INGERSOLL-RAND®

XF 7.5 - 15
EP 7.5 - 15
HP 7.5 - 15
XP 7.5 - 15

OPERATORS/
INSTRUCTION MANUAL
PARTS LIST
RECOMMENDED SPARES

Before installation or starting the compressor for the first time, this manual should be studied carefully to obtain a clear knowledge of the unit and of the duties to be performed while operating and maintaining the unit.

RETAIN THIS MANUAL WITH UNIT.
This Technical manual contains IMPORTANT SAFETY DATA and should be kept with the air compres-

APDD 702
November 1997

AIR COMPRESSOR GROUP
BONDED WARRANTY & REGISTERED START UP

Warranty

The Company warrants that the equipment manufactured by it and delivered hereunder will be free of defects in material and workmanship for a period of twelve months (see extended airend warranty) from the date of placing the Equipment in operation or eighteen months (see extended airend warranty) from the date of shipment from Davidson, NC, whichever shall first occur. The Purchaser shall be obligated to promptly report any failure to conform to this warranty, in writing to the Company in said period, whereupon the Company shall, at its option, correct such nonconformity, by suitable repair to such equipment or, furnish a replacement part F.O.B. point of shipment, provided the Purchaser has stored, installed maintained and operated such Equipment in accordance with good industry practices and has complied with specific recommendations of the Company. Accessories or equipment furnished by the Company, but manufactured by others, shall carry whatever warranty the manufacturers have conveyed to the Company and which can be passed on to the Purchaser. The Company shall not be liable for any repairs, replacements, or adjustments to the Equipment or any costs of labor performed by the Purchaser or others without Company's prior written approval.

The effects of corrosion, erosion and normal wear and tear are specifically excluded. Performance warranties are limited to those specifically stated within the Company's proposal. Unless responsibility for meeting such performance warranties are limited to specified tests, the Company's obligation shall be to correct in the manner and for the period of time provided above.

THE COMPANY MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED.

Correction by the Company of nonconformities whether patent or latent, in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of the Company for such nonconformities whether based on contract, warranty negligence, indemnity, strict liability or otherwise with respect to or arising out of such Equipment.

The purchaser shall not operate Equipment which is considered to be defective, without first notifying the Company in writing of its intention to do so. Any such Equipment will be at Purchaser's sole risk and liability.

Limitation or Liability

The remedies of the Purchaser set forth herein are exclusive, and the total liability of the Company with respect to this contract or the Equipment and services furnished hereunder, in connection with the performance or breach thereof, or from the manufacture, sale, delivery, installation, repair or technical direction covered by or furnished under this contract, whether passed on contract, warranty negligence, indemnity, strict liability or otherwise, shall not exceed the purchase price of the unit of Equipment upon which such liability is based.

The Company and its suppliers shall in no event be liable to the Purchaser, any successors in interest or any beneficiary or assignee of this contract for any consequential, incidental, indirect, special or punitive damages arising out of this contract or any breach thereof, or any defect in, or failure of, or malfunction of the Equipment hereunder, whether based upon loss of use, lost profits or revenue, interest, lost goodwill, work stoppage, impairment of other goods, loss by reason of shutdown or non-operation, increased expenses of operation, cost of purchase of replacement power or claims of Purchaser or customers of Purchaser for service interruption whether or not such loss or damage is based on contract, warranty, negligence, indemnity, strict liability or otherwise.

EXTENDED AIREND WARRANTY

The Ingersoll-Rand Company Rotary Screw Air Compressor that has been filled prior to its original shipment from Ingersoll-Rand Company with ULTRA COOLANT and which has been operated solely on ULTRA COOLANT thereafter shall have its AIREND warranted for twenty four (24) months from the date of placing the COMPRESSOR in operation or thirty (30) months from the date of shipment, whichever occurs first.

Except for the above warranty period, the standard warranty provisions shall apply and the conditions outlined herein are understood to be a supplement to the standard Ingersoll-Rand Company warranty.

ROTARY SCREW AIR COMPRESSOR

This unit was purchased from

_____

_____

_____

Ingersoll-Rand Company reserves the right to make changes or add improvements without notice and without incurring any obligation to make such changes or add such improvements to products sold previously.

No. of units on order: _____

Customer Order No: _____

Ingersoll-Rand Co. Order No.: _____

For ready reference:

Record the serial number and model number of your unit here.

Serial Number: _____

Model Number: _____

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GENERAL INFORMATION

Cooling Air Flow:

60 Hz:	1800 cfm	(0.85 m^3/sec)
50 Hz:	1500 cfm	(0.71 m^3/sec)

Ambient Temperature Limit: 35°F to 115°F (2°C to 46°C)

Coolant: Factory Filled ULTRA COOLANT

Coolant Change: 8,000 hours or two years, whichever comes first, when using ULTRA COOLANT

Coolant Capacity: 1.5 GAL (5.75L)

Discharge Temperature Limit: 228°F (109°C)

Tools: U.S. Standard and metric are required to perform maintenance

0.0 SAFETY AND WARNINGS

0.1 SAFETY INSTRUCTIONS

Before you install this air compressor you should take the time to carefully read all the instructions contained in this manual.

Electricity and compressed air have the potential to cause severe personal injury or property damage.

Before installing, wiring, starting, operating or making any adjustments, identify the components of the air compressor using this manual as a guide.

The operator should use common sense and good working practices while operating and maintaining this unit. Follow all codes, pipe adequately, understand the starting and stopping sequence. Check the safety devices by following the procedure contained in this manual.

Maintenance should be done by qualified personnel, adequately equipped with proper tools. Follow the maintenance schedules as outlined in the operators manual to ensure problem free operation after start up.

Safety instructions in the operators manual are bold-faced for emphasis. The signal words DANGER, WARNING and CAUTION are used to indicate hazard seriousness levels as follows:

⚠ DANGER — **Danger is used to indicate the presence of a hazard which *will cause severe* personal injury, death, or substantial property damage if the warning is ignored.**

⚠ WARNING — **Warning is used to indicate the presence of a hazard which *can cause severe* personal injury, death, or substantial property damage if the warning is ignored.**

⚠ CAUTION — **Caution is used to indicate the presence of a hazard which *will or can cause minor* personal injury or property damage if the warning is ignored.**

NOTICE — **Notice is used to notify people of installation, operation, or maintenance information which is important but not hazard-related.**

0.2 SAFETY PRECAUTIONS

SAFETY PRECAUTIONS

BEFORE PROCEEDING, READ CAREFULLY BEFORE INSTALLING THE COMPRESSOR OR PERFORMING ANY MAINTENANCE

WARNING

COMPRESSED AIR AND ELECTRICITY ARE DANGEROUS.

BEFORE DOING ANY WORK ON THIS UNIT, BE SURE THE ELECTRICAL SUPPLY HAS BEEN CUT OFF–LOCKED & TAGGED AND THE ENTIRE COMPRESSOR SYSTEM HAS BEEN VENTED OF ALL PRESSURE.

1. Do not remove the covers, loosen or remove any fittings, connections or devices when this unit is in operation. Hot liquid and air under pressure that are contained within this unit can cause severe injury or death.

2. The compressor has high and dangerous voltage in the motor starter and control box. All installations must be in accordance with recognized electrical codes. Before working on the electrical system, be sure to remove voltage from the system by use of a manual-disconnect-switch. A circuit breaker or fuse safety switch must be provided in the electrical supply line leading to the compressor.

Those responsible for installation of this equipment must provide suitable grounds, maintenance clearance and lightning arrestors for all electrical components as stipulated in O.S.H.A. 1910.308 through 1910.329.

3. Do not operate the compressor at higher discharge pressure than those specified on the Compressor Nameplate or motor overload will occur. This condition will result in compressor motor shutdown.

4. Use only safety solvent for cleaning the compressor and auxiliary equipment.

5. Install a manual shut off valve (isolation type) in the discharge line. When a safety valve is installed between the isolation valve and the compressor, it must have sufficient capacity to relieve the full capacity of the compressor(s).

6. Whenever pressure is released through the pressure relief valve, it is due to excessive pressure in the system. The cause for the excessive pressure should be investigated immediately.

7. Before doing any mechanical work on the compressor:

a.) Shut the unit down.

b.) Electrically isolate the compressor by use of the manual disconnect switch in the power line to the unit. Lock and tag the switch so that it cannot be operated.

c.) Vent pressure from the compressor and isolate the unit from any other source of air.

8. There can be adverse effects if compressor lubricants are allowed to enter plant air systems.

Air line separators, properly selected and installed, will minimize any liquid carry-over.

The use of plastic bowls on line filters without metal guards can be hazardous. From a safety standpoint, metal bowls should be used on any pressurized system. Review of your plant air line system is recommended.

9. When a receiver is installed, it is recommended that occupational safety and health standards as covered in the Federal Register, Volume 36, number 105, part 11, paragraph 1910.169 be adhered to in the installation and maintenance of this receiver.

10. Before starting the compressor, its maintenance instructions should be thoroughly read and understood.

11. After maintenance functions are completed, covers and guards must be replaced.

⚠ SAFETY SHUTDOWN CHECK HIGH AIR TEMPERATURE

There is a high discharge air temperature shutdown function built into the Intellisys on each compressor. It is factory pre-set at 228°F (109°C). This function should be checked at regular intervals for proper operation, once a month is recommended.
PROCEDURE:

1. Block off the cooling air discharge.

2. The compressor discharge temperature will rise at a rapid rate. Shutdown should occur when the discharge temperature reaches the pre-set maximum discharge air temperature setting.

⚠ WARNING

Failure to adhere to these recommendations can result in mechanical failure, property damage and serious injury or death.

All air and water inlet, and air and water discharge pipework to and from the inlet and discharge port connections must take into account vibration, pulsations, temperature, maximum pressure applied, corrosion and chemical resistance. In addition, it should be noted that lubricated compressors will discharge some oil into the air stream; therefore, compatibility between discharge piping, system accessories and software must be assured.

For the foregoing reasons, the use of plastic piping, soldered copper fittings and rubber hose as discharge piping is not recommended. In addition, flexible joints and/or flex lines can only be considered for such purposes if their specifications fit the operating parameters of the system.

It is the responsibility of the installer and owner to provide the appropriate service pipework to and from the machine.

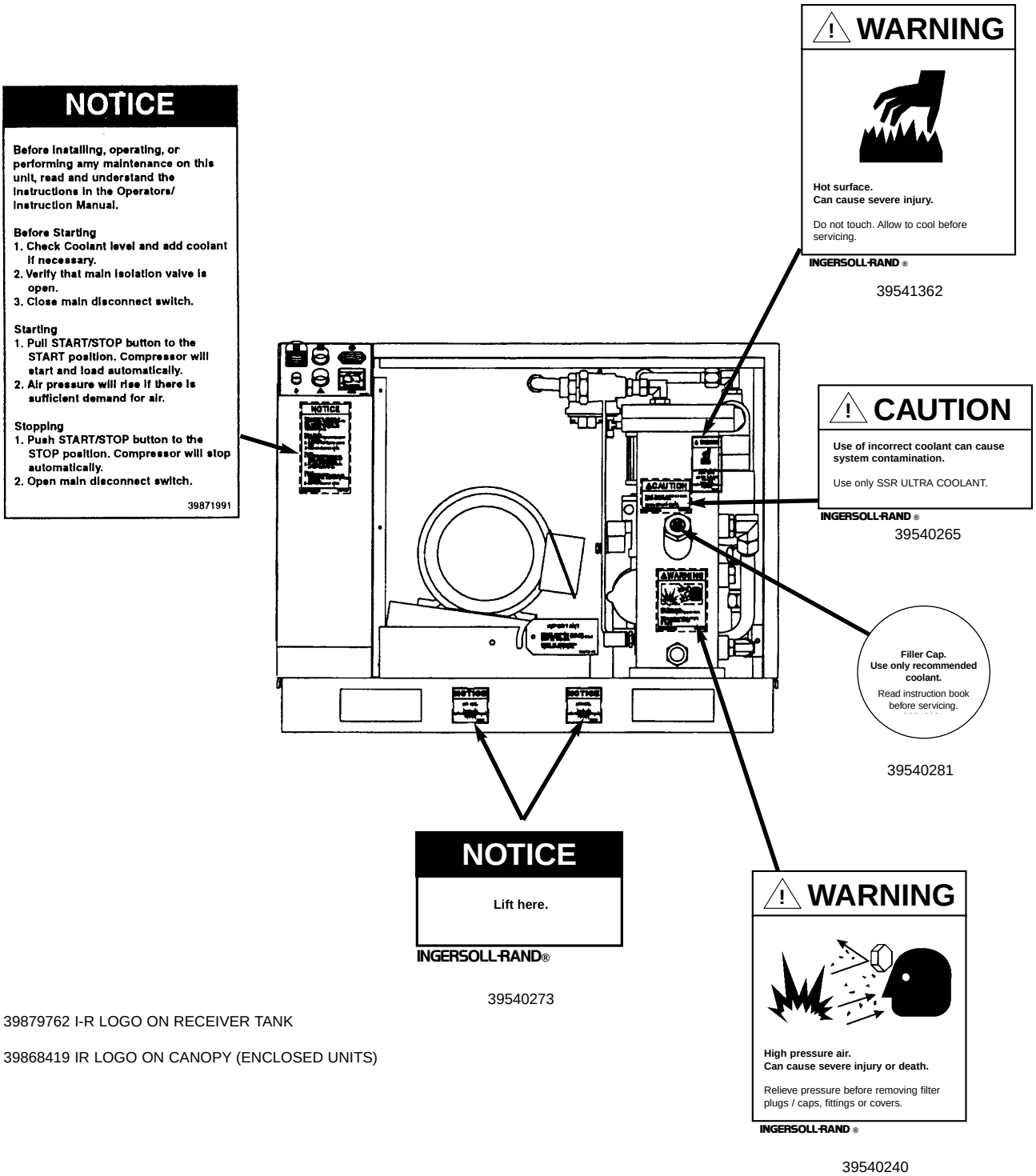
⚠ WARNING

“Ingersoll-Rand air compressors are not designed, intended, or approved for breathing air applications. Ingersoll-Rand does not approve specialized equipment for breathing air application and assumes no responsibility or liability for compressors used for breathing air services.”

0.3 DECALS

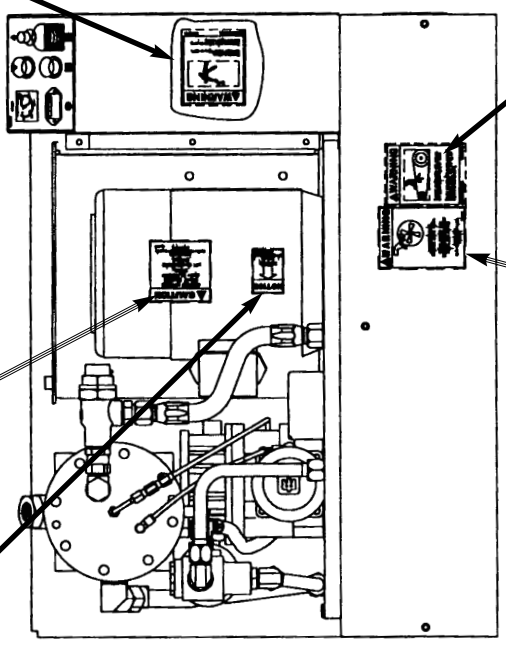
This section contains representative examples of decals which will be appearing throughout this manual and are applied to the compressor unit.

If for some reason a decal is defaced, parts are replaced or painted over, we recommend that you obtain a replacement (See Recommended Spare Parts List for Decal Kit Number).



39879762 I-R LOGO ON RECEIVER TANK

39868419 IR LOGO ON CANOPY (ENCLOSED UNITS)



WARNING

Hazardous voltage. Can cause severe injury or death.

Disconnect power before servicing. Lockout/Tagout machine.

INGERSOLL-RAND ®

39540174

WARNING

Exposed moving belts and sheaves.

Can cause severe injury or death.

Do not operate with guards removed. Disconnect power, lock and tag out machine before servicing.

INGERSOLL-RAND®

39859236

CAUTION

Incorrect lifting of machine can cause injury or property damage.

Lift only from base channels.

INGERSOLL-RAND ®

39540232

WARNING

Exposed fan blade. Can cause severe injury.

Do not operate with covers removed. Disconnect power. Lock and tag.

INGERSOLL-RAND ®

3954190

NOTICE

Rotation.

INGERSOLL-RAND ®

39544150

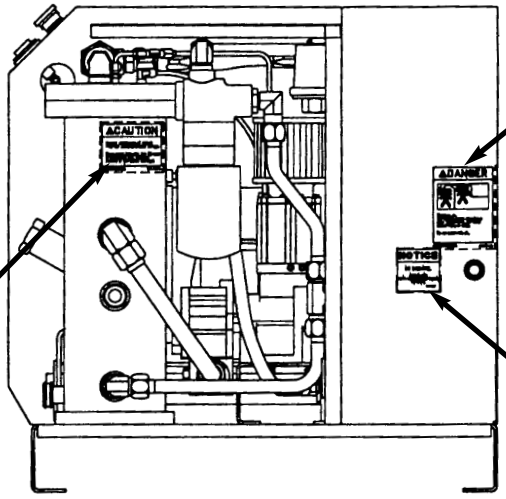
DANGER

Discharge air.
Can contain carbon monoxide or other contaminants. Will cause severe injury or death.

Do not breathe this air.

INGERSOLL-RAND ®

39540166*



CAUTION

Improper coolant filter replacement will cause compressor damage.

Replace filter element after first 150 hours of operation and every 2000 hours thereafter or when coolant is changed.

INGERSOLL-RAND ®

39544143

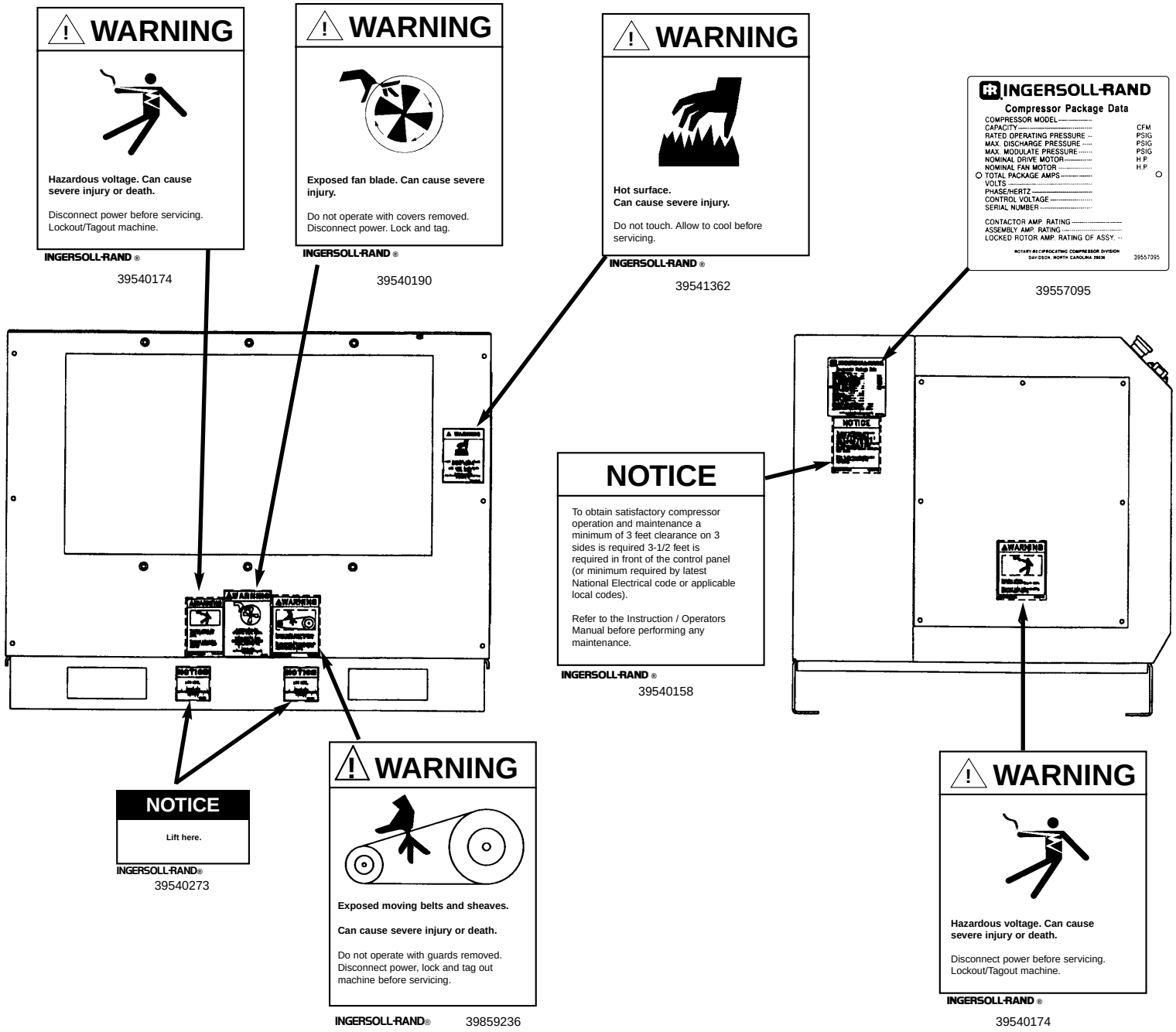
NOTICE

Air discharge.

INGERSOLL-RAND®

39540257*

* THESE DECALS ARE LOCATED ON THE END OF THE TANK ON TANK MOUNTED UNITS.


WARNING
Hazardous voltage. Can cause severe injury or death.
Disconnect power before servicing. Lockout/Tagout machine.
INGERSOLL-RAND ®
39540174
WARNING
Exposed fan blade. Can cause severe injury.
Do not operate with covers removed. Disconnect power. Lock and tag.
INGERSOLL-RAND ®
39540190
WARNING
Hot surface.
Can cause severe injury.
Do not touch. Allow to cool before servicing.
INGERSOLL-RAND ®
39541362
INGERSOLL-RAND
Compressor Package Data
COMPRESSOR MODEL
CAPACITY CFM
RATED OPERATING PRESSURE PSIG
MAX. DISCHARGE PRESSURE PSIG
MAX. MODULATE PRESSURE PSIG
NOMINAL DRIVE MOTOR H.P.
NOMINAL FAN MOTOR H.P.
TOTAL PACKAGE AMPS
VOLTS
PHASE/HERTZ
CONTROL VOLTAGE
SERIAL NUMBER
CONTACTOR AMP. RATING
ASSEMBLY AMP. RATING
LOCKED ROTOR AMP. RATING OF ASSY.
ROTARY RECIPROCATING COMPRESSOR DIVISION
DAVIDSON, NORTH CAROLINA 28036
39557095
39557095
NOTICE
To obtain satisfactory compressor operation and maintenance a minimum of 3 feet clearance on 3 sides is required 3-1/2 feet is required in front of the control panel (or minimum required by latest National Electrical code or applicable local codes).
Refer to the Instruction / Operators Manual before performing any maintenance.
INGERSOLL-RAND ®
39540158
NOTICE
Lift here.
INGERSOLL-RAND®
39540273
WARNING
Exposed moving belts and sheaves.
Can cause severe injury or death.
Do not operate with guards removed. Disconnect power, lock and tag out machine before servicing.
INGERSOLL-RAND®
39859236
WARNING
Hazardous voltage. Can cause severe injury or death.
Disconnect power before servicing. Lockout/Tagout machine.
INGERSOLL-RAND ®
39540174

1.0 RECEIPT OF EQUIPMENT

1.1 INSPECTION

When you receive the compressor please inspect it closely. Any indication of careless handling by the carrier should be noted on the delivery receipt especially if the compressor will not be immediately un-crated. Obtaining the delivery man's signed agreement to any noted damages will facilitate any future insurance claims.

1.2 UNPACKING AND HANDLING

The compressor package has been mounted on a wooden shipping base which will allow fork lifting under the compressor base to facilitate handling during shipment. Care in positioning the forklift is important because the location of the center of gravity is strongly affected by the location of the airend and drive motor.

The wooden base must be removed prior to installation.

2.0 INSTALLATION

2.1 VENTILATION

Air cooled air compressors produce large amounts of heat. Because of this large heat production, the compressor **must** be placed in a room with adequate ventilation.

If heated air from the compressor exhaust is allowed to re-circulate back to the compressor, the compressor will overheat and shut down. This heat must be exhausted from the room. You should take this into consideration when deciding where to place the compressor within the building. Sufficient clearance must be allowed around the compressor to perform the required maintenance.

Ambient temperatures higher than 115°F (46°C) should be avoided as well as areas of high humidity. Also consider the environment near the compressor.

DUST, CHEMICALS, METAL FILINGS, PAINT FUMES, and OVERSPRAY should be avoided as well as any other conditions which might be detrimental to the proper operation of the compressor.

2.2 FOUNDATION REQUIREMENTS

The compressor can be installed on any level floor that is capable of supporting the weight.

When sound transmission is of particular importance, it is often helpful to install a sheet of rubber-fabric-matting, under the compressor baseplate or receiver tank feet to reduce the possibility of resonant sounds being transmitted or amplified through the floor.

2.3 OUTDOOR INSTALLATIONS

When a compressor must be installed outside, there are certain items that should be incorporated into the installation to help assure trouble free operation. These items have been listed below plus Figure 2.3-1 has been included to show a typical outdoor protected installation. The unit must be purchased with NEMA 4 motor option to provide watertight electric's and a TEFC motor.

• The compressor should be on a concrete pad designed to drain water away. If the concrete pad is sloped, then the compressor must be leveled.

• The roof of the shelter should overhang the compressor a minimum of 4 feet (1.2m) on all sides to prevent direct rain and snow from falling on the unit.

• The unit must be arranged under the shelter in a way that prevents air recirculation (i.e. hot exhaust back to the package inlet).

• If the installation includes more than one compressor, the hot air exhaust should not be directed towards the fresh air intake of the second unit or an Air Dryer.

• If a standard machine is to be installed outside, the ambient temperature must never drop below 35°F (2°C) or freezing of condensate will result.

• Power disconnect switch must be within the compressor operator's line of sight and should be in close proximity to the unit.

• Condensate drains must never be allowed to dump on the ground. Pipe to a suitable sump for future collection, disposal or separation of lubricant and water mixture.

• Incoming power connections must use suitable connectors for outdoor weather tight service.

• Sufficient clearance must be allowed on all four sides of the unit for service access. If possible, access by a fork lift and/or an overhead beam hoist should be kept in mind (for eventual service to airend or motor).

• If the area around the installation contains fine airborne dust or lint and fibers etc., then the unit should be purchased with the TEFC motor option.

• Some type of protection such as a fence or security system, should be provided to prevent unauthorized access.

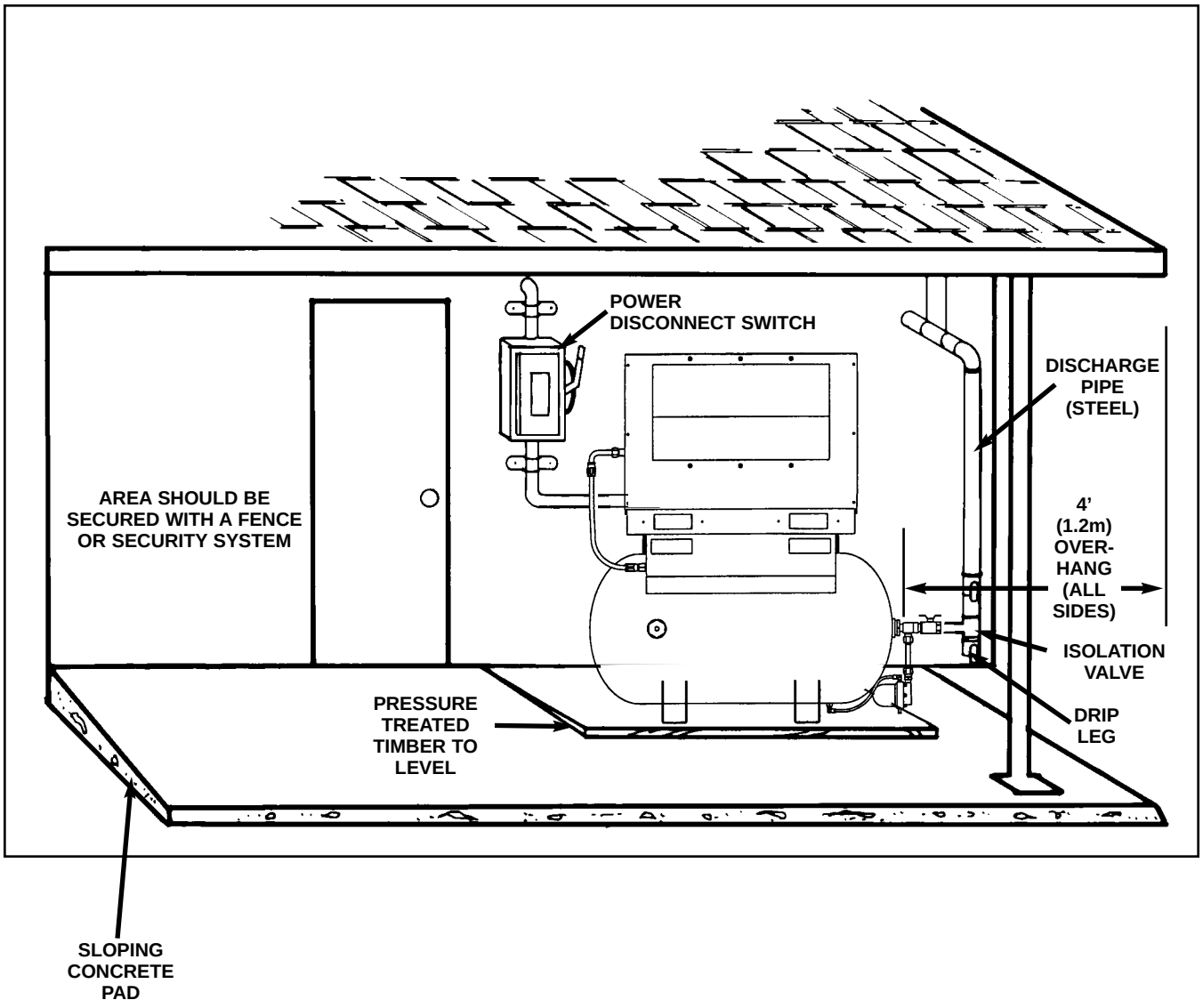


FIGURE 2.3-1 TYPICAL OUTDOOR SHELTERED INSTALLATION
35°F (2°C) AND ABOVE

2.4 PIPING

It is essential when installing a new compressor to review the total plant air system. This is to insure a safe and effective total system.

The use of plastic bowls on line filters without metal guards can be hazardous. Their safety can be affected by either synthetic lubricants or the additives used in mineral oils. From a safety standpoint, metal bowls should be used on any pressurized system.

⚠ WARNING

Do not use plastic pipe, soldered copper fittings or rubber hose for discharge piping.

Condensed water 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.

Moisture in compressed air is responsible for costly problems in almost every application that relies on compressed air. Some common problems caused by moisture are: rusting and scaling in pipelines, clogging of instruments, sticking of control valves, and freezing of outdoor compressed air lines. Any of these could result in partial or total shutdown of the compressed air system.

The compressed air discharging from this compressor will be at some elevated temperature and will therefore contain amounts of water vapor. As this air cools, the vapor will condense within the piping system.

IMPORTANT: The drain line must slope downward from the trap to work properly.

NOTE: For ease of inspection of the automatic drain trap operation, the drain piping should include an open funnel or some type of sight flow indicator.

It is possible that additional condensation can occur if the downstream piping cools the air even further. Therefore, low points in the piping system should be provided with driplegs and traps.

Compressed air dryers reduce the water vapor concentration and prevent liquid water formation in compressed air lines. Dryers are a necessary companion to filters, aftercoolers, and automatic drains for improving the productivity of compressed air systems. Two types of dryers, refrigerated or desiccant , are used to correct moisture related problems in a compressed air system. Refrigerated dryers are normally specified where compressed air pressure dew points of 33°F to 39°F (.5°C to 4°C) are adequate. Desiccant dryers are required where pressure dew points must be below 33°F (.5°C).

Figure 2.4-1 indicates the approximate moisture content in compressed air at various operating points.

Contact your local Ingersoll-Rand Distributor or Air Center for assistance in selecting correct Ingersoll-Rand filtration or drying products.

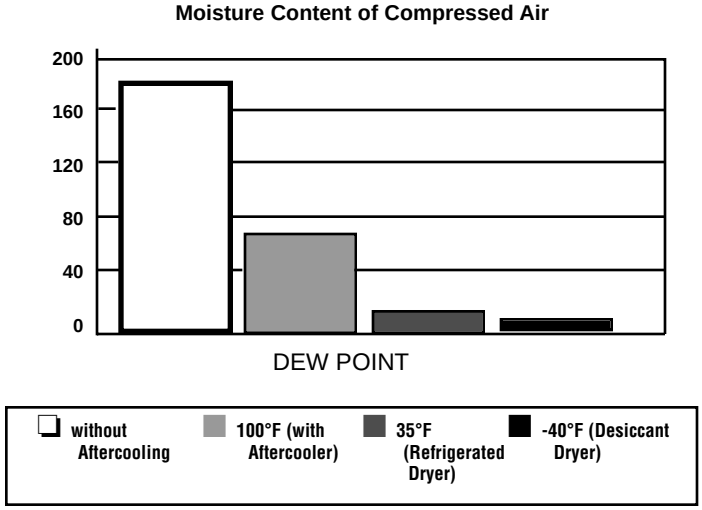


FIGURE 2.4-1 MOISTURE CONTENT OF COMPRESSED AIR

IMPORTANT: Discharge piping should be at least as large as the discharge connection at the compressor. All piping and fittings must be suitably rated for the discharge pressure and temperature.

A careful review of piping size from the compressor connection point is essential. Length of pipe, size of pipe, number and type of fittings and valves must be considered for minimum air pressure drop and optimum efficiency of your compressor.

NOTE: Screw type compressors should not be installed in air systems with reciprocating compressors without a means of pulsation isolation, such as a common receiver tank. We recommend both types of compressor units be piped to a common receiver utilizing individual air lines. See Figure 2.4-2.

When two rotary units are operated in parallel, provide an isolation valve and drain trap for each compressor before the common receiver.
See Figure 2.4-3

To assure long trouble free operation of a compressor operating with On-line/ Off-line and Auto Stop/Start control, the system volume must be large enough to keep the load/unload cycles to a minimum. This may require the installation of a receiver down stream of the compressor. Baseplate mounted units must be piped to a receiver if installed in a system with insufficient volume to keep compressor cycling to a minimum. If equipment such as filters or air dryers, is installed in the main piping system, they must be sized to handle the entire flow of the compressor and an air receiver must be placed in the system between the compressor discharge and the equipment, regardless of system volume.

This will prevent quick cycling of the compressor which results in large fluctuations in system pressure.

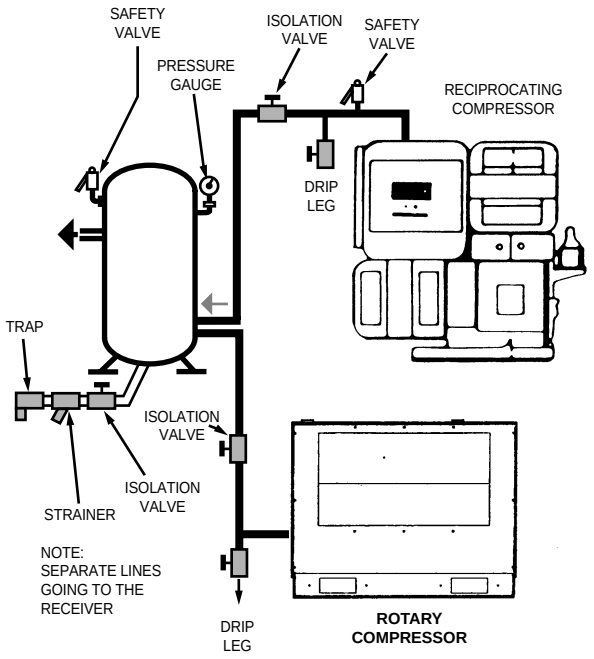


FIGURE 2.4-2 ROTARY-RECIP IN PARALLEL

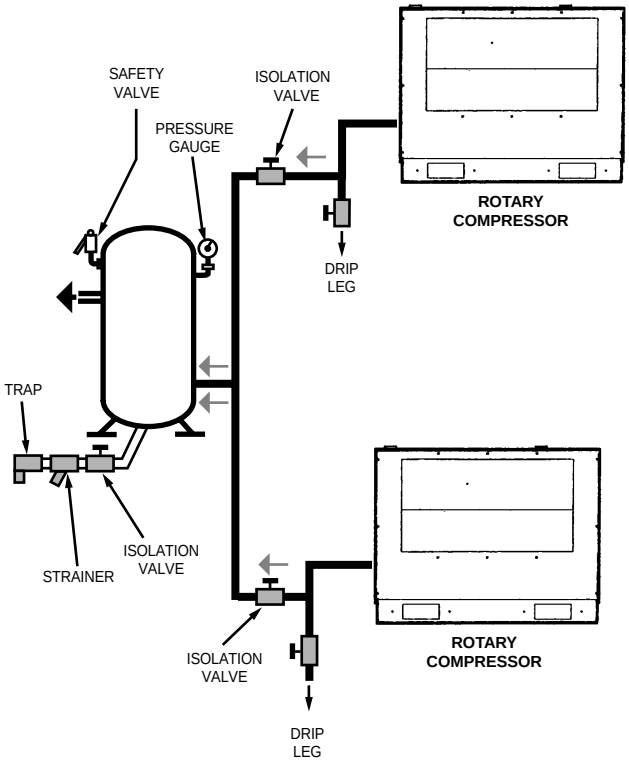


FIGURE 2.4-3 ROTARY-TWO COMPRESSOR SYSTEM

2.5 ELECTRICAL INSTALLATION

Before proceeding further, we recommend that you review the safety data in the front of this manual.

Locate the compressor data plate on the left end of the cooler box next to the control box.

The data plate lists the rated operating pressure, the maximum discharge pressure, the electric motor characteristics and power.

Confirm that the line voltage and compressor nameplate voltage are the same.

The standard control box meets the intent of NEMA 1 guidelines.
It will be necessary to make a hole in the control box for the incoming power connection. Care should be taken to not allow metal shavings to enter the starter and other electrical components within the box. After making the power inlet hole, all shavings and debris must be removed from inside of control box before power is turned on.

Incoming power should be connected per the electrical schematic at the rear of this manual (See Section 6.0). Confirm that all electrical connections are made and tightened. Confirm that the control transformer is wired correctly for supply voltage (See Figure 2.6-1).

Inspect the motor and control wiring for tightness. Close the panel front.

2.6 VOLTAGE CONVERSION

IMPORTANT: This procedure should only be carried out by a qualified electrician, electrical contractor or your local Ingersoll Rand Distributor or Air Center.

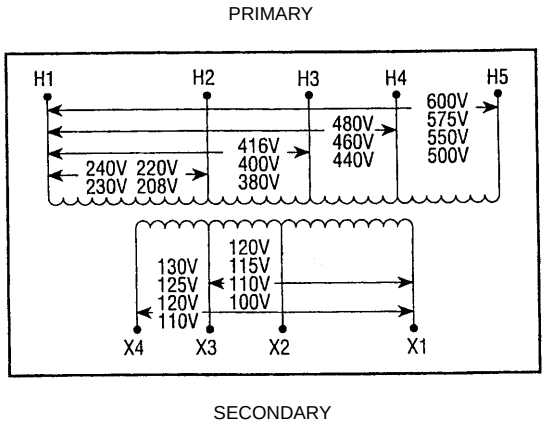


FIGURE 2.6-1 CONTROL TRANSFORMER CONNECTIONS

NOTE: This procedure applies only to units manufactured to multi-voltage specifications. Motor nameplate must indicate multiple voltages.

PROCEDURE:

Put main disconnect in the OFF position, lock and tag (See Figure 2.6-2).

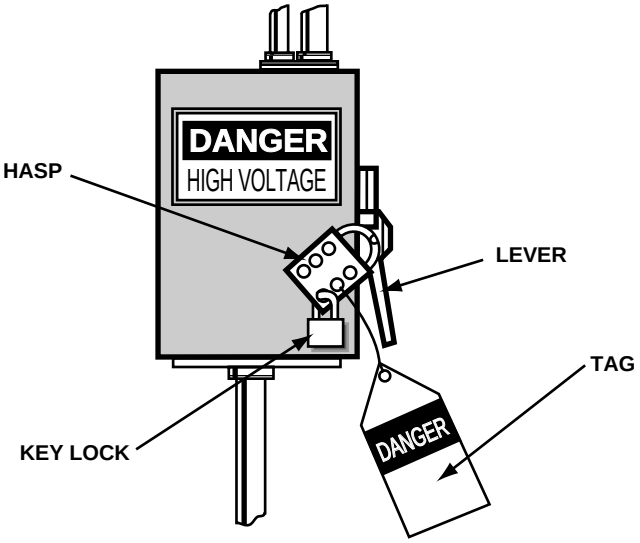


FIGURE 2.6-2 MAIN DISCONNECT LOCKED AND TAGGED

Open the motor junction box on the side of the motor.

Reconnect the motor to the desired voltage. Use the connection decal provided on the motor as a guide.

Reconnect the primary side of the control transformer for the desired voltage, as shown on the control transformer wiring decal.

Refer to the motor nameplate for full load amps. Set the dial position of the overload relay to the corresponding setting.

Make sure all wiring connections are tight.

Put main disconnect in the ON position and check motor rotation, as outlined in Section 2.7 of this manual.

2.7 ROTATION CHECK.

Locate the rotation decal on the motor and check for correct rotation. The correct rotation when viewed from the opposite drive end of the motor is clockwise.

If compressor is operated in the opposite direction of rotation, airend damage can result and is not warrantable.

The unit is shipped with a bolt in the motor support to prevent possible belt damage caused by bouncing during shipment. This bolt must be remove prior to checking motor rotation or operating the unit.

Locate the shipping bolt in the motor support as shown in Figure 2.7-1. and remove.

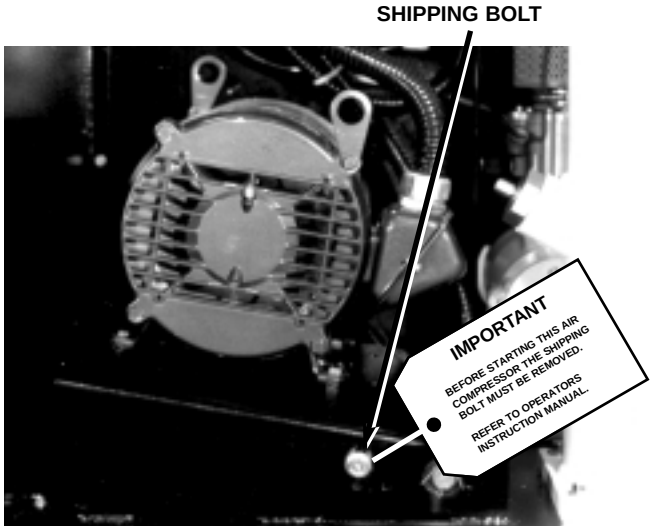


FIGURE 2.7-1 SHIPPING BOLT LOCATION

For the compressor motor rotation check, the motor jogging should be as short a time as possible.

1. Assure that the Stop button is in the stop (depressed) position.

2. Check coolant level. To check coolant level, slowly loosen the till plug one complete turn. As the fill plug is unscrewed approximately one turn, a small amount of pressure may be released. Do not remove the fill plug until all pressure has been vented. Once pressure is vented, finish removing the fill plug. The proper coolant level is when the coolant is even with the top of the fill port. Add coolant if necessary.

3. Replace and tighten fill plug.

4. Close the main disconnect switch (ON position).

5. Verify that the main isolation valve is open.

6. Open the canopy enclosure if machine is so equipped. Push the Start button to start the unit and immediately depress (push) the Stop button to stop the unit.
Observe the compressor drive motor shaft. The rotation should be in accordance with the directional arrow decal on the motor.

Should the motor rotation not be correct, put the main disconnect in the OFF position, lock and tag.

Interchange any two line connections (L1 ,L2, or L3) at the starter. Close the control box cover. Recheck for correct rotation.

2.8 BEFORE STARTING - STARTING - STOPPING

Read and understand the following instructions before operating or performing any maintenance on this unit.

Before Starting:

1. Assure that Stop push button is in the OFF (depressed) position (See Figure 2.8-1).

2. Check coolant level. To check coolant level, slowly loosen the fill plug one complete turn. As the fill plug is unscrewed approximately one turn, a small amount of pressure may be released. Do not remove the fill plug until all pressure has been vented. Once pressure is vented, finish removing the fill plug. The proper coolant level is when the coolant is even with the top of the fill port. Add coolant if necessary.

3. Replace and tighten fill plug.

4. Close the main disconnect switch (ON position).

5. Verify that the main isolation valve is open.

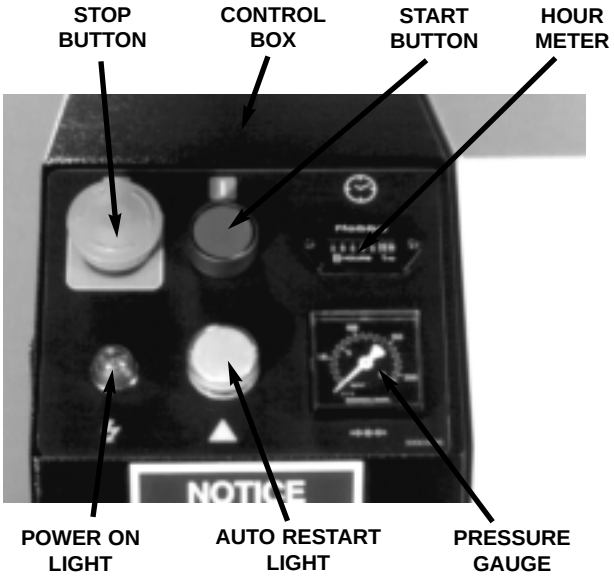


FIGURE 2.8-1 CONTROL BOX

Starting

1. Push the Start button and release. The compressor will start and then load automatically if line pressure is below the lower setting of the pressure switch.

Stopping

1. Depress the Stop button to the OFF position. Compressor will stop immediately.

2. Open the main disconnect switch (OFF position).

3.0 SYSTEMS

3.1 GENERAL SYSTEM INFORMATION

The compressor is an electric motor driven, single stage, rotary screw compressor, complete with supporting components to make a fully functional unit. A standard compressor is composed of the following:
Inlet air filter
Drive motor
Airend
Pressurized coolant system with cooler & filter
Separation system
Capacity control
Instruments
Safety devices

Compression in the rotary screw type air compressor is created by the meshing of two helical rotors (male and female) on parallel shafts, enclosed in a heavy duty iron housing, with air inlet and outlet ports located on opposite ends. The grooves of the female rotor mesh with and are driven by the male rotor. Bearings on both ends of the rotors are used to support the rotor both laterally and axially.

3.2 COOLANT SYSTEM

The coolant system consists of a separator tank, thermostatic element, coolant filter, coolant cooler with fans, and a separator element. When the unit is operating, the coolant is pressurized and forced to the compressor bearings. The compressor is provided with a temperature switch which will shut the unit down in case of excessive temperature, 228°F (109°C). Effective coolant filtration is provided by the use of a screw on, automotive type, heavy duty coolant filter.

The compressor is designed for operation in an ambient range of 35°F to 115°F (2°C to 46°C).

COOLANT

Rotary screw compressor fluids have a triple function to perform. They lubricate the bearings and contacting surfaces of the rotors, seal internal clearances within the rotor chamber, and provide for the cooling of the compression process. The bulk of the fluid is actually used for cooling, with only small amounts used for lubrication and sealing.

SSR air compressors are factory filled with SSR ULTRA COOLANT. ULTRA COOLANT is designed to operate for 8,000 hours or two years, whichever comes first. The coolant must be changed at these intervals to avoid breakdown and equipment damage.

CIRCULATION OF COOLANT

Coolant is forced by air pressure from the separator tank to the thermostatic element. The position of the element (a direct result of coolant temperature) will determine whether the coolant circulates through the cooler, bypasses the cooler, or mixes the two paths together to maintain an optimum compressor injection temperature. This temperature is controlled to preclude the possibility of water vapor condensing. By injecting coolant at a sufficiently high temperature, the discharge air coolant mixture temperature will be kept above the dew point.

Before being injected into the airend, all coolant flows through the coolant filter. It is an automotive type full-flow filter with a single replacement spin-on element, rated at 4 micron. There is a differential-pressure bypass valve set to open in the event that the pressure drop across the filter rises to as high as 15 psi (1 bar), which indicates an excessively fouled element as well as poor maintenance practice.

COOLANT/AIR SEPARATION SYSTEM

The coolant/air separation system is composed of a separator tank with specially designed internals and a coalescing type separator element located inside the tank.

The air-coolant mixture discharges from the airend into the separator tank. The majority of coolant is separated while in the separator tank and the coalescing separator filter element is used for final cleaning of the air prior to the customer's system. The system removes nearly all of the coolant from the discharge air. The separated coolant is returned to the coolant system and the air passes to the compressed air system.

3.3 AIR SYSTEM

COMPONENTS AND FLOW

The air system is composed of:
Inlet air filter
Inlet control valve (ICV)
Airend
Coolant/Air separator
Minimum pressure check valve (MPCV)
Aftercooler

The direction of flow is from the inlet filter to the aftercooler.

FUNCTIONS OF COMPONENTS

Inlet air filter, filters the incoming air, trapping 99.9% of particles 3 micron and larger.

Inlet valve opens full for on-line operation.

The valve closes in the off-line mode and at shutdown which prevents back flow of the compressed air.

The airend compresses the air.

The separator tank removes most of the coolant from the air.

The separator element performs the final separation of coolant and cleaning of the air prior to leaving the compressor.

The minimum pressure check valve keeps the separator tank and separator element at a minimum pressure to ensure adequate oil flow and proper coolant/air separation. It also prevents line pressure from exhausting back through the airend at shutdown and during periods of unloaded operation.

The aftercooler cools the air prior to leaving the package.

3.4 CAPACITY CONTROL

ON LINE/OFF LINE WITH AUTOMATIC START/STOP CONTROL

The compressor will deliver air at full capacity, (the compressor maximum efficiency condition) or will operate at zero capacity with high receiver pressure (the compressor minimum power condition), while the unit continues to run.

When the compressor starts and line pressure is below the lower setting of the line pressure switch, control solenoid 1SV will be energized (close), inlet control valve ICV will open, and the compressor will load. When the line pressure reaches the upper setting of the pressure switch, the compressor will unload by de-energizing (opening) 1SV and closing ICV. Solenoid 1SV relieves the internal pressure of the compressor back to the inlet filter. The only adjustment required is setting of the pressure switch.

A time delay relay is energized and begins to time out. The timer, mounted in the control box, is factory set at 10 minutes. It will continue to operate for as long as its time setting, after which a relay contact opens to de-energize the compressor starter coil. At the same time, an amber light (1LT) on the control box is lit to indicate the compressor has shut down automatically and will restart automatically. The automatic restart will take place when the line pressure drops to the lower setting of the pressure switch. **Adjusting the adjustable timer below the 10 minute factory setting may shorten the life of the compressor drive motor.**

3.5 PRESSURE SWITCH ADJUSTMENT

Locate the pressure switch as shown in Figure 3.5-1. The pressure switch can be adjusted using the following procedure:

1. Open, lock and tag the main electrical disconnect. Do not adjust the pressure switch with power on or machine operating.

2. Remove pressure switch cover by turning the cover screw counterclockwise.
NOTE: It is required that the load or on-line pressure be set first, before the unload or off-line pressure is set.

3. Set the on-line pressure by turning screw 5 (See Figure 3.5-2). Turn clockwise to increase setting or counter-clockwise to decrease setting (indicated by pointer 4).

4. Set the off-line pressure by turning screw 2. Turn screw counter-clockwise to increase setting or clockwise to decrease setting (indicated by pointer 3).

CAUTION:
DO NOT EXCEED NAMEPLATE RATING OF THE COMPRESSOR.

5. Start compressor and test adjustment(s) made. If necessary, readjust according to steps 1-4 above.

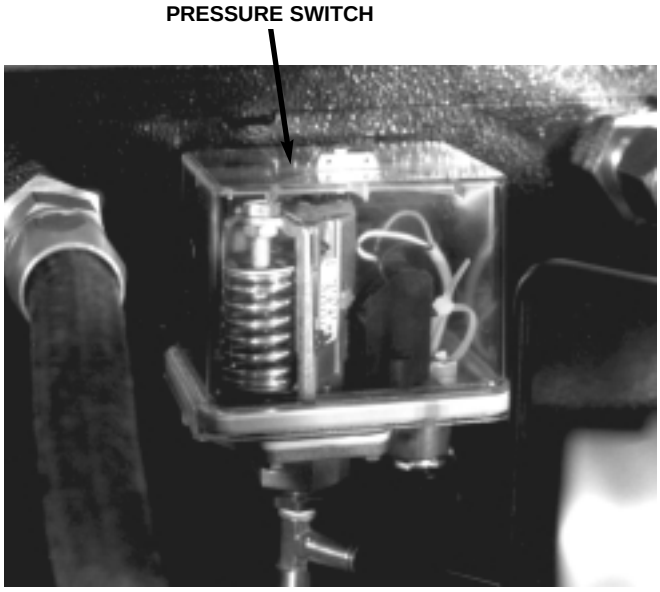


FIGURE 3.5-1 PRESSURE SWITCH LOCATION

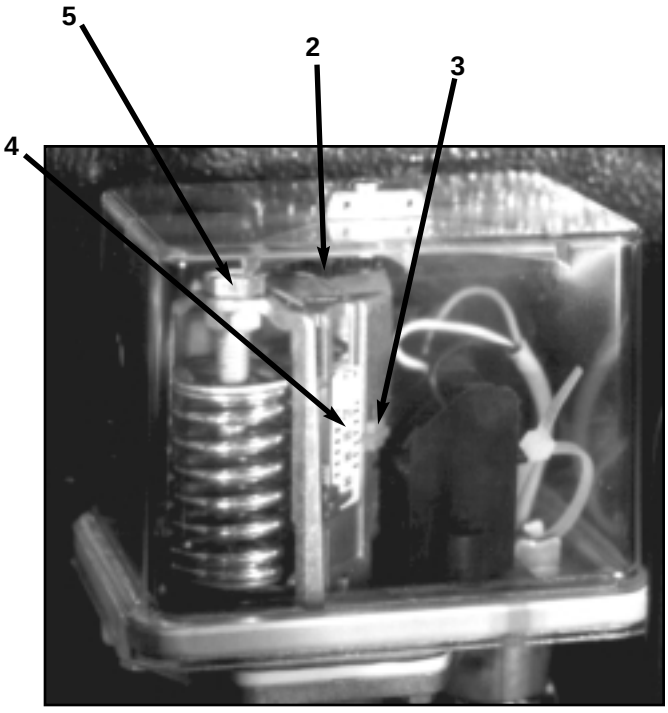


FIGURE 3.5-2 PRESSURE SWITCH ADJUSTMENT

4.0 MAINTENANCE

4.1 MAINTENANCE SCHEDULE

THE MAINTENANCE SCHEDULE SPECIFIES ALL RECOMMENDED MAINTENANCE REQUIRED TO KEEP THE COMPRESSOR IN GOOD OPERATING CONDITION. SERVICE AT THE INTERVAL LISTED OR AFTER THAT NUMBER OF

		TIME INTERVAL (WHICHEVER COMES FIRST)						
ACTION	PART OR ITEM	HOURS	1 WK	1 MO	6 MO	9 MO	YEARLY	2 YR
INSPECT	COOLANT LEVEL VISIBLE IN FILL PORT (WHEN COLD)	WEEKLY	X					
INSPECT	AIR FILTER	WEEKLY	X					
REPLACE	COOLANT FILTER*	150	X	(INITIAL CHANGE ONLY)				
REPLACE	COOLANT FILTER*	2000			X (SUBSEQUENT CHANGES)			
INSPECT	HOSES	1000			X			
INSPECT	DRIVE BELTS	500		X				
REPLACE	DRIVE BELTS	YEARLY					X	
CHECK	HIGH AIR TEMP. SWITCH	1000		X				
CHECK	OPERATE PRESSURE RELIEF VALVES	1000		X				
CLEAN	SEPARATOR SCAVENGE ORIFICE	1000					X	
CLEAN	COOLERS CORES**	4000			X			
REPLACE	AIR FILTER	2500			X			
REPLACE	SEPARATOR FILTER ELEMENT*	4000			X			
REPLACE	ULTRA COOLANT	8000						X
REPLACE	SHAFT SEAL	8000						X

*IN VERY CLEAN OPERATING ENVIRONMENTS AND WHERE INLET AIR FILTER IS CHANGED AT THE ABOVE PRESCRIBED INTERVALS. IN EXTREME DIRTY ENVIRONMENT CHANGE COOLANT, FILTERS AND SEPARATOR ELEMENTS MORE FREQUENTLY.

**CLEAN COOLER CORES IF UNIT SHUTDOWN OCCURS ON HIGH AIR TEMPERATURE.

4.2 MAINTENANCE RECORDS

It is very important that you, the owner, keep accurate and detailed records of all maintenance work you or the Ingersoll-Rand Distributor or Air Center perform on your compressor. This includes, but is not limited to, coolant, coolant filter, separator element, inlet air filter, drive belts, shaft seals and so forth. This information must be kept by you, the owner, should you require warranty service work by your Ingersoll-Rand Distributor or Air Center. Maintenance record sheets are located at the back of this manual.

4.3 MAINTENANCE PROCEDURES

Before starting any maintenance, be certain the following is heeded.

Read Safety Instructions.

Have a well equipped mechanic's tool box with English and Metric sockets. (Special tools when needed will be listed under each appropriate procedure).

Have an OSHA approved air nozzle and compressed air. (International - local codes may apply).

Have recommended spare parts on hand (See listing in back of this manual.

⚠ WARNING

When the unit is shut down, residual pressure can be trapped within the compressor system. This pressure must be vented from the system prior to beginning any service work.

Before beginning any work on the compressor, open, lock and tag the main electrical disconnect and close the isolation valve on the compressor discharge. Wait 2 minutes after stopping to allow internal pressure to dissipate. Vent residual pressure from the unit by slowly unscrewing the coolant fill plug one turn. Unscrewing the fill plug opens a vent hole, drilled in the plug, allowing the pressure to release to atmosphere (See Figure 4.3-1). A slight mist or oil droplets may be visible during venting. Do not remove fill plug until all pressure has vented from the unit. Also vent piping by slightly opening the drip leg valve. When opening the drain valve or removing the coolant fill plug, stand clear of the valve discharge, wear work gloves and appropriate eye protection.

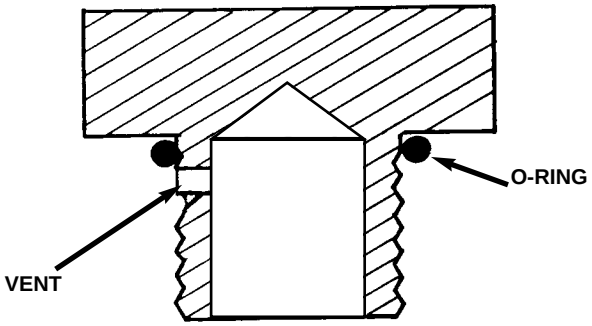


FIGURE 4.3-1 FILL PLUG WITH VENT HOLE

4.4 PRESSURE RELIEF VALVE CHECK

Under normal operating condition a “try lever test” must be performed every month . Under severe service conditions, or if corrosion and/or deposits are noticed within the valve body, testing must be performed more often. A “try lever test” must also be performed at the end of any non-service period. **CAUTION! High pressure air will discharge through the discharge ports of the valve during “try lever test”. Wear ample clothing, gloves, safety glasses and ear protection during valve testing.** Run the compressor for about 10 minutes by venting air from the system to let the unit warm up. With the unit running, test at or near maximum operating pressure by holding the test lever fully open for at least 5 seconds to flush the valve seat free of debris. Then release lever and permit the valve to snap shut. If lift lever does not activate, or there is no evidence of discharge, discontinue use of equipment immediately and contact a licensed contractor or qualified service personnel.

4.5 SHEAVE ALIGNMENT

Any degree of sheave misalignment will result in a reduction of belt life. Misalignment of belt drive should not exceed 1/16 in. (1.6 mm).

Parallel misalignment occurs when the drive and driven shafts are parallel, but the two sheaves lie in different planes (See Figure 4.5-1).

Angular misalignment occurs when the two shafts are not parallel (See Figure 4.5-2).

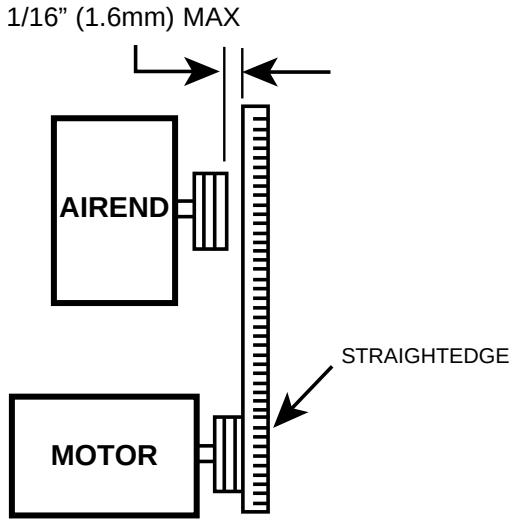


FIGURE 4.5-1 PARALLEL MISALIGNMENT

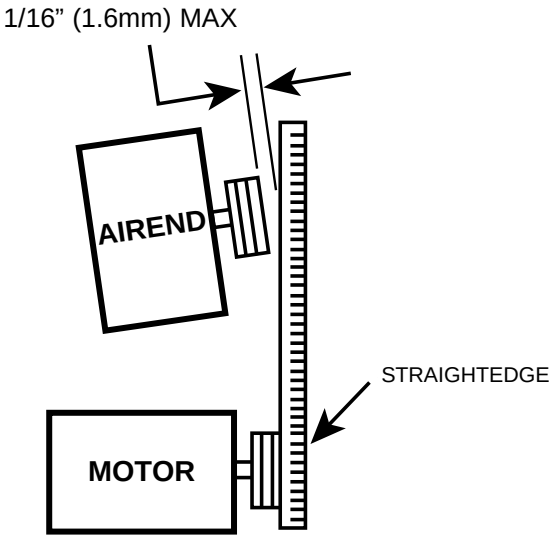


FIGURE 4.5-2 ANGULAR MISALIGNMENT

ALIGN SHEAVES

Insure that the compressor is isolated from the compressed air system by closing the isolation valve and venting pressure from the drip leg. Insure that the main power disconnect switch is locked and tagged.

An easy and effective method of checking alignment in both directions between the driver and driven sheaves utilizes an accurate straightedge.

Lay the straightedge across the face of the driver (motor) sheave and check alignment of the driven (airend) sheave. Then lay the straightedge across the driven sheave and check that the driver sheave is aligned.

Alignment should be within 1/16” (1.6 mm) maximum when measuring the gap between the straightedge and the rim of the opposite sheave in each direction.

This alignment is factory set and should only require resetting if the drive motor or airend is removed.

The following steps should be taken to insure proper alignment of all components.

1. Remove the cooler box top panel.

2. Holding the straightedge against the front of the airend sheave, measure the amount of misalignment seen on the motor sheave. If misalignment is less than 1/16” (1.6 mm) then reinstall cooler box panel prior to operating unit.

3. If misalignment is more than 1/16” (1.6 mm), the motor sheave bushing must be loosened for repositioning.

To reposition the motor sheave:

1. Remove drive belts (See Section 4.6).

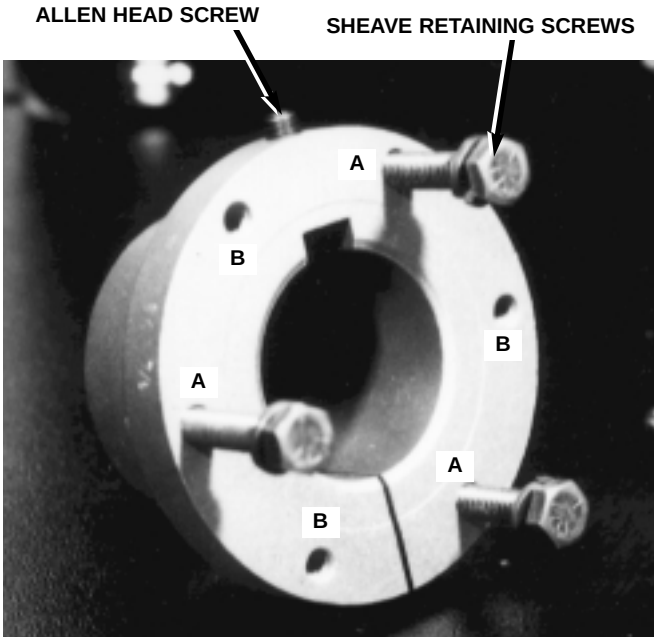
2. Remove the three hex head screws that hold the sheave to the sheave bushing. See Figure 4.5-3.

3. Lubricate the thread and end of screws that were just removed.

4. Reinstall all three screws in the holes of the bushing that are threaded.

5. Slowly tighten the three screws evenly until the sheave is pressed from the bushing. (Light tapping on bushing may assist removal.)

6. Remove the screws from the holes.



“A” - Clearance Holes
“B” - Threaded Holes

FIGURE 4.5-3 MOTOR SHEAVE BUSHING

7. Loosen allen screw in sheave bushing.

8. Move the bushing either in or out on the motor shaft depending upon the measurement taken earlier.

9. Tighten allen screw in sheave bushing.

10. Being careful to not move the bushing on the shaft, align sheave so that the three threaded holes in the sheave line up with the three clearance holes in the bushing.

11. Insert all three screws through clearance holes in the bushing and thread into sheave.

12. Slowly and evenly tighten all sheave retaining screws. Torque to 108 lb-in. (1.2 kg-m).

13. Tap against large end of bushing using hammer and block or sleeve to avoid damage. Continue to torque screws until the specified wrench torque no longer turns the screw after tapping.

14. Install belts as shown in Section 4.6.

15. Recheck for proper alignment.

16. Reinstall cooler box outer panel.

4.6 DRIVE BELTS

Insure that the compressor is isolated from the compressed air system by closing the isolation valve and venting pressure from the drip leg. Insure that the main power disconnect switch is locked open and tagged.

If installing or removing the belts on a new unit at startup, the motor support shipping bolt must first be removed. This bolt is only used to secure the motor support during shipment and will not be reinstalled once the belts are put into place.

Locate the support shipping bolt as shown in Figure 2.7-1 and remove.

REPLACEMENT PARTS

Belts (See Recommended Spare Parts Section 7.3). Be sure to use only Ingersoll-Rand Genuine parts to assure proper belt size and length. Incorrectly sized belts can lead to overloading of bearings and eventual airend or motor failure.

DISASSEMBLY

Belt tension is maintained due to a pivoting motor support. The weight of the motor holds the belt tight.

1. Remove the cooler box rear panel.

2. Carefully lift the back of the motor support and place a block of wood underneath the motor support.

3. Remove belts from the airend sheave and the motor sheave.

INSTALLATION / INSPECTION

Inspect sheave grooves for foreign material or rubber build-up. Clean and degrease sheaves before installing drive belts to insure long belt life.

1. Carefully lift the back of the motor support plate and place a block of wood underneath the plate.

2. Install belts on the airend sheave and the motor sheave. When installing a new belt, do not pry or force the belt over the sheave grooves.

3. Remove the block of wood from under the motor support.

4.7 BELT TENSION

This unit has been designed with a unique self tensioning system for the drive belts. There is no adjustment required to insure proper belt tensioning. Be sure to use only Ingersoll-Rand Genuine parts to assure correct belt tension.

4.8 SHAFT SEAL REPLACEMENT

There are two lip type seals on the compressor. They are wearable parts and should be replaced at 8,000 hour intervals. While it is advisable to have your local Ingersoll-Rand Distributor or Air Center perform this work, the task can be accomplished by a good mechanic following these instructions.

Before beginning any work on the compressor, open, lock and tag the main electrical disconnect and close the isolation valve on the compressor discharge. Wait 2 minutes after stopping to allow internal pressure to dissipate. Vent residual pressure from the unit by slowly unscrewing the coolant fill plug one turn. Unscrewing the fill plug opens a vent hole, drilled In the plug, allowing the pressure to release to atmosphere (See Figure 4.3-1). A slight mist or oil droplets may be visible during venting. Do not remove fill plug until all pressure has vented from the unit. Also vent piping by slightly opening the drip leg valve. When opening the drain valve or removing the coolant fill plug, stand clear of the valve discharge, wear work gloves and appropriate eye protection.

SPECIAL TOOLS

A clean work bench
Seal installation tool

REPLACEMENT PARTS

Shaft seal kit
Seal retainer 0-Ring
Loctite® 609
Loctite® 515

INSTALLATION

1. Remove the cooler box rear panel.

2. Remove belts (See Section 4.6).

3. Remove the three hex lead screws that hold the sheave to the sheave bushing (See Figure 4.5-3).

4. Lubricate the thread and end of screws that were just removed.

5. Reinstall all three screws in the holes of the bushing that are threaded.

6. Slowly tighten the three screws evenly until the sheave is pressed from the bushing. (Light tapping on bushing may assist removal.)

7. Remove the screws from the holes.

8. Loosen allen screw in sheave bushing.

9. Remove seal housing from airend assembly. Use the removal slots provided to pry the seal housing from the airend. Do not attempt to break the seal housing loose by tapping.

10. Drive each seal out of the housing, being careful not to damage the surface of the bore. The larger double lip seal must be driven out toward the inboard side. The term “inboard” side of the seal housing will refer to the face that is mounted to the airend assembly. The term “outboard” side will refer to the face closest to the sheave.

11. Discard seals.

12. Remove check valve ball and plug from seal housing.

13. Remove wear sleeve from shaft, being careful not to damage the shaft.

14. Thoroughly clean the scavenge holes, (See Figure 4.8-1), bore surfaces of the seal housing, wear sleeve journal on the shaft, and the face of the airend assembly. Be careful not to damage any of the surfaces, and insure that no particles are allowed to enter the bearings.

15. Be certain to install the seals from the proper side and in the proper orientation. Carefully follow directions for seal assembly. Protect seal elements from inadvertent damage during installation. Be sure all tools are free of contaminants before installation.

16. Put a thin continuous coat of Loctite® 609 on the outer diameter of the double lip seal.

17. Position the seal in the seal housing from the inboard side. The seal should be oriented such that the edge of the lip is toward the installer.

18. Using the seal installation tool (machined according to Figure 4.8-2), press the double lip seal into the seal housing until it locates against the shoulder.

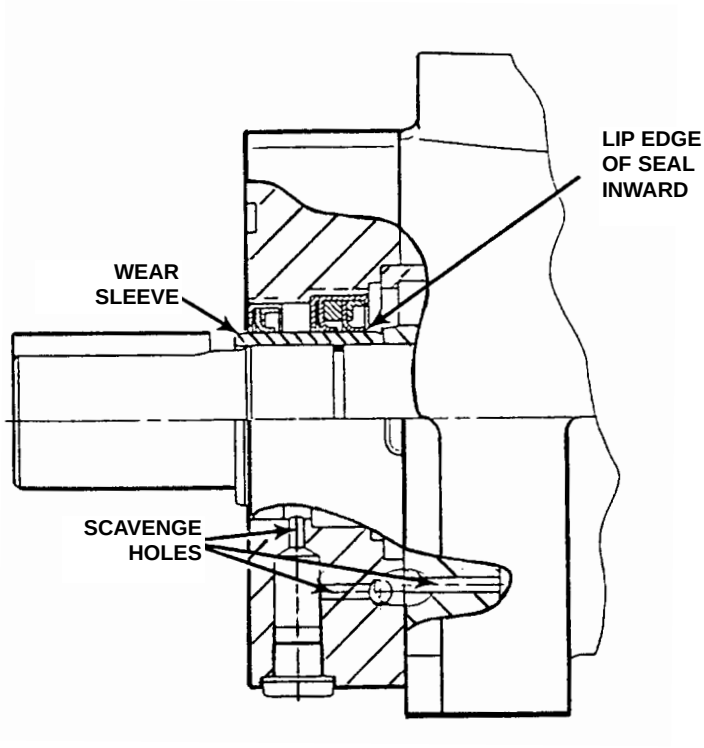


FIGURE 4.8-1 SHAFT SEAL ASSEMBLY

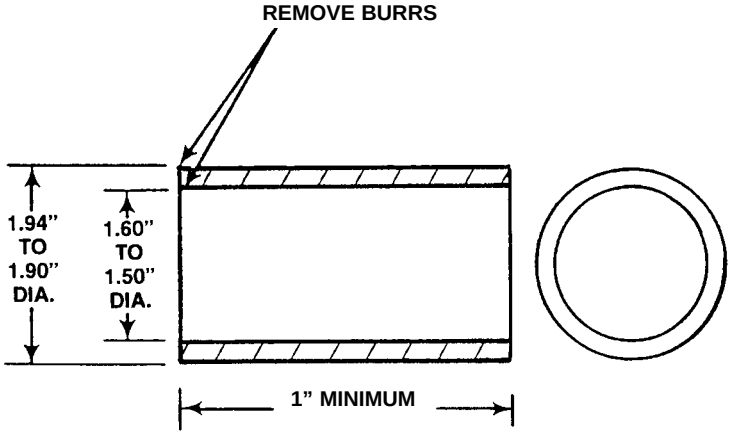


FIGURE 4.8-2 SEAL INSTALLATION TOOL

19. Remove any excess Loctite® 609 with a clean cloth.

20. Put a thin continuous coat of Loctite® 609 on the outer diameter of the single lip seal.

21. Position the seal in the seal housing from the outboard side. The seal should be oriented such that the edge of the lip is installed first.

22. Using a clean flat tool that is larger in diameter than the seal, press the single lip seal into the seal housing until it is flush with the surface of the housing. The seal must not be pushed beyond the flush position.

23. Remove any excess Loctite® 609 from the seals, the seal housing. and from the seal scavenge holes in the seal housing between the seals.

24. Install the plug in the bottom of the seal housing.

25. Lightly lubricate a new O-ring with clean coolant and install on the rotor shaft.

26. Insure that the surface of the seal housing is clean and dry. Put a thin continuous coat of Loctite® 515 on the inboard face of the seal housing. Do not over apply.

27. Install a new check valve ball in the seal housing. A small amount of grease can be used to hold the check valve ball in place for assembly.

28. Making sure that the check valve ball remains in place, assemble the seal housing to the rotor housing. Attach the seal housing to the rotor housing with eight screws and tighten to 92-102 lb-in (1.07-1.19 Kg-m).

29. Lightly lubricate the inner diameter and the outer diameter of the new wear sleeve with clean compressor coolant.

30. Carefully slide the wear sleeve onto the rotor and through the seals until the wear sleeve locates against the bearing.

31. Reinstall the spacer, key, sheave, and bushing. Push the bushing back against the spacer, until it “locates” against the wear sleeve, when tightening the two bushing allen head screws to 175 lb-in (2.0 Kg-m).

32. Reinstall belts, and check alignment per Section 4.5.

33. Reinstall cooler box outer panel.

4.9 INLET AIR FILTER ELEMENT

The inlet air filter should be changed at the interval shown in the maintenance chart or any time the filter becomes dirty.

The filter element is not washable and must be replaced. Remove the filter by loosening the clamp on the filter assembly located on the Inlet Control Valve. Remove and discard the old filter element. Install a new filter element. Tighten clamp (See Figure 4.9-1).

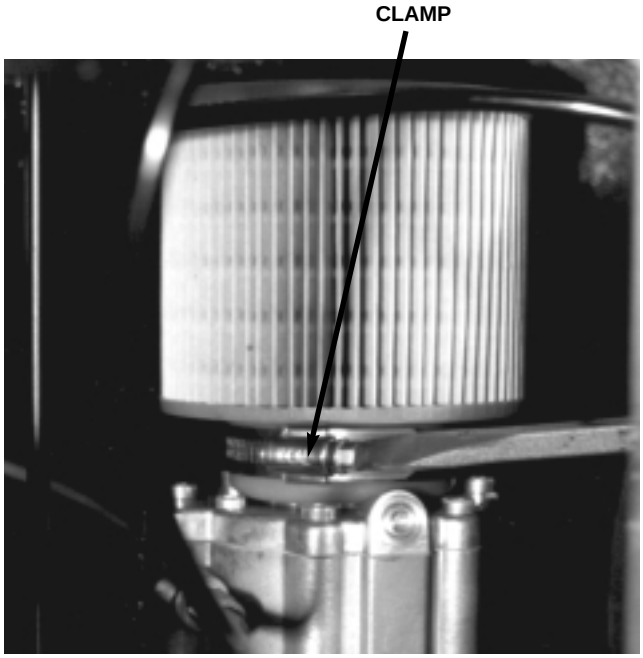


FIGURE 4.9-1 INLET AIR FILTER

4.10 COOLANT FILTER

Time of change - after the first 150 hours and every 1000 hours thereafter, or when the coolant is being changed. In dirty operating environments, the filter should be changed more frequently.

Before beginning any work on the compressor, open, lock and tag the main electrical disconnect and close the isolation valve on the compressor discharge. Wait 2 minutes after stopping to allow internal pressure to dissipate. Vent residual pressure from the unit by slowly unscrewing the coolant fill plug one turn. Unscrewing the fill plug opens a vent hole, drilled in the plug, allowing the pressure to release to atmosphere (See Figure 4.3-1). A slight mist or oil droplets may be visible during venting. Do not remove fill plug until all pressure has vented from the unit. Also vent piping by slightly opening the drip leg valve. When opening the drain valve or removing the coolant fill plug, stand clear of the valve discharge, wear work gloves and appropriate eye protection.

SPECIAL TOOLS

Suitable clean drain pan or container to hold coolant drained from unit.

A quantity of proper coolant sufficient to top off the coolant level in the compressor.

One genuine IR replacement coolant filter of the proper type for the unit.

1. Place a clean pan under the coolant filter.

2. Using a filter wrench, remove the coolant filter. Remember that the filter and coolant may be hot!

3. Discard the old filter.

4. Wipe the sealing surface of the filter head with a clean lint-free rag to prevent entry of dirt into the system.

5. Remove the replacement filter from it's protective package.

6. Apply a small amount of clean coolant on the rubber seal of the filter.

7. Screw filter on until the seal makes contact with the seat on the filter head. Tighten approximately one half to three quarters turn additional.

8. Remove coolant fill plug (See Figure 4.10-1).

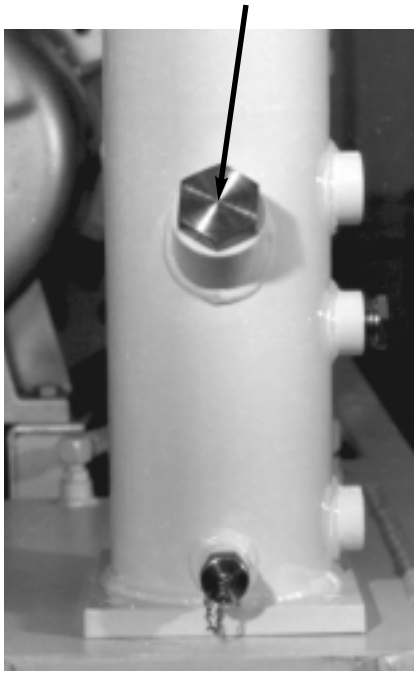


FIGURE 4.10-1 SEPARATOR TANK

9. Fill unit with new coolant as follows:
   a. Fill tank to the middle of the 45°fill port.
   b. Run machine 15-20 seconds and relieve pressure.
   c. Add approximately 1 more quart of coolant.
   d. Restart machine and verify that coolant level is in the bottom half of the sight glass when loaded.

10. Replace fill plug.

11. Start unit and check for leaks.

Do not add coolant through the intake of the compressor, as this can result in overfilling, saturation of the separator filter element, and coolant carry-over downstream.

4.11 COOLANT CHANGE

Before beginning any work on the compressor, open, lock and tag the main electrical disconnect and close the isolation valve on the compressor discharge. Wait 2 minutes after stopping to allow internal pressure to dissipate. Vent residual pressure from the unit by slowly unscrewing the coolant fill plug one turn. Unscrewing the fill plug opens a vent hole, drilled in the plug, allowing the pressure to release to atmosphere (See Figure 4.3-1). A slight mist or oil droplets may be visible during venting. Do not remove fill plug until all pressure has vented from the unit. Also vent piping by slightly opening the drip leg valve. When opening the drain valve or removing the coolant fill plug, stand clear of the valve discharge, wear work gloves and appropriate eye protection.

SPECIAL TOOLS

Suitable clean drain pan or container to hold approximately 1.5 gal. (5.75L) of coolant drained from unit.

A quantity of proper coolant sufficient to refill the coolant level in the compressor.

One genuine IR replacement coolant filter of the proper type for the unit.

The coolant should be drained soon after the compressor has been shut down. When the coolant is warm, the drainage will be more complete and any particles in suspension in the coolant will be carried out with the coolant.

1. Place a clean pan under the oil drain valve.

2. Remove the cap from the oil drain valve (See Figure 4.11-1).

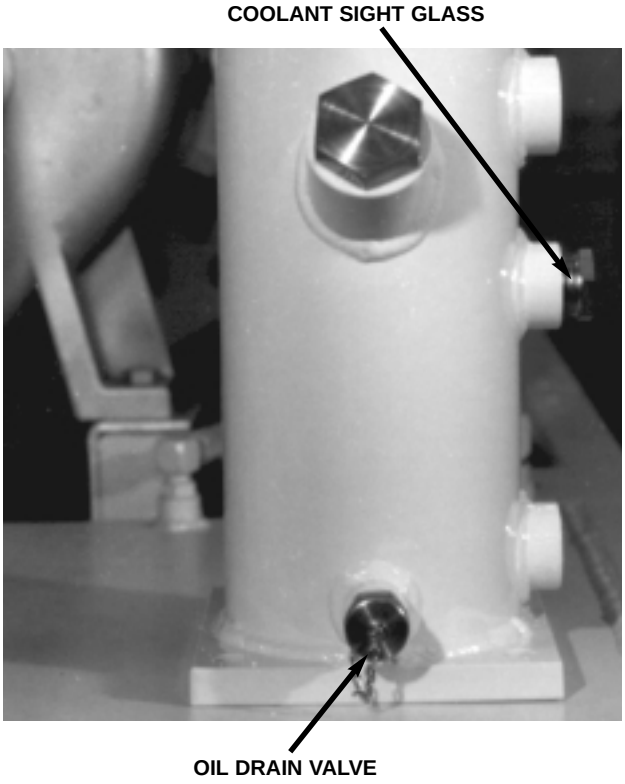


FIGURE 4.11-1 OIL DRAIN VALVE

3. Thread the oil drain fitting (supplied with compressor), with hose attached, onto the oil drain valve. The valve will open as the fitting is threaded completely, allowing the oil to drain.

4. Using a filter wrench, remove the coolant filter. Remember that the coolant filter may be hot!

5. Discard the old filter.

6. Wipe the sealing surface of the filter head with a clean lint-free rag to prevent entry of dirt into the system.

7. Remove the replacement filter from its protective package.

8. Apply a small amount of clean coolant on the rubber seal of the filter.

9. Screw element on until the seal makes contact with the seat on the filter header. Tighten approximately one half to three quarters turns additional.

10. Remove drain fitting and replace drain valve cap.

11. Remove coolant fill plug (See Figure 4.10-1).

12. Fill unit with new coolant as follows:
    a. Fill tank to the middle of the 45°fill port.
    b. Run machine 15-20 seconds and relieve pressure.
    c. Add approximately 1 more quart of coolant.
    d. Restart machine and verify that coolant level is in the bottom half of the sight glass when loaded.
13. Replace fill plug.

14. Start unit and check for leaks.

Do not add coolant through the intake of the compressor as this can result in overfilling, saturation of the separator filter element and coolant carry-over downstream.

4.12 COOLANT HOSE

The flexible hose that carries coolant to the airend may become brittle with age and will require replacement. Have your local Ingersoll-Rand Distributor or Air Center check it every year and replace it as needed or every 2 years.

Before beginning any work on the compressor, open, lock and tag the main electrical disconnect and close the isolation valve on the compressor discharge. Wait 2 minutes after stopping to allow internal pressure to dissipate. Vent residual pressure from the unit by slowly unscrewing the coolant fill plug one turn. Unscrewing the fill plug opens a vent hole, drilled in the plug, allowing the pressure to release to atmosphere (See Figure 4.3-1). A slight mist or oil droplets may be visible during venting. Do not remove fill plug until all pressure has vented from the unit. Also vent piping by slightly opening the drip leg valve. When opening the drain valve or removing the coolant fill plug, stand clear of the valve discharge, wear work gloves and appropriate eye protection.

REMOVAL

Drain coolant into a clean container. Cover the container to prevent contamination. If the coolant is contaminated, a new charge of coolant must be used.

Remove the hose.

INSTALLATION

Install the new hose. Refill the unit with coolant. Start the compressor and check for leaks. Stop unit and check coolant level in the coolant sight glass on the separator tank.

4.13 COOLANT SEPARATOR FILTER ELEMENT

The separator filter element should be replaced every year or after 4000 hours of operation, whichever comes first, to prevent excessive coolant carryover into the plant's air piping system.

The element is located inside the separator tank (See Figure 4.13-1).

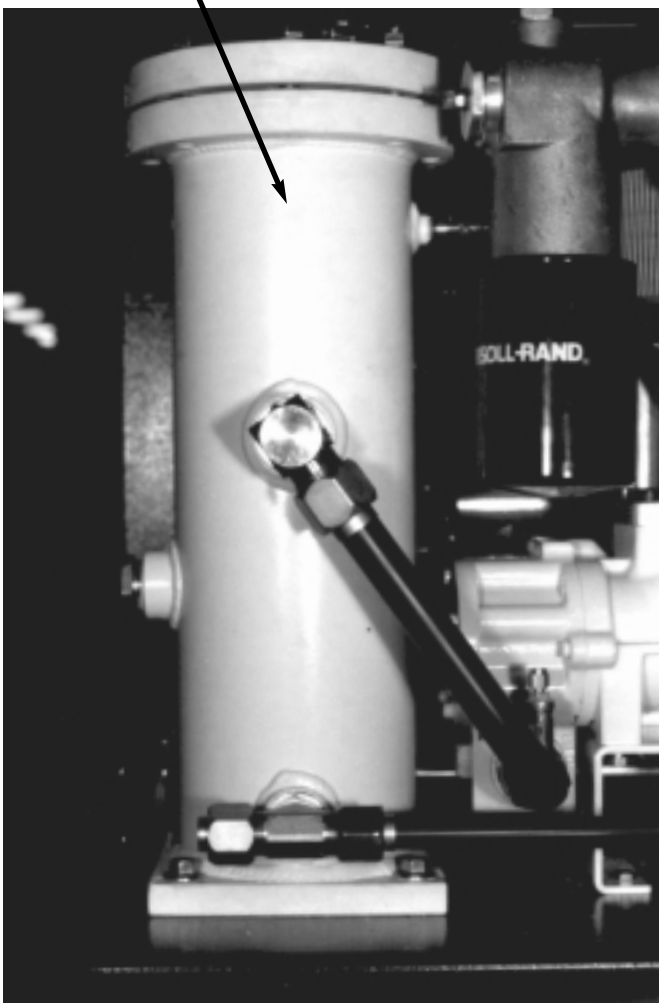


FIGURE 4.13-1 SEPARATOR ELEMENT LOCATION

Before beginning any work on the compressor, open, lock and tag the main electrical disconnect and close the isolation valve on the compressor discharge. Wait 2 minutes after stopping to allow internal pressure to dissipate. Vent residual pressure from the unit by slowly unscrewing the coolant fill plug one turn. Unscrewing the fill plug opens a vent hole, drilled in the plug, allowing the pressure to release to atmosphere (See Figure 4.3-1). A slight mist or oil droplets may be visible during venting. Do not remove fill plug until all pressure has vented from the unit. Also vent piping by slightly opening the drip leg valve. When opening the drain valve or removing the coolant fill plug, stand clear of the valve discharge, wear work gloves and appropriate eye protection.

Procedure:

1. Disconnect tank discharge fitting, inlet valve control tube, and scavenge tube.

2. Remove tank cover bolts and cover (See Figure 4.13-2).

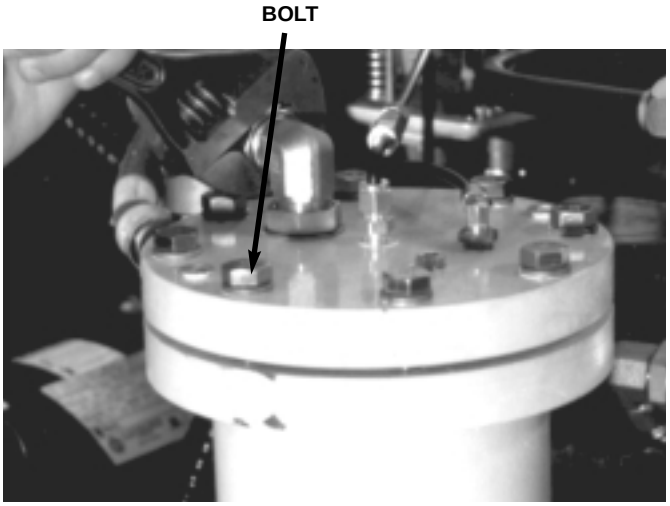


FIGURE 4.13-2 TANK COVER REMOVAL

3. Remove separator element.

4. Clean all tank flange surfaces of dirt and residual gasket material.

5.Install new separator element, making sure that the ground staple comes in contact with the flange material.

6. Replace cover and start the retaining bolts.

7. Torque bolts evenly to 80 ft.-lb (109 N-m).

8. Replace connections removed in step 1.

9. Start unit and check for leaks.

4.14 SEPARATOR TANK SCAVENGE CHECK VALVE/SCREEN/ORIFICE

TOOLS REQUIRED

Open end wrench
Screwdriver

PROCEDURE

Disconnect tubing at each end of check valve/screen/orfice assembly.

Check orifice and clean if required. Use suitable small screwdriver or knife and press screen retainer orifice from its mating fitting (See Figure 4.14-1). Be careful not to damage flared end of fitting or O-ring. Wash screen and housing in safety solvent and blow dry.

Press the check valve/screen/orifice into fitting block.

Assemble the check valve/screen/orifice assembly to the tubing lines. The fitting must be re-installed with the screen on the upstream side of the orifice as indicated by the flow arrow (See Figure 4.14-1).

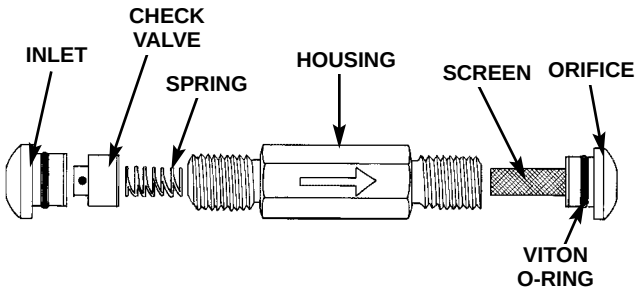


FIGURE 4.14-1 SEPARATOR TANK SCAVENGE CHECK VALVE/SCREEN/ORIFICE

4.15 COOLER CORES

INSPECTION

Visually check the cooler cores for build up of dirt, dust, lint or other foreign material.

Using an OSHA approved air gun, blow air through the cooler cores in the opposite direction of normal air flow.

Remove cooler box rear panel and clean all loose material that blew from the coolers into the fans.

Reinstall the cooler box outer panel.

Start unit and verify proper operation.

4.16 MOTOR BEARING MAINTENANCE-STORED UNITS

To ensure that complete contact is maintained between the motor bearings and the bearing grease on units to be placed in storage for extended intervals, the following motor maintenance procedure should be adhered to:

1. Prior to placing a unit in storage, rotate the motor several revolutions by hand in the proper direction of rotation.

2. Thereafter, rotate the motor as described in Step 1 at three month intervals until such time as the unit is placed in service.

3. The storage time should not exceed a total of nine (9) months duration.

5.0 TROUBLE SHOOTING

TROUBLE	CHECK POINT NUMBERS
Compressor Fails to Start	1,2,3
Repeat Shutdowns	3,4,5,2
High Amp Draw	8,9,6,7
Low Amp Draw	1,10,12
High Discharge Pressure	13,15,16,19
Low Air System Pressure	22, 20,17,18,13,15,14,19,7
Unit Running Hot	22,21,23,24,6
High Coolant Consumption	28,27,25,26
Excessive Noise Level	17,18,31,30,29
Shaft Seal Leak	32
Pressure Relief Valve Opens	6,13,15,14,16,19
Black Residue on Belt Guard/Cooler Box	17,33,34

CHECK POINT NUMBERS	TROUBLE CAUSE
1.	Control Voltage Not Available
2.	Defective Starter
3.	Motor Overload
4.	Incorrect Overload Size
5.	Line Voltage Variation
6.	Compressor Operating Above Rated Pressure
7.	Dirty Separator Filter Element
8.	Low Voltage
9.	Unbalanced Voltage
10.	Dirty Air Filter
11.	Compressor Operating Unloaded
12.	High Voltage
13.	Incorrect Pressure Switch Setting
14.	Faulty Minimum Pressure Valve
15.	Load Solenoid Valve Defective
16.	Blowdown Valve Defective
17.	Drive Belt Slipping
18.	Air System Leaks
19.	Inlet Valve Malfunction
20.	System Demand Exceeds Compressor Delivery
21.	Coolant Cooler Core Dirty
22.	Low Coolant Level
23.	High Ambient Temperature
24.	Restricted Cooling Air Flow
25.	Separator Filter Element Leak
26.	Plugged Separator Filter Drain
27.	Compressor Operating Below Rated Pressure
28.	Coolant System Leak
29.	Airend Defective
30.	Motor Defective
31	Loose Components
32	Worn or Defective Shaft Seal
33	Sheaves Misaligned
34	Worn Sheaves

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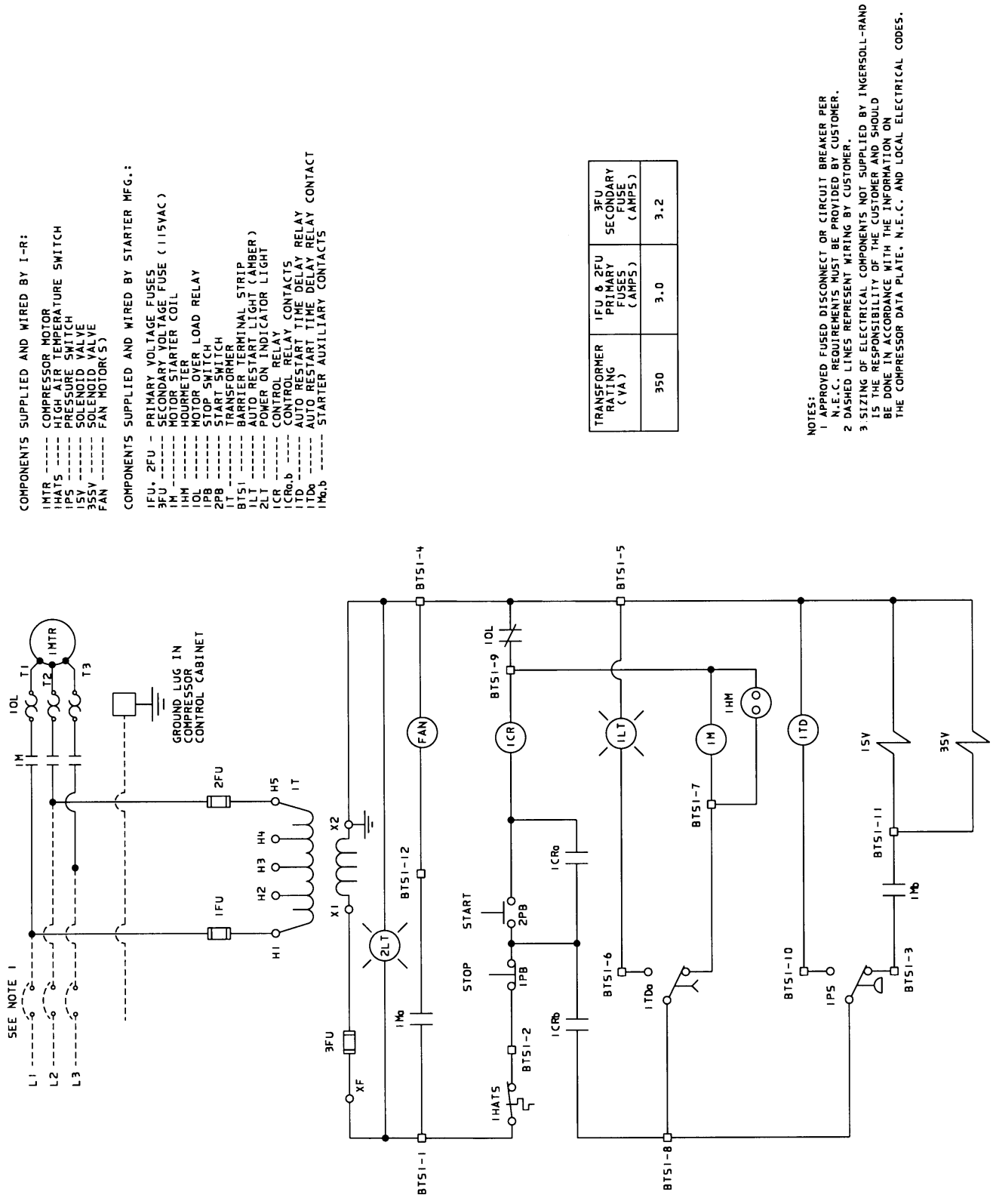
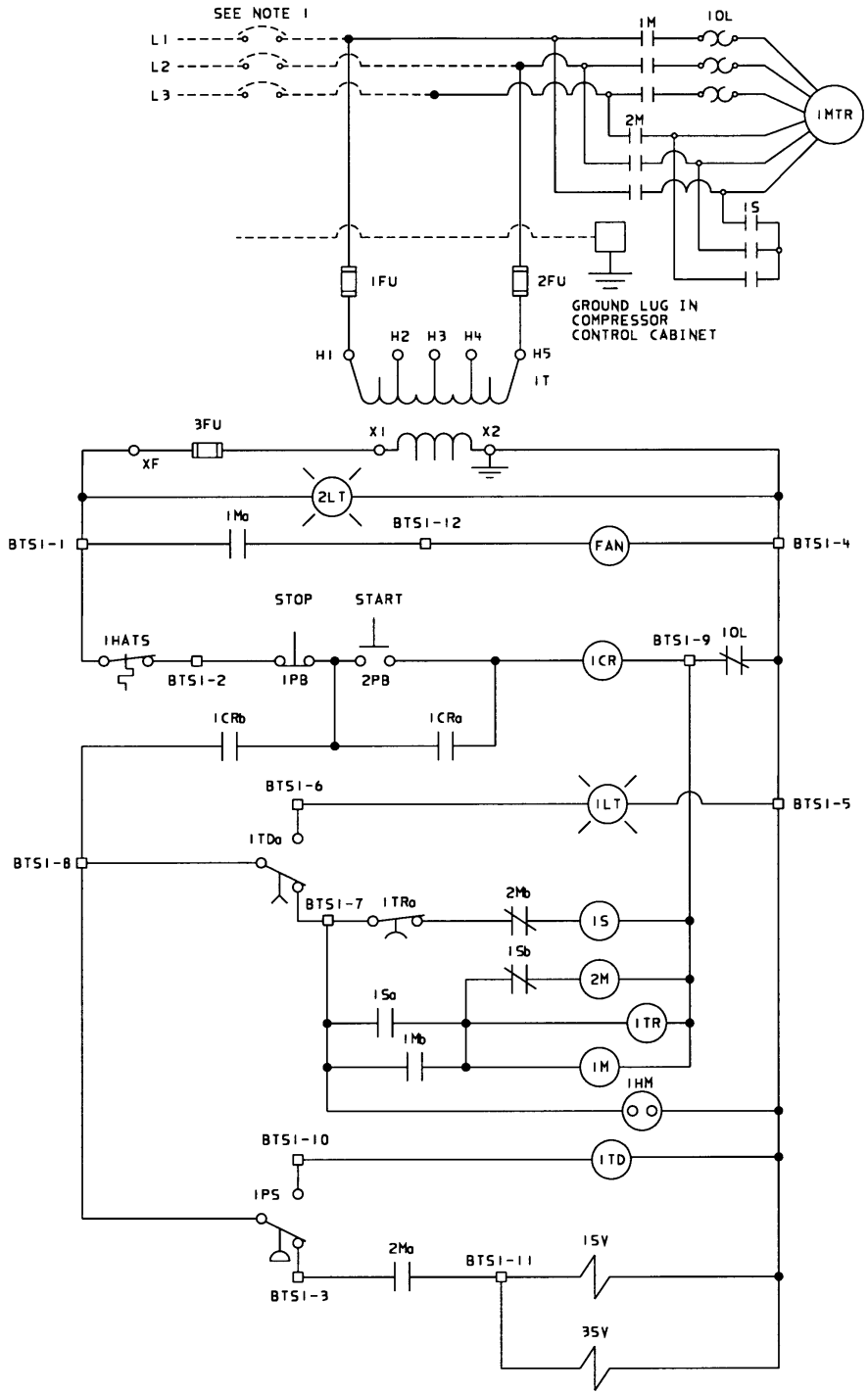
6.0 REFERENCE DRAWINGS



6.1 ELECTRICAL SCHEMATIC - FULL VOLTAGE

6.2 ELECTRICAL SCHEMATIC - STAR-DELTA



COMPONENTS SUPPLIED AND WIRED BY I-R:

1MTR ----- COMPRESSOR MOTOR
1HATS ---- HIGH AIR TEMPERATURE SWITCH
1PS ------ PRESSURE SWITCH
1SV ------ SOLENOID VALVE
3SV ------ SOLENOID VALVE
FAN ------ FAN MOTOR(S)

COMPONENTS SUPPLIED AND WIRED BY STARTER MFG.:

1FU, 2FU - PRIMARY VOLTAGE FUSES
3FU ------ SECONDARY VOLTAGE FUSE (115VAC)
1M ------- START-RUN CONTACTOR
1Ma,b ----- STARTER AUXILIARY CONTACT (1M CONTACTOR)
2M ------- RUN CONTACTOR
2Ma,b ----- STARTER AUXILIARY CONTACT (2M CONTACTOR)
1S ------- START CONTACTOR
1Sa,b ----- STARTER AUXILIARY CONTACT (1S CONTACTOR)
1HM ------ HOURMETER
1OL ------ MOTOR OVER LOAD RELAY
1PB ------ STOP SWITCH
2PB ------ START SWITCH
1T ------- TRANSFORMER
1TR ------ STAR DELTA TIMER
1TRa ----- STAR DELTA TIMER CONTACT
BTS1 ----- BARRIER TERMINAL STRIP
1LT ------ AUTO RESTART LIGHT (AMBER)
2LT ------ POWER ON INDICATOR LIGHT
1CR ------ CONTROL RELAY
1CRa,b ---- CONTROL RELAY CONTACTS
1TD ------ AUTO RESTART TIME DELAY RELAY
1TDa ----- AUTO RESTART TIME DELAY RELAY CONTACT

TRANSFORMER RATING (VA)	1FU & 2FU PRIMARY FUSES (AMPS)	3FU SECONDARY FUSE (AMPS)
350	3.0	3.2

NOTES:
1 APPROVED FUSED DISCONNECT OR CIRCUIT BREAKER PER N.E.C. REQUIREMENTS MUST BE PROVIDED BY CUSTOMER.
2 DASHED LINES REPRESENT WIRING BY CUSTOMER.
3 SIZING OF ELECTRICAL COMPONENTS NOT SUPPLIED BY INGERSOLL-RAND IS THE RESPONSIBILITY OF THE CUSTOMER AND SHOULD BE DONE IN ACCORDANCE WITH THE INFORMATION ON THE COMPRESSOR DATA PLATE, N.E.C. AND LOCAL ELECTRICAL CODES.

NOTES:

1. DECAL MUST CONFORM TO THE LATEST REVISION OF I-R SPECIFICATION 92-8.95

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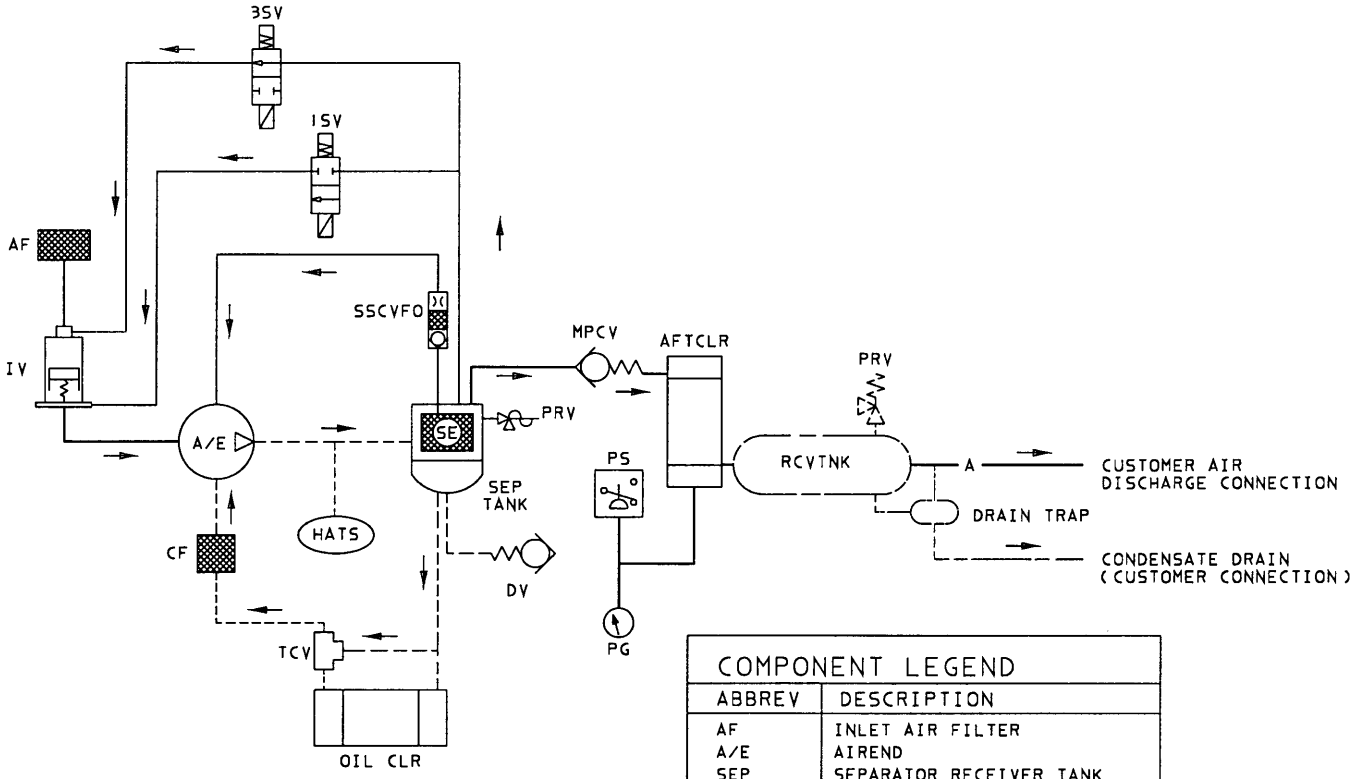

COMPONENT LEGEND	
ABBREV	DESCRIPTION
AF	INLET AIR FILTER
A/E	AIREND
SEP	SEPARATOR RECEIVER TANK
SE	SEPARATOR ELEMENT
RCVTNK	RECEIVER TANK
MPCV	MINIMUM PRESS CHECK VALVE
AFTCLR	AFTERCOOLER
CF	COOLANT FILTER
OIL CLR	COOLANT COOLER
CV	CHECK VALVE
TCV	THERMOSTATIC CONTROL VALVE
SSCVFO	SEPARATOR SCAVENGE CHECK VALVE/FILTER/ORIFICE
PRV	PRESS RELIEF VALVE
PG	PRESSURE GAUGE
PS	PRESSURE SWITCH
HATS	HIGH AIR TEMPERATURE SWITCH
1SV	UNLOAD SOLENOID VALVE
3SV	BLOWDOWN SOLENOID VALVE
IV	INLET VALVE
DRTRP	DRAIN TRAP
DV	DRAIN VALVE

PIPING LEGEND
——— CONTROL PIPING
——— AIR PIPING
------ COOLANT PIPING
——— OPTIONAL-RECIEVER TANK

NOTES:
1. FOR CUSTOMER CONNECTIONS SEE FOUNDATION PLAN OF UNIT.

6.3 PIPING DIAGRAM

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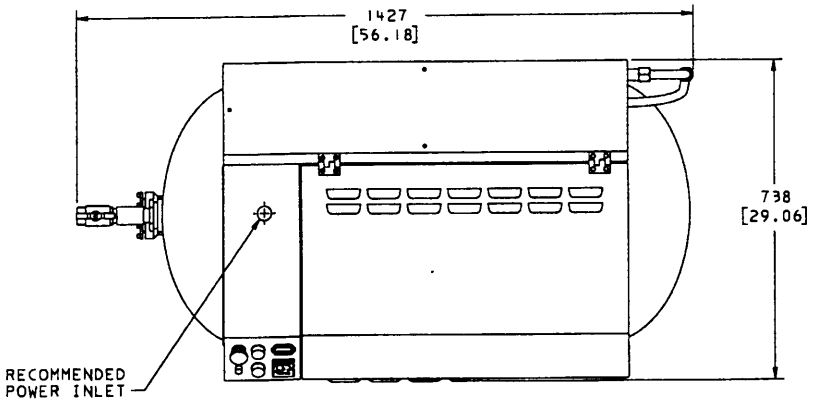
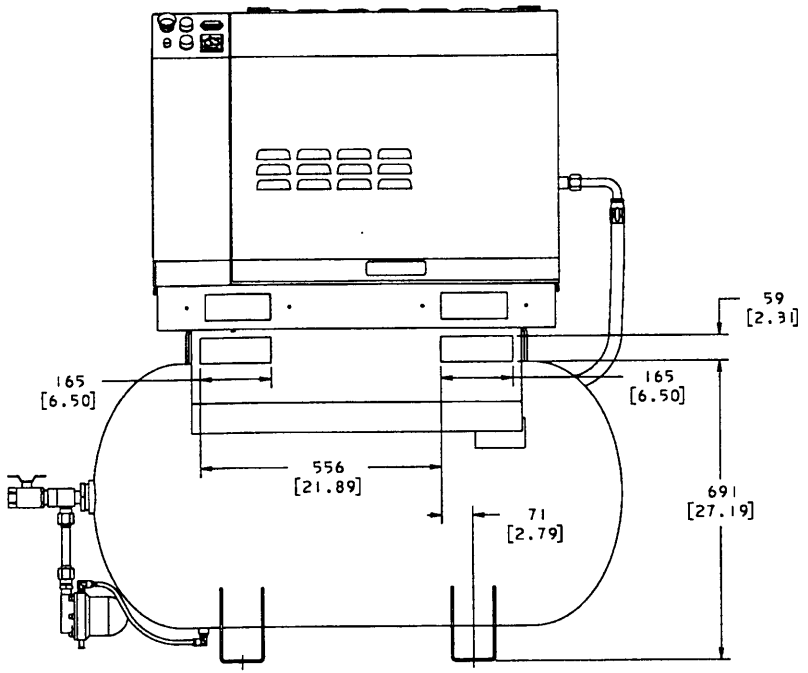


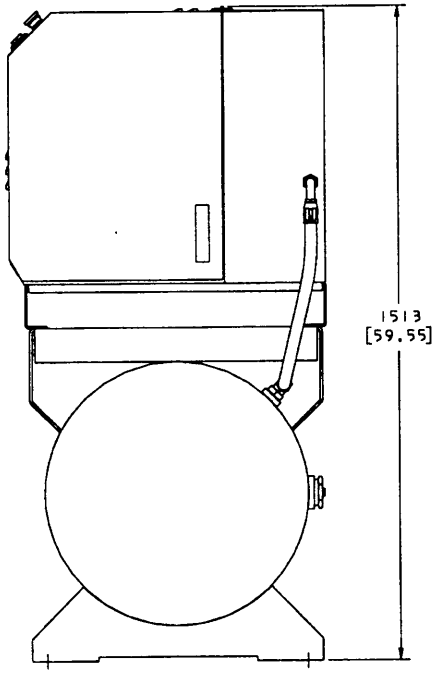
TOP VIEW

NOTES:

1. WEIGHT (APPROXIMATELY):
   7.5 HP - 421.8 KG (930 LBS)
   10 HP - 426.4 KG (940 LBS)
2. COOLANT-LUBRICANT FILL QUANTITY (APPROX.):
   5.75 L (1.5 GAL.)
3. TOLERANCE ON ALL DIMENSIONS = ±3MM (±.12 INCH)
4. ALL DIMENSIONS IN MILLIMETERS (INCH)
5. AIR FLOW:
   60 HZ: 0.85 M^3/SEC (1400 CFM)
   50 HZ: 0.71 M^3/SEC (1170 CFM)
6. RECOMMENDED CLEARANCE ON THREE SIDES 914 (36.00):
   1067 (42.00) IN FRONT OF CONTROL PANEL OR MINIMUM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODES OR APPLICABLE LOCAL CODES.
7. EXTERNAL PIPING SHALL NOT EXERT ANY UNRESOLVED MOMENTS OR FORCES ON THE UNIT.
8. THERE SHOULD BE NO PLASTIC PIPING ATTACHED TO THIS UNIT OR USED FOR ANY LINES DOWNSTREAM.



FRONT VIEW



RIGHT VIEW

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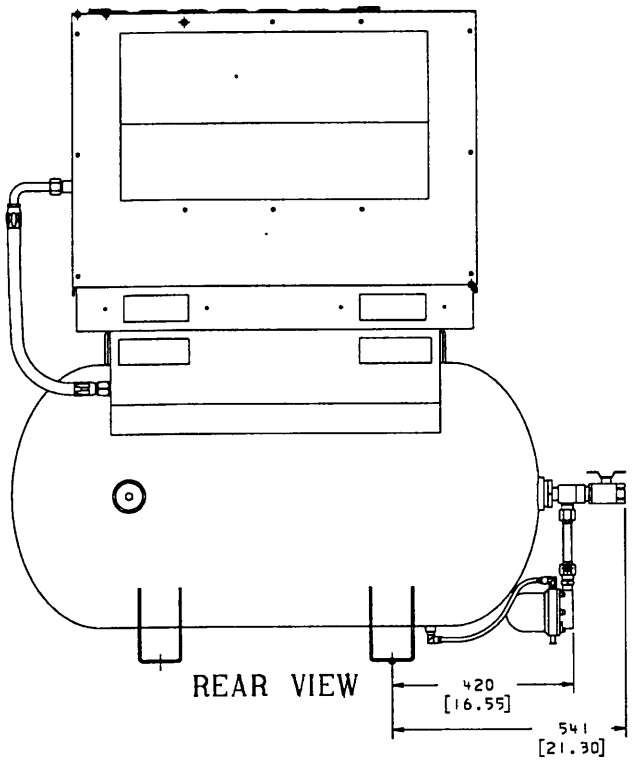

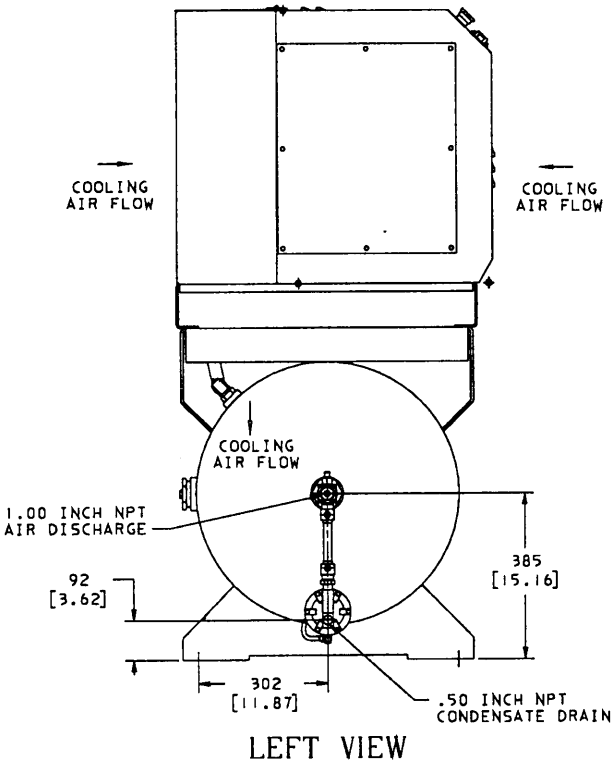

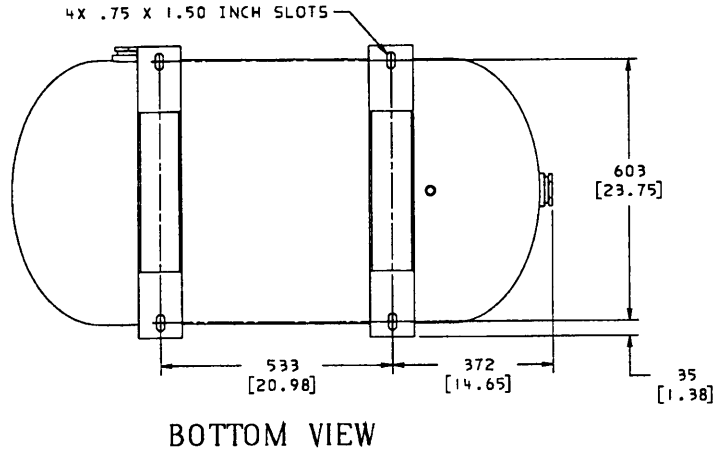

6.4 FOUNDATION PLAN - 80 GAL TANK MOUNTED - ENCLOSED

6.5 FOUNDATION PLAN - 80 GAL TANK MOUNTED - UNENCLOSED (CONTINUED)

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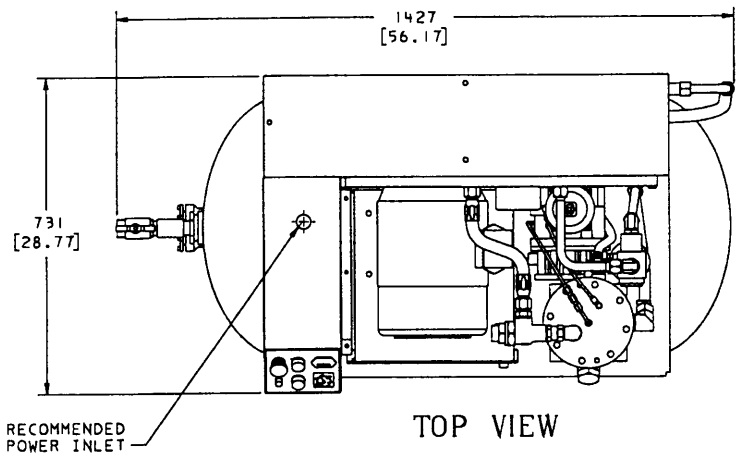
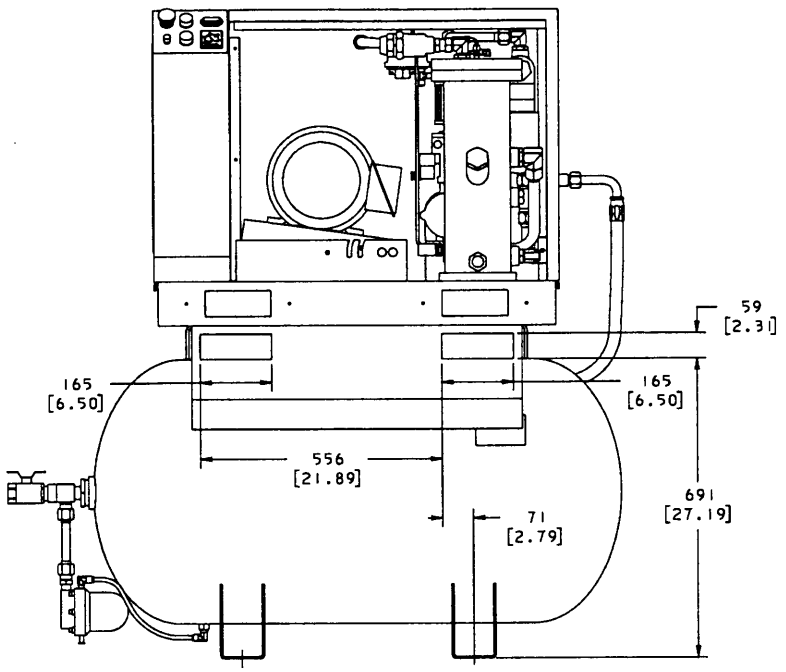


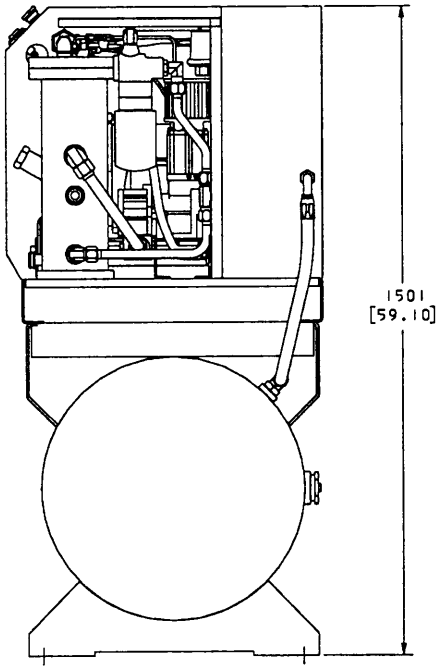
TOP VIEW



FRONT VIEW

NOTES:

1. WEIGHT (APPROXIMATELY):
   7.5 HP - 410.5 KG (905 LBS)
   10 HP - 415.1 KG (915 LBS)
2. COOLANT-LUBRICANT FILL QUANTITY (APPROX.):
   5.75 L (1.5 GAL.)
3. TOLERANCE ON ALL DIMENSIONS = ±3MM (±.12 INCH)
4. ALL DIMENSIONS IN MILLIMETERS (INCH)
5. AIR FLOW:
   60 HZ: 0.85 M^3/SEC (1400 CFM)
   50 HZ: 0.71 M^3/SEC (1170 CFM)
6. RECOMMENDED CLEARANCE ON ALL THREE SIDES 914 (36.00):
   1067 (42.00) IN FRONT OF CONTROL PANEL OR MINIMUM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODES OR APPLICABLE LOCAL CODES.
7. EXTERNAL PIPING SHALL NOT EXERT ANY UNRESOLVED MOMENTS OR FORCES ON THE UNIT.
8. THERE SHOULD BE NO PLASTIC PIPING ATTACHED TO THIS UNIT OR USED FOR ANY LINES DOWNSTREAM.



RIGHT VIEW

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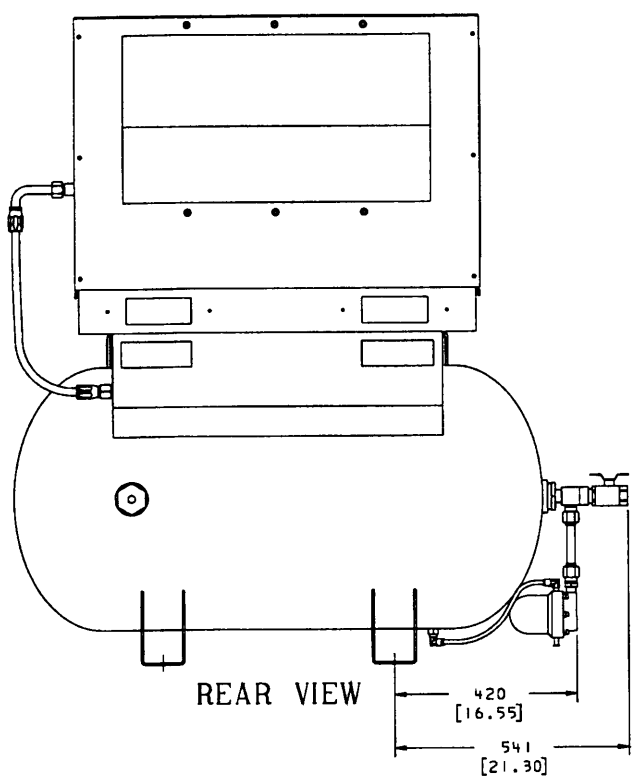

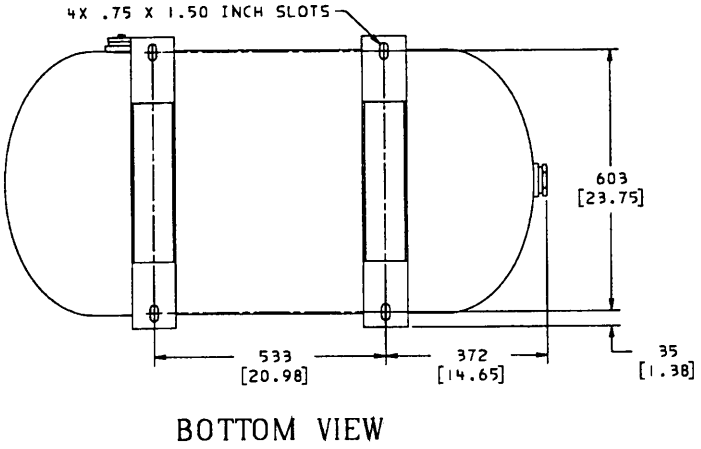

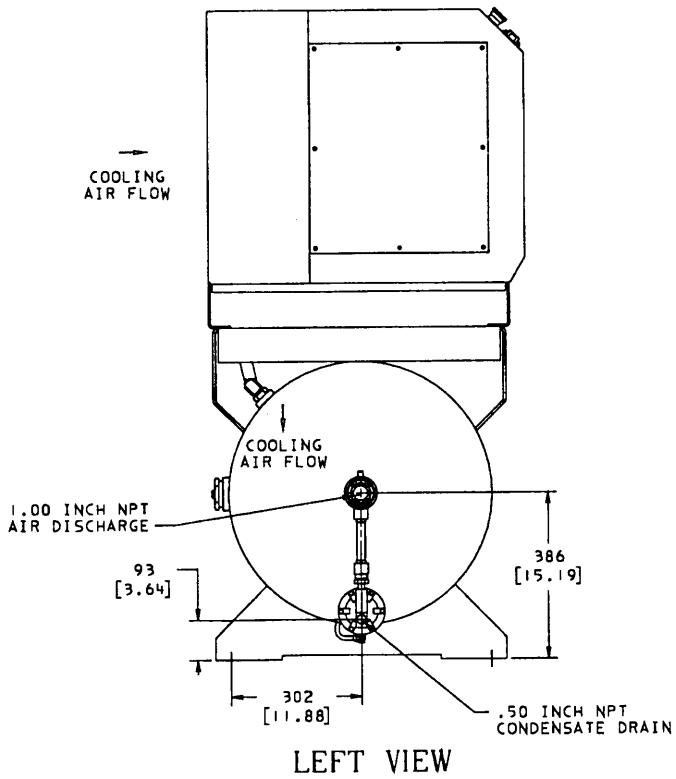

6.5 FOUNDATION PLAN - 80 GAL TANK MOUNTED - UNENCLOSED

6.6 FOUNDATION PLAN - 120 GAL TANK MOUNTED - ENCLOSED (CONTINUED)

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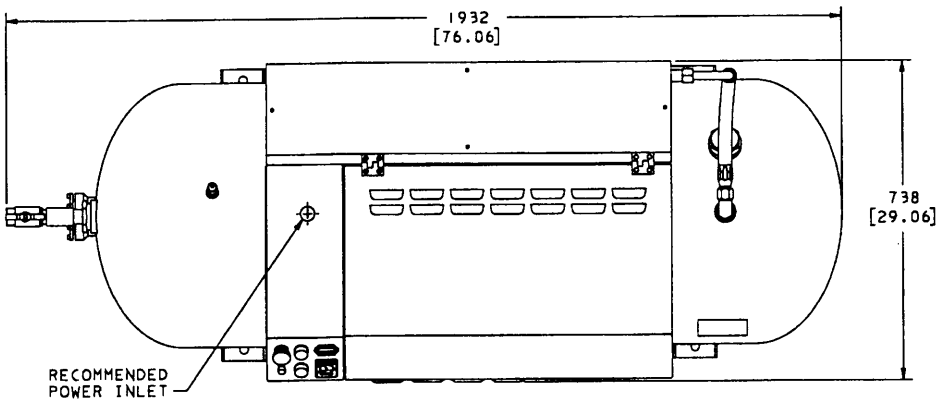
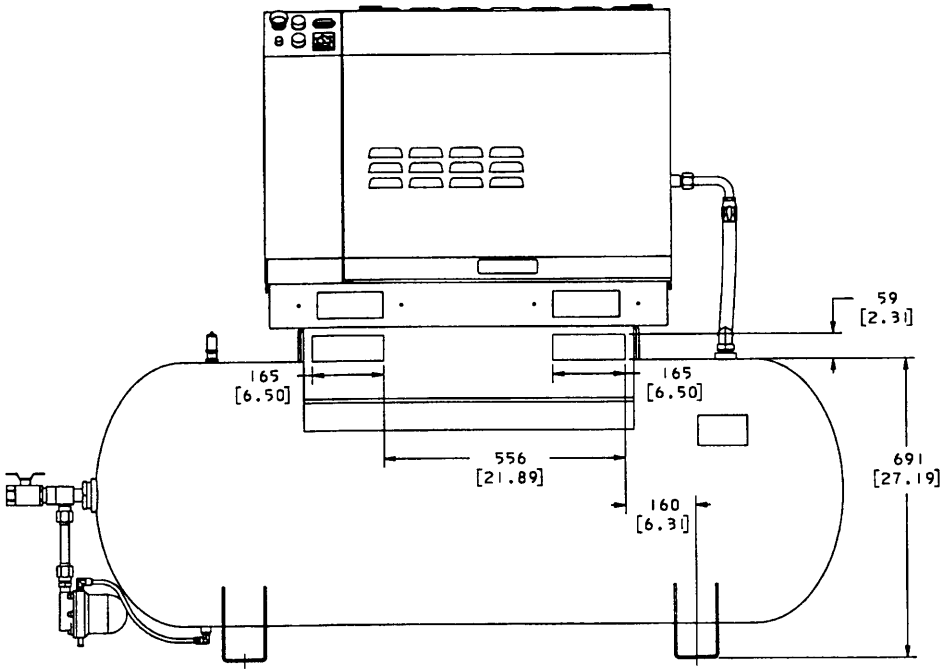


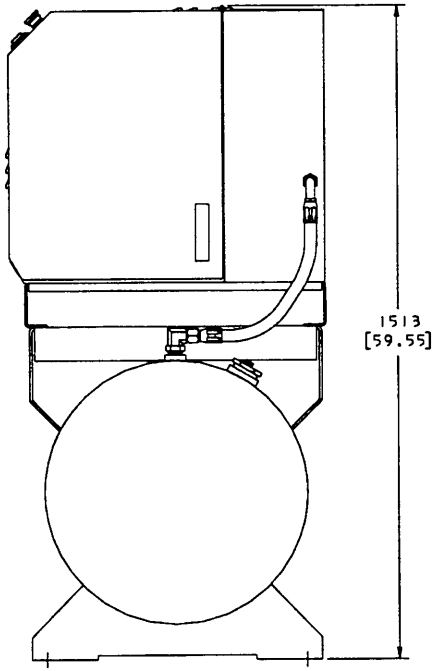
TOP VIEW

NOTES:

1. WEIGHT (APPROXIMATELY):
   7.5 HP - 467.2 KG (1030 LBS)
   10 HP - 471.7 KG (1040 LBS)
   15 HP - 476.3 KG (1050 LBS)
2. COOLANT-LUBRICANT FILL QUANTITY (APPROX.):
   5.75 L (1.5 GAL.)
3. TOLERANCE ON ALL DIMENSIONS = ±3MM (±.12 INCH)
4. ALL DIMENSIONS IN MILLIMETERS (INCH)
5. AIR FLOW:
   60 HZ: 0.85 M^3/SEC (1400 CFM)
   50 HZ: 0.71 M^3/SEC (1170 CFM)
6. RECOMMENDED CLEARANCE ON THREE SIDES 914 (36.00):
   1067 (42.00) IN FRONT OF CONTROL PANEL OR MINIMUM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODES OR APPLICABLE LOCAL CODES.
7. EXTERNAL PIPING SHALL NOT EXERT ANY UNRESOLVED MOMENTS OR FORCES ON THE UNIT.
8. THERE SHOULD BE NO PLASTIC PIPING ATTACHED TO THIS UNIT OR USED FOR ANY LINES DOWNSTREAM.



FRONT VIEW



RIGHT VIEW

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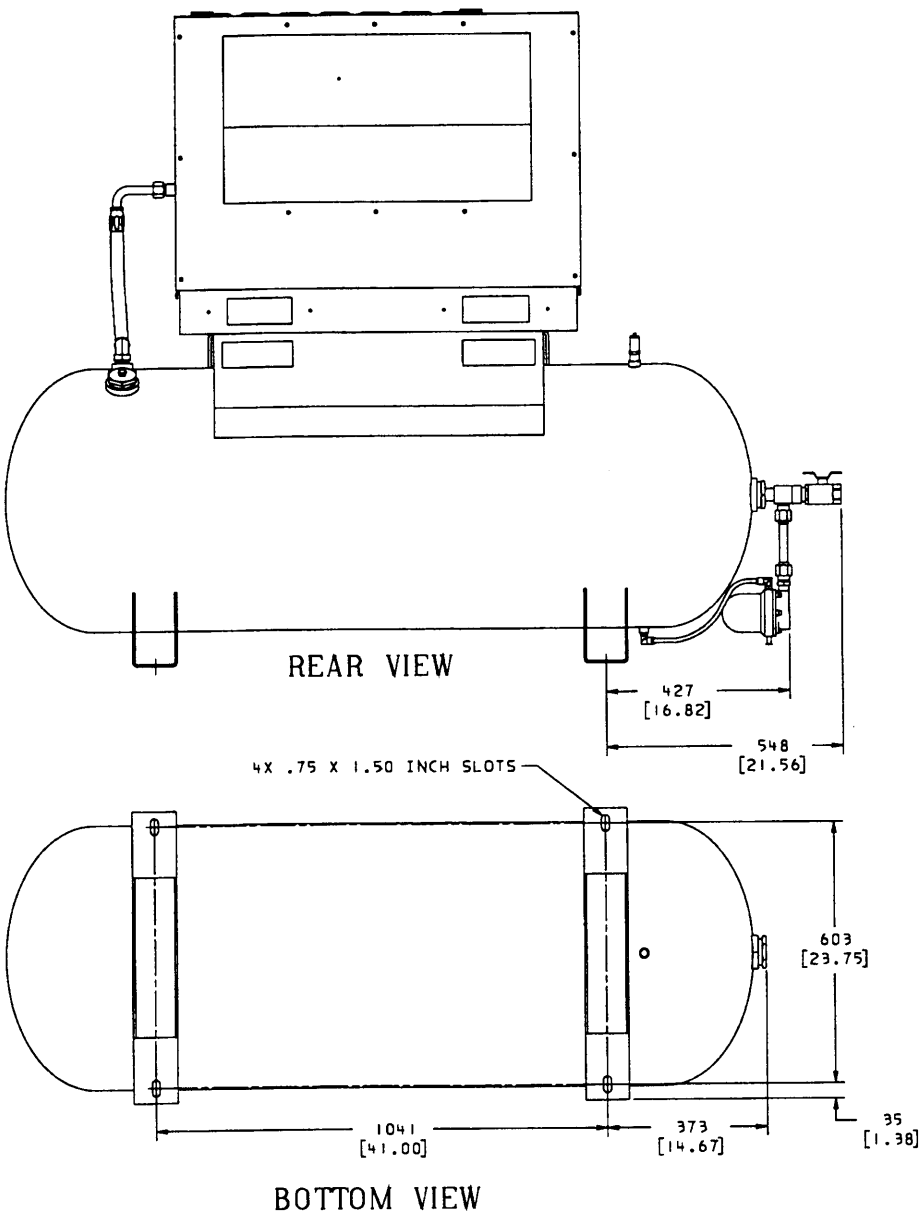

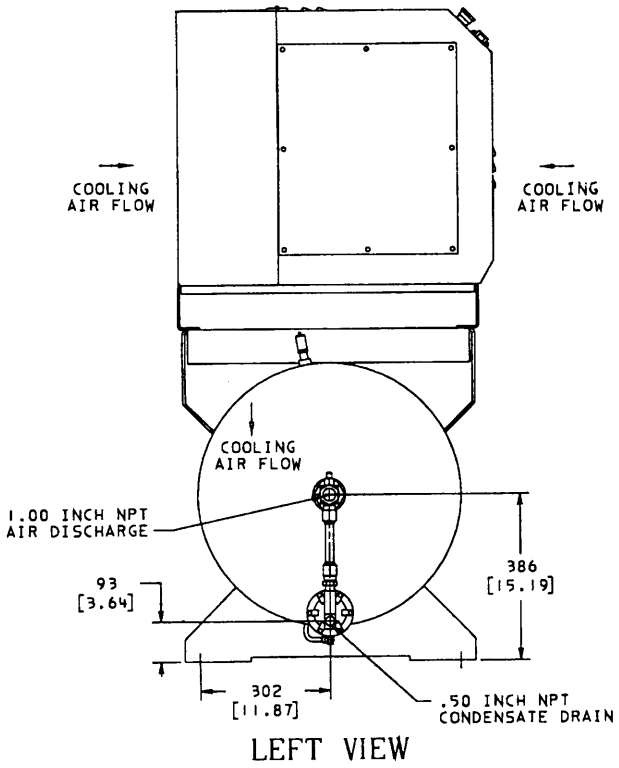

6.6 FOUNDATION PLAN - 120 GAL TANK MOUNTED - ENCLOSED

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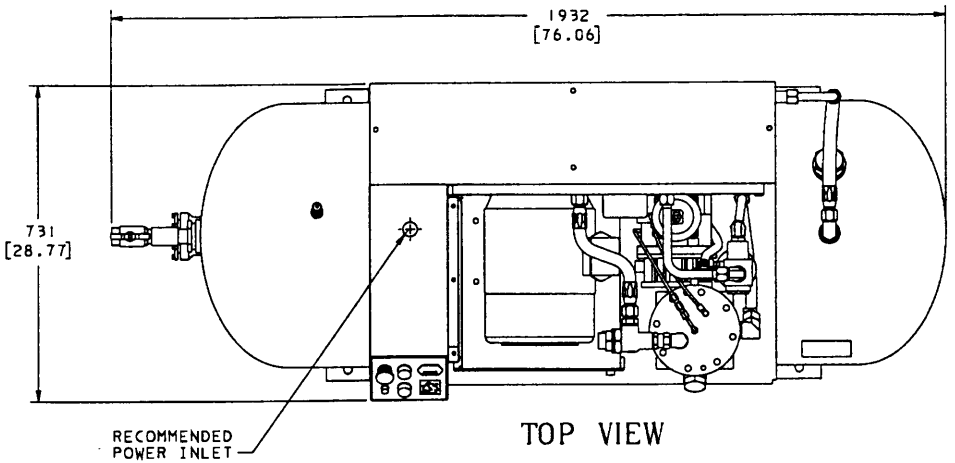
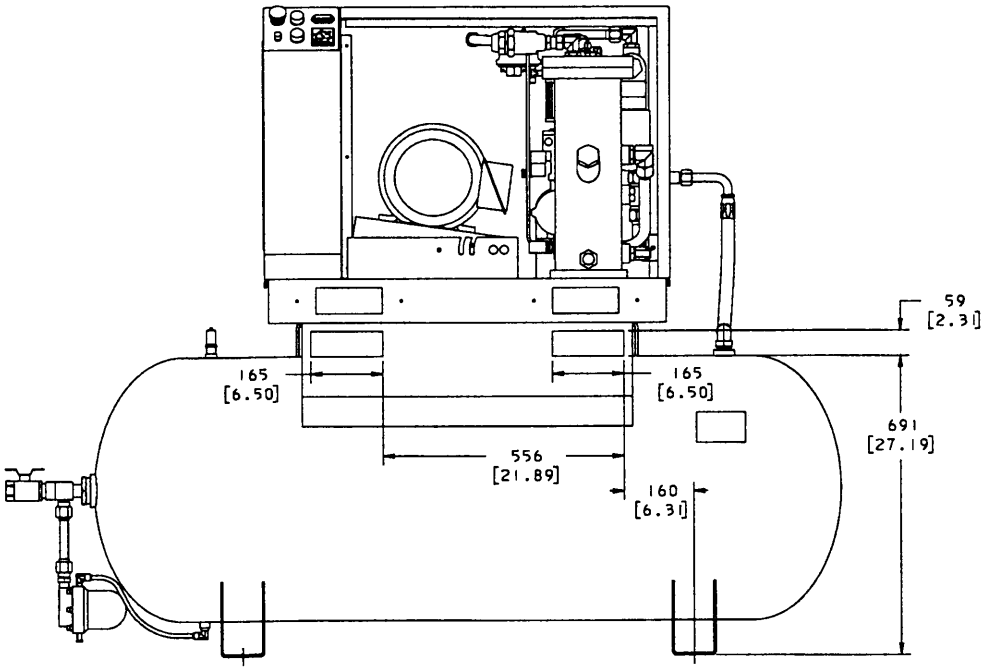


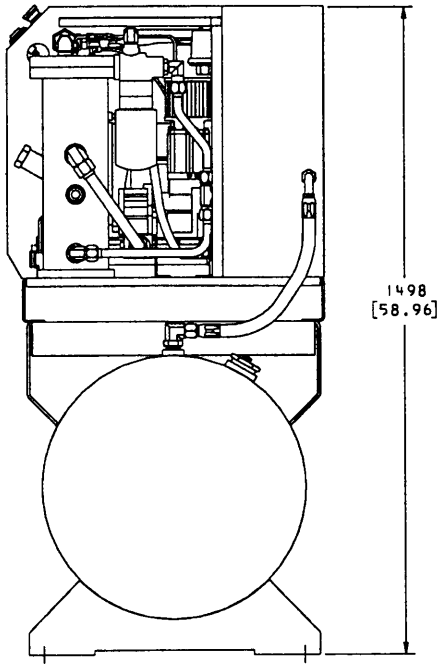
TOP VIEW

NOTES:

1. WEIGHT (APPROXIMATELY):
   7.5 HP - 455.9 KG (1005 LBS)
   10 HP - 460.4 KG (1015 LBS)
   15 HP - 464.9 KG (1025 LBS)
2. COOLANT-LUBRICANT FILL QUANTITY (APPROX.):
   5.75 L (1.5 GAL.)
3. TOLERANCE ON ALL DIMENSIONS = ±3MM (±.12 INCH)
4. ALL DIMENSIONS IN MILLIMETERS (INCH)
5. AIR FLOW:
   60 HZ: 0.85 M^3/SEC (1400 CFM)
   50 HZ: 0.71 M^3/SEC (1170 CFM)
6. RECOMMENDED CLEARANCE ON ALL THREE SIDES 914 (36.00): 1067 (42.00) IN FRONT OF CONTROL PANEL OR MINIMUM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODES OR APPLICABLE LOCAL CODES.
7. EXTERNAL PIPING SHALL NOT EXERT ANY UNRESOLVED MOMENTS OR FORCES ON THE UNIT.
8. THERE SHOULD BE NO PLASTIC PIPING ATTACHED TO THIS UNIT OR USED FOR ANY LINES DOWNSTREAM.

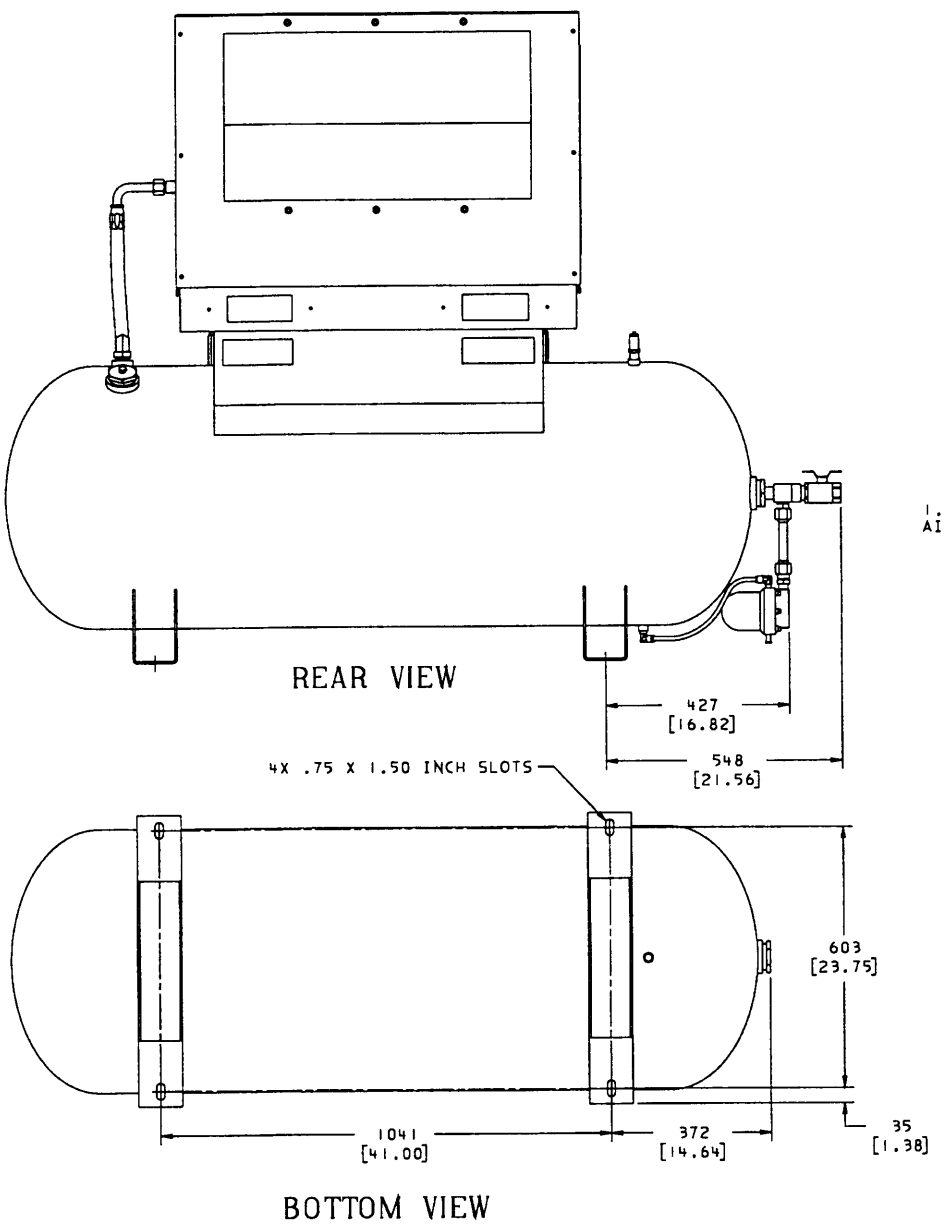


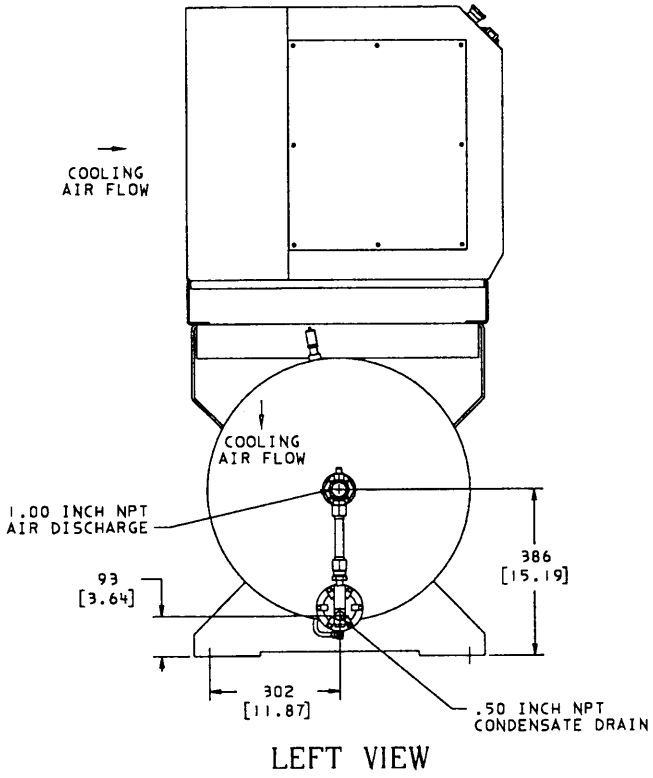
FRONT VIEW



RIGHT VIEW

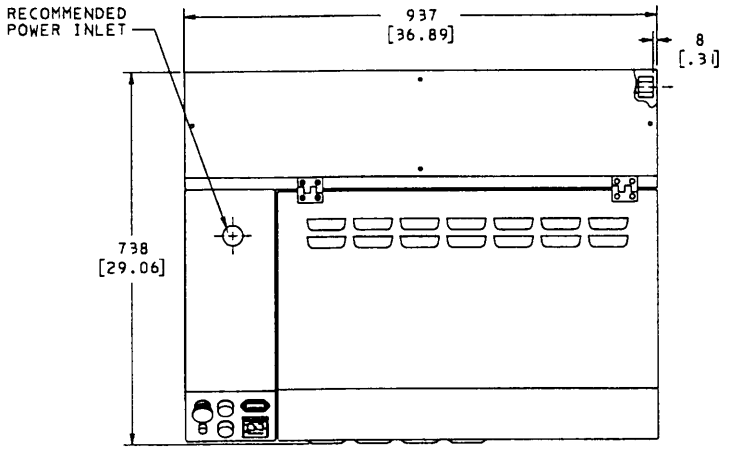
39906292
REV 01





6.8 FOUNDATION PLAN - BASE MOUNTED - ENCLOSED (CONTINUED)

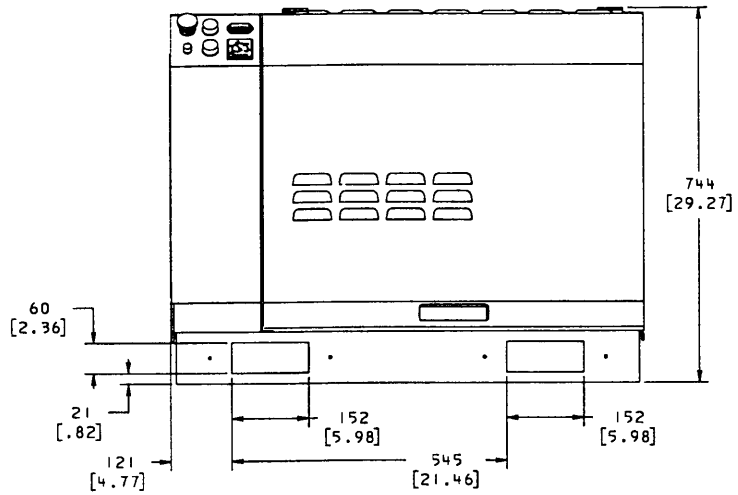
39902562
REV 01



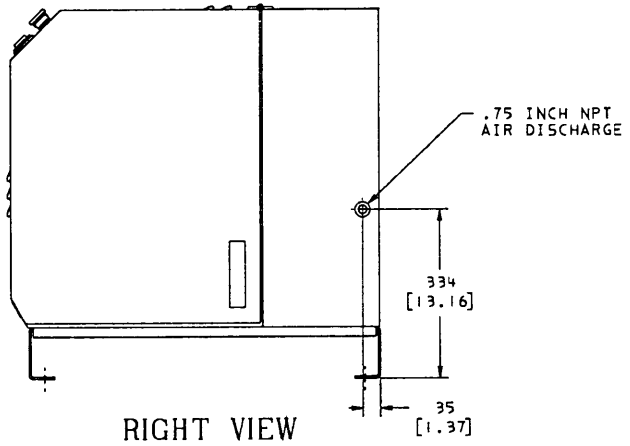
TOP VIEW

NOTES:

1. WEIGHT (APPROXIMATELY):
   7.5 HP - 286 KG (630 LBS)
   10 HP - 290 KG (640 LBS)
   15 HP - 295 KG (650 LBS)
2. COOLANT-LUBRICANT FILL QUANTITY (APPROX.):
   5.75 L (1.5 GAL.)
3. TOLERANCE ON ALL DIMENSIONS = ±3MM (±.12 INCH)
4. ALL DIMENSIONS IN MILLIMETERS (INCH)
5. AIR FLOW:
   60 HZ: 0.85 M^3/SEC (1400 CFM)
   50 HZ: 0.71 M^3/SEC (1170 CFM)
6. RECOMMENDED CLEARANCE ON THREE SIDES 914 (36.00):
   1067 (42.00) IN FRONT OF CONTROL PANEL OR MINIMUM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODES OR APPLICABLE LOCAL CODES.
7. EXTERNAL PIPING SHALL NOT EXERT ANY UNRESOLVED MOMENTS OR FORCES ON THE UNIT.
8. THERE SHOULD BE NO PLASTIC PIPING ATTACHED TO THIS UNIT OR USED FOR ANY LINES DOWNSTREAM.

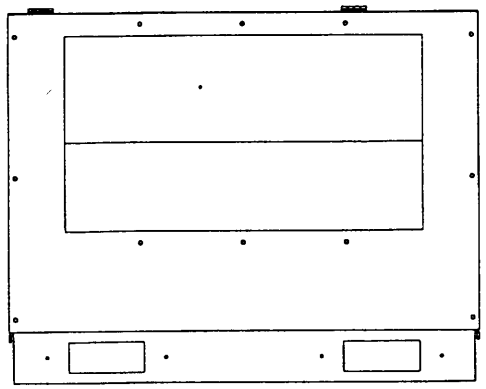


FRONT VIEW

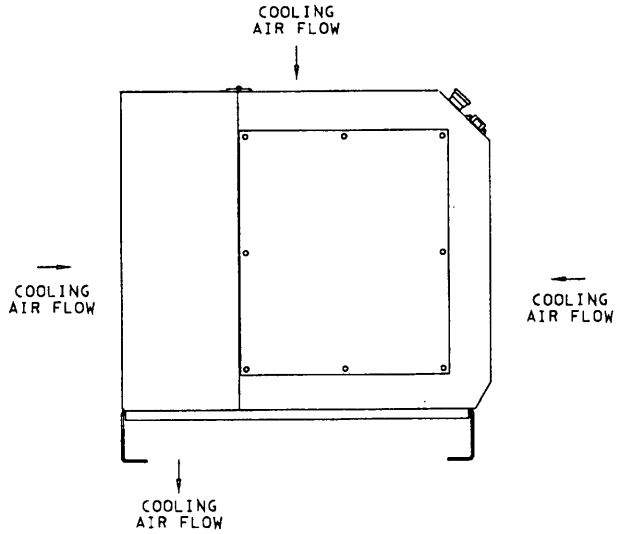


RIGHT VIEW

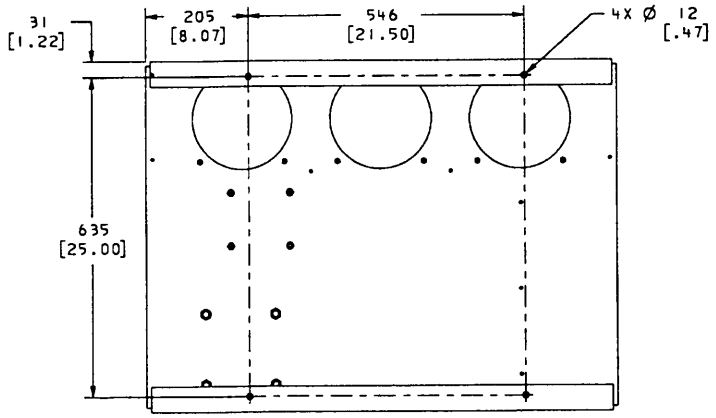
39902562
REV 01



REAR VIEW

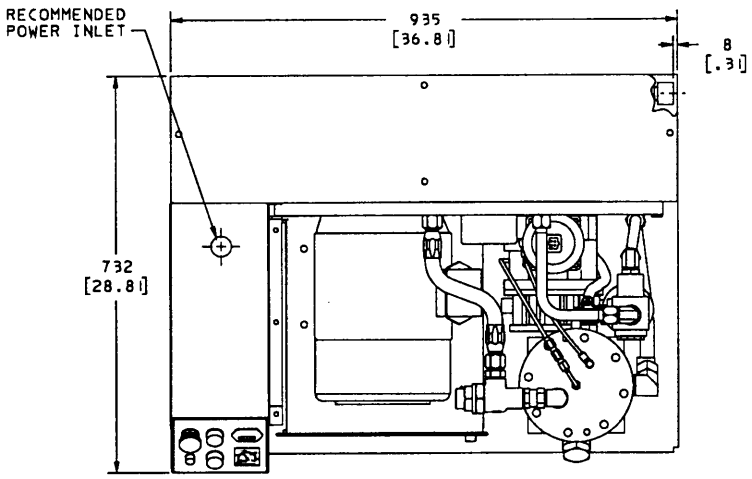


LEFT VIEW



BOTTOM VIEW

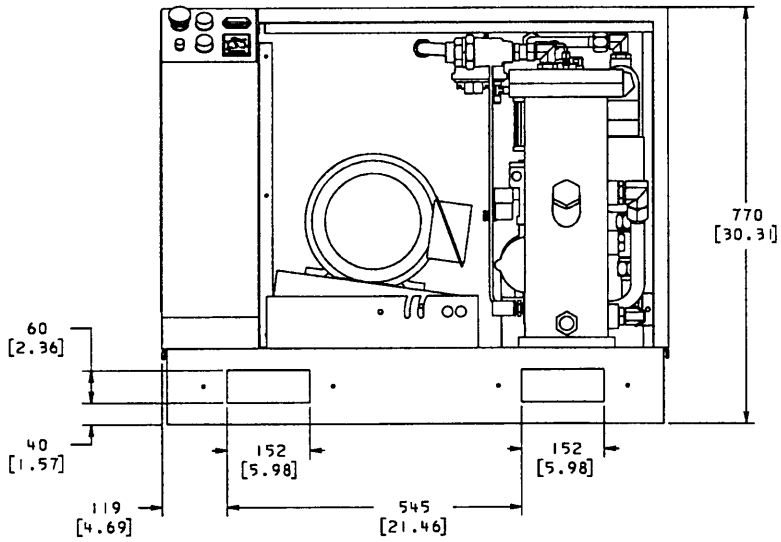
39907233
REV 01



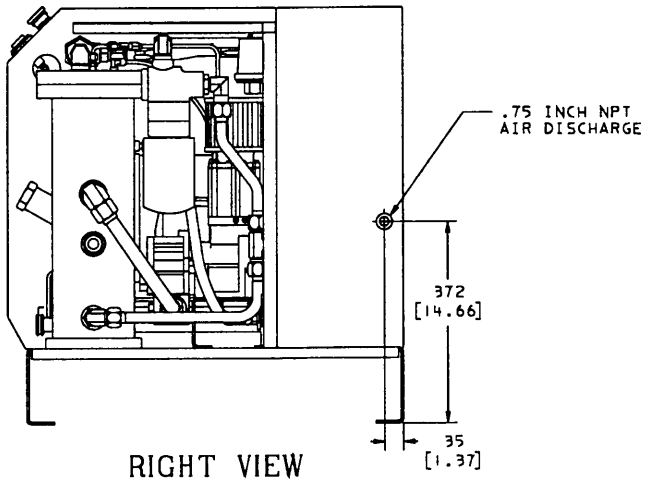
TOP VIEW

NOTES:

1. WEIGHT (APPROXIMATELY):
   7.5 HP - 274 KG (605 LBS)
   10 HP - 279 KG (615 LBS)
   15 HP - 284 KG (625 LBS)
2. COOLANT-LUBRICANT FILL QUANTITY (APPROX.):
   5.75 L (1.5 GAL.)
3. TOLERANCE ON ALL DIMENSIONS = ±3MM (±.12 INCH)
4. ALL DIMENSIONS IN MILLIMETERS (INCH)
5. AIR FLOW:
   60 HZ: 0.85 M^3/SEC (1400 CFM)
   50 HZ: 0.71 M^3/SEC (1170 CFM)
6. RECOMMENDED CLEARANCE ON ALL THREE SIDES 914 (36.00): 1067 (42.00) IN FRONT OF CONTROL PANEL OR MINIMUM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODES OR APPLICABLE LOCAL CODES.
7. EXTERNAL PIPING SHALL NOT EXERT ANY UNRESOLVED MOMENTS OR FORCES ON THE UNIT.
8. THERE SHOULD BE NO PLASTIC PIPING ATTACHED TO THIS UNIT OR USED FOR ANY LINES DOWNSTREAM.

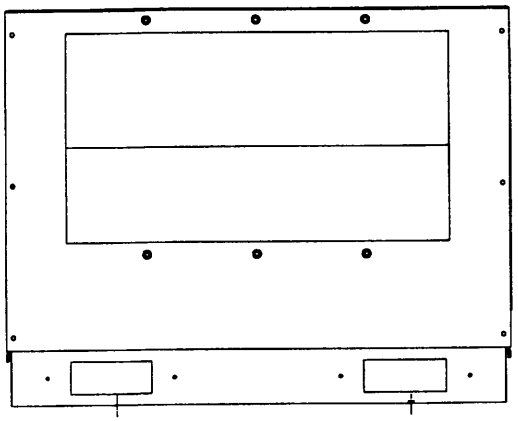


FRONT VIEW

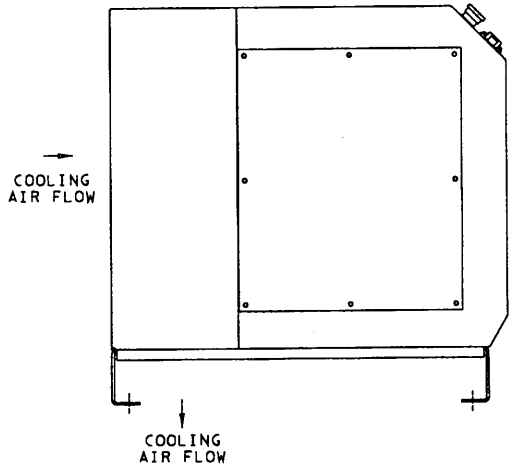


RIGHT VIEW

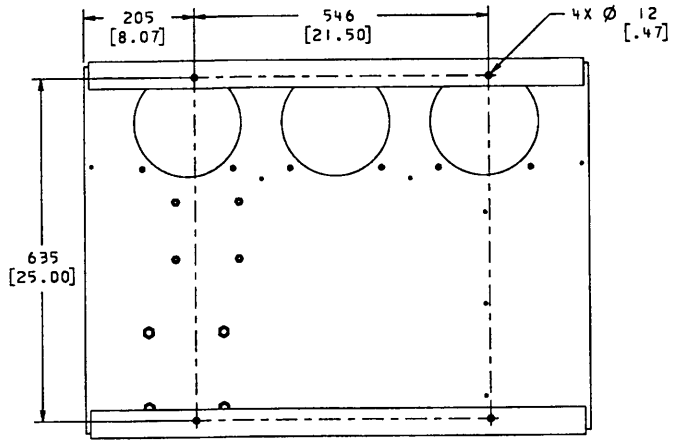
39907233
REV 01



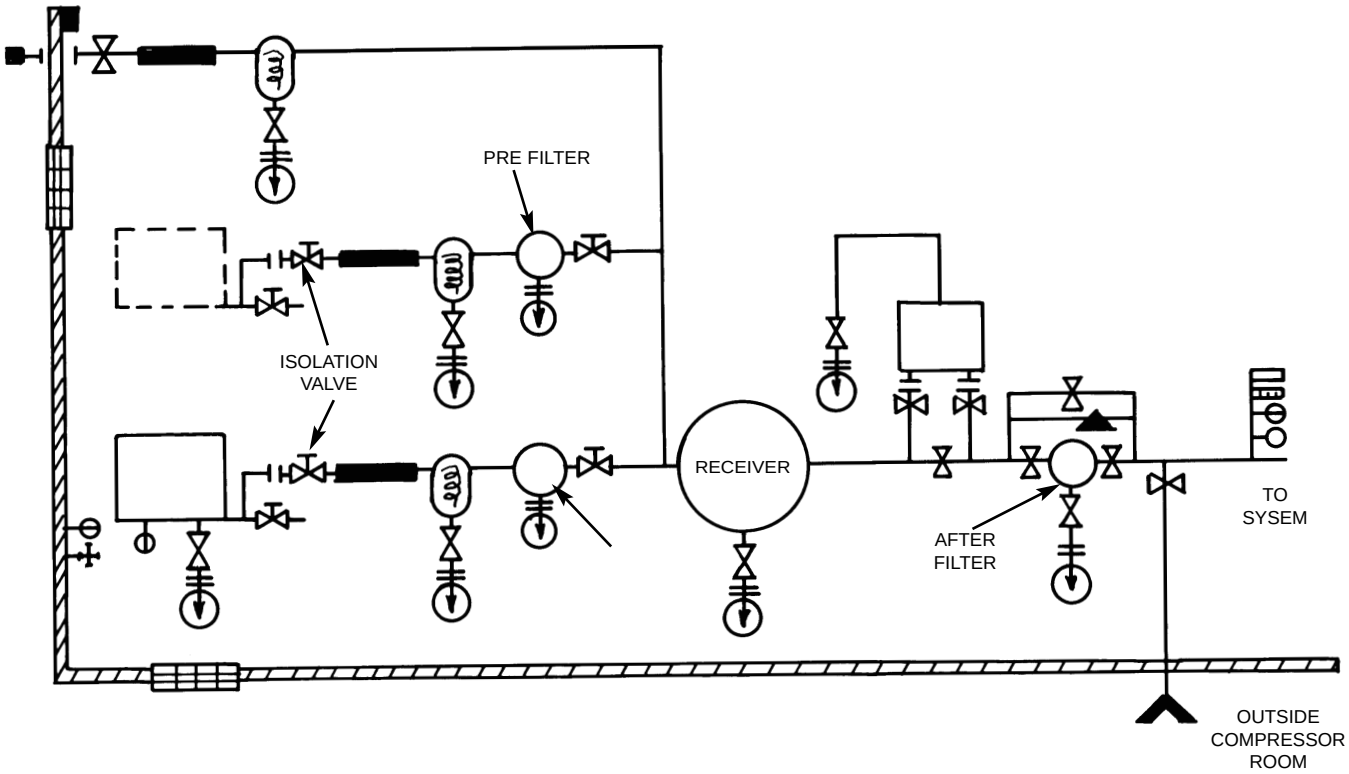
REAR VIEW



LEFT VIEW



BOTTOM VIEW



	GLADHAND	Emergency Standby Air Hook Up. Complete with Necessary Fitting For Portable or IR Rental Air Unit From Local IR Distributor
	VALVE	Water, Or Ball Type Valve
	UNION	Aids in Disconnecting Compressor From The System
	PRESSURE GAUGE	
	THERMOMETER	
	DRIP LEG	
	MANOMETER	
	DIFFERENTIAL PRESSURE INDICATOR	
	I-R AUTOMATIC DRAIN VALVE	
	FALSE LOADER	Blows Off Air Outside Of Compressor Room
	SYSTEM INSTRUMENTATION INCLUDES Nephelometer; Hygrometer; Pressure; Temperature	
	VENTILATION	Moisture Louvers, Exhaust Fans
	AFTERCOOLER/SEPARATOR, ISOLATION VALVE, UNION, STRAINER AND TRAP	

6.10 TYPICAL SYSTEM FLOW DIAGRAM (TWO BASE PLATE MOUNTED UNITS)

7.0 PARTS LIST

7.1 INTRODUCTION

GENERAL

This manual, which contains an illustrated parts breakdown, has been prepared as an aid in identifying and ordering parts for the SSR compressor. All of the compressor parts, listed in the parts breakdown, are manufactured with the same precision as the original equipment.

Ingersoll-Rand Company service facilities and parts are available worldwide. There are Ingersoll-Rand Company Branch Offices and authorized distributors located in the principle cities of the United States. In Canada, our customers are serviced by the Canadian Ingersoll-Rand Company, Limited. There are also Ingersoll-Rand Company subsidiaries and authorized distributors located in the principle cities throughout the world.

DESCRIPTION

The illustrated parts breakdown illustrates the various assemblies, sub-assemblies and detailed parts which make up this particular SSR compressor. A series of illustrations show each part clearly and in it's correct location relative to the other parts in the illustration. Each part of an illustration is referenced with a number. The number, description and quantity needed per assembly are listed in numerical order on the following pages.

Items with a description of NSS are not sold separately and must be purchased as an assembly. Items with a description of Ref. indicate that the item is located elsewhere in the parts list.

HOW TO USE THIS PARTS MANUAL

1. Turn to the Parts Section to locate desired illustrations.

2. Locate the part on the illustration by visual identification and the reference number.

3. Find the reference number on the Tabulated page, along with the Part Number and Description.

SERIAL NUMBER BREAK

When a part is changed and it doesn't supersede the previous part, this change must be documented by a serial number break. By using the last six (6) digits of the serial number, as outlined below, this change is recorded in the parts list.

→≫ U97202 indicates part is used on units up to and including serial number ending in U97202.

U97203 →≫ indicates part is used on units with serial number ending in U97203 or higher.

HOW TO ORDER PARTS

In order that all avoidable errors be eliminated when ordering parts, please specify the following:

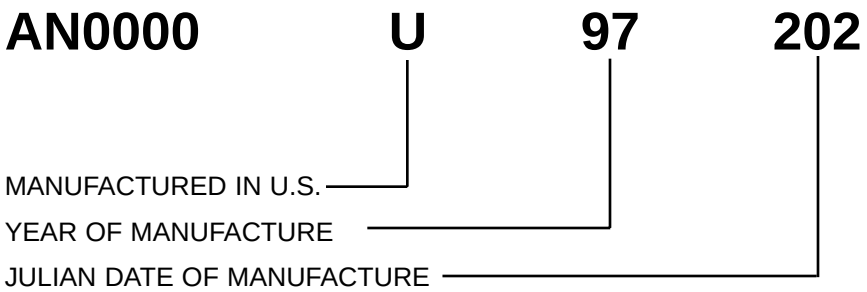
1. The model number of the unit as shown on the Compressor Data Plate.

2. The serial number of the unit as shown on the Compressor Data Plate.

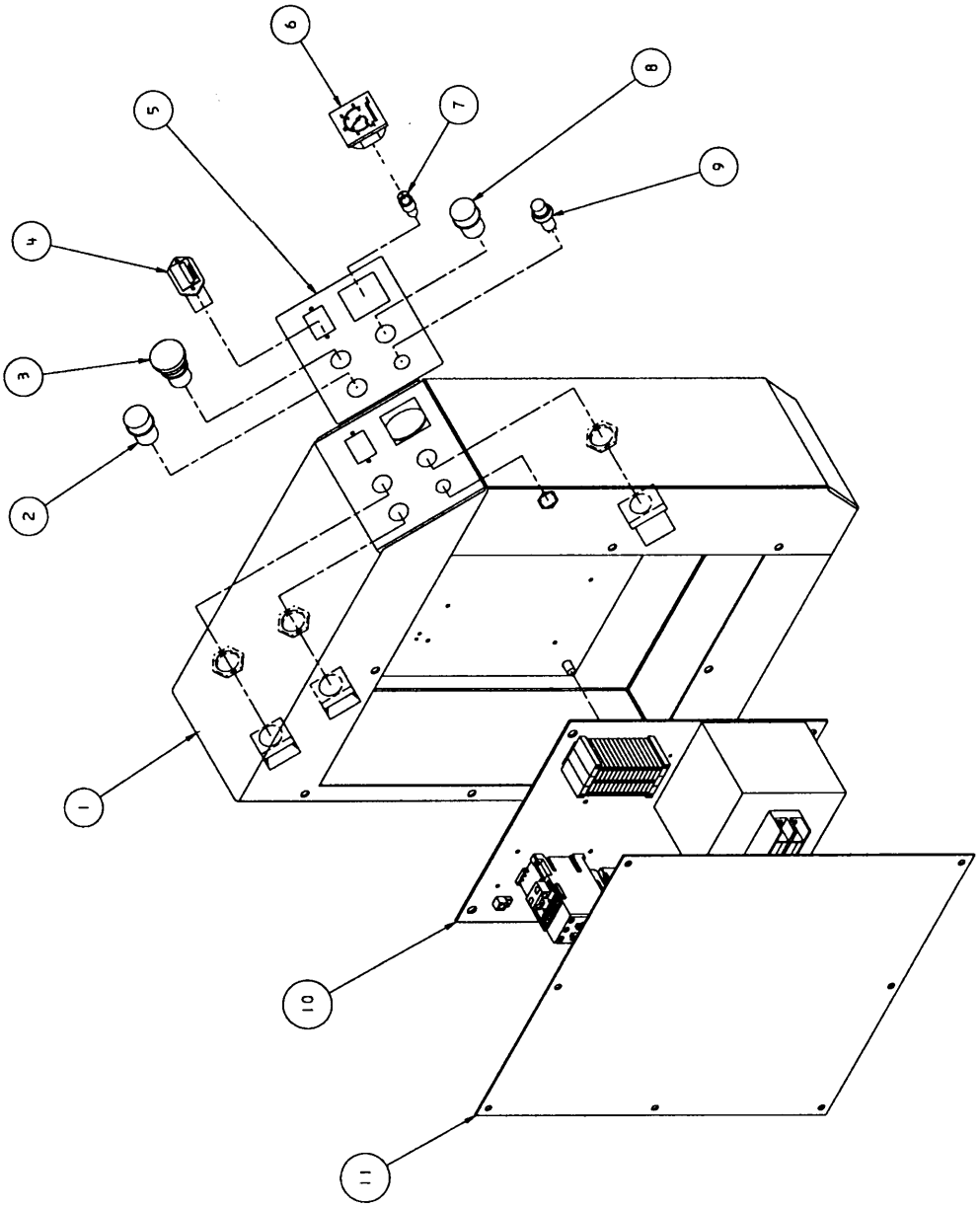
3. The form number of this manual.

4. The reference number, part number, description and quantity needed exactly as listed.

5. The motor data code shown on the motor data plate.



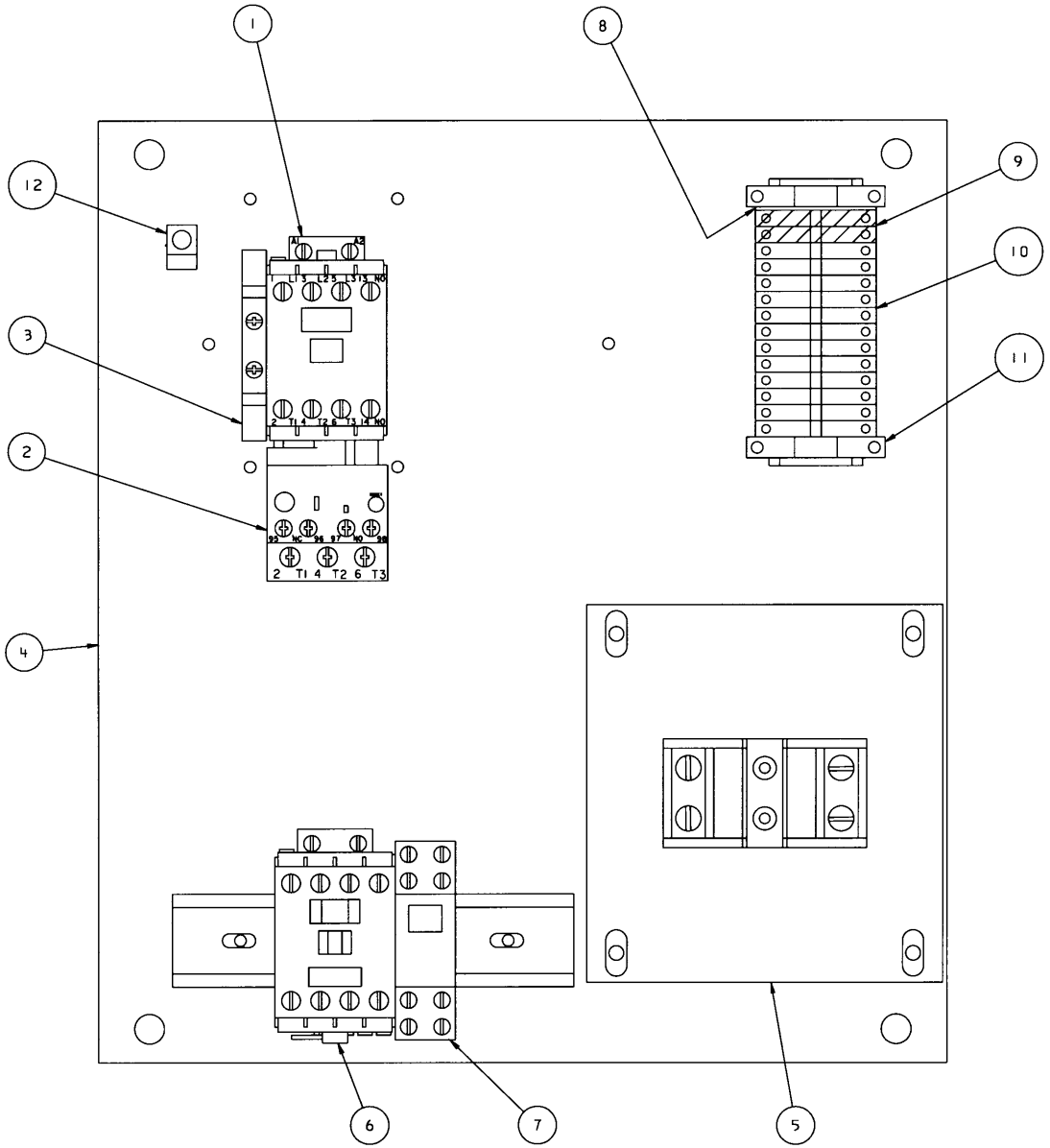
39906524
REV 01



Starter Box Assembly

Ref. No.	Part Number	Qty.	Description
1	39905997	1	Box, Starter NEMA 1
	39899521	1	Box, Starter NEMA 4
1A	39249875	90”	Gasket NEMA 4
2	39255609	1	Button, Starter Push
3	39255625	1	Button, Stop Push/Pull
4	39226618	1	Hourmeter
	39237086	1	Gasket, Hourmeter - NEMA 4
4A	39117767	2	Screw
5	39903406	1	Decal, Control Panel
6	39499256	1	Gauge, Pressure
7	39155460	1	Elbow
8	39255662	1	Light, Amber Indicator
9	39243985	1	Light, Power On Indicator
10	xxxxxxxx	1	Panel, Starter
10A	39128566	4	Nut
11	39899844	1	Door, Starter Box
11A	39133152	6	Screw

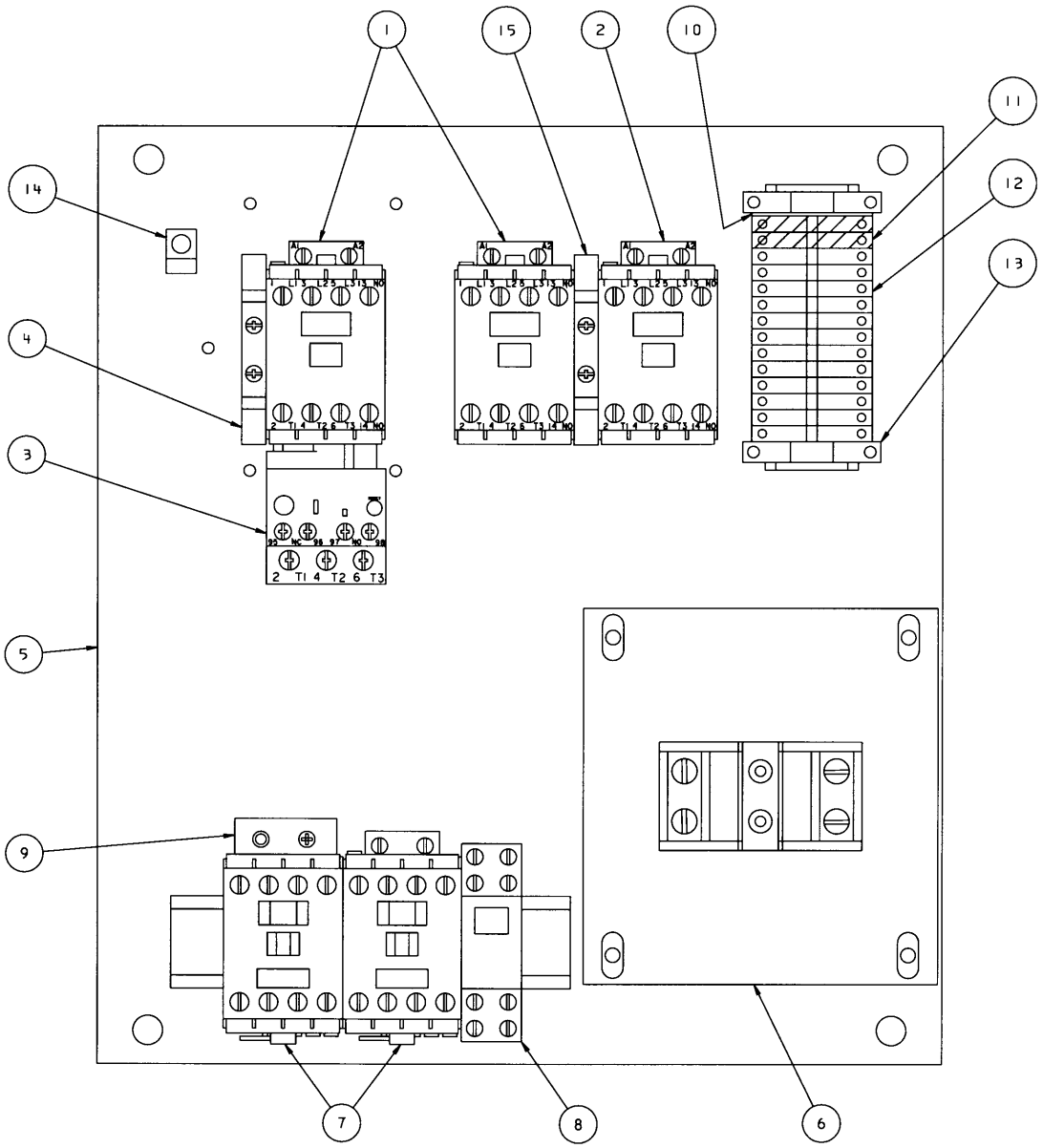
39905773
REV 01



Starter Assembly - Full Voltage

Ref. No.	Part Number	Qty.	Description
1	39255518	1	Contactor, C16
	39252010	1	Contactor, C30
	39250998	1	Contactor, C43
	39251004	1	Contactor, C60
2	39255591	1	Relay, Overload EA5GB
	39255542	1	Relay, Overload EA5FB
	39255542	1	Relay, Overload EA5HC
	39251079	1	Relay, Overload EA5JD
	39251087	1	Relay, Overload EA5KE
3	39255492	1	Contact, Aux. 2 N.O.
4	39900618	1	Backpanel, Starter
5	39233408	1	Transformer, 350 VA
6	39255559	1	Relay, Control
7	39255567	1	Relay, Timer AS/S
8	39256102	1	Barrier, End
9	39256110	2	Block, Ground Terminal
10	39256094	12	Block, Terminal
11	39256128	2	Barrier, End
12	39256136	1	Lug, Ground
13	39255609	1	Operator, Push Button
14	39255625	1	Operator, Push/Pull
15	39255666	1	Indicator, Amber
16	39255633	1	Block, Contact N.O.
17	39255641	1	Block, Contact N.C.
18	39256805	1	Module, FV Power
19	39239355	1	Fuse 3.0A
20	39113527	1	Fuse 3.2A

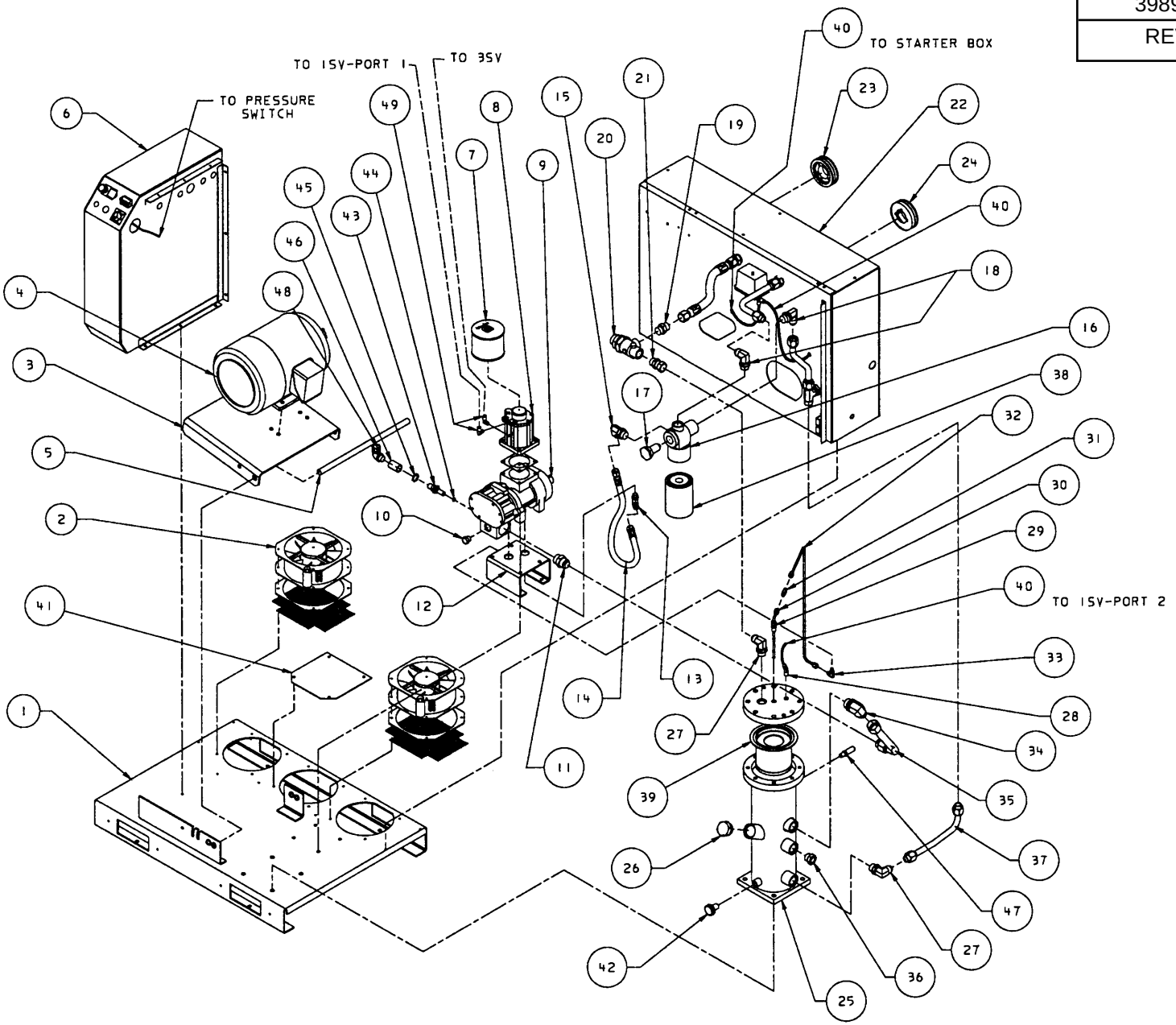
39905906
REV 01



Starter Assembly - Star-Delta

Ref. No.	Part Number	Oty.	Description
1	39255518	2	Contactor, C16
	39252036	2	Contactor, C23
	39252010	2	Contactor, C30
2	39255518	1	Contactor, Reversing
3	39255591	1	Relay, Overload EA5GB
	39255542	1	Relay, Overload EA5FB
	39251988	1	Relay, Overload EA5HC
	39251079	1	Relay, Overload EA5JD
	39251087	1	Relay, Overload EA5KE
4	39255492	1	Contact, Aux. 2 N.O.
5	39900618	1	Backpanel, Starter
6	39233408	1	Transformer, 350 VA
7	39255559	1	Relay, Control
8	39255567	1	Relay, Timer AS/S
9	39256599	1	Module, Timer
10	39256102	1	Barrier, End
11	39256110	2	Block, Ground Terminal
12	39256094	12	Block, Terminal
13	39256128	2	Anchors, End
14	39256136	1	Lug, Ground
15	39251186	1	Interlock, Mechanical
16	39255609	1	Operator, Push Button
17	39255625	1	Operator, Push/Pull
18	39255666	1	Indicator, Amber
19	39255633	1	Block, Contact N.O.
20	39255641	1	Block, Contact N.C.
21	39256805	1	Module, FV Power
22	39239355	1	Fuse 3.0A
23	39113527	1	Fuse 3.2A

39897384
REV 01

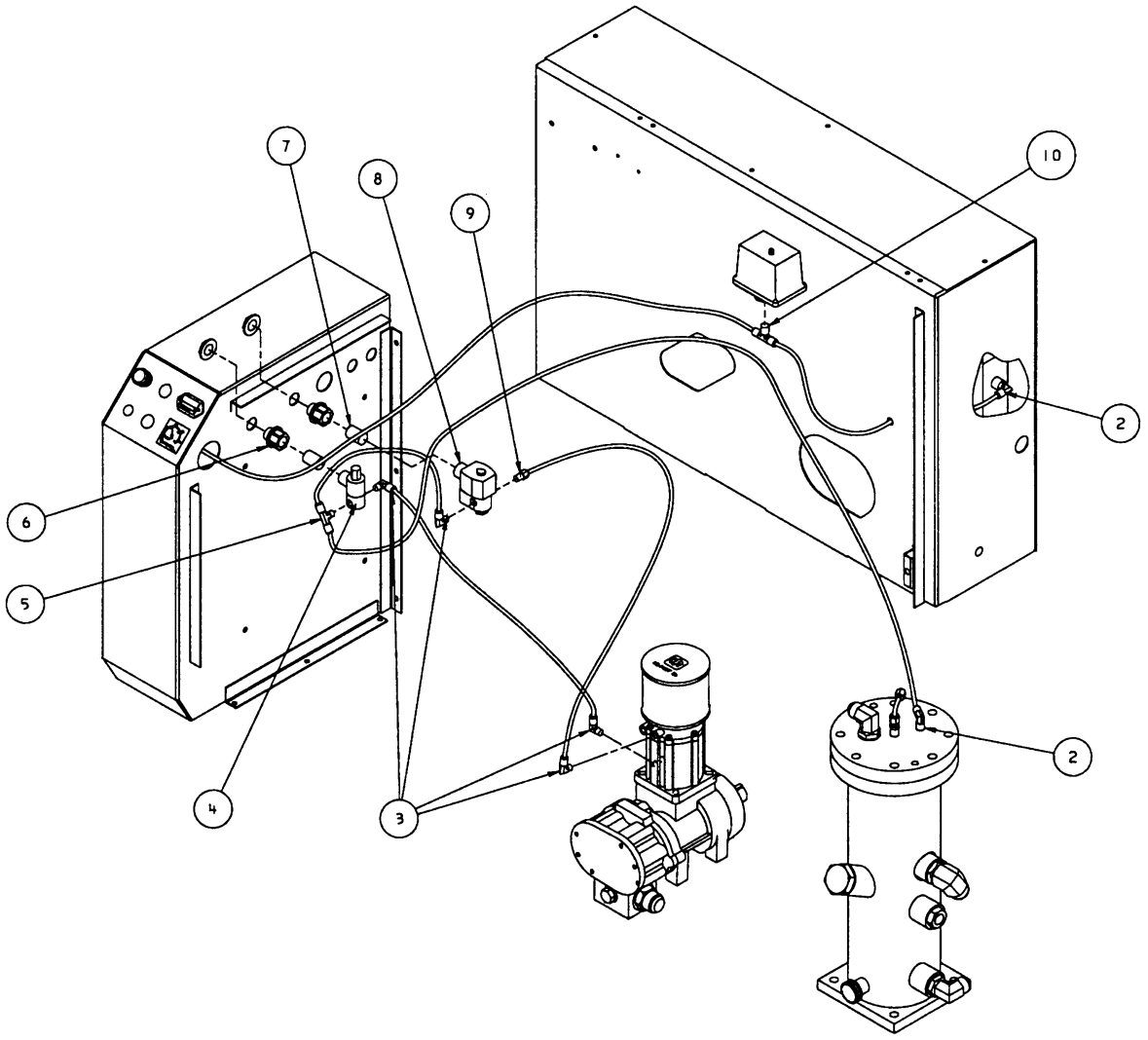


Major Components

Ref. No.	Part Number	Qty.	Description
1	39906912	1	Base
2	39858485	2	Fan (7-1/2 & 10 HP)
	39858485	3	Fan (15 HP)
2A	39587266	2	Gasket, Fan
2B	88153267	2	Guard, Fan
2C	96728696	8	Screw
3	xxxxxxxx	1	Support, Motor
3A	96702279	1	Screw
3B	39178678	1	Screw
4	xxxxxxxx	1	Motor
4A	96702279	4	Screw
5	39310792	1	Shaft, Motor Pivot
5A	95231494	2	Pin, Cotter
5B	39224209	2	Washer, Nylon
6	Ref. Only	1	Assembly, Starter Box
6A	39133145	6	Screw
7	92888718	1	Filter, Air
7A	95301370	1	Clamp
8	xxxxxxxx	1	Valve, Inlet
8A	39313879	1	Gasket, Inlet Valve
8B	39185293	4	Screw
9	39248117	1	Airend
9A	39155221	2	Screw
9B	96705850	2	Screw
10	95938213	1	Plug
11	95938148	1	Connector
12	39899851	1	Support, Airend
12A	39128459	4	Screw
12B	39128558	4	Nut
13	39310800	1	Elbow
14	39572003	1	Hose
15	95952610	1	Elbow
16	39566237	1	Valve, Thermo
17	39441944	1	Element, Thermo
18	39152368	2	Elbow
19	95952867	1	Connector
20	39490693	1	Valve, MPCV
21	95974028	1	Connector
22	Ref. Only	1	Assembly, Cooler Box
22A	39133145	6	Screw

Ref. No.	Part Number	Qty.	Description
23	xxxxxxxx	1	Sheave, Driver
24	xxxxxxxx	1	Sheave, Driven
25	39900063	1	Tank, Separator
25A	39128517	4	Screw
25B	39116348	4	Nut
26	39478953	1	Plug, Oil Fill
27	39152368	2	Elbow
28	39155478	1	Elbow
29	39417118	1	Connector, Thermo Coupling
30	39902671	1	Tube, Scavenge - To Tank
31	39303219	1	Orifice, Check Valve
32	39902689	1	Tube, Scavenge - To Airend
33	96719976	1	Elbow
34	95938171	1	Elbow
35	39588538	1	Tube, Airend To Separator
36	39324496	1	Sight Glass
37	88158068	1	Tube, Separator To Tee
38	39446489	1	Filter, Oil
39	39900923	1	Element, Separator
40	39124813	72”	Tubing
41	39896931	1	Plate, Fan Cover
41A	96726518	4	Screw
42	39324488	1	Assembly, Oil Drain Valve
43	39416128	1	Switch, HAT
44	39404157	1	O-Ring
45	39114079	1	Nut, Lock
46	95952388	1	Coupling
47	39102736	1	Valve, Safety
48	39479472	1	Elbow, Conduit - NEMA 1
	95361390	1	Elbow, Conduit - NEMA 4
49	39155577	2	Elbow

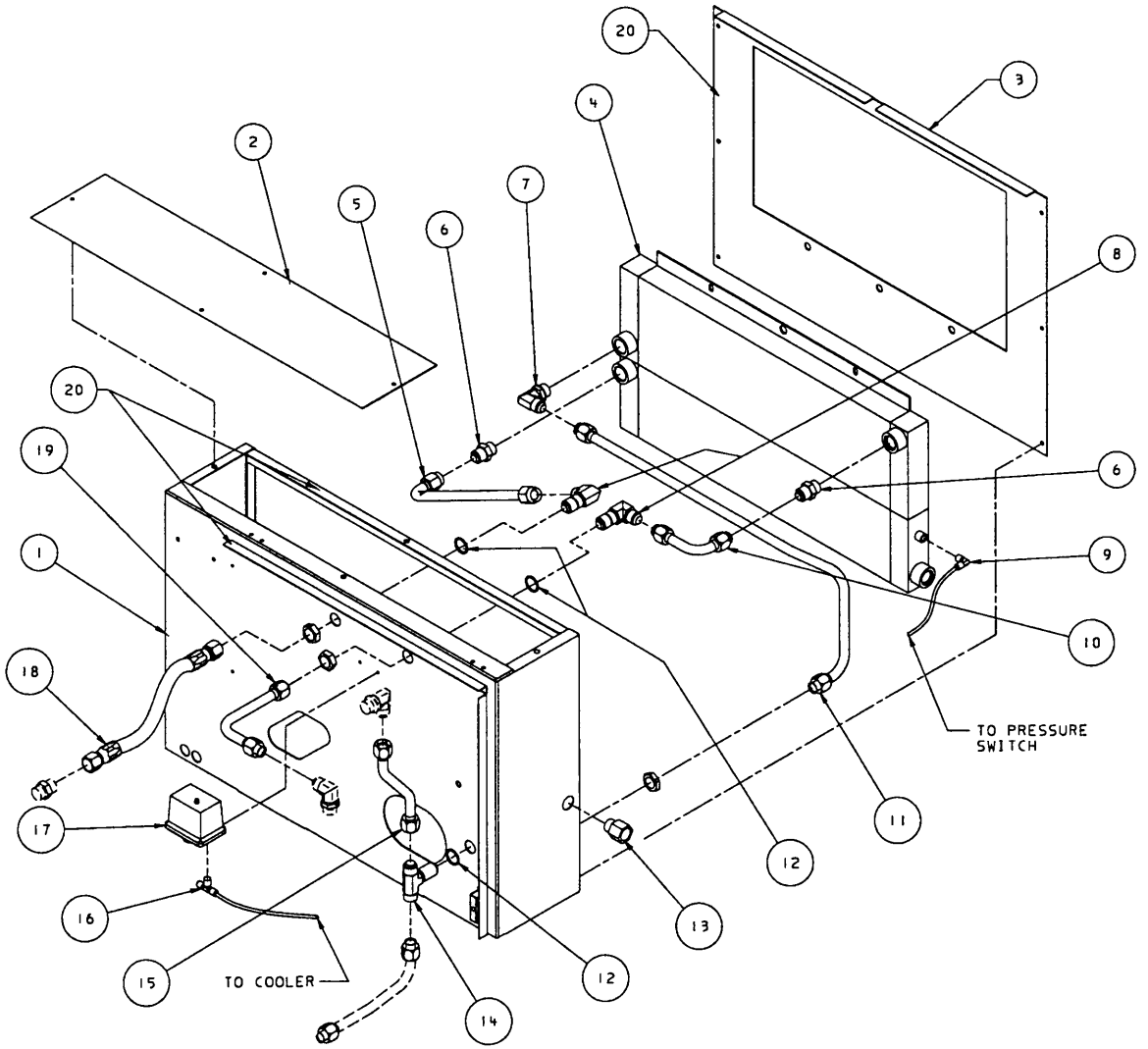
39909221
REV 01



Control Piping Assembly

Ref. No.	Part Number	Qty.	Description
1	39124813	240”	Tubing
2	39156435	2	Elbow
3	39155577	4	Elbow
4	39583943	1	Valve, Solenoid 3-Way
5	39156385	1	Tee
6	35275494	2	Hub, Electrical
7	39108592	2	Nipple, Conduit
8	39492558	1	Valve, Solenoid 2-Way
9	39156393	1	Connector
10	39155346	1	Tee

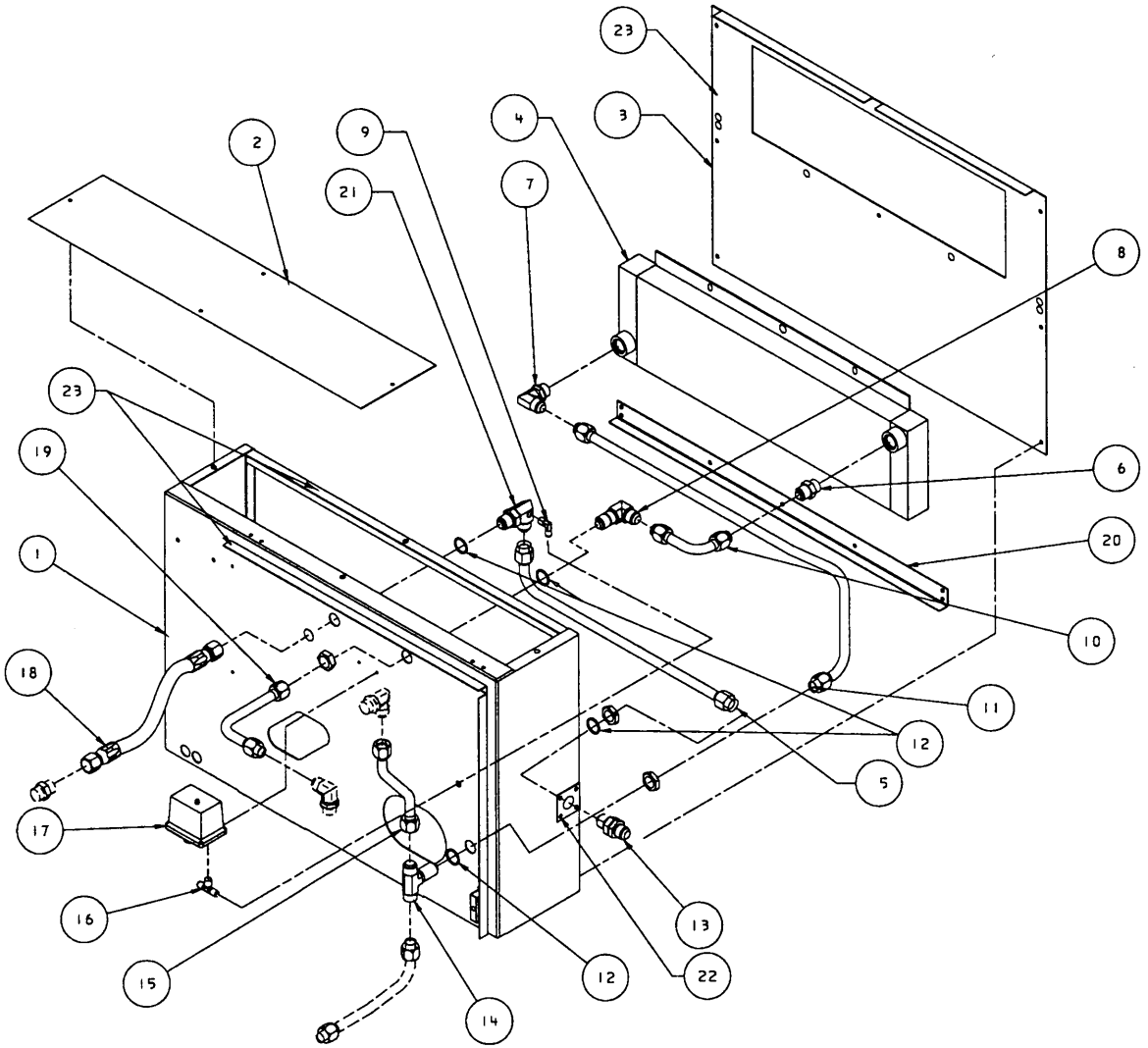
39905989
REV 01



Cooler Box Assembly With Aftercooler

Ref. No.	Part Number	Qty.	Description
1	39906920	1	Cooler, Box
2	39896048	1	Cover, Cooler Box Top
2A	39133145	4	Screw
2B	35256452	4	Clips, Retaining
3	39893102	1	Cover, Cooler Box Rear
3A	39133145	8	Screw
4	39899893	1	Cooler, Oil/Aftercooler
4A	39181987	4	Screw
4B	39128541	4	Nut
4C	95929071	4	Washer
5	39896543	1	Tube, Aftercooler In
6	95952867	2	Adapter
7	39152368	1	Elbow
8	95338018	2	Elbow
9	39155478	1	Elbow
10	88158316	1	Tube, Oil Cooler Out
11	88158324	1	Tube, Oil Cooler In
12	92095348	3	Ring, Retaining
13	95974036	1	Connector (W/Receiver Tank)
	95954897	1	Adapter (W/O Receiver Tank)
14	88158332	1	Tee
15	88158076	1	Tube, Oil Filter To Tee
16	39181342	1	Tee
17	39439740	1	Switch, Pressure
17A	35139047	2	Screw
18	39571872	1	Hose
19	88158290	1	Tube, Oil Filter To Elbow
20	39117312	230”	Gasket

39907647
REV 01



Cooler Box Assembly Without Aftercooler

Ref. No.	Part Number	Qty.	Description
1	39906920	1	Cooler, Box
2	39896048	1	Cover, Cooler Box Top
2A	39133145	4	Screw
2B	35256452	4	Clips, Retaining
3	39906508	1	Cover, Cooler Box Rear - No Aftercooler
3A	39133145	8	Screw
4	39906482	1	Cooler, Oil
4A	39181987	4	Screw
4B	39128541	4	Nut
4C	95929071	4	Washer
5	39906540	1	Tube, No Aftercooler
6	95952867	1	Adapter
7	39152368	1	Elbow
8	95338018	1	Elbow
9	39155478	1	Elbow
10	88158316	1	Tube, Oil Cooler Out
11	88158324	1	Tube, Oil Cooler In
12	92095348	4	Ring, Retaining
13	95972113	1	Connector (W/Receiver Tank)
	95974242	1	Adapter (W/O Receiver Tank)
14	88158332	1	Tee
15	88158076	1	Tube, Oil Filter To Tee
16	39181342	1	Tee
17	39439740	1	Switch, Pressure
17A	35139047	2	Screw
18	39571872	1	Hose
19	88158290	1	Tube, Oil Filter To Elbow
20	39906490	1	Angle, No Aftercooler
20A	39133145	4	Screw
21	39327390	1	Elbow
22	39327374	1	Plate, No Aftercooler
22A	39133145	4	Screw
23	39117312	230”	Gasket

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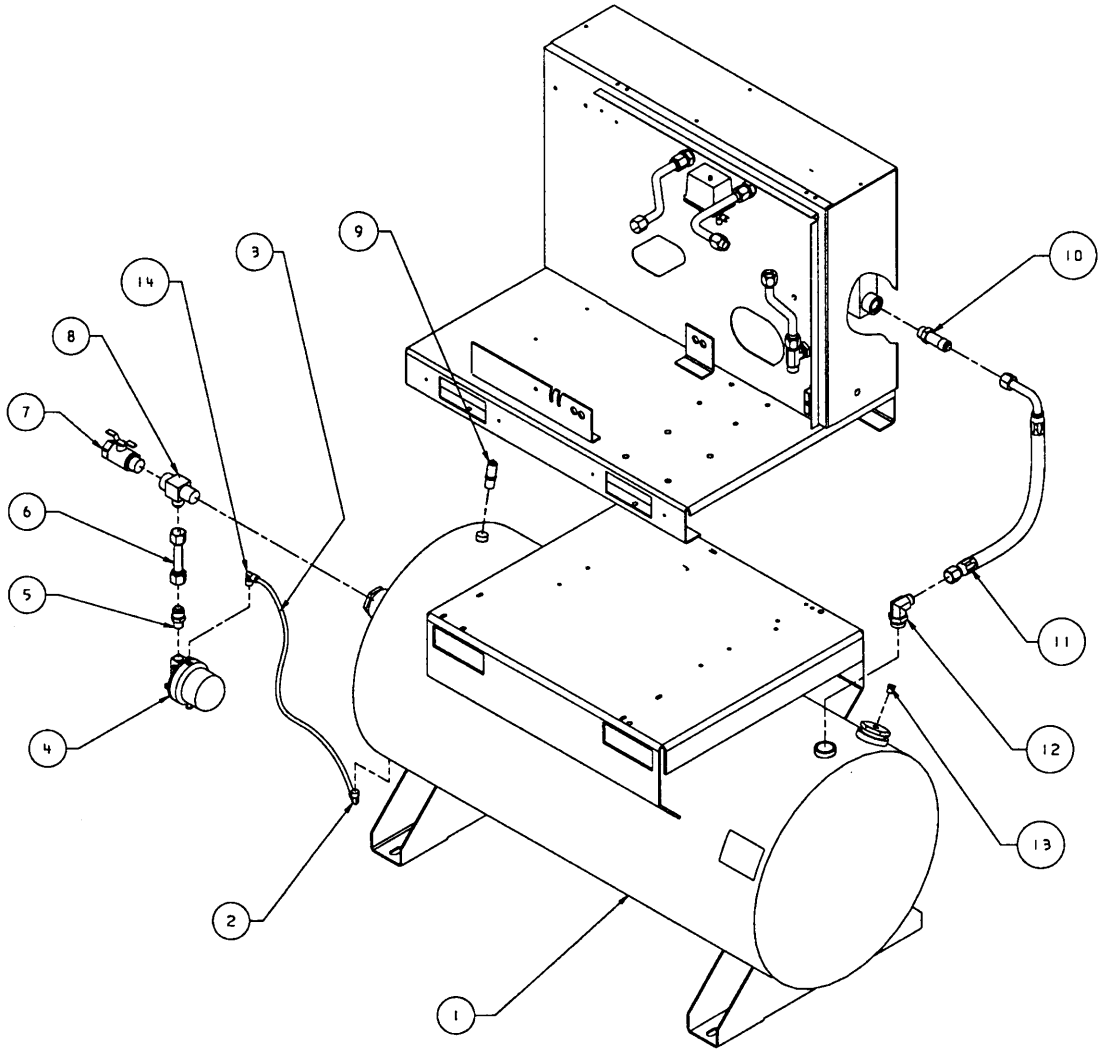
REV 01



Receiver Tank Assembly

Ref. No.	Part Number	Qty.	Description
1	39892294	1	Tank, 120 Gal.
	39906144	1	Tank, 80 Gal.
2	39155759	1	Elbow
3	39124821	15”	Tubing
4	39586672	1	Trap, Drain
5	95279378	1	Connector
6	39324439	1	Tube, Moisture Trap
7	39105754	1	Valve, Ball
8	39316179	1	Tee
9	39588108	1	Valve, Safety
10	95974036	1	Connector
	95972113	1	Connnector (No Aftercooler)
11	39571922	1	Hose
12	39476957	1	Elbow (120 Gal. Tank)
	39152368	1	Elbow (80 Gal. Tank)
13	95252409	1	Plug
14	39155650	1	Elbow

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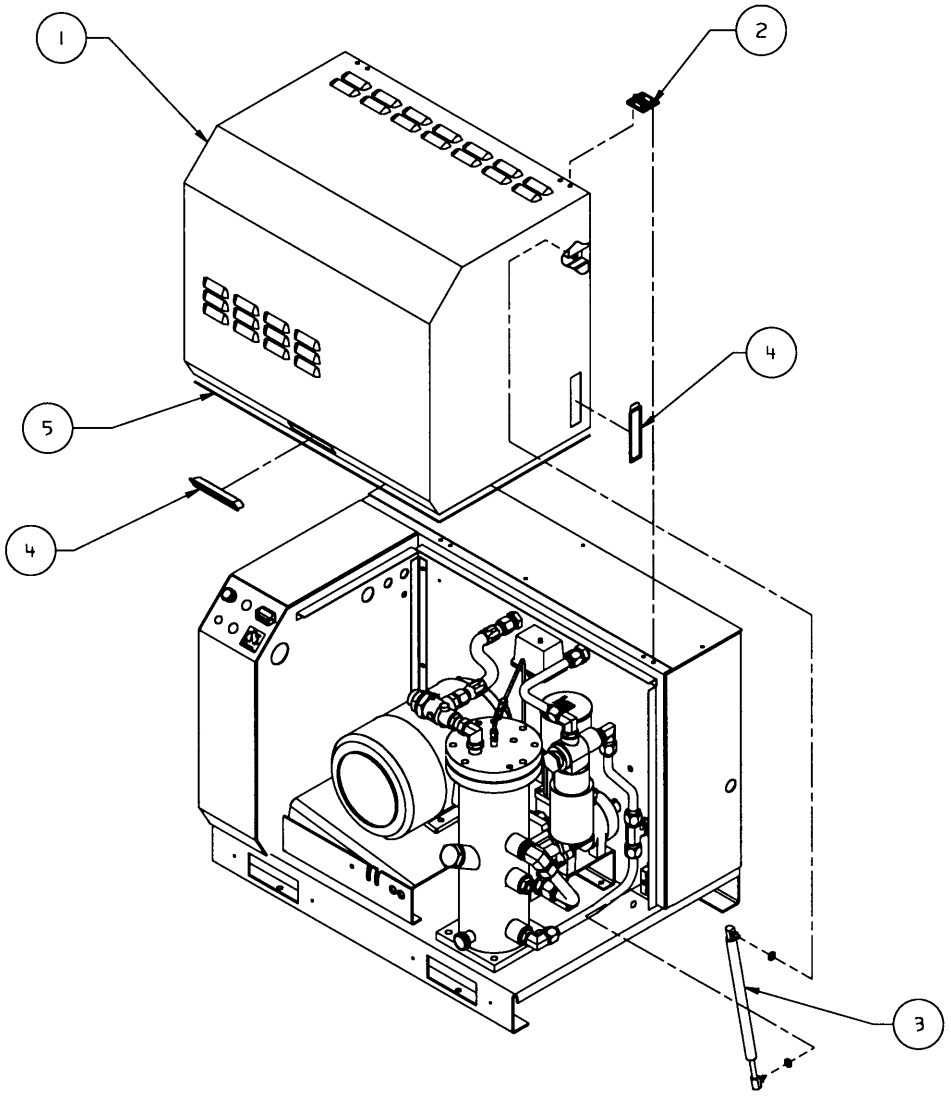
REV 01



Canopy Assembly Option

Ref. No.	Part Number	Qty.	Description
1	88155734	1	Canopy
2	88152392	2	Hinge
2A	96726898	8	Screw
3	92107804	1	Spring, Gas
4	39491147	2	Handle, Canopy

O-RINGS

Part No.	Size/ Thread	ID	Width	Tube Size
39404157	7/16-20	0.351	0.072	1/4
39404132	9/16-18	0.468	0.078	3/8
39404165	3/4-16	0.644	0.087	1/2
39437074	7/8-14	0.755	0.097	5/8
39407531	1- 1/16-12	0.924	0.116	3/4
39404173	1- 5/16-12	1.171	0.116	1
39404140	1- 5/8-12	1.475	0.118	1-1/4
39406996	1- 7/8-12	1.720	0.118	1-1/2
39410279	2- 1/2-12	2.337	0.118	2

7.3 RECOMMENDED SPARE PARTS LIST

COMPRESSOR PART DESCRIPTION	I-R PART NO.	QTY PER UNIT
Maintenance Kit	42448456	1
Ultra Coolant (5 gal. Container)	39433735	1
Air Filter Element	39588462	1
Coolant Filter	39446489	1
Coolant Separator Element	39900923	1
V-Belt, 42.5”	39204714	**
V-Belt, 45.0”	39204722	**
V-Belt, 47.5”	39204730	**
Inlet Valve Rebuild Kit	39257514	1
Inlet Valve Gasket	39313879	1
Load Solenoid Valve (1SV)	39583943	1
Blowdown Solenoid Valve (3SV)	39492558	1
Shaft Seal Kit	42412197	1
Thermostatic Control Element	39441944	1
High Air Temperature Switch (HATS)	39416128	1
O-ring, HATS	39404157	1
Orifice, Check Valve / Filter	39303219	1
Combination Oil Cooler / Aftercooler	39899893	1
Minimum Pressure Check Valve (MPCV)	39490693	1
Hose, MPCV to Aftercooler In	39571872	1
Hose, Aftercooler Out to Receiver Tank	39571922	1
Hose, Oil Filter to Airend Injection	39572003	1
Control Relay	39255559	1
Start Switch Operator	39255609	1
Start Switch Contact Block	39255633	1
Stop Switch Operator	39255625	1
Stop Switch Contact Block	39255641	1
Auto Restart Indicator	39255662	1
Power On Indicator	39243985	1
Auto Restart Timer Relay	39255567	1
Pressure Gauge	39499256	1
Pressure Switch	39439740	1
Starter Contactor Assembly, Size C16	39255518	1*
Starter Contactor Assembly, Size C23	39252036	1*
Starter Contactor Assembly, Size C30	39252010	1*
Starter Contactor Assembly, Size C43	39250998	1
Starter Contactor Assembly, Size C60	39251004	1
Reversing Starter Contactor Assy, Size C16	39255518	1*
Mechanical Interlock (Star-Delta)	39251186	1
Starter Overload Relay, EA5FB (1OL)	39255542	1
Starter Overload Relay, EA5GB (1OL)	39255591	1
Starter Overload Relay, EA5HC (1OL)	39251988	1
Starter Overload Relay, EA5JD (1OL)	39251079	1
Starter Overload Relay, EA5KE (1OL)	39251087	1
Auxiliary Contact, 2 N.O.	39255492	1
Hourmeter, 60 Hz	39226618	1
Hourmeter, 50 Hz	39233382	1
Relief Valve (Separator Tank)	39588082	1
Relief Valve (Receiver Tank)	39588017	1
Cooling Fan (7-1/2 & 10 HP)	39858485	2
Cooling Fan (15 HP)	39858485	3
Fuse, FU1 / FU2	39239355	1
Fuse, FU3	39113527	1
Control Circuit Transformer	39233408	1
Decal Kit (English)	39256730	
Decal Kit (Spanish)	39257555	

* QUANITY IS (2) FOR STAR-DELTA

** BELT SIZE AND QUANTITY VARY WITH HORSEPOWER AND PRESSURE RATING. CONTACT YOUR LOCAL INGERSOLL-RAND DISTRIBUTOR IF ASSISTANCE IS NEEDED FOR BELT REPLACEMENT.

8.0 MAINTENANCE RECORD

DATE	RUN TIME (HOURS)	WORK DONE	QTY.	UNIT MEASURE	WORK BY

MAINTENANCE RECORD

DATE	RUN TIME (HOURS)	WORK DONE	QTY.	UNIT MEASURE	WORK BY

MAINTENANCE RECORD

DATE	RUN TIME (HOURS)	WORK DONE	QTY.	UNIT MEASURE	WORK BY