

# Climate Control Series

## Instruction Manual

This manual contains important safety information and must be carefully read in its entirety and understood prior to installation by all personnel who install, operate and/or maintain this product.

*On-line product registration, parts ordering and warranty information is available at [www.quincycompressor.com](http://www.quincycompressor.com)*

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**! WARNING**

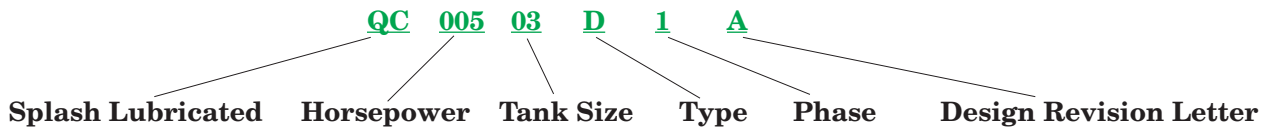
THIS PRODUCT CAN EXPOSE YOU TO CHEMICALS INCLUDING LEAD, WHICH IS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM. FOR MORE INFORMATION GO TO [WWW.P65WARNINGS.CA.GOV](http://WWW.P65WARNINGS.CA.GOV) 2024114400



# INTRODUCTION

The Quincy Compressor Climate Control Series consists of splash or pressure lubricated reciprocating air compressors. This instruction manual provides you with general and specific information regarding these compressors. Outlined below is a Model Designation Code to assist you in determining which unit you have as well as the specific basic compressor.

## Model Designation Code for Splash Lubricated Unit Models



Basic Compressor		Tank Size	Type	Phase
<b>Horsepower</b>				
005 = 1/2 h.p.	§ QTS3QCB	03 = 30 gal.	S = simplex	1 = 60 Hz. 1 Phase
007 = 3/4 h.p.	§ QTS3QCB	06 = 60 gal.	D = duplex	3 = 60 Hz. 3 Phase
010 = 1 h.p.	§ QTS3QCB	08 = 80 gal.		
015 = 1 1/2 h.p.	§ QTS3QCB	12 = 120 gal.		
020 = 2 h.p.	† QTS5QCB	20 = 200 gal.		
030 = 3 h.p.	† QTS5QCB	24 = 240 gal.		
050 = 5 h.p.	‡ QT7QCB	BB = base mount		
075 = 7 1/2 h.p.	**QT10QCB	BR = retrofit		
100 = 10 h.p.	QT15QCB	EPT4 = Emergency Portable Q911 (twin 4 gal. tanks)		
151 = 15 h.p.	QT15QCB			

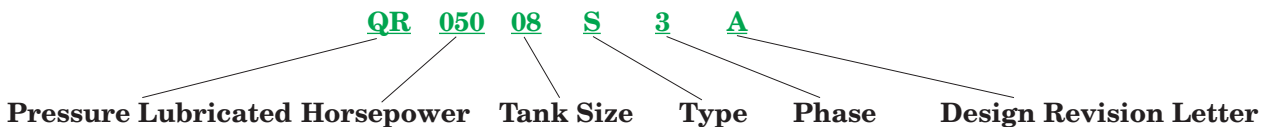
§ Before 1994, X3QCB (1/2 h.p.), 210QCB (3/4 & 1 h.p.) & QT5QCB (1 1/2 h.p.) were produced.

† Before May of 2001, QT5QCB was offered as 2 & 3 h.p. QT5QCB is used on 2 & 3 h.p. retrofit package only.

‡ 5 h.p. retrofit package also produced with QT7QCB. The package was supplied with QT5QCB prior to Sept. 2000.

\*\* Prior to July 1, 2000, QT15QCB basic compressor was offered as 7 1/2 h.p.

## Model Designation Code for Pressure Lubricated Unit Models



Basic Compressor		Tank Size	Type	Phase
<b>Horsepower</b>				
010 = 1 h.p.	210QRB	03 = 30 gal.	S = simplex	1 = 60 Hz. 1 Phase
015 = 1 1/2 h.p.	† 210QRB	06 = 60 gal.	D = duplex	3 = 60 Hz. 3 Phase
020 = 2 h.p.	325QRB	08 = 80 gal.		
030 = 3 h.p.	325QRB	12 = 120 gal.		
050 = 5 h.p.	340QRB	20 = 200 gal.		
075 = 7 1/2 h.p.	350QRB	24 = 240 gal.		
100 = 10 h.p.	390QRB	BB = base mount		
150 = 15 h.p.	5120QRB			
200 = 20 h.p.	5120QRB			

† Before 1996, 310QRB (1 1/2 h.p.) was produced.

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•*Safety First*

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

“**WARNING !**”, “**CAUTION !**”, and “**DANGER !**” 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 Quincy distributor, or the Quincy 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 Quincy 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 running.
- Per OSHA regulation 1910.147, relieve the system of all pressure before attempting to service any part of the unit.
- Do not operate the unit with any of its safety guards, shields, or screens removed.

- 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 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.
- All components of the compressed air system must be properly rated for the application.
- Alterations must not be made to this compressor without Quincy 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 and fittings must be kept tight.
- Reckless behavior of any kind involving compressed air is dangerous and can cause very serious injury to the participants.
- 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 replaced immediately. The instruction manual should be read periodically to refresh one's memory. It may prevent a serious or fatal accident.
- Wear safety glasses and hearing protection during operation, service and maintenance procedures.

**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.**

The owner, lessor or operator of any compressor unit manufactured by Quincy 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. Quincy 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.

Quincy 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. Quincy Compressor reserves the right to change specifications without incurring any obligation for equipment previously or subsequently sold.

***Summary of Changes to This Manual***  
***(since previous printing dated January 2013):***

- Clarified safety statement relative to properly rated components for the compressed air system.
- Updated lubricant capacity specifications for pressure lubricated models as result of bearing carrier redesign.
- Added Lubricant Filter information.

# SYSTEM DYNAMICS

## • *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 and into the low pressure cylinder. This air is 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 System*

### **Splash Lubricated Models**

With each stroke of the compressor, a dipper attached to the bottom of the connecting rod, dips into a lubricant bath at the bottom of the crankcase. This dipper causes the lubricant to splash throughout the interior of the crankcase, lubricating all moving parts.

It is important with this system that the lubricant level be maintained between the high and low level marks on the dipstick. If the lubricant level is too high, excessive lubricant carryover could result. If the lubricant 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 Models**

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



## • ***Principles of Cooling System***

Fan blades in the compressor sheave force ambient air across fins on the cylinder heads (and intercooler fins of two stage compressors). Quincy compressors should be 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.

## • ***Principles of Control System***

### **Simplex Units**

Simplex Climate Control units are controlled by a pressure switch which detects the demand for compressed air and allows the motor to start. When the demand is satisfied, the unit stops.

### **Duplex Units**

Duplex Climate Control units are controlled by multiple pressure switches (one for each compressor). They react to a demand for air the same way as a simplex unit. In addition to the pressure switches, duplex units can be controlled by an electrical alternating switch that automatically distributes the workload evenly between the two basic compressors. The following example best explains the process:

The lead compressor starts and runs to satisfy the air demand. When the pressure in the system reaches the cut-out pressure of the lead compressor, it shuts off. The next time air is required, the lag compressor starts up first and becomes the lead compressor.

If the lead compressor can not satisfy the air demand, the lag compressor will automatically start and assist until the pressure in the system reaches the cut-out pressure. At the cut-out pressure, both the lead compressor and lag compressor shut down. The cut-in pressure of the lead pressure switch is normally set 10 PSIG higher than the lag pressure switch.

### •*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 Quincy Compressor warranty.**
- Step 2)** Insure that adequate lifting equipment is available for moving the compressor equipment.

## CAUTION !

**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 volt, 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. Quincy 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 Quincy Compressor. 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:

- a.) form #3208
- b.) original bill of lading
- c.) original paid freight bill
- d.) original invoice or certified copy
- e.) 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*

Quincy air compressors must be installed and operated in a secure and upright position in an area that is clean, dry, well lighted, adequately ventilated, and protected from adverse conditions and/or elements. 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.

The compressor must not be installed closer than 24 inches to a wall or another compressor. This allows ample circulation of air across the compressor cylinders, heads and cooler (if so equipped). Do not allow hot air from additional equipment blow towards the compressor. If at all possible, the pulley drive system (i.e. motor pulley, compressor sheave, belts and guard) should be located next to a wall to minimize any danger created by the drive system while the compressor is operating.

Quincy 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 -15° 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 Quincy distributor if assistance is required.

## CAUTION !

**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.**

## 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*.**

## CAUTION !

**NEMA electrical enclosures and components must be appropriate to the area 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. Contact your Quincy distributor for assistance.

# 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 Quincy distributor for assistance.

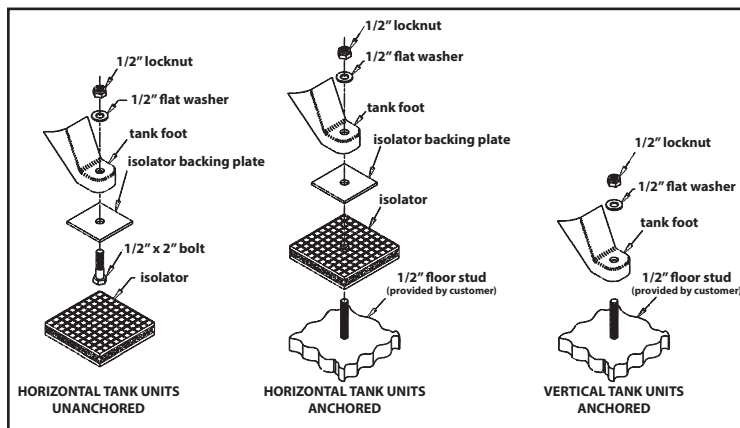
## •Mounting

# WARNING !

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

Proper mounting of Quincy Compressor units is crucial to the safe operation and longevity of the equipment. The installation requires a flat and level concrete floor or pad. Satisfactory results can usually be obtained by mounting horizontal tank units on vibration isolating pads available from your

local Quincy Distributor. **All vertical tank units must be anchored!** Refer to **Fig. 3-1, Isolator Installation for Unanchored or Anchored Receivers**. Quincy recommends that all vertical tank units be mounted as indicated **without** isolators.



**Fig. 3-1 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.**

# CAUTION !

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

## •System components

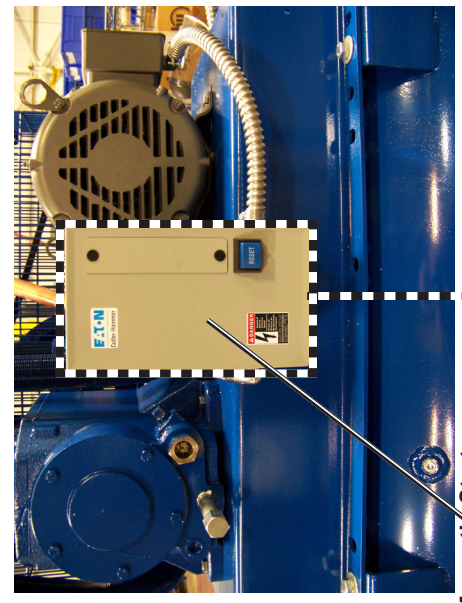
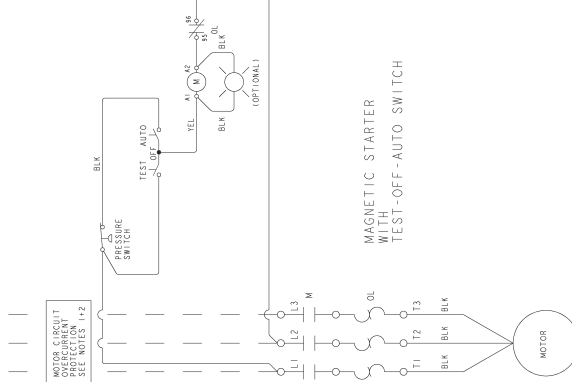
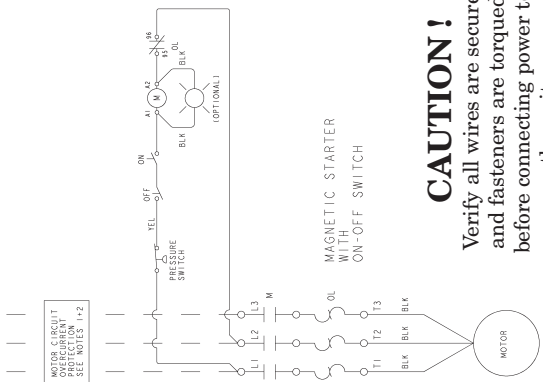
Efficiency and safety are the primary concerns when selecting components for compressed air systems. Products of inferior quality can not only hinder performance of the unit, but could cause system failures that result in bodily harm or even death. Select only top quality components for your system.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

### Drive Pulleys

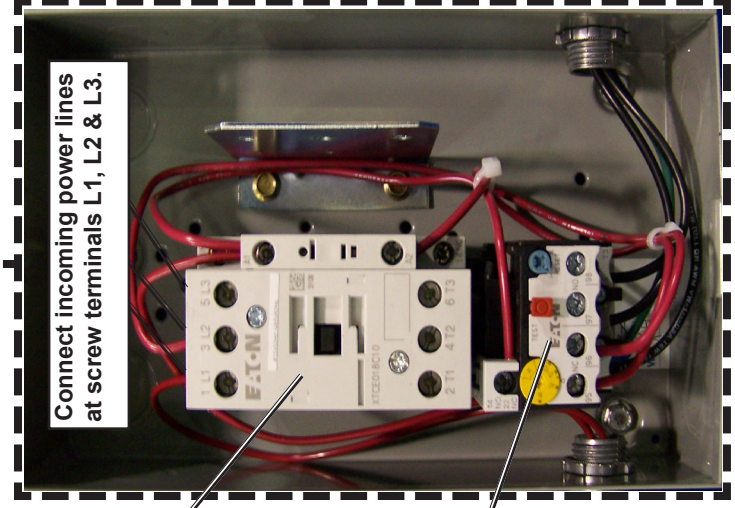
Drive pulleys must be properly aligned and drive belt tension set to specifications (refer to **SECTION 5, •Pulley / Sheave Alignment & Belt Tension**). Improper pulley alignment and belt tension can cause motor overloading, excessive vibration, and premature belt and/or bearing failure.

# WARNING !

**Excessive compressor RPM's (speed) could cause a pulley to shatter. In an instant, the pulley 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).**



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

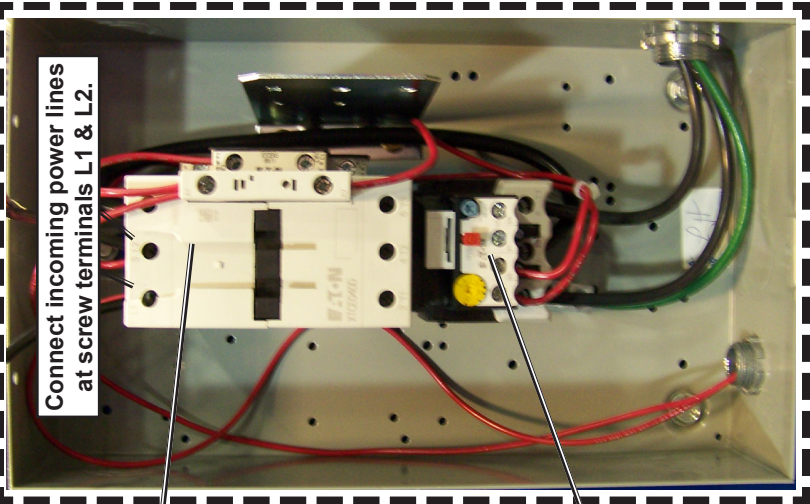


- 1) AT INSTALLATION, THE CUSTOMER IS TO PROVIDE DISCONNECT AND BRANCH CIRCUIT OVERCURRENT PROTECTION IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND THE ELECTRICAL CONTROL EQUIPMENT INSTALLATION INSTRUCTIONS.
- 2) GROUNDING AT INSTALLATION, THE CUSTOMER IS TO PROVIDE GROUNDING BETWEEN THE POWER SUPPLY AND THE ELECTRICAL CONTROL ENCLOSURE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND THE ELECTRICAL CONTROL EQUIPMENT INSTALLATION INSTRUCTIONS.
- 3) ALL WIRES ARE RED UNLESS OTHERWISE SPECIFIED.
- 4) DASHED LINES REPRESENT WIRES SUPPLIED BY OTHERS.

**Fig. 3-2 Typical Three Phase Magnetic Starter Wiring Schematic WP1744A**

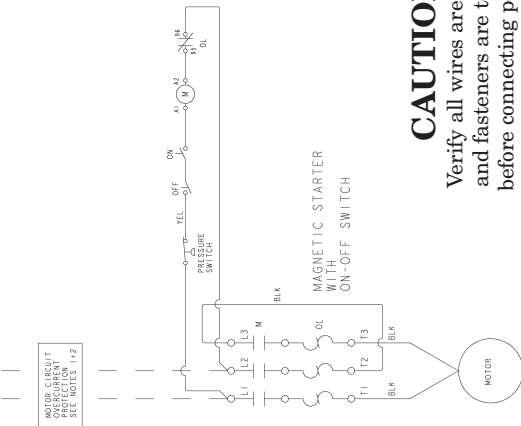


**Magnetic Starter**



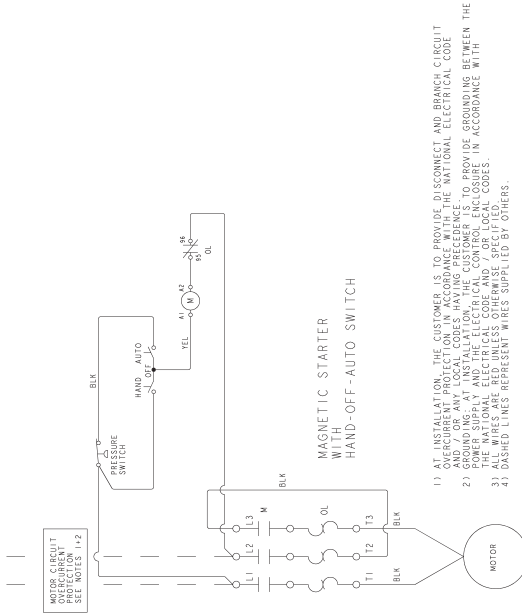
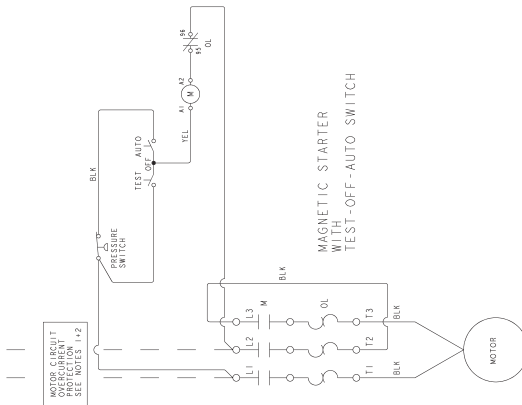
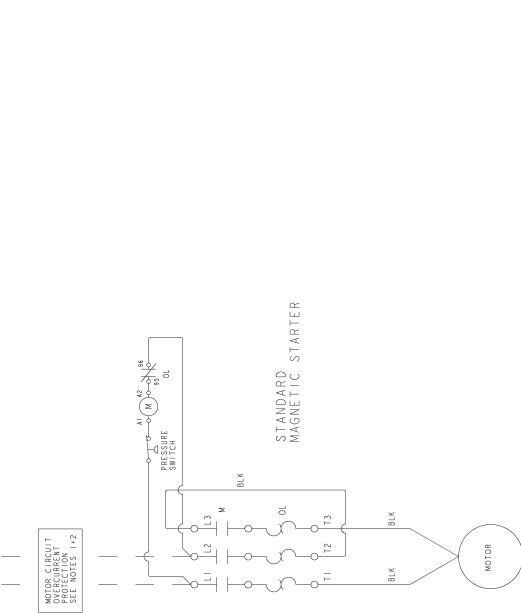
**Contactor**

**Overload Relay**



**CAUTION!**

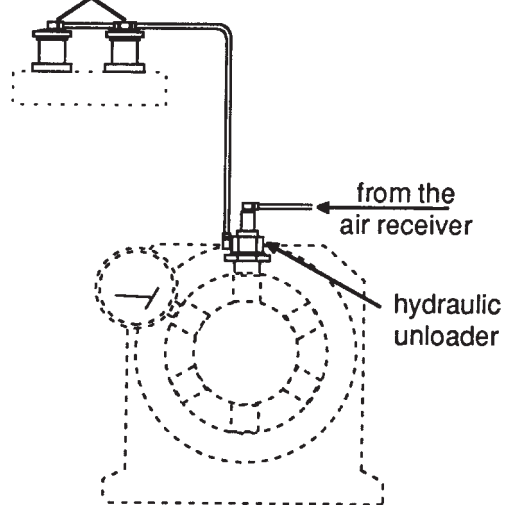
Verify all wires are secure and fasteners are torqued before connecting power to the unit.



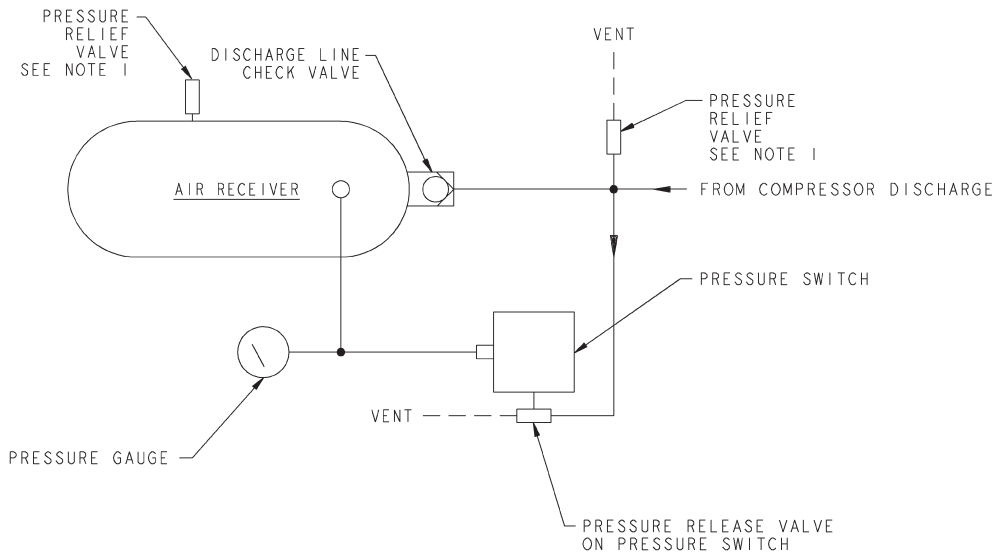
- 1) AT INSTALLATION, THE CUSTOMER IS TO PROVIDE DISCONNECT AND BRANCH CIRCUIT PROTECTION IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND 7 OR ANY LOCAL CODES HAVING PRECEDENCE.
- 2) THE NATIONAL ELECTRICAL CODE AND 7 OR ANY LOCAL CODES HAVING PRECEDENCE OVER THE POWER SUPPLY AND THE ELECTRICAL CONTROL ENCLOSURE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND 7 OR ANY LOCAL CODES.
- 3) DASHED LINES REPRESENT WIRES SUPPLIED BY OTHERS.

**Fig. 3-3 Typical Single Phase Magnetic Starter Wiring Schematic WP1744B**

**head unloading arrangement**



**Fig. 3-5 Loadless Starting Piping Schematic For QR Simplex & Duplex Units (2 h.p. & above Units)**

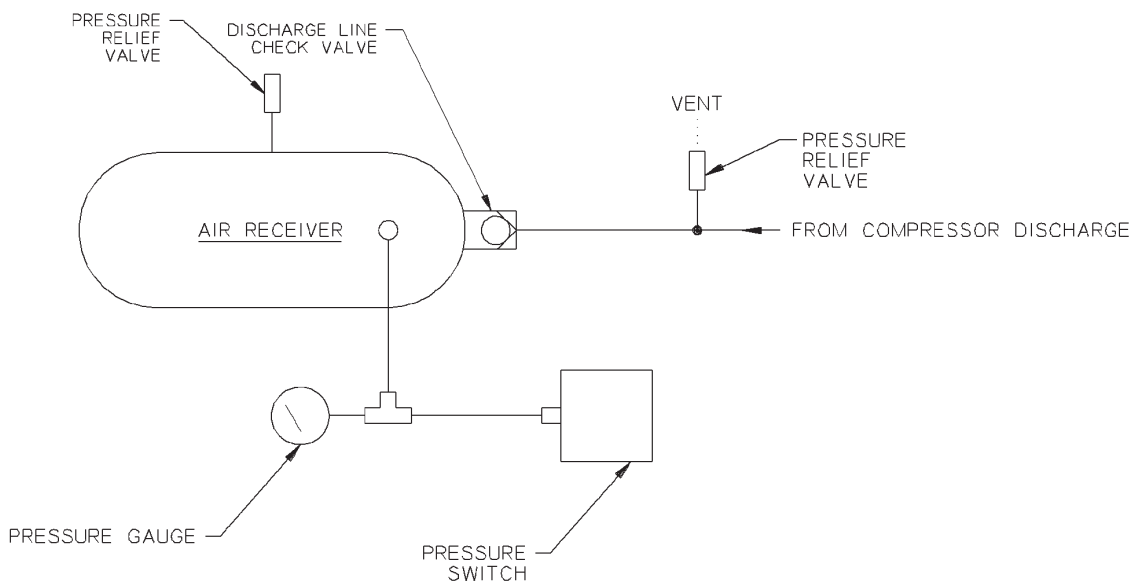


**NOTES:**

- 1) INSTALL A PROPERLY RATED PRESSURE RELIEF VALVE SO THAT MOISTURE CANNOT ACCUMULATE IN VALVE INLET.
- 2) INSTALL A PROPERLY RATED FLEXIBLE LINE BETWEEN THE AIR RECEIVER AND THE COMPRESSED AIR DELIVERY SYSTEM.

**Fig. 3-6 Start/Stop Control For QR 1 h.p. & 1½ h.p. Simplex Units Piping Schematic WP1781B**

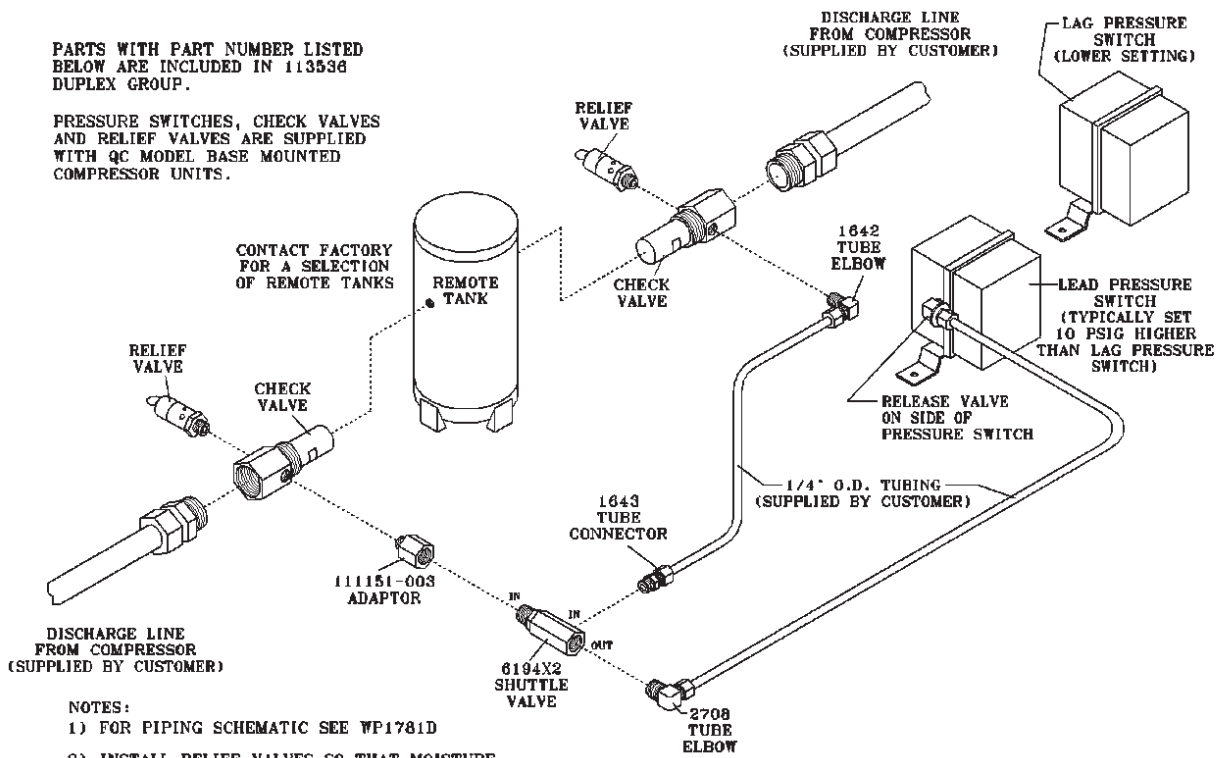




**Fig. 3-7 Start/Stop Control  
For QC Simplex Units & QR 2 h.p. & Above Units  
Piping Schematic WP1781KO**

PARTS WITH PART NUMBER LISTED BELOW ARE INCLUDED IN 113536 DUPLEX GROUP.

PRESSURE SWITCHES, CHECK VALVES AND RELIEF VALVES ARE SUPPLIED WITH QC MODEL BASE MOUNTED COMPRESSOR UNITS.



**NOTES:**

- 1) FOR PIPING SCHEMATIC SEE WP1781D
- 2) INSTALL RELIEF VALVES SO THAT MOISTURE CANNOT ACCUMULATE IN THE INLET PORT.
- 3) USE FLEXIBLE DISCHARGE LINE BETWEEN REMOTE TANK AND COMPRESSOR TO REDUCE STRAIN ON PIPING.
- 4) COMPRESSED AIR SYSTEMS EQUIPPED WITH A MANUAL SHUT OFF VALVE MUST BE PROTECTED BY A PRESSURE RELIEF VALVE INSTALLED BETWEEN THE MANUAL SHUT OFF VALVE AND THE COMPRESSOR.
- 5) TANK AND ALL COMPONENTS MUST BE PROPERLY SIZED FOR THE AIR FLOW, TEMPERATURE AND PRESSURE OF YOUR INSTALLATION.

**Fig. 3-8 Typical Diagram  
for QR 1 h.p. & 1½ h.p. Duplex Units**

## 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

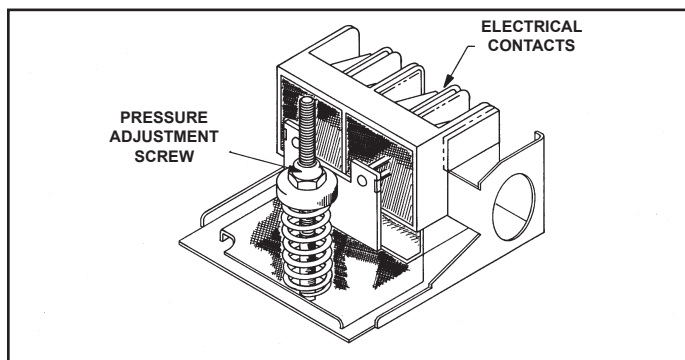
Manual shutoff valves block the flow of air pressure in either direction. This type of valve can be used to isolate a receiver from a pressurized system, provided the system is equipped with a pressure relief valve capable of being manually released. Shutoff valves must be equipped with a lockout feature and always locked in a closed position when the unit is being serviced. A 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 set level. They are available in various pressure settings to accommodate a range of applications. A check valve and pressure relief valve are required in all QC Series compressor discharge lines. 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.**



**Fig. 3-9 Pressure Switch**

## 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 Quincy Compressor are pre-set at the factory and usually do not require adjustment. However, the following procedures can be performed by a qualified electrician to adjust the pressure switch.

**Step 1)** Remove the pressure switch cover.

**Step 2)** While the compressor is running, screw the spring loaded adjustment screw in (clockwise) to increase the amount of air pressure required to open the switch and stop the unit.

Screw the spring loaded adjustment screw out (counterclock-wise) to decrease the amount of air pressure required to open the switch and stop the unit.

## CAUTION !

**The maximum discharge pressure for a Climate Control Series compressor is 90 PSIG Do not set the pressure switch to exceed this limit.**

## 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 setting the pressure switch.**

## WARNING !

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

**\* Full Load Amps x Service Factor = Maximum Amp Draw**

*\* Full Load Amps (FLA) & Service Factor can be found on the motor nameplate.*

## 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.**

### •Induction System

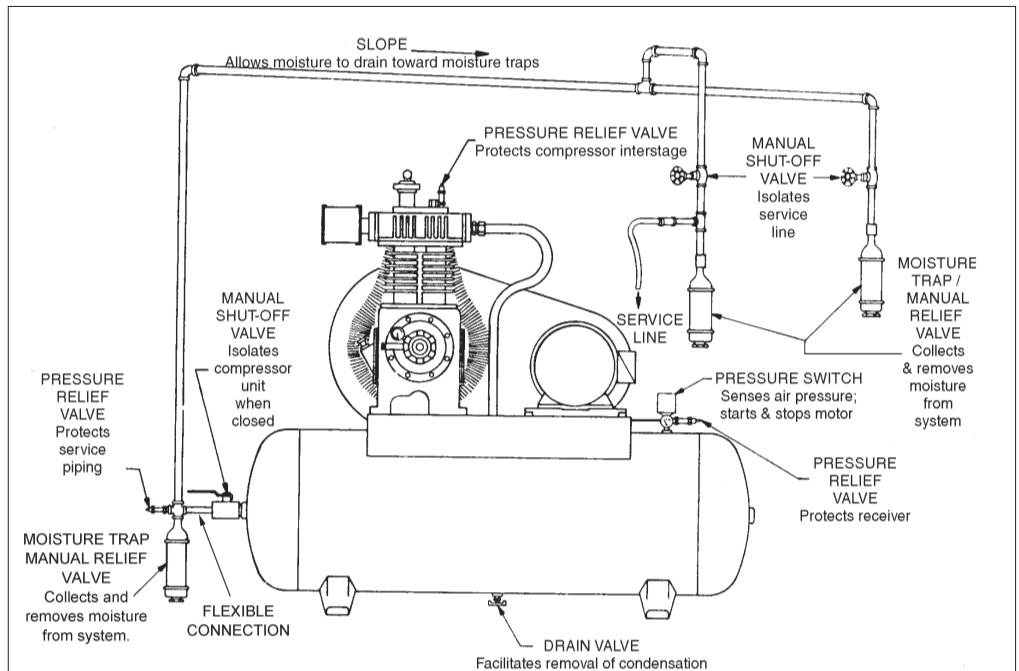
#### Air Intake

A clean, cool and dry air supply is essential to the satisfactory operation of your Quincy 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 requirements, 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 Quincy 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.



**Fig. 3-10 Typical Drop Leg & Component Location**

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.

Never locate the compressor air inlet system where toxic, volatile or corrosive vapors, air temperatures exceeding 100°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 insure 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 compressed air supply line from the air receiver of a stationary unit must be equipped with a pressure and heat 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

**Never join pipes or fittings with lead-tin soldering or use plastic (PVC) 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, receiver tank drain, & manual shutoff valve (refer to **Fig. 3-10, Typical Drop Leg & Component Location**).

**Follow ASME code for air receiver tanks and other pressure containing vessels. Pressure vessels may 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 receivers.**

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

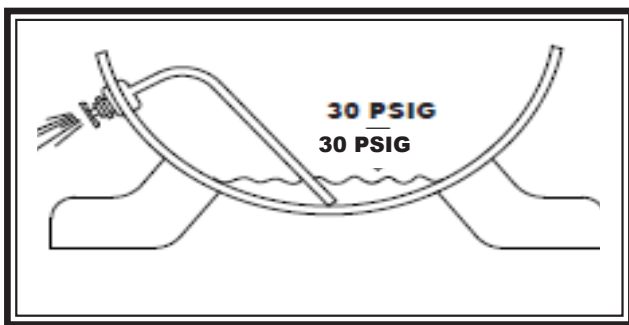


Fig. 3-11 Internal Drain Tube

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 Quincy 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.

**WARNING !**

**WARNING !**

## Manual Tank Drain Valve Operation

The manual tank drain valve on portable compressors and some stationary compressors is located on the underside of the air tank. Portable compressors can be tilted in the direction of the drain to allow removal of tank moisture.

Some tanks use an internal drain tube (Refer to **Fig. 3-11, Internal Drain Tube**) to drain the moisture. 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 !

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

## WARNING !

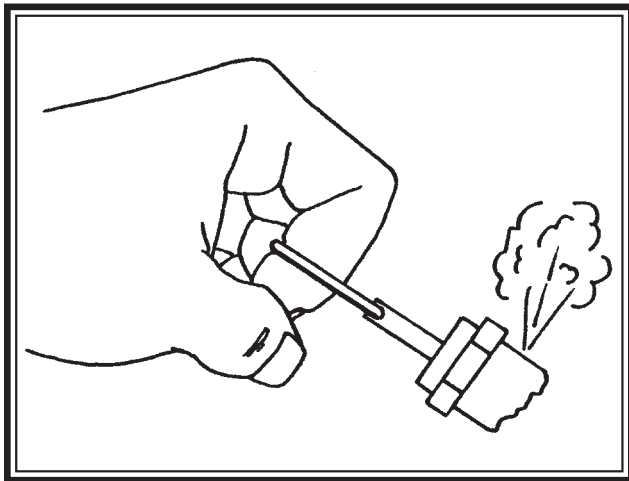
**Never attempt to relieve an air tank by removing a pipe plug or any other system component!**

## 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.**

### *Manually Draining An Air Tank:*

**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).



**Fig. 3-12 Checking Pressure Relief Valves & Relieving System Pressure**

**Step 2)** Tank(s) subjected to freezing temperatures may contain ice. Store the compressor in a heated area before attempting to drain moisture from the tank(s). Reduce the air pressure in the tank to 30 PSIG by pulling the pressure relief valve ring (refer to **Fig. 3-12, 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.

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	Yearly	10 Years
60 Gal.	Horizontal	.109	.135	Yearly	10 Years
60 Gal.	Vertical	.109	.111	Yearly	10 Years
80 Gal.	Horizontal	.109	.135	Yearly	10 Years
80 Gal.	Vertical	.131	.133	Yearly	10 Years
120 Gal.	Horizontal	.131	.162	Yearly	10 Years
120 Gal.	Vertical	.163	.199	Yearly	10 Years
200 Gal.	Horizontal	.163	.199	Yearly	10 Years
240 Gal.	Horizontal	.163	.199	Yearly	10 Years

**Fig. 3-13 Recommended Air Tank Inspection Intervals**

### **Air Tank Inspection**

Quincy Compressor recommends that all air tanks be inspected at scheduled intervals. Refer to **Fig. 3-13 Recommended Air Tank Inspection Intervals** for relative information. Measure tank wall thickness at several locations, including the lowest point where condensation can accumulate.

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



**•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; check for installation debris.
- Step 2)** **Quincy Climate Control compressor units are normally shipped with lubricant in the crankcase.** Once the compressor is in a level position, pull the dipstick from the crankcase and wipe clean. Re-insert completely to measure lubricant level. Pull the dipstick again and read the lubricant level. It should register between the upper and lower marks on the dipstick. If needed, add lubricant per specs - **Do Not Overfill!** (Refer to **SECTION 5, •Lubrication** for quantity and types of lubricant to be used.)
- Step 3)** Check motor pulley(s) and compressor sheave(s) for alignment and tightness on shaft. (Refer to **SECTION 5, •Pulley / Sheave Alignment & Belt Tension**.)
- Step 4)** Manually rotate the compressor sheave(s) 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 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)** Connect the unit to a proper power source.
- Step 13)** Jog the starter switch to check the rotational direction of the compressor. It should agree with the rotation arrow on the unit.

### •*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 instructions, please call your local Quincy distributor, or the Quincy Compressor factory.

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.

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, Quincy 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***. Retorque the cylinder to head capscrews to the specifications outlined in the parts book corresponding to the Record of Change for your compressor after the compressor has cooled.

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.

### •*Daily Starting Checklist*

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

- Step 1)** Check lubricant level in crankcase. (Refer to **SECTION 4, •*Pre-Starting Checklist - Step 4***)
- Step 2)** Drain moisture from the air receiver (refer to **SECTION 3, *Manually Draining An Air Tank***) and moisture trap (if so equipped).
- Step 3)** Be sure all safety guards are in place
- Step 4)** Check all hoses and fittings for weak or worn conditions and replace if necessary.
- Step 5)** Start the compressor. Watch and listen for excessive vibration and unusual noises. If either exist, stop the compressor and refer to **SECTION 6, •*Troubleshooting***, for help in determining the cause of such problems.

- Step 6)** Check lubricant pressure (*QR Models only*). Maintain 18 to 20 PSIG lubricant pressure. (Refer to **SECTION 5, •Lubrication** for adjustment instructions.)
- Step 7)** Check for lubricant leaks.
- Step 8)** Check system pressure.
- Step 9)** Manually operate all pressure relief valves to ensure proper operation.

### •*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)** Per OSHA regulation 1910.147 isolate and lockout the compressor from the compressed air supply by closing a manual shutoff valve. Display a sign in clear view at the shutoff valve stating that the compressor is being serviced.

**Step 3)** Open a pressure relief valve to allow the system 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. Time frames 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)***

- QT-5, QT-7.5 & QT-10 lubricant levels should be kept at the top of the sight glass (add lubricant until it reaches the bottom edge of the lubricant fill opening).
- Maintain lubricant levels of all other models between high and low level marks on dipstick. Check the lubricant level 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.

- Drain drop legs and traps in air distribution system.
- 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 (*QR Models only*)
- Check for lubricant leaks.

***Every 40 Hours (or Weekly)***

- Manually operate the pressure relief valves to be certain they are working
- Clean the cooling surfaces of the intercooler and compressor.
- Check the air filter (*more often under humid or dirty conditions.*)
- Check the compressor for air leaks.
- Check the compressed air distribution system for 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 160 Hours (or Monthly)***

- Check belt tension

***After First 250 Hours (or First 1 1/2 Months)***

- Change lubricant (and oil filter, if so equipped).

***Every 500 Hours (or Every 3 Months) After Initial Lubricant Change***

- Change lubricant (and filter, if so equipped) *more often under humid or dirty conditions.*
- Clean the oil sump strainer screen with a safety solvent if replacing contaminated lubricant (*QR Models only*).
- Torque compressor sheave fasteners per specifications.

## **WARNING !**

**Never use a flammable or toxic solvent for cleaning. Always use a safety solvent and follow the directions provided.**

***Every 1000 Hours (or Every 6 Months)***

- Inspect compressor valves for leakage and/or carbon build-up.

***Every 2000 Hours (or Every 12 Months)***

- Inspect pressure switch contacts, and contact points in motor starter.
- Lubricate the electric motor. (*Follow manufacturer's recommendations.*)

### **Servicing Valves**

Valve plates and reed valves should be inspected and cleaned on a regular basis. *Disassembly of the reed valves from the valve plate is not recommended!* Soak the entire valve assembly in a clean safety solvent to loosen carbon deposits on the valve plates and reed valves prior to cleaning with a stiff bristle brush (***not a wire brush!***). Handle all parts with care; do not bend, mar or scratch any sealing surfaces

## **WARNING !**

**Never use a flammable or toxic solvent for cleaning. Always use a safety solvent and follow the directions provided.**

Always use new gaskets when servicing the valves. Check to be sure the reed valves are seated perfectly flat against the sealing surface around each port. Damaged or improperly seating valves will cause lower than normal discharge pressure, excessive heat, and carbon buildup.

•**Lubrication**

**Quincy Climate Control Series compressor units are shipped with Quin-Cip (ISO 68) lubricant in the crankcase.** Basic compressors sold as replacements may be shipped with Quin-Cip (ISO 68) in a separate container to avoid spillage. **Replace the break-in lubricant after 100 hours of operation with Quin-Cip lubricant!**

Quin-Cip lubricant has proven under extensive testing to minimize friction and wear, limit lubricant carryover, and reduce carbon and varnish deposits. It will support the performance characteristics and life designed into all Quincy compressors and is 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**

<b>Splash Lubricated Model</b>	<b>Lubricant Capacity</b>
QTS3QCB (1/2, 3/4 h.p.)	*20 oz. (590 ml.)
QTS3QCB (1 & 1-1/2 h.p.)	**12 oz. (354 ml.)
QTS5QCB	39 oz. (1140 ml.)
QT5QCB & QT7QCB	1 qt. & 20 oz. (1.3 lit.)
QT10QCB (R.C. 200C)	2.5 qts. (2.37 lit.)
QT15QCB	3 qts. & 24 oz. (3.55 lit.)

*\*A shorter (white) dipstick and higher lubricant level is required for QTS3QCB compressors run at 350 RPM to 425 RPM.*

*\*\*A standard (black) dipstick and normal lubricant level is required for QTS3QCB compressors run at 426 RPM to 600 RPM.*

<b>Pressure Lubricated Model</b>	<b>Lubricant Capacity</b>
210QRB	26 oz. (770 ml.)
216QRB, 310QRB & 325QRB	1 qt. & 22 oz. (1.6 lit.)
340QRB & 350QRB	4 qts. & 30 oz. (4.7 lit.)
390QRB	9 qts. & 22 oz. (9.2 lit.)
5120QRB	9 qts. & 30 oz. (9.4 lit.)

Pressure lubricated models are designed to be operated at 18 to 20 PSIG lubricant pressure (at rated speed and operating temperature). The oil pressure relief valve on the oil pump can be adjusted. To do this, loosen the locknut seated against the side of the oil pump housing. Turn the adjusting screw clockwise to increase; counterclockwise to decrease the lubricant pressure. Re-tighten the locknut.

**Lubricant Specifications**

(Use Quin-Cip lubricant or consult factory.)

<b>Ambient Temperature</b>	<b>SAE Viscosity</b>	<b>ISO Viscosity</b>
0-32° F	SAE 10W	ISO 32
32-80°F	SAE 20	ISO 68
60-104°F	SAE 30	ISO 100

# CAUTION !

Do not operate this compressor in ambient temperatures lower than -15° F. A crankcase heater is recommended for compressors operating in temperatures under 32° F.

## *Lubricant Filter (if equipped)*

When replacing the filter, apply a thin film of lubricant to the gasket surface of the new filter prior to installing it onto the pump housing. Spin the filter on the threaded stud until the gasket makes contact with the housing. Then tighten the filter an additional 3/4 turn.

The filter provided with the compressor is for use with Quin-Cip or Qui-Cip-D lubricant only.

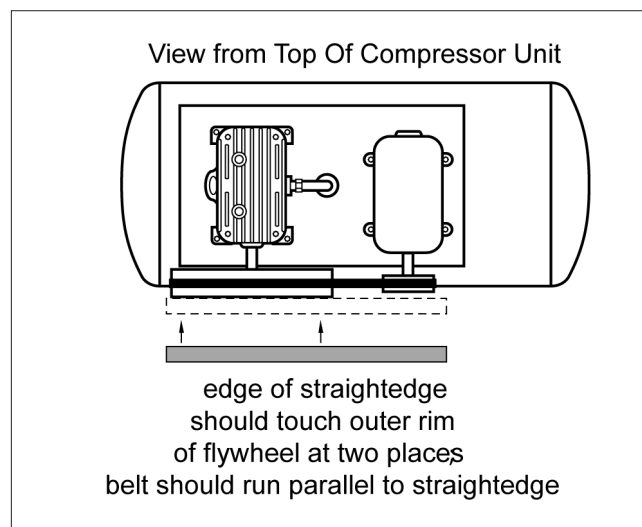
# CAUTION !

A bent or damaged filter may rupture and leak. Do not use a filter in this condition.

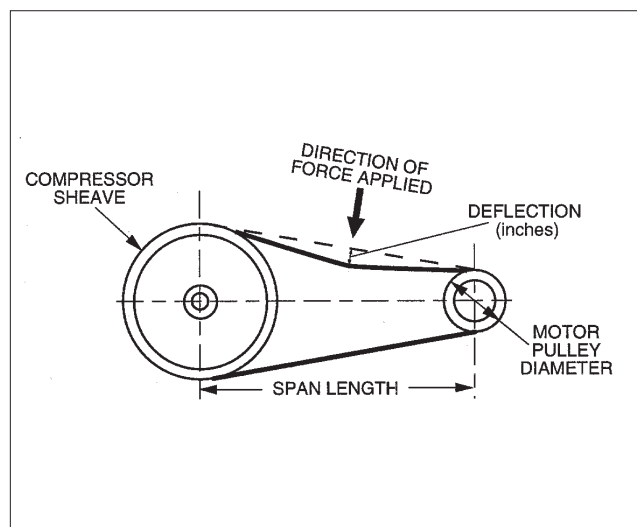
## *•Pulley / Sheave Alignment & Belt Tension*

Improper pulley 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 alignment and belt tension on a regular basis (refer to **SECTION 5, •Maintenance Schedule**).

Periodically inspect both 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(s) with the motor pulley(s). Drive belt grooves should be in line with each other. The compressor crankshaft must be parallel to the motor or engine drive shaft.

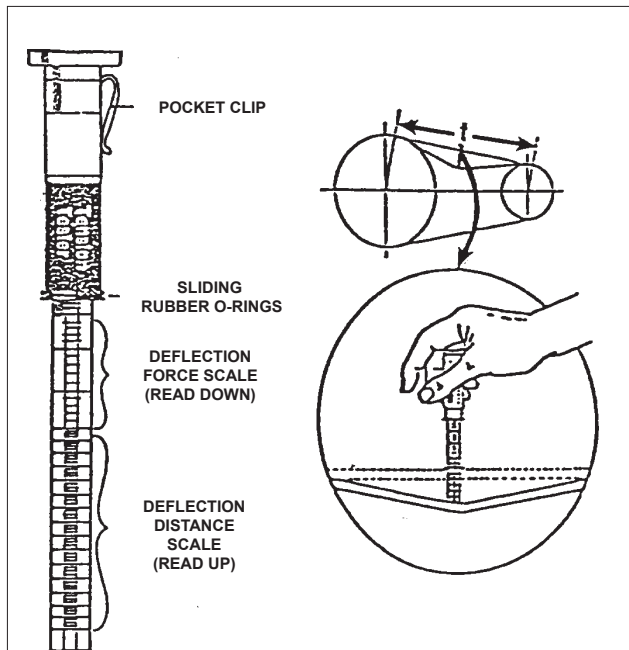


**Fig. 5-1 Belt Alignment**



**Fig. 5-2 Setting Belt Tension**

Belt tension & alignment should be measured and adjusted to provide smooth operation. Procedures are provided here to correctly measure and set the drive belt tension & alignment:



**Fig. 5-3 Belt Tension Gauge**

### Belt Alignment

Check the belt alignment by placing a straightedge against the face of the flywheel, touching its rim at two places (Refer to **Fig. 5-1, Belt Alignment**). Adjust the motor pulley so that the belt runs parallel to the straightedge. Use a wheel puller to move the motor pulley on the shaft.

### Belt Tension

Set belt tension using the following instructions:

**Step 1)** Measure the span length of the drive. (Refer to **Fig. 5-2, Setting Belt Tension**.)

**Step 2)** Determine the amount of deflection (in inches) required to measure deflection force (in pounds) by multiplying the span length x  $\frac{1}{64}$  (.016) (i.e. 32" span length x  $\frac{1}{64}$  [.016] =  $\frac{1}{2}$ " [.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 pulley.

**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. 5-3, 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 below. The deflection force reading should be within the minimum and maximum values shown. Adjust belt(s) accordingly. New belts should be tensioned to the values listed under "Initial Install".

**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**).

Belt Cross Section	Motor Pulley Dia. Range (inches)	Recommended Deflection Force (lbs.)		
		Initial Install.	Minimum	Maximum
A	up to 3.0	3.6	2.4	3.1
	3.1 - 4.0	4.2	2.8	3.6
	4.1 - 5.0	5.2	3.5	4.6
	5.1 + above	6.1	4.1	5.3
B	up to 4.6	7.3	4.9	6.4
	4.7 - 5.6	8.7	5.8	7.5
	5.7 - 7.0	9.3	6.2	8.1
	7.1 + above	10.0	6.8	8.8



<b>Trouble</b>	<b>Probable Cause</b>
<b>Low discharge pressure</b>	<ul style="list-style-type: none"> <li>•Restricted inlet</li> <li>•Defective compressor valves</li> <li>•Leaks in the compressed air distribution system at fittings, connections, etc.</li> <li>•Pressure switch defective or set wrong</li> <li>•Drive belt slipping</li> <li>•Incorrect speed</li> <li>•Worn piston rings or loose piston</li> <li>•Faulty hydraulic unloader</li> <li>•Leaking head gasket</li> <li>•Low lubricant pressure</li> <li>•Drain valve open</li> <li>•Defective pressure gauge</li> <li>•Excessive running clearances</li> <li>•Pressure relief valve leaking</li> <li>•Clogged intercooler</li> <li>•Loose compressor valves or leaking at valve gaskets</li> <li>•Compressor incorrectly sized for the altitude at which it is operating</li> </ul>
<b>Water in the crankcase (lubricant appears milky)</b>	<ul style="list-style-type: none"> <li>•Compressor does not run long enough to get hot and vaporize the liquids squeezed out of the air during compression (<i>compressor may be too large for application</i>)</li> <li>•Incorrect or inferior grade of lubricant</li> <li>•System pressure leaking back through discharge valve</li> </ul>
<b>Rusty valves and/or cylinders</b>	<ul style="list-style-type: none"> <li>•Compressor operated too infrequently</li> <li>•Compressor does not run long enough to get hot and vaporize the liquids squeezed out of the air during compression (<i>compressor may be too large for application</i>)</li> <li>•Compressor not properly prepared for storage</li> <li>•Discharge line from compressor head is pointed upward allowing condensation to drain back at shutdown</li> </ul>
<b>Excessive vibration</b>	<ul style="list-style-type: none"> <li>•Incorrect speed</li> <li>•Compressor valves not functioning properly</li> <li>•Loose pulley/sheave</li> <li>•Motor or engine out of balance</li> <li>•Compressor, motor or engine not secured tightly, or tightened into a bind</li> <li>•Foundation or frame inadequate</li> </ul>

## Trouble

## Probable Cause

### Excessive Vibration (cont.)

- Piping inadequately supported or tightened into a bind
- Excessive discharge pressure
- Compressor feet may need to be leveled with shims

### Excessive drive belt wear

- Pulley/sheave out of alignment
- Belt too loose or too tight
- Belt slipping
- Pulley/sheave wobbling
- Pulley/sheave groove damaged or rough
- Incorrect belts

### Low lubricant pressure

- Oil pump direction reversed
- Oil sump strainer plugged
- Excessive leakage at crankshaft seals
- Low lubricant level
- Oil pump incorrectly assembled to the bearing carrier (“o”ring not properly located between oil pump body & bearing carrier)
- Lubricant pressure adjusting screw not set properly
- Defective oil pressure gauge
- Plugged oil filter

### Excessive air pressure in air receiver

- Air pressure gauge inaccurate
- Leaks in unloader piping system
- Defective compressor valve unloader
- Pressure switch set incorrectly or defective
- Pressure switch wired incorrectly
- Tube to compressor unloader valve plugged

### Excessive intercooler pressure (Two stage models only)

- Intercooler restricted or plugged
- Compressor valves in second stage broken or not functioning properly
- Pressure switch set incorrectly or defective
- Pressure gauge defective

### Intercooler pressure abnormally low (Two stage models only)

- Compressor valves or valve unloaders in first stage not functioning properly or defective
- Restricted air inlet filter or suction line
- Pressure switch set incorrectly or defective
- Pressurized air at valve unloader not venting properly when demand for air is required; vent passage at hydraulic unloader could be plugged
- Compressor valve or head gasket leaking
- Worn piston rings
- Defective pressure gauge
- Leaking air at intercooler or intercooler connections

## Trouble

## Probable Cause

### Compressor overheats

- Clogged intake system
- Defective compressor valves
- Pressure setting too high
- Clogged intercooler, internally or externally
- Pulley/sheave rotation wrong
- Incorrect speed
- Running clearances insufficient (*piston to cylinder wall or running gear*)
- Lubrication inadequate
- Compressor incorrectly sized

### High discharge temperature

- Inadequate cooling water flow
- Compressor valve assemblies defective
- Discharge pressure too high
- Inadequate ventilation or hot air recirculating
- Cooling surfaces of compressor or intercooler excessively dirty
- Internal surface of heat exchanger fouled
- Ambient temperature too high
- Scored or excessively worn cylinder walls

### Compressor knocks

- 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
- Compressor valve assemblies loose
- Loose/defective belt

### Excessive lubricant consumption

- Worn piston rings
- Restricted intake system
- Compressor running too hot
- Breather valve not functioning properly
- Lubricant level in crankcase too high
- Lubricant viscosity wrong for the application
- Connecting rod out of alignment, bent or twisted
- Leaking oil seal
- Piston rings not seated
- Wrong lubricant (*may be a detergent lubricant with a tendency to foam*)
- Inferior grade of lubricant

## Trouble

## Probable Cause

**Excessive current draw**  
(To determine maximum amperage allowed, multiply the FLA on the motor nameplate by the service factor.)

**CAUTION !**

**Motor surface temperature normally exceeds 170° F.**

- Low voltage (*must be within 10% of nameplate voltage*)
- Loose electrical connection
- Wire size too small
- Incorrect lubricant
- Discharge pressure too high
- Intercooler plugging
- Bearings tight or seizing
- No crankshaft endplay
- Motor sized incorrectly
- Motor defective
- Drive belts too tight

## Failure to start

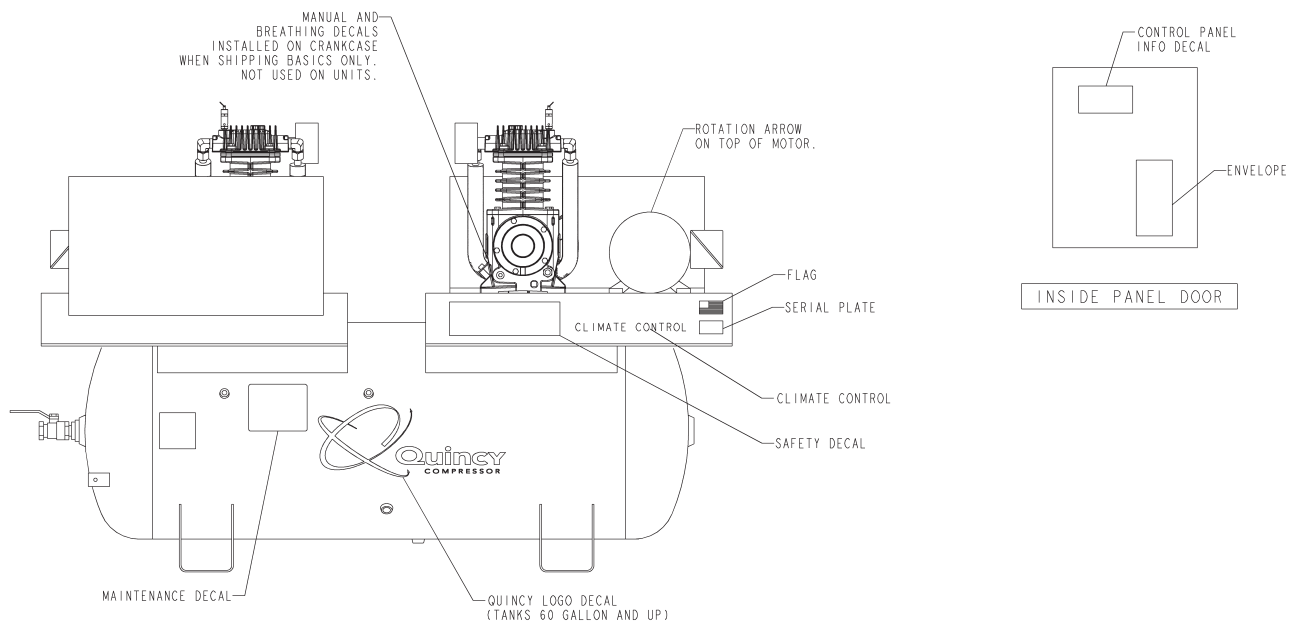
- Power not on
- Blown circuit fuse
- Overload relay tripped
- Low voltage
- Faulty start switch
- Power failure
- Pressure switch incorrectly adjusted or faulty
- Loose or broken wire
- Motor defective
- Compressor seized

## CAUTION !

**Thermal overloads are designed to protect the motor from damage due to motor overload. If the thermal overload trips persistently, DO NOT CONTINUE TO PUSH THE RESET BUTTON! Contact your local Quincy distributor for assistance.**

## Motor stalls

- Motor overloaded (*refer to Excessive current draw*)



### Decal Diagram for Climate Control Unit Compressor

# QUINCY COMPRESSOR STANDARD TERMS AND CONDITIONS

**LEGAL EFFECT:** Except as expressly otherwise agreed to in writing by an authorized representative of Seller, the following terms and conditions shall apply to and form a part of this order and any additional and/or different terms of Buyer's purchase order or other form of acceptance are rejected in advance and shall not become a part of this order.

The rights of Buyer hereunder shall be neither assignable nor transferable except with the written consent of Seller.

This order may not be canceled or altered except with the written consent of Seller and upon terms which will indemnify Seller against all loss occasioned thereby. All additional costs incurred by Seller due to changes in design or specifications, modification of this order or revision of product must be paid for by Buyer.

In addition to the rights and remedies conferred upon Seller by this order, Seller shall have all rights and remedies conferred at law and in equity and shall not be required to proceed with the performance of this order if Buyer is in default in the performance of such order or of any other contract or order with seller.

**TERMS OF PAYMENT:** Unless otherwise specified in the order acknowledgment, the terms of payment shall be 1% 15, net forty-five (45) days after shipment. These terms shall apply to partial as well as complete shipments. If any proceeding be initiated by or against Buyer under any bankruptcy or insolvency law, or in the judgment of Seller the financial condition of Buyer, at the time the equipment is ready for shipment, does not justify the terms of payment specified, Seller reserves the right to require full payment in cash prior to making shipment. If such payment is not received within fifteen (15) days after notification of readiness for shipment, Seller may cancel the order as to any unshipped item and require payment of its reasonable cancellation charges.

If Buyer delays shipment, payments based on date of shipment shall become due as of the date when ready for shipment. If Buyer delays completion of manufacture, Seller may elect to require payment according to percentage of completion. Equipment held for Buyer shall be at Buyer's risk and storage charges may be applied at the discretion of Seller.

Accounts past due shall bear interest at the highest rate lawful to contract for but if there is no limit set by law, such interest shall be eighteen percent (18%). Buyer shall pay all cost and expenses, including reasonable attorney's fees, incurred in collecting the same, and no claim, except claims within Seller's warranty of material or workmanship, as stated below, will be recognized unless delivered in writing to Seller within thirty (30) days after date of shipment.

**TAXES:** All prices exclude present and future sales, use, occupation, license, excise, and other taxes in respect of manufacture, sales or delivery, all of which shall be paid by Buyer unless included in the purchase price at the proper rate or a proper exemption certificate is furnished.

**ACCEPTANCE:** All offers to purchase, quotations and contracts of sales are subject to final acceptance by an authorized representative at Seller's plant.

**DELIVERY:** Except as otherwise specified in this quotation, delivery will be F. O. B. point of shipment. In the absence of exact shipping instruction, Seller will use its discretion regarding best means of insured shipment. No liability will be accepted by Seller for so doing. All transportation charges are at Buyer's expense. Time of delivery is an estimate only and is based upon the receipt of all information and necessary approvals. The shipping schedule shall not be construed to limit seller in making commitments for materials or in fabricating articles under this order in accordance with Seller's normal and reasonable production schedules.

Seller shall in no event be liable for delays caused by fires, acts of God, strikes, labor difficulties, acts of governmental or military authorities, delays in transportation or procuring materials, or causes of any kind beyond Seller's control. No provision for liquidated damages for any cause shall apply under this order. Buyer shall accept delivery within thirty (30) days after receipt of notification of readiness for shipment. Claims for shortages will be deemed to have been waived if not made in writing with ten (10) days after the receipt of the material in respect of which any such shortage is claimed. Seller is not responsible for loss or damage in transit after having received "In Good Order" receipt from the carrier. All claims for loss or damage in transit should be made to the carrier.

**TITLE & LIEN RIGHTS:** The equipment shall remain personal property, regardless of how affixed to any realty or structure. Until the price (including any notes given therefore) of the equipment has been fully paid in cash, Seller shall, in the event of Buyer's default, have the right to repossess such equipment.

**PATENT INFRINGEMENT:** If properly notified and given an opportunity to do so with friendly assistance, Seller will defend Buyer and the ultimate user of the equipment from any actual or alleged infringement of any published United States patent by the equipment or any part thereof furnished pursuant hereto (other than parts of special design, construction, or manufacture specified by and originating with Buyer), and will pay all damages and costs awarded by competent court in any suit thus defended or of which it may have had notice and opportunity to defend as aforesaid.

**STANDARD WARRANTY:** Seller warrants that products of its own manufacture will be free from defects in workmanship and materials under normal use and service for the period specified in the product instruction manual. Warranty for service parts will be Ninety (90) days from date of factory shipment. Electric Motors, gasoline and diesel engines, electrical apparatus and all other accessories, components and parts not manufactured by Seller are warranted only to the extent of the original manufacturer's warranty.

Notice of the alleged defect must be given to the Seller, in writing with all identifying details including serial number, type of equipment and date of purchase within thirty (30) days of the discovery of the same during the warranty period.

Seller's sole obligation on this warranty shall be, at its option, to repair or replace or refund the purchase price of any product or part thereof which proves to be defective. If requested by Seller, such product or part thereof must be promptly returned to seller, freight prepaid, for inspection.

Seller warrants repaired or replaced parts of its own manufacture against defects in materials and workmanship under normal use and service for ninety (90) days or for the remainder of the warranty on the product being repaired.

This warranty shall not apply and Seller shall not be responsible or liable for:

- (a) Consequential, collateral or special losses or damages;
- (b) Equipment conditions caused by fair wear and tear, abnormal conditions of use, accident, neglect or misuse of equipment, improper storage or damage resulting during shipping;
- (c) Deviation from operating instructions, specifications or other special terms of sale;
- (d) Labor charges, loss or damage resulting from improper operation, maintenance or repairs made by person(s) other than Seller or Seller's authorized service station.

In no event shall Seller be liable for any claims whether arising from breach of contract or warranty or claims of negligence or negligent manufacture in excess of the purchase price.

**THIS WARRANTY IS THE SOLE WARRANTY OF SELLERS AND ANY OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED IN LAW OR IMPLIED IN FACT, INCLUDING ANY WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR USE ARE HEREBY SPECIFICALLY EXCLUDED.**

**LIABILITY LIMITATIONS:** Under no circumstances shall the Seller have any liability for liquidated damages or for collateral, consequential or special damages or for loss of profits, or for actual losses or for loss of production or progress of construction, whether resulting from delays in delivery or performance, breach of warranty, negligent manufacture or otherwise.

**ENVIRONMENTAL AND OSHA REQUIREMENTS:** At the time of shipment of the equipment from the factory, Quincy Compressor / Ortman Fluid Power will comply with the various Federal, State and local laws and regulations concerning occupational health and safety and pollution. However, in the installation and operation of the equipment and other matters over which the seller has no control, the Seller assumes no responsibility for compliance with those laws and regulations, whether by the way of indemnity, warranty or otherwise.

June 30, 2003





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