red unless otherwise specified.
Dashed lines represent wires supplied by others.
At Installation, the customer is to provide:

Disconnect and branch circuit overcurrent protection and grounding between the power supply and the electrical control enclosure in accordance with the National Electrical Code (NEC), the Canadian Electrical Code (CEC) and / or any local codes having precedence.



Caution!

Verify all wires are secure and fasteners are torqued before connecting power to the unit.

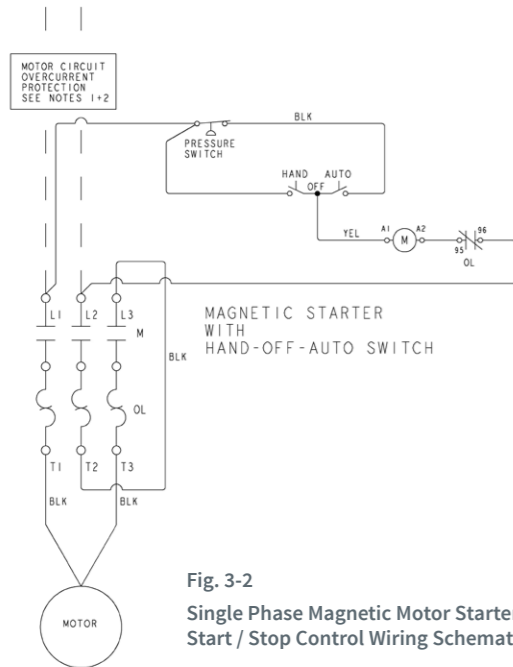
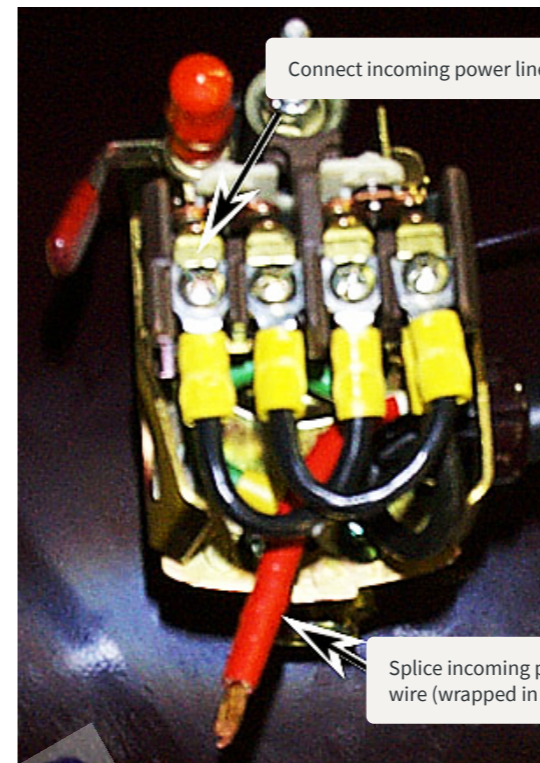
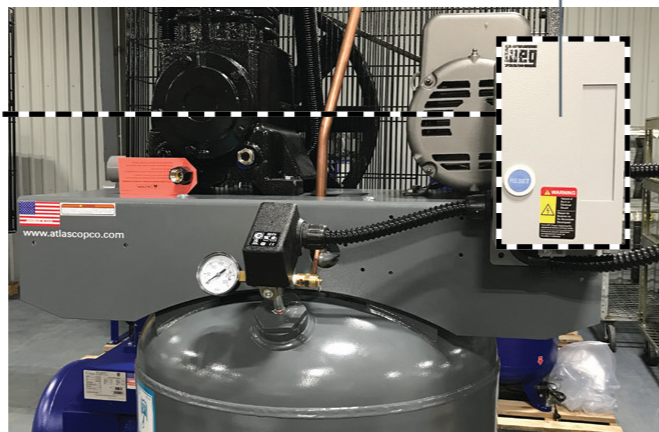
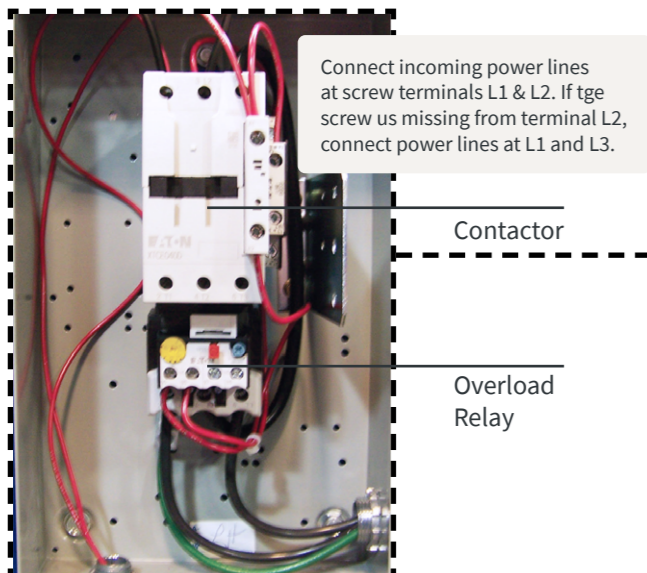
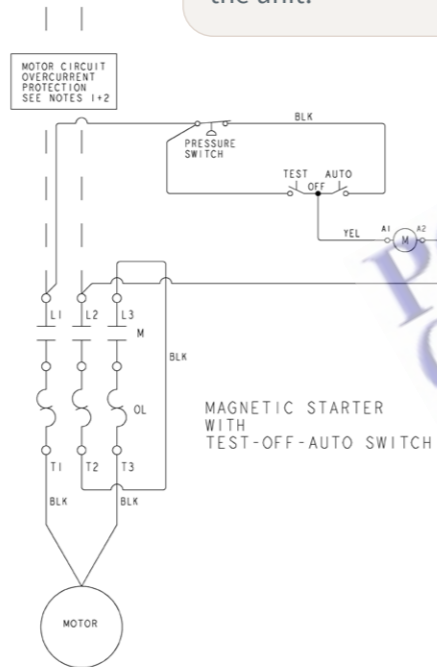
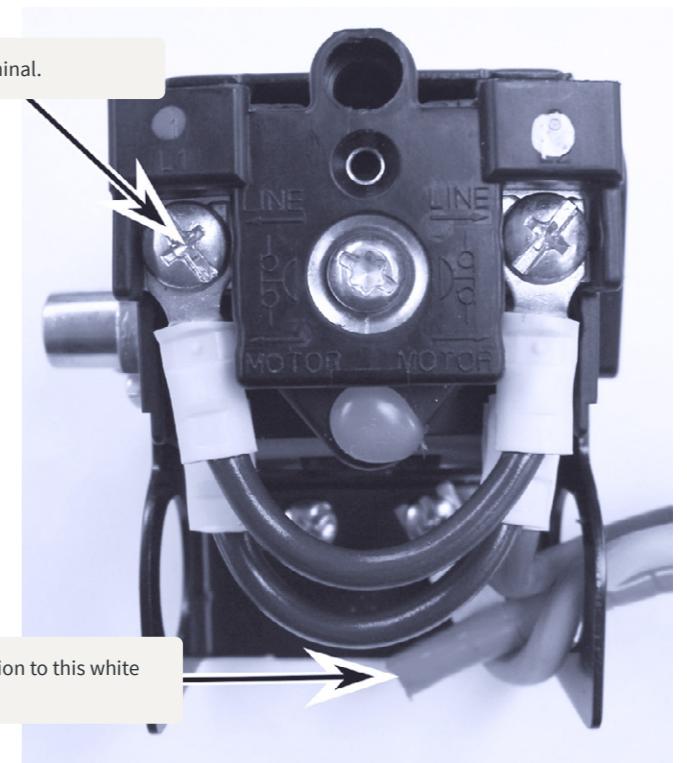


Fig. 3-2
Single Phase Magnetic Motor Starter With Automatic Start / Stop Control Wiring Schematic WP1744B (Rev. D)



Square D pressure switch

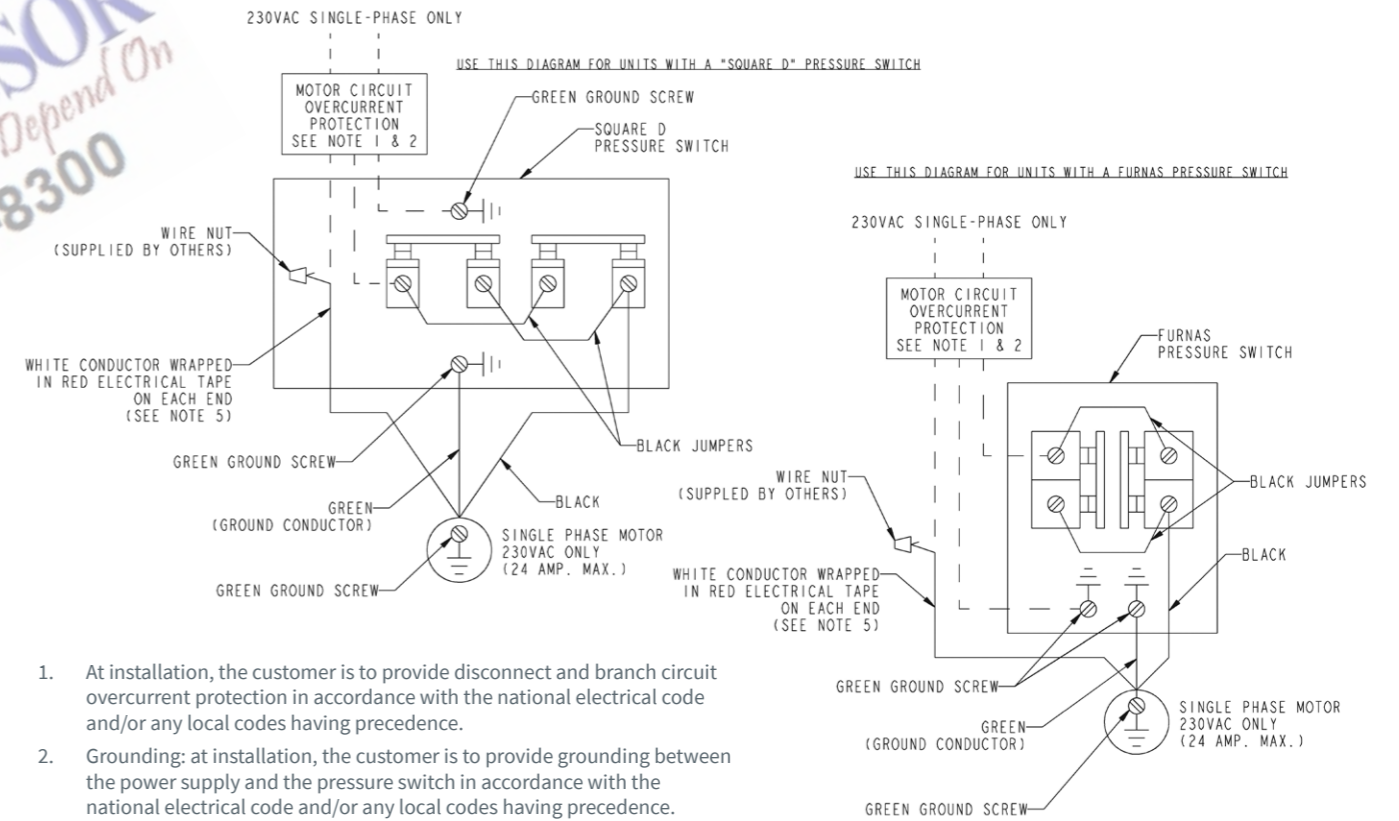


Furnas / Hubbell pressure switch

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1. At installation, the customer is to provide disconnect and branch circuit overcurrent protection in accordance with the national electrical code and/or any local codes having precedence.
2. Grounding: at installation, the customer is to provide grounding between the power supply and the pressure switch in accordance with the national electrical code and/or any local codes having precedence.
3. High voltage is present in the motor when the pressure switch is actuated and the motor is not running. Disconnect and lockout/tagout per O.S.H.A. Regulation 1910.147 All electrical power supplies before opening the pressure switch or motor when servicing, or maintaining the compressor.
4. Dashed lines represent wires supplied by others at installation.
5. The insulation of the white wire in the 3-conductor flexible cord is to be entirely wrapped with red electrical tape on each end.

Fig. 3-3
Start / Stop - Pressure Switch / Motor
Wiring Schematic WP1753 (Rev. K)

Caution!

Verify all wires are secure and fasteners are torqued before connecting power to the unit.

Pressure Switch
To Remove the Cover:

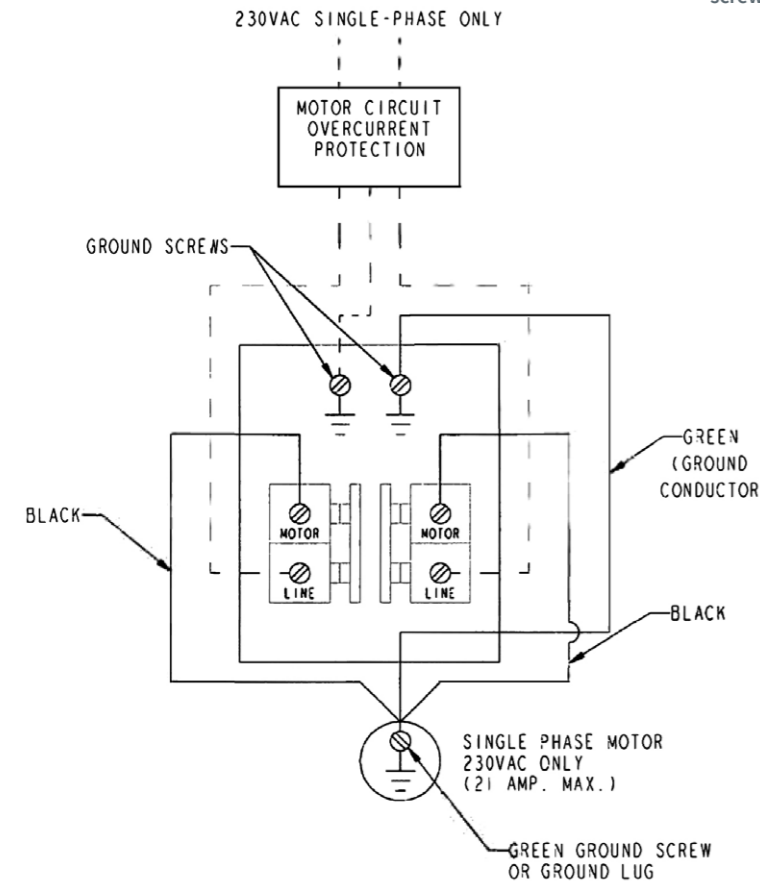
1. Turn the switch handle to "OFF" position.
2. Remove small screws on front of the cover.
3. Pull the cover away from the pressure switch.

To Re-install the Cover:

1. Make sure the switch handle is in the "OFF" position (as shown).
2. Carefully slide the cover over the pressure switch.

DO NOT FORCE!

1. Re-install the small cover screws and tighten

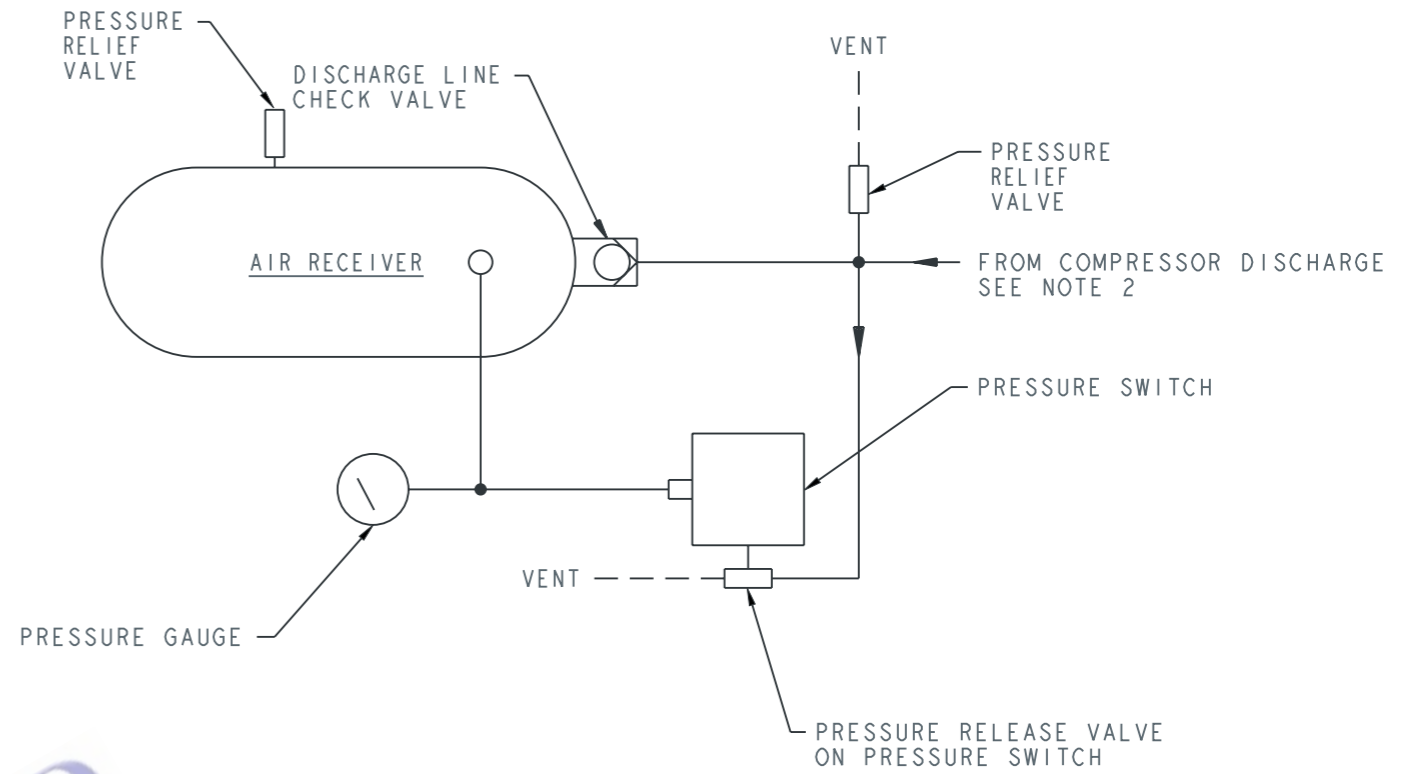
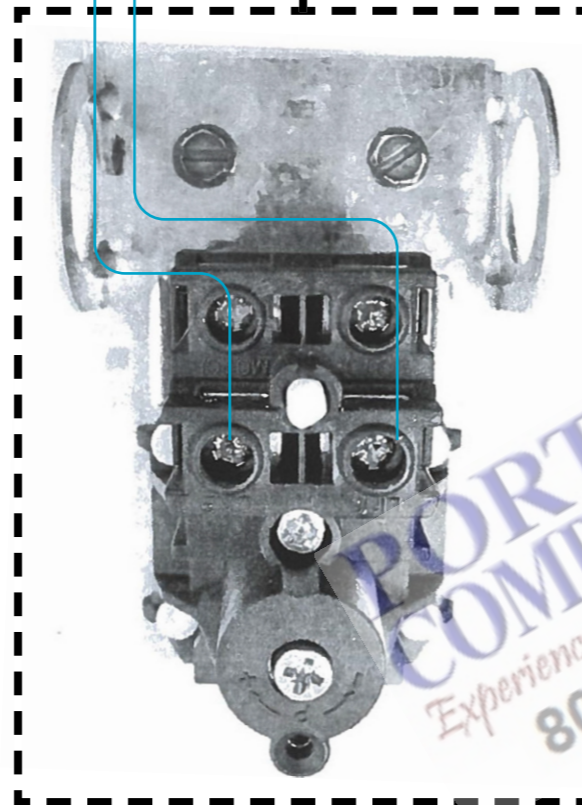


At installation, the customer is to provide:
 Disconnect and branch circuit overcurrent protection and grounding between the power supply and the electrical control enclosure in accordance with the National Electrical Code (NEC), the Canadian Electrical Code (CEC) and/or any local codes having precedence.

Fig. 3-4
 Single Phase Condor Pressure Switch
 Wired to a 3600 RPM Motor
 Connection Diagram



Connect incoming power lines at screw terminals labeled "LINE".



Note:

1. Install pressure relief valve so that moisture can not accumulate in valve inlet
2. Use flexible line between remote receiver and compressor to reduce strain on piping.

Fig. 3-5
 Start / Stop control
 Piping Schematic 2022007200

⚠ Caution!
 Verify all wires are secure and fasteners are torqued before connecting power to the unit.

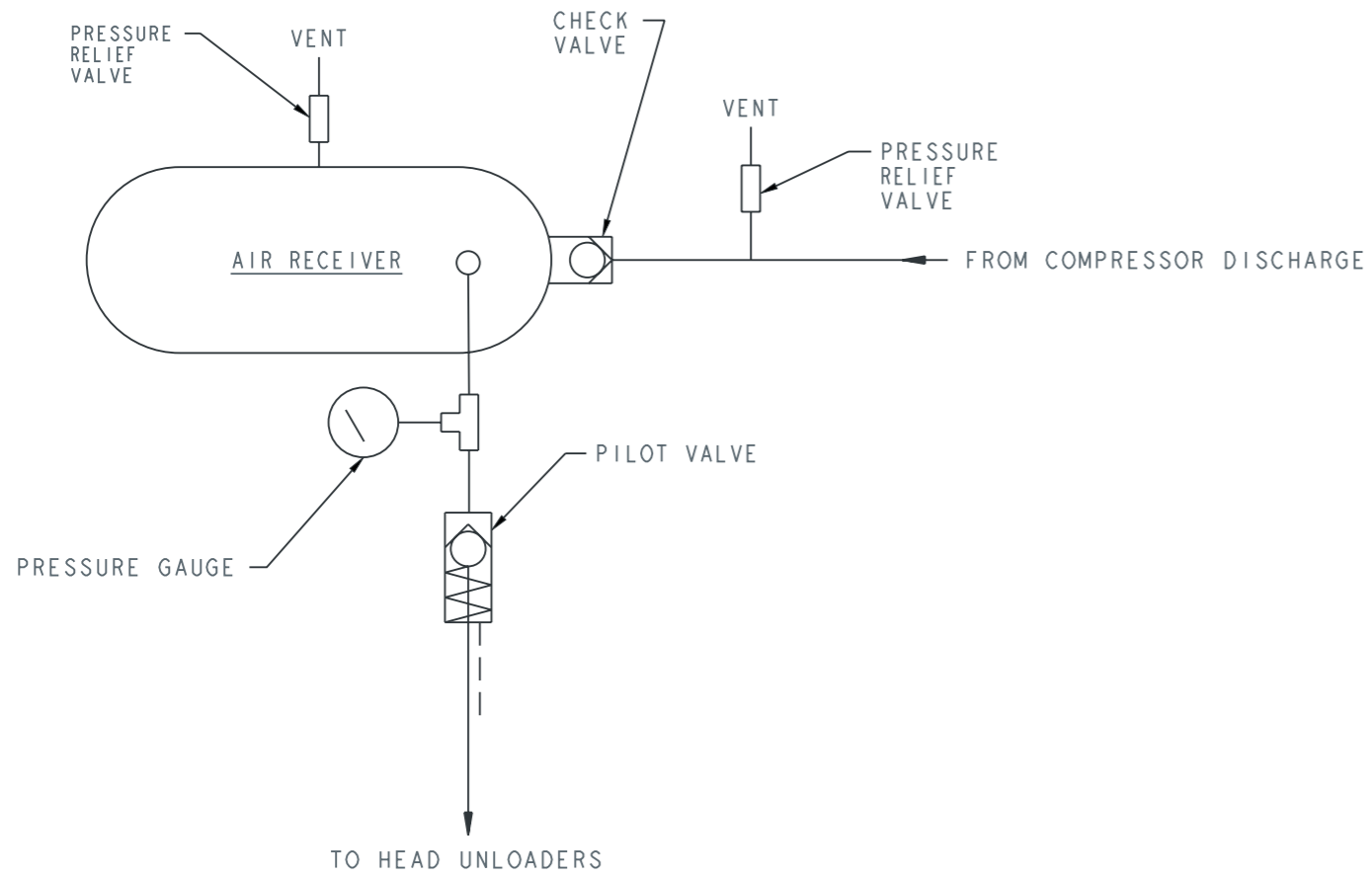


Fig. 3-6
Continuous Run - Load / Unload Control Piping Schematic 2022005500

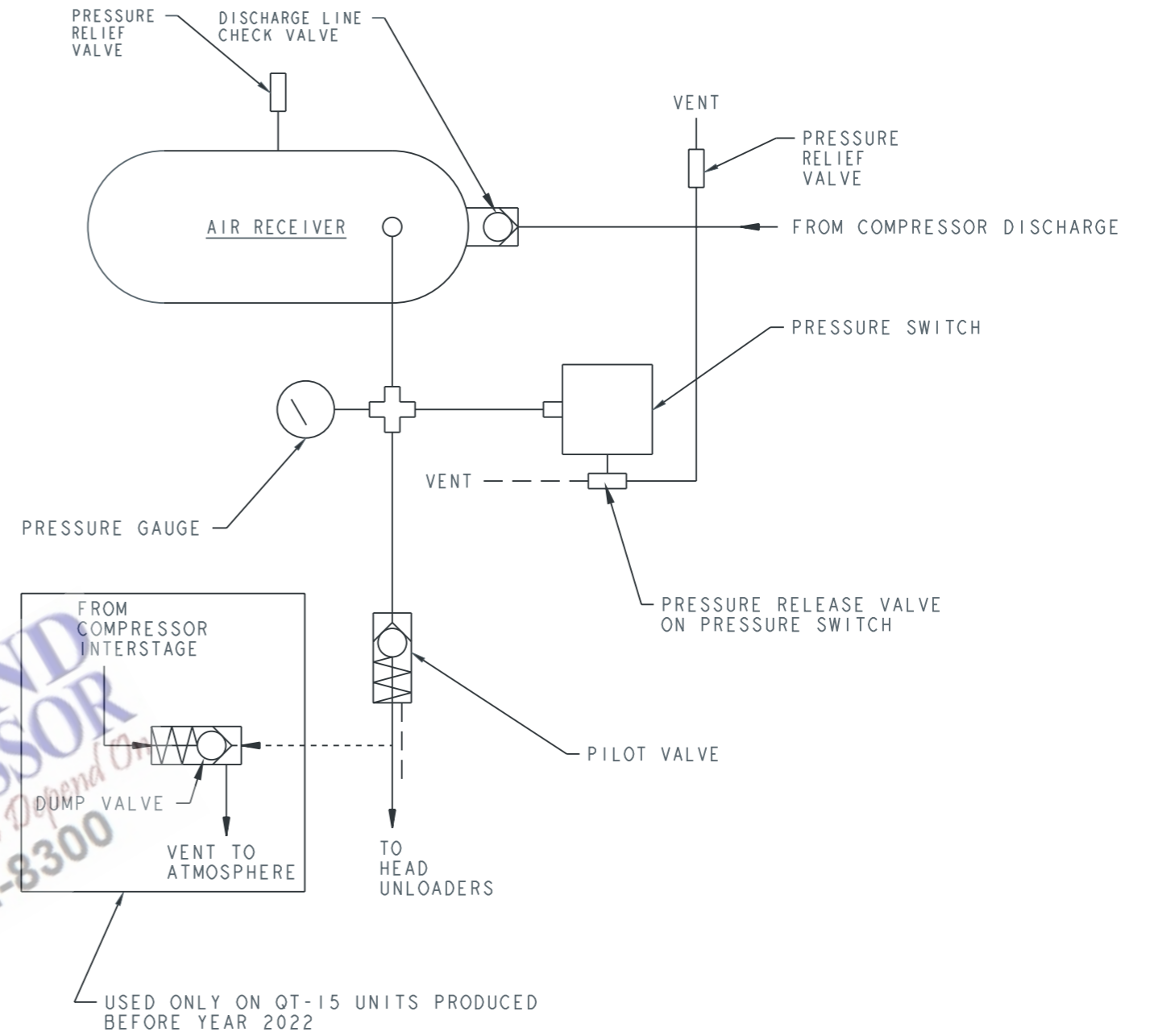
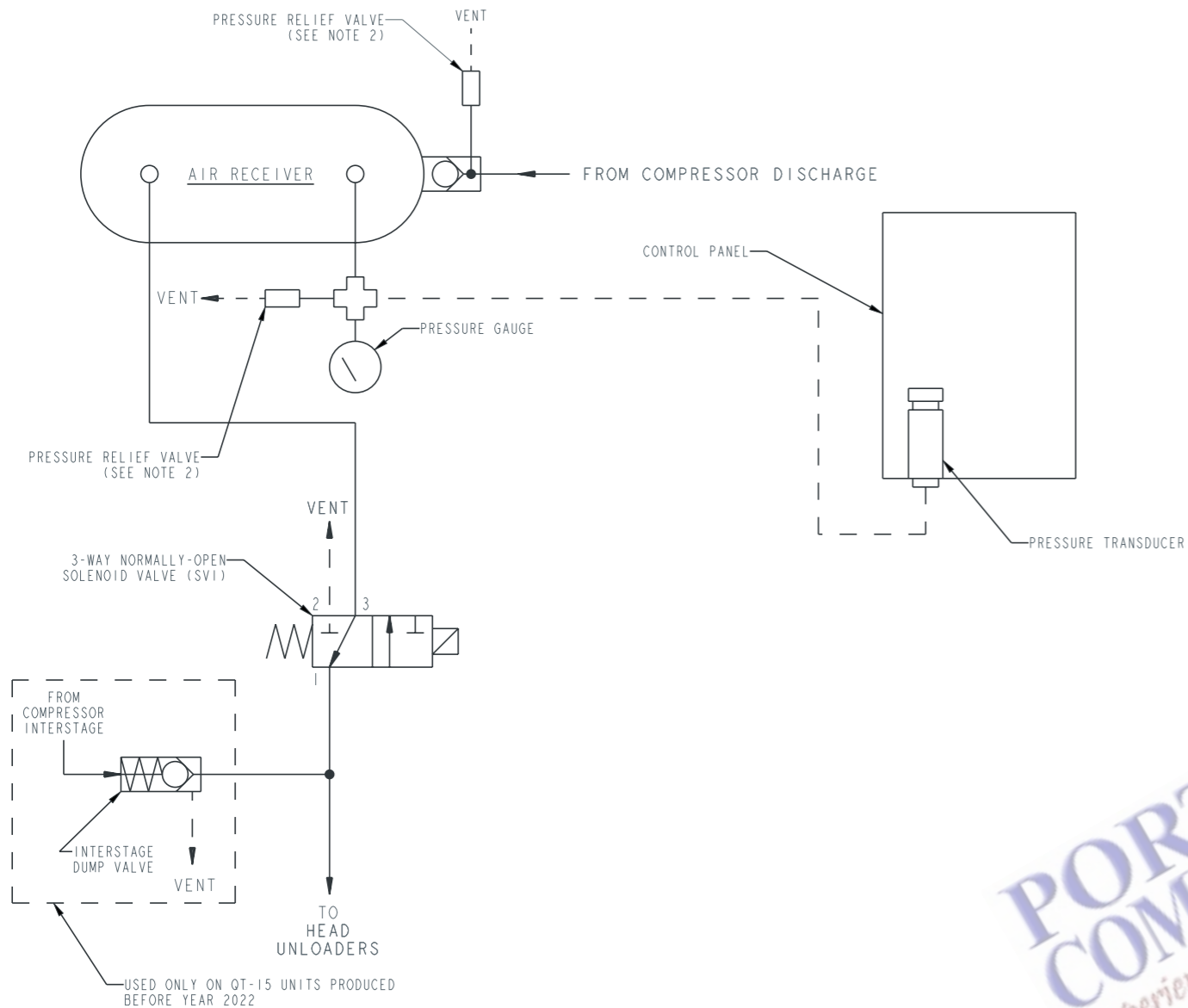


Fig. 3-7
Dual Control with Pilot Valve Unloading Piping Schematic 2022007100

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Notes:

1. dashed line represents copper tubing provided by others when the control panel is shipped loose and copper tubing installed by the factory when the control panel is mounted on the unit.
1. Install pressure relief valves in a manner that moisture can not accumulate in or around the relief valve ports.

Fig. 3-8
Dual Control with Solenoid Valve Unloading Piping Schematic 2022000606

⚠ Caution!

Overload relays are designed to protect the motor from damage due to motor overload. If the overload relay trips persistently, **DO NOT CONTINUE TO PUSH THE RESET BUTTON!** Contact your local Atlas Copco distributor for assistance.

Mounting

⚠ Warning!

The compressor unit must be removed from the shipping skid prior to operation.

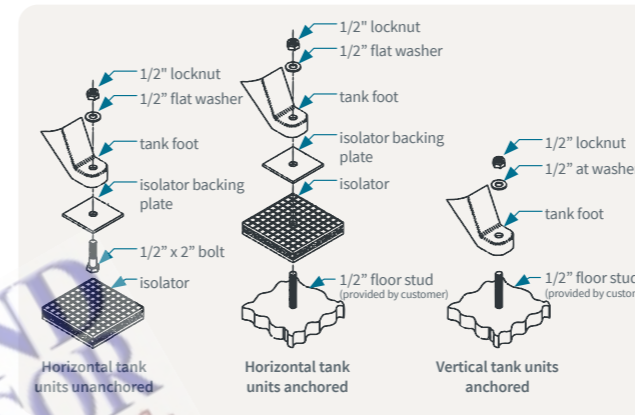


Fig. 3-9 Isolator Installation for Unanchored or Anchored Receivers

Proper mounting of Atlas Copco compressor units is crucial to the safe operation and longevity of the equipment. The installation requires a flat and level concrete floor or pad (for mobile units see **Mounting Mobile Units**). Satisfactory results can usually be obtained by mounting horizontal tank units on vibration isolators available from your local Atlas Copco distributor. **All vertical tank units must be anchored!** Atlas Copco recommends that all vertical tank units be mounted as indicated **without** isolators. Refer to **Fig. 3-9, Isolator Installation for Unanchored or Anchored Receivers**.

State or local codes may mandate that the compressor be bolted to the floor. In this case the unit must be leveled and bolted making absolutely certain the feet are not stressed in any manner. **Leave the locknut loose!** Uneven feet drawn tightly to the concrete pad will cause severe vibrations resulting in cracked welds or fatigue failure. The customer is responsible for providing a suitable foundation & isolator mounting where necessary.

Mounting mobile units

Gas engine driven compressors mounted to truck beds should be fastened in such a way so as not to create any stress to the air receiver tank. Truck beds, characteristically, have a tendency to flex and could cause damage to the receiver tank if the tank

is fastened directly to the truck bed. It is the user's responsibility to provide an adequate means of fastening the unit in these applications.

⚠ Caution!

Do not operate this compressor more than 15° off level or move it while it is operating.

System components

Efficiency and safety are the primary concerns when selecting components for compressed air systems. Products of inferior quality can not only hinder performance of the unit, but could cause system failures that result in bodily harm or even death. Select only top quality components for your system. Call your local Atlas Copco distributor for quality parts and professional advice.

Drive pulleys / Sheaves

Various pulley and sheave combinations are available to obtain the desired air pressure and delivery rate of your compressor. Consideration must be given to these combinations to ensure that the motor is not overloaded by operating above.

Whatever combination is employed, the drive pulleys & compressor sheave must be properly aligned and drive belt tension set to specifications (refer to **SECTION 5, Pulley / Sheave Alignment & Belt Tension**). Improper pulley/sheave alignment and belt tension can cause motor overloading, excessive vibration, and premature belt and/or bearing failure.

⚠ Warning!

Excessive compressor RPM's (speed) could cause a pulley or sheave to shatter. In an instant, the pulley or sheave could separate into fragments capable of penetrating the belt guard and causing bodily harm or death. Do not operate the compressor above the recommended RPM (refer to **SECTION 2, Specifications**).

Guards

All mechanical action or motion is hazardous in varying degrees and needs to be guarded. Guards should be designed to achieve the required degree of protection and still allow full air flow from the compressor sheave across the unit. Guards shall be in compliance with OSHA safety and health standards 29 CFR 1910.219 in OSHA manual 2206 and any state or local codes.

Warning!

Guards must be fastened in place before starting the compressor and never removed before cutting off and locking out the main power supply.

Check valves

Check valves are designed to prevent back-flow of air pressure in the compressed air system (air flows freely in one direction only). The check valve must be properly sized for air flow and temperature. **Do not rely upon a check valve to isolate a compressor from a pressurized tank or compressed air delivery system during maintenance procedures!**

Manual shutoff valves

Manual shutoff valves block the flow of air pressure in either direction. This type of valve can be used to isolate a compressor from a pressurized system, provided the system is equipped with a pressure relief valve capable of being manually released. The pressure relief valve must be installed between the manual shutoff valve and the compressor (refer to Fig. 3-10, Typical Drop Leg & Component Location).

Pressure relief valves

Pressure relief valves aid in preventing system failures by relieving system pressure when compressed air reaches a determined level. They are available in various pressure settings to accommodate a range of applications. Pressure relief valves are preset by the manufacturer and under no circumstances should the setting be changed by anyone other than the manufacturer.

Danger!

Pressure relief valves are designed to protect compressed air systems in accordance with ASME B19 safety standards. Failure to provide properly sized pressure relief valves may cause property damage, severe personal injury or even death.

Pressure switch

The pressure switch detects the demand for compressed air and allows the motor to start. When the demand is satisfied, the unit stops. Pressure switches provided by Atlas Copco Compressor are pre-set at the factory and usually do not require adjustment.

Induction system

Air intake

A clean, cool and dry air supply is essential to the satisfactory operation of your Atlas Copco air compressor. The standard air filter that the compressor is equipped with when leaving the factory is of sufficient size and design to meet normal conditions, when properly serviced, in accordance with the maintenance section of this manual.

If, however, the compressor is to be installed in a location where considerable dust, dirt and other contaminants are prevalent, consult your local Atlas Copco distributor for advice and optional filters. A condensate trap must be installed as close as possible to the inlet filter if, as a result of installation or environmental conditions, there is any risk of moisture forming in the inlet piping. It is the user's responsibility to provide adequate filtration for those conditions. Oil bath filters are not to be used. Warranty will be void if a failure is determined to be caused by inadequate filtration.

Remote inlet filters

Depending on the size of the compressor and the size and construction of the room in which the unit operates, the air inlet may have to be located outside of the room. If it is necessary to remotely install the air filter, make the inlet piping as short and direct as possible. Remotely installed air filters can lead to vibrations in the inlet piping. These vibrations can be minimized by adding a pulsation dampener in the inlet piping between the remote inlet filter(s) and the compressor.

If the inlet is routed to outside atmosphere, the inlet piping should be equipped with a hooded air filter and designed to prevent condensate, water or snow from being ingested into the compressor.

All inlet piping should be at least the same size (or larger) in diameter as the inlet connection to the compressor. For every 10 feet of inlet piping or every 90° bend, increase the inlet piping diameter by one pipe size. The inlet piping must be thoroughly clean inside. Remove all weld slag, rust or dirt. Galvanized pipe with threaded or flanged fittings is preferred.

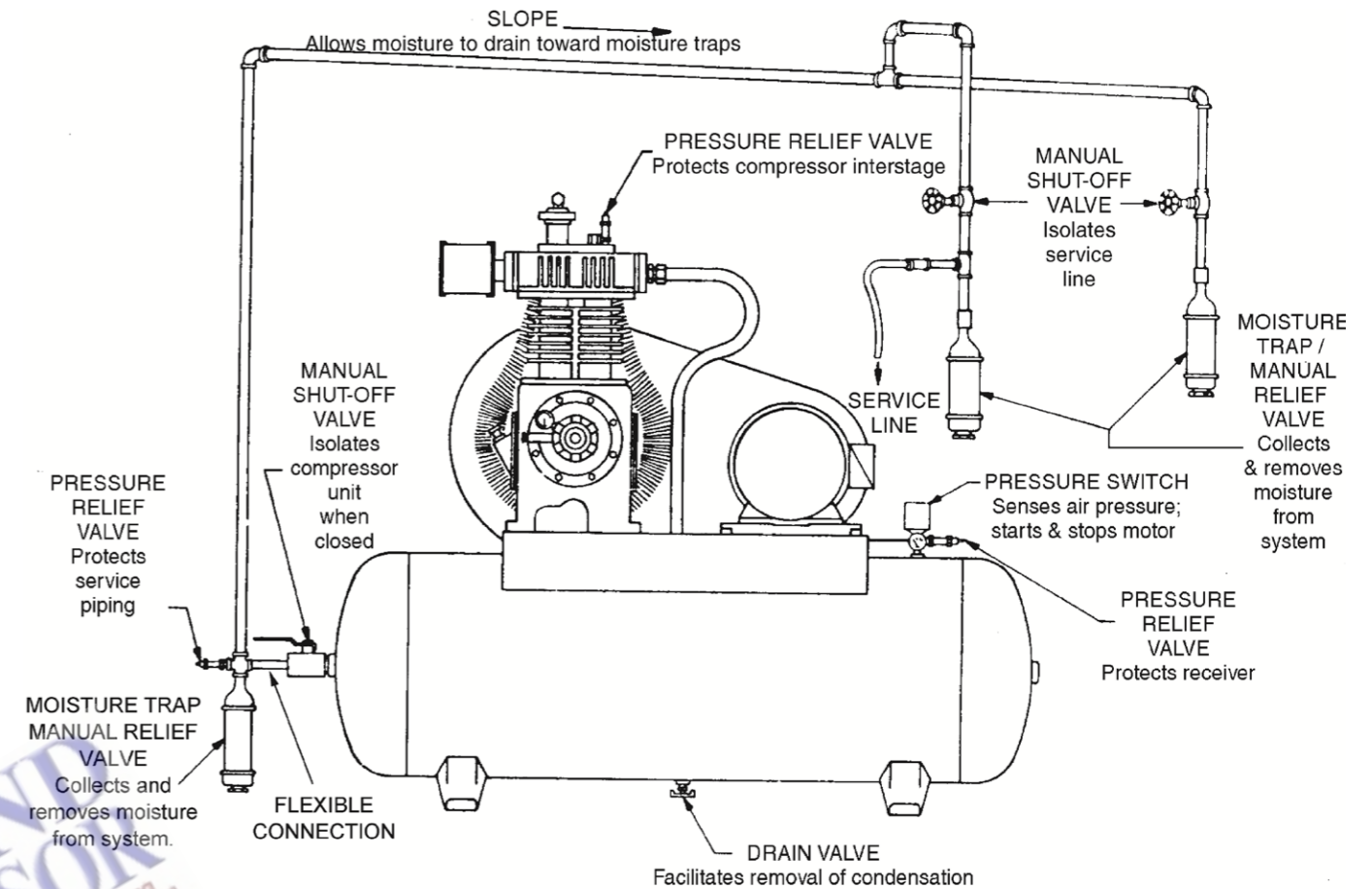


Fig. 3-10 Typical Drop Leg & Component Location

Caution!

Never locate the compressor air inlet system where toxic, volatile or corrosive vapors, air temperatures exceeding 104°F, water, or extremely dirty air could be ingested. These types of atmospheres could adversely affect the performance of the compressor system.

Compressed air discharge system

The discharge piping should be of the same diameter as the compressor discharge connection, or sized so that the pressure drop at any point in the system does not exceed 10% of the air receiver pressure. Install auxiliary air receivers near heavy loads or at the far end of a long system. This will ensure sufficient pressure if the use is intermittent, or sudden large demands are placed on the system.

Discharge piping should slope to a drop leg (refer to Fig. 3-10, Typical Drop Leg & Component Location) or moisture trap to provide a collection point where moisture can be easily removed. All service line outlets should be installed above the moisture traps to prevent moisture from entering the tool or device using the air. Manual shutoff valves, protected by pressure relief valves, should be installed at all service line outlets to eliminate leakage while the tools are not in use.

The discharge piping from the tank of a stationary unit must be equipped with a properly rated flexible connection. As with any piping, all parts of the discharge piping should fit so as not to create any stress between the piping and components.

Pneumatic circuit breakers or velocity fuses

The Occupational Safety and Health Act (OSHA), Section 1926.303, Paragraph 7, published in the Code of Federal Regulations 29 CFR 1920.1, revised July 1, 1982 states that all hoses exceeding 1/2" inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of a hose failure".

These pneumatic safety devices are designed to prevent hoses from whipping which could result in a serious or fatal accident.

Warning!

Never join pipes or fittings with lead-tin soldering or use plastic pipe. Welded or threaded steel pipes and cast iron fittings, designed for the pressures and temperatures, are recommended.

Pressure vessels

Air receiver tanks and other pressure containing vessels such as (but not limited to) pulsation bottles, heat exchangers, moisture separators and traps, must be in accordance with ASME Boiler and Pressure Vessel Code Section VIII and ANSI B19.3 safety standards. They must be equipped with a properly sized pressure relief valve, pressure gauge, tank drain, & manual shutoff valve (refer to Fig. 3-10, Typical Drop Leg & Component Location).

Warning!

Follow ASME code for air receiver tanks and other pressure containing vessels. Pressure vessels must not be modified, welded, repaired, reworked or subjected to operating conditions outside the nameplate ratings. Such actions will negate code status, affect insurance status and may cause property damage, severe injury or even death. Always replace worn, cracked or damaged tanks.

A drain valve must be located in the bottom of the air receiver to allow for moisture drainage. An automatic drain valve is recommended. Extend piping away from the unit and any personnel in the immediate area to provide safe and convenient removal of excess moisture.

If the air receiver is going to be subject to temperatures of 32°F or below, provisions must be made to guard against freezing of the pressure relief valves, check valves, pressure gauge, and moisture drain.

Condensation

Rust can form inside the crankcase and on internal components as a result of condensation. A compressor must operate long enough during each run cycle to reach full operating temperature in order to reduce the risk of condensation.

Caution!

Lubricant that appears milky may have mixed with condensate. Failure to replace contaminated lubricant's will result in damage to the compressor and may void warranty.

Condensation can also form in the air tank of your compressor. When this happens, a mixture of air and moisture will be expelled through the service valve and into whatever is connected to the valve (e.g. air hoses, metal air lines, pneumatic tools, spray guns). An in-line filter or dryer, available from your local Atlas Copco distributor, may be required to eliminate the moisture.

Condensation in the air tank can be kept to a minimum by draining the tank on a daily basis. This also reduces the risk of rust developing and weakening the tank..

Manual tank drain valve operation

The manual tank drain valve is located on the underside of the air tank. Tank pressure is required to force moisture out of the tank through the drain tube. Safe removal of tank moisture from the air tank is dependent upon an internal tank pressure of no more than 30 PSIG. Higher internal tank pressures are dangerous and could cause serious injury!

Warning!

Oil and moisture residue must be drained from the air receiver daily or after each use. Accumulations of oil residue in the receiver can be ignited by embers of carbon created by the heat of compression, causing an explosion, damage to property and injury to personnel.

Warning!

Do not open a manual tank drain valve on any air tank containing more than 30 PSIG of air pressure!

Warning!

Never attempt to relieve an air tank by removing a pipe plug or any other system component!

Manually draining an air tank:

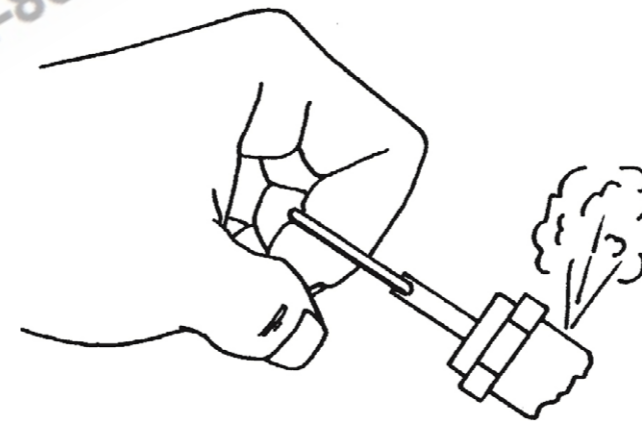


Fig. 3-11 Checking Pressure Relief Valves & Relieving System Pressure

Step 1

Disconnect & lockout the compressor from the power source (electric models) or disconnect the spark plug wire from the spark plug (gas engine models).

Step 2

Tanks subjected to freezing temperatures may contain ice. Store the compressor in a heated area before attempting to drain moisture from the tanks. Reduce the air pressure in the tank to 30 PSIG by pulling the pressure relief valve ring (refer to Fig. 3-11, Checking Pressure Relief Valves & Relieving System Pressure).

Step 3

Slowly open the drain valve and allow the moisture and air mixture to drain from the tank.

Step 4)

Once the moisture has been completely drained, close the drain valve.

Air tank inspection

Atlas Copco Compressor recommends that all air tanks be inspected at scheduled intervals. Refer to Fig. 3-12 Recommended Air Tank Inspection Intervals for relative information. Measure tank wall thickness at several locations, including the lowest point where condensation can accumulate.

Tank Capacity	Horizontal or Vertical	Minimum Allowable Wall Thickness		Visually Inspect	Hydrostatically Inspect
		Head	Shell		
30 Gal.	Horizontal	.094	.106	Yearly	10 Years
30 Gal.	Vertical	.109	.111		
60 Gal.	Horizontal	.109	.135		
60 Gal.	Vertical	.109	.111		
80 Gal.	Horizontal	.109	.135		
80 Gal.	Vertical	.131	.133		
120 Gal.	Horizontal	.131	.162		
120 Gal.	Vertical	.163	.199		
200 Gal.	Horizontal	.163	.199		
240 Gal.	Horizontal	.163	.199		

Fig. 3-12 Recommended air tank inspection intervals

Refer to federal, state or provincial, or local codes for mandatory air tank maintenance information.

*Specifications listed are for air tanks rated at 200 PSIG only. Consult factory for higher pressure ratings.

Section 4 - Start-up & operation

Pre-starting checklist

Warning!

Never assume a compressor is safe to work on just because it is not operating. It could restart at any time. Follow all safety precautions outlined in SECTION 5, Stopping For Maintenance.

Warning!

Failure to perform the pre-starting checklist may result in mechanical failure, property damage, serious injury or even death.

Steps 1 through 12 should be performed prior to connecting the unit to a power source. If any condition of the checklist is not satisfied, make the necessary adjustments or corrections before starting the compressor.

Step 1)

Remove all installation tools from the compressor and check for installation debris.

Step 2)

Check the lubricant level in the crankcase. (Refer to SECTION 5, Lubrication, for quantity and types of lubricants to be used).

Step 3)

Check motor pulley and compressor sheave for alignment and tightness on shaft. (Refer to SECTION 5, Pulley / Sheave Alignment & Belt Tension).

Step 4)

Manually rotate the compressor sheave several rotations to be sure there are no mechanical interferences.

Step 5)

Check inlet piping installation (Refer to SECTION 3, Induction System).

Step 6)

Check belt tension. (Refer to SECTION 5, Pulley / Sheave Alignment & Belt Tension).

Step 7)

Check all pressure connections for tightness.

Step 8)

Make sure all pressure relief valves are correctly installed. (Refer to SECTION 3, System Components).

Step 9)

Be sure all guards are in place and securely mounted. (Refer to SECTION 3, System Components).

Step 10)

Check fuses, circuit breakers, and overload relays for proper size. Verify that the supply voltage matches the motor requirements. (Refer to SECTION 3, Electrical Supply Requirements).

Step 11)

Open all manual shutoff valves at and beyond the compressor discharge.

Step 12)

After all the above conditions have been satisfied, the unit can be connected to the proper power source.

Step 13)

Jog the starter switch to check the rotational direction of the compressor. It should agree with the rotation arrow embossed on the compressor sheave.

Step 14)

Check for proper rotation of the cylinder cooling fan (fins inside sheave). The fan should blow cooling air across the cylinder.

Initial starting & operating

This instruction manual, as well as any instructions supplied by manufacturers of supporting equipment, should be read and understood prior to starting the compressor. If there are any questions regarding any part of the instructions, please call your local Atlas Copco distributor, or the Atlas Copco Compressor factory.

Caution!

When using battery cables to start engine driven units do not use more than a total of 40 ft. of #4 gauge cable (GND & HOT).

With the pre-starting checklist completed and satisfied, start the compressor. Watch and listen for excessive vibration and strange noises. If either exist, stop the compressor. Refer to SECTION 6, Troubleshooting, for help in determining the cause of such problems.

Oil pressure should be maintained at 18 to 20 PSIG after 20 minutes of run time. Normally the oil pressure does not need to be adjusted. But if it does, loosen the locknut on the adjustment screw located on the right side of the oil pump housing (see Fig. 4-1, Oil Pressure Adjustment). Increase the oil pressure by turning the adjustment screw clockwise; decrease the oil pressure by turning the adjusting screw counterclockwise. After adjustment tighten the locknut.

Check the air receiver pressure gauge or system pressure gauge for proper readings. If inadequate or excessive air pressure conditions exist, refer to Section 6, Troubleshooting.

Heat created during the initial startup of a new compressor will cause slight expansion of the head(s). This slight expansion crushes the head gasket ever so slightly and affects the torque value of the cylinder fasteners (capscrews). To ensure optimal performance, Atlas Copco recommends that you initially operate the compressor for at least one hour. Shut the compressor off and follow precautions outlined in SECTION 5, Stopping for Maintenance. Observe compressor operation closely for the first hour of operation and then frequently for the next seven hours. After the first eight hours, monitor the compressor at least once every eight hours. If any abnormal conditions are witnessed, stop the compressor and correct the problem. After two days of operation, check belt tension, lubricant level, and inspect the system for leaks.

Atlas Copco Compressor recommends that a new or rebuilt reciprocating compressor should be run for a total of 100 hours at full discharge operating pressure to break-in the new piston rings. Until the rings are seated, the compressor will discharge higher than normal amounts of lubricant. In light of this fact, the lubricant level should be checked more frequently during the 100 hour break-in period.

Daily starting checklist

Do not proceed until the Pre-starting Checklist and Initial Starting & Operating sub-sections have been read and are thoroughly understood.

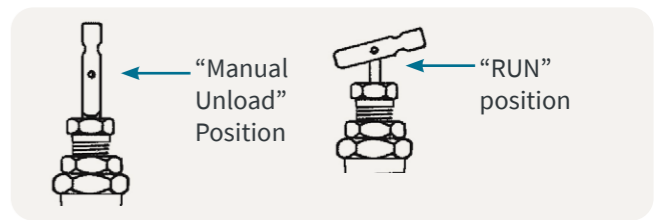


Fig. 4-1 Continuous Pilot Valve

Step 1)

Check lubricant level in crankcase.

Step 2)

Drain liquid from the air receiver and moisture trap (if so equipped).

Step 3)

Check all hoses and fittings for weak or worn conditions and replace if necessary.

Step 4)

Jog the starter button and check compressor rotation (refer to Steps 14 & 15 of Pre-Starting Checklist).

Note: Continuous Run Units - Prior to starting a continuous run unit, flip the toggle lever on the pilot valve stem to the "Manual Unload" position (see Fig. 4-1). Now the compressor can be started unloaded. Once the compressor is running at full speed, flip the toggle lever back to the "RUN" position.

Step 5)

Start compressor per factory instructions. (Refer to SECTION 4, Pre-Starting Checklist and Initial Starting & Operating.)

Step 6)

Check system pressure.

Step 7)

Check all pressure relief valves for proper operation.

Step 8)

Check control system for proper operation.

Step 9)

Check the lubricant level in the crankcase several minutes after the compressor has run. (Discoloration or a higher lubricant level reading may indicate the presence of condensed liquids.) If lubricant is contaminated, drain and replace.

Section 5 - Maintenance & lubrication

Stopping for maintenance

The following procedures should be followed when stopping the compressor for maintenance or service:

Step 1)

Per OSHA regulation 1910.147: The Control of Hazardous Energy Source (Lockout/Tagout), disconnect and lockout the main power source. Display a sign in clear view at the main power switch stating that the compressor is being serviced.

Warning!

Never assume a compressor is safe to work on just because it is not operating. It could restart at any time.

Step 2)

Isolate the compressor from the compressed air supply by closing a manual shutoff valve upstream and downstream from the compressor. Display a sign in clear view at the shutoff valve stating that the compressor is being serviced

Step 3)

Open a pressure relief valve within the pressurized system to allow it to be completely de-pressurized. **NEVER** remove a plug to relieve the pressure!

Step 4)

Open all manual drain valves within the area to be serviced.

Step 5)

Wait for the unit to cool before starting to service. (Temperatures of 125°F can burn skin. Some surface temperatures exceed 350°F when the compressor is operating).

Maintenance schedule

To assure maximum performance and service life of your compressor, a routine maintenance schedule should be developed. A sample schedule has been included here to help you to develop a maintenance schedule designed for your particular application. Timeframes may need to be shortened in harsher environments.

At the back of this instruction manual you will find a **Maintenance Schedule Checklist**. Make copies of this checklist and retain the master to make more copies as needed. On a copy of the checklist, enter dates and initials in the appropriate spaces. Keep the checklist and this instruction manual readily available near the compressor.

Maintenance schedule checklist sample

Every 8 hours (or daily)

- Lubricant levels should be kept at the top of the sight glass.
- Drain receiver tank, drop legs and traps in air distribution system. Receiver tanks subjected to freezing temperatures may contain ice. Store the compressor unit in a heated area before attempting to drain moisture from the tank.
- Give compressor an overall visual inspection and be sure safety guards are in place.
- Check for any unusual noise or vibration.
- Check lubricant pressure (hot). Maintain 18 to 20 PSIG .
- Check for lubricant leaks.
- Check all pressurized components for rust, cracks or leaks. Immediately discontinue use of the equipment and relieve all system pressure if any of these problems are discovered. Do not use the equipment until it has been inspected and repaired by a qualified mechanic.

Every 40 hours (or Weekly)

- Manually operate the pressure relief valves to be certain they are working.
- Clean the cooling surfaces of the intercooler, aftercooler and compressor.
- Check the compressor for air leaks.
- Check the compressed air distribution system for leaks.
- Inspect lubricant for contamination & change if necessary.
- Clean or replace the air intake filter. Check more often under humid or dirty conditions.

After initial 100 hours

- Completely drain the crankcase of break-in lubricant and replace with Quin-Cip-D or Quin-Cip lubricant.

Every 160 hours (or monthly)

- Check belt tension.

Every 500 hours (or every 3 months)

- Change lubricant (more frequently in harsher environments).
- Torque pulley clamp screws or jam nut.

Every 1000 hours (or every 6 months)

- When Quin-Cip or Quin-Cip-D lubricant is used, lubricant change intervals may be extended to every 1000 hours or every 6 months, whichever occurs first (change more frequently in harsher conditions).
- Inspect compressor valves for leakage and/or carbon build-up. If excessive sludge build-up exists inside the crankcase, clean the inside of the crankcase as well as the screen. **Never use a flammable or toxic solvent for cleaning. Always use a safety solvent and follow the directions provided.**

Every 2000 hours (or every 12 months)

- Inspect the pressure switch diaphragm and contacts. Inspect the contact points in the motor / starter.

Servicing reed valves

Atlas Copco compressor valve plates and reed valves should be inspected and cleaned on a regular basis. The reed valves are made of stainless steel and can be cleaned with a stiff bristle brush (not a wire brush!). A clean safety solvent may also be used to loosen carbon deposits on the valve plates and reed valves. Handle all parts with care; do not bend, mar

or scratch any sealing surfaces.

Danger!

Never use gasoline, thinners, or other flammable solutions to clean valves or related parts.

Lubrication

Before starting your compressor, check the lubricant level in the crankcase. The lubricant level of CRS-5, CRS-7.5, CRS-10S, CRS-10 and CRS-15 compressors must be kept at the top of the sightglass.

Replace the breakin lubricant supplied with the compressor after 100 hours of operation with Quin-Cip-D or Quin-Cip lubricant.

Avg. # of Hrs. Compressor Operates Daily	# of days of operation to reach:	
	50 Hrs.	100 Hrs.
4	13 days	25 days
6	9 days	17 days
8	6 days	13 days
10	5 days	10 days

Quin-Cip-D and Quin Cipb lubricants have proven under extensive testing to minimize friction and wear, limit lubricant carryover, and reduce carbon and varnish deposits. They will support the performance characteristics and life designed into all Atlas Copco compressors and are highly recommended. Refer to the charts below to determine the correct amount of lubricant and viscosity to use for your model and application.

Approximate Crankcase Lubricant Capacities	
Basic Compressor Model	Lubricant Capacity
CRS/CRP-5 & CRS/CRP-7.5	2.5 qt. (2.37 lit.)
CRS/CRP-10S	2.5 qt. (2.37 lit.)
CRS/CRP-10	4 qt. (3.78 lit.)
CRS/CRP-15	4 qt. (3.78 lit.)

Lubricant Specifications		
Quin-Cip		
Ambient Temperature	SAE Viscosity	ISO Viscosity
Below 00 F	SAE 5W	ISO 22
0-32°F	SAE 10W	ISO 32
32-80°F	SAE 20W	ISO 68
80-104°F	SAE 30W	ISO 100

Quin-Cip-D		
Ambient Temperature	SAE Viscosity	ISO Viscosity
15-104°F	SAE 30	ISO 100

⚠ Caution!

The lubricant selected must have a pour point at least 15°F lower than the minimum expected ambient temperature.

Pulley / sheave alignment & belt tension

Improper pulley/sheave alignment and belt tension are causes for motor overloading, excessive vibration, and premature belt and/or bearing failure. To prevent this from happening, check the pulley/sheave alignment and belt tension on a regular basis (refer to **SECTION 5, Maintenance Schedule**).

Periodically inspect the motor pulley(s) and compressor sheave(s) for oil, grease, nicks or burrs. Clean or replace if necessary. Make sure they are securely fastened. Align the compressor sheave with the motor or engine pulley. Drive belt grooves of the pulley(s) and sheave(s) should be in line with each other. The compressor crankshaft must be parallel to the motor or engine drive shaft.

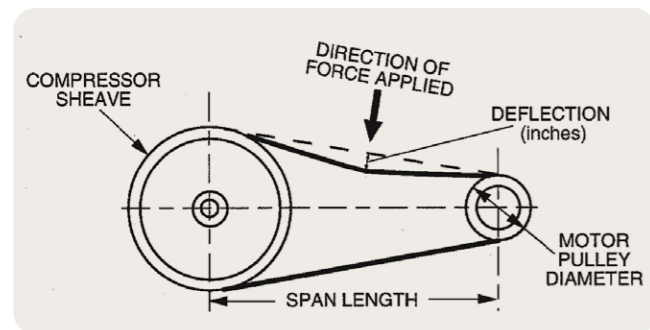


Fig. 5-1 Setting Belt Tension

Belt tension should be measured and adjusted to provide smooth operation.

Step-by-step procedures are provided here to correctly measure and set the drive belt tension:

Step 1)

Measure the span length of the drive. (Refer to **Fig. 5-1, Setting Belt Tension**).

Belt Cross Section	Motor Pulley Dia. Range (inches)	Recommended Deflection Force (lbs.)	
		Minimum	Maximum
B	4.6	3	5.9
B	5.0 - 5	4.4.5	6.7
B	5.6 - 6.4	5.0	5.0
B	6.8 - 12.75	5.8	8.6

Step 2)

Determine the amount of deflection (in inches) required to measure deflection force (in pounds) by multiplying the span length x 1/64 (.016) (i.e. 32" span length x 1/64 [.016] = 1/2" [.50] of deflection required to measure deflection force).

Step 3)

Lay a straightedge across the top outer surface of a drive belt from pulley to sheave.

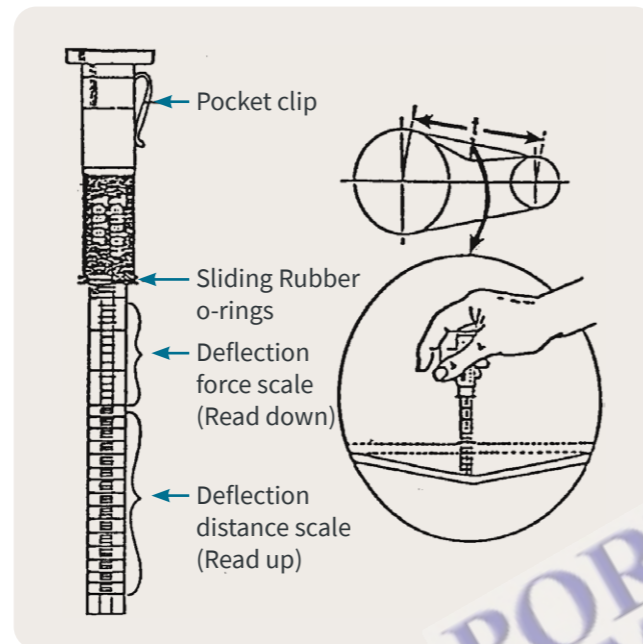


Fig. 5-2 Belt Tension Gauge

Step 4)

At the center of the span, perpendicular to the belt, apply pressure to the outer surface of the belt with a belt tension gauge (refer to **Fig. 5-2, Belt Tension Gauge**). Force the belt to the predetermined deflection (refer to Step 2 above). Record the reading on the belt tension gauge and compare to the chart following **Fig 5-1**. The deflection force reading should be within the minimum and maximum values shown. Adjust belt(s) accordingly. New belts should be initially tensioned to the maximum value plus 33% (multiply by 1.33).

Step 5)

Recheck the tension of the new belts several times in the first 50 hours of operation and adjust if necessary. Thereafter, check belt tension on a regular basis (refer to **SECTION 5, Maintenance Schedule**).

⚠ Warning!

Electric power always exists inside the pressure switch whenever the compressor package is connected to a power supply. Be careful not to touch any electrical leads when adjusting the pressure switch.

⚠ Warning!

Never exceed the designed pressure for the system or overload the motor beyond its Maximum Amp Draw.

$$\text{Full Load Amps} \times \text{Service Factor} = \text{Maximum Amp Draw}$$

⚠ Warning!

Never assume a compressor is safe to work on just because it is not operating. It may be in the automatic stand-by mode and may restart any time. Follow all safety precautions outlined in **SECTION 5, Stopping For Maintenance**.

*Full load amps (FLA) & Service Factor can be found on the motor nameplate.



Pilot valve adjustments

All adjustments made to the pilot valve must be performed by a qualified technician. The adjustments must be made while the unit is operating, therefore, extreme caution must be taken while working on the unit. Observe all necessary precautions. Always use a back-up wrench and make all differential and unload pressure adjustments in very small increments (1/8 turn).

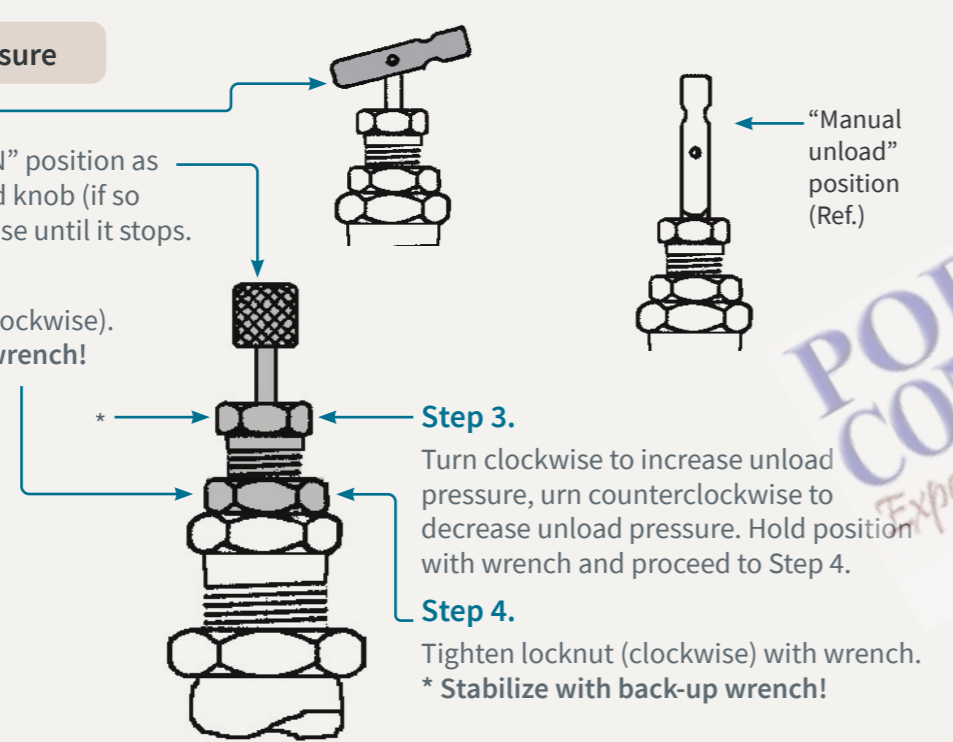
Warning!

Electric power always exists inside the pressure switch whenever the compressor package is connected to a power supply. Be careful not to touch any electrical leads when adjusting the pressure switch.

Setting unload pressure

Step 1.
Flip the toggle to the “RUN” position as shown, or turn the knurled knob (if so equipped) counterclockwise until it stops.

Step 2.
Loosen locknut (counterclockwise).
* **Stabilize with back-up wrench!**



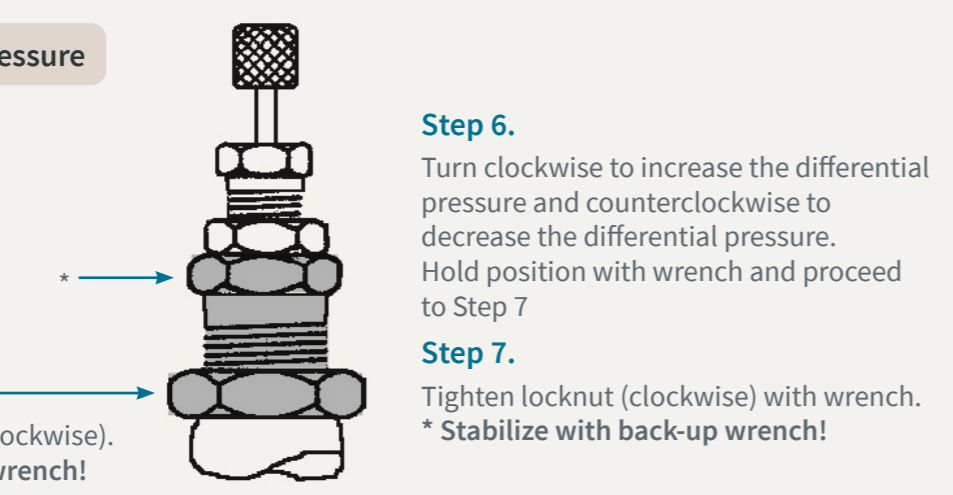
“Manual unload” position (Ref.)

Step 3.
Turn clockwise to increase unload pressure, turn counterclockwise to decrease unload pressure. Hold position with wrench and proceed to Step 4.

Step 4.
Tighten locknut (clockwise) with wrench.
* **Stabilize with back-up wrench!**

Setting differential pressure

Step 5.
Loosen locknut (counterclockwise).
* **Stabilize with back-up wrench!**



Step 6.
Turn clockwise to increase the differential pressure and counterclockwise to decrease the differential pressure. Hold position with wrench and proceed to Step 7

Step 7.
Tighten locknut (clockwise) with wrench.
* **Stabilize with back-up wrench!**

Section 6 - Troubleshooting

Trouble	Probable cause
Low discharge pressure	<ul style="list-style-type: none"> Restricted inlet Defective compressor valves or valve unloading mechanism Leaks in the compressed air distribution system at fittings, connections, etc. Unloader pilot valve defective or set wrong Pressure switch defective or set wrong Drive belt slipping Incorrect speed Worn piston rings or loose piston Leaking head gasket Drain valve open Defective pressure gauge Pressure relief valve leaking Clogged intercooler Compressor incorrectly sized for the altitude it is operating at Piston rings not seated; allow 100 hours at full pressure
Water in the crankcase (lubricant appears milky)	<ul style="list-style-type: none"> Compressor does not run long enough to get hot and vaporize the liquids squeezed out of the air during compression (compressor may be too large for application) Incorrect or inferior grade of lubricant System pressure leaking back through discharge valve
Rusty valves and/or cylinders	<ul style="list-style-type: none"> Compressor operated too infrequently Compressor does not run long enough to get hot and vaporize the liquids squeezed out of the air during compression (compressor may be too large for application) Compressor not properly prepared for storage Discharge line from compressor head is pointed upward allowing condensation to drain back at shutdown
Excessive vibration	<ul style="list-style-type: none"> Incorrect speed Compressor valves not functioning properly Loose pulley/sheave Motor or engine out of balance Compressor, motor or engine not secured tightly, or tightened into a bind Foundation or frame inadequate Piping inadequately supported or tightened into a bind Excessive discharge pressure Compressor feet may need to be leveled with shims
Excessive drive belt wear	<ul style="list-style-type: none"> Pulley/sheave out of alignment Belt too loose or too tight Belt slipping Pulley/sheave wobbling Pulley/sheave groove damaged or rough Incorrect belts

Trouble	Probable cause
Low oil pressure	<ul style="list-style-type: none"> • Oil sump strainer plugged • Excessive leakage at crankshaft seals • Low oil level • Oil pump incorrectly assembled to the bearing carrier (“o”ring not properly located between oil pump body & bearing carrier) • Oil pressure adjusting screw not set properly • Defective oil pressure gauge
Compressor loads and unloads excessive	<ul style="list-style-type: none"> • Air receiver too small • Compressor valves or unloaders defective • Excessive system leakage • Compressor operating at incorrect speed • Unloader pilot differential set too close • Pressure switch defective
Defective pressure switch	<ul style="list-style-type: none"> • Moisture &/or oil buildup on the pressure switch diaphragm • Ruptured diaphragm • Burned contact points • Plugged air passage from the receiver to the pressure switch • Loose electrical connection
Excessive air pressure in air receiver	<ul style="list-style-type: none"> • Air pressure gauge inaccurate • Leaks in unloader piping system • Defective compressor valve unloader • Pilot valve or pressure switch set incorrectly or defective • Pressure switch wired incorrectly • Tube to compressor unloader valve plugged
Excessive intercooler pressure (Two stage models only)	<ul style="list-style-type: none"> • Intercooler restricted or plugged • Compressor valves in second stage broken or not functioning properly • Pilot valve or pressure switch set incorrectly or defective
Intercooler pressure abnormally low	<ul style="list-style-type: none"> • Compressor valves or head unloaders in first stage not functioning properly or defective • Restricted air inlet filter or suction line • Pilot valve or pressure switch set incorrectly or defective • Pressurized air at head unloader not venting properly when demand for air is required • Compressor valve or head gasket leaking • Worn piston rings • Leaking air at intercooler or intercooler connections
Compressor overheats	<ul style="list-style-type: none"> • Clogged intake system • Defective compressor valves • Pressure setting too high • Clogged intercooler, internally or externally • Inadequate ventilation, or recirculation of hot air • Pulley/sheave rotation wrong • Incorrect speed • Lubrication inadequate • Compressor incorrectly sized

Trouble	Probable cause
High discharge temperature	<ul style="list-style-type: none"> • Compressor valve assemblies defective • Discharge pressure too high • Inadequate ventilation or hot air recirculating • Cooling surfaces of compressor or intercooler excessively dirty • Ambient temperature too high • Scored or excessively worn cylinder walls
Compressor knocks	<ul style="list-style-type: none"> • Head clearance insufficient • Piston loose in cylinder bore, cylinder bore worn, piston or piston rings worn • Worn rods or main bearing • Wrong pressure setting, discharge pressure excessive • Crankcase lubrication inadequate • Loose pulley/sheave
Excessive oil consumption	<ul style="list-style-type: none"> • Compressor runs unloaded too long • Worn piston rings • Restricted intake system • Compressor running too hot • Breather valve not functioning properly • Oil level in crankcase too high • Oil level in crankcase too high • Connecting rod out of alignment, bent or twisted • Leaking oil seal • Piston rings not seated (allow 100 hours for seating) • Wrong oil (may be a detergent oil with a tendency to foam) • Inferior grade of lubricant
Excessive current draw (To determine maximum amperage allowed, multiply the FLA on the motor nameplate by the service factor)	<ul style="list-style-type: none"> • Low voltage (must be within 10% of nameplate voltage) • Loose electrical connection • Wire size too small • Incorrect lubricant • Discharge pressure too high
⚠ Caution! Motor surface temperature normally exceeds 170° F.	<ul style="list-style-type: none"> • Intercooler plugging • Bearings tight or seizing • No crankshaft endplay • Motor sized incorrectly • Motor defective • Drive belts too tight
Failure to start	<ul style="list-style-type: none"> • Power not on • Blown circuit fuse • Overload relay tripped • Low voltage • Faulty start switch • Power failure • Pressure switch incorrectly adjusted or faulty • Loose or broken wire • Motor defective • Compressor seized • Inferior grade of lubricant <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>⚠ Caution!</p> <p>Overload relays are designed to protect the motor from damage due to motor overload. If the overload relay trips persistently, DO NOT CONTINUE TO PUSH THE RESET BUTTON! Contact your local Atlas Copco distributor for assistance.</p> </div>
Motor stalls	<ul style="list-style-type: none"> • Motor overloaded (refer to Excessive current draw)

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The Atlas Copco logo consists of two horizontal white bars above the company name 'Atlas Copco' in a white serif font, all contained within a blue rounded rectangular shape.

Atlas Copco

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