

Ingersoll-Rand Company
Portable Compressor Division
P.O. Box 868
Mocksville, North Carolina 27028
Attention: Warranty Department

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Section 3 - Noise Emission



Noise Emission

This section pertains only to machines distributed within the United States.



Tampering with Noise Control System Prohibited

Federal law prohibits the following acts or the causing thereof:

1. The removal or rendering inoperative by any persons, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new compressor for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; or
2. the use of the compressor after such device or element of design has been removed or rendered inoperative by any person.

Among those acts included in the prohibition against tampering are these:

3. Removal or rendering inoperative any of the following:
 - a.the engine exhaust system or parts thereof
 - b.the air intake system or parts thereof
 - c.enclosure or parts thereof
4. Removal of any of the following:
 - a.fan shroud
 - b.vibration mounts
 - c.sound absorption material
5. Operation of the compressor with any of the enclosure doors open.

Compressor Noise Emission Control Information

- A. The removal or rendering inoperative, other than for the purpose of maintenance, repair, or replacement of any noise control device or element of design incorporated into this compressor in compliance with noise control act;
- B. The use of this compressor after such device or element of design has been removed or rendered inoperative.

NOTE: The above information applies only to units that are built in compliance with the U.S. Environmental Protection Agency.

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.

The Purchaser is urged to include the above provisions in any agreement for any resale of this compressor.

Noise Emission Control Maintenance Log

COMPRESSOR MODEL _____ SERIAL NO. _____ USER UNIT NO. _____
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UNIT IDENTIFICATION Engine Make & Model: _____ Serial No.: _____ Purchaser or Owner: _____ Address: _____	DEALER OR DISTRIBUTOR FROM WHOM PURCHASED: _____ _____ _____ Date Purchased: _____
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The Noise Control Act of 1972 (86 Stat. 1234) prohibits tampering with the noise control system of any compressor manufactured and sold under the above regulations, specifically the following acts or the causing thereof:

(1) the removal or rendering inoperative by any persons, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into new compressor for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; or (2) the use of the compressor after such device or element of design has been removed or rendered inoperative by any person.

Noise Emission Warranty

The manufacturer warrants to the ultimate purchaser and each subsequent purchaser that this air compressor was designed, built and equipped to conform at the time of sale to the first retail purchaser, with all applicable U.S. EPA Noise Control Regulations.

This warranty is not limited to any particular part, component, or system of the air compressor. Defects in the design, assembly or in any part, component, or system of the compressor which, at the time of sale to the first retail purchaser, caused noise emissions to exceed Federal Standards are covered by this warranty for the life of the air compressor.

Introduction

The unit for which this Maintenance Log is provided conforms to U.S. E.P.A. Regulations for Noise Emissions, applicable to Portable Air Compressors.

The purpose of this book is to provide (1) the Maintenance Performance Schedule for all required noise emission controls and (2) space so that the purchaser or owner can record what maintenance was done, by whom, where and when. The Maintenance Schedule and detailed instructions on the maintenance items are given on following page.

Maintenance Schedule

Item	Area	Period
A.	Compressed Air Leaks	As Detected
B.	Safety and Control Systems	As Detected
C.	Acoustic Materials	Daily
D.	Fasteners	100 hours
E.	Enclosure Panels	100 hours
F.	Air Intake & Engine Exhaust	100 hours
G.	Cooling Systems	250 hours
H.	Isolation Mounts	250 hours
I.	Engine Operation	See Operator's Manual
J.	Fuels & Lubricants	See Operator's Manual

A. Compressed Air Leaks

Correct all compressed air leaks during the first shutdown period after discovery. If severe enough to cause serious noise problems and efficiency loss, shut down immediately and correct the leak(s).

B. Safety and Control Systems

Repair or replace all safety and control systems or circuits as malfunction occurs. No compressor should be operated with either system bypassed, disabled, or nonfunctional.

C. Acoustic Materials

In daily inspections, observe these materials. Maintain all acoustic material as nearly as possible in its original condition. Repair or replace all sections that have: 1) sustained damage, 2) have partially separated from panels to which they were attached, 3) are missing, or have otherwise deteriorated due to severe operating or storage conditions.

D. Fasteners

All fasteners such as hinges, nuts, bolts, clamps, screws, rivets, and latches should be inspected for looseness after each 100 hours of operation. They should be retightened, repaired, or if missing, replaced immediately to prevent subsequent damage and noise emission increase.

E. Enclosure Panels

Enclosure panels should also be inspected at 100 hour operational intervals. All panels that are warped, punctured, torn, or otherwise

deformed, such that their noise containment function is reduced, should be repaired or replaced before the next operation interval. Doors, access panels, and hatch closures especially, should be checked and adjusted at this time to insure continuous seating between gasket or acoustic material and the mating frame.

F. Air Intake and Engine Exhaust

Engine and compressor air intake and engine exhaust systems should be inspected after each 100 hours of operation for loose, damaged, or deteriorated components. Repairs or replacements should be made before the next period of use.

G. Cooling Systems

All components of the cooling system for engine water and compressor oil should be inspected every 250 hours of use. Any discrepancies found should be corrected before placing the unit back in operation. Unrestricted airflow over the radiator and oil cooler must be maintained at all times during operation.

H. Isolation Mounts

Engine/airend isolation mounts should be inspected after each 250 hours of operation. Those mounts with cracks or splits in the molded rubber, or with bent or broken bolts due to operation or storage in severe environments, all should be replaced with equivalent parts.

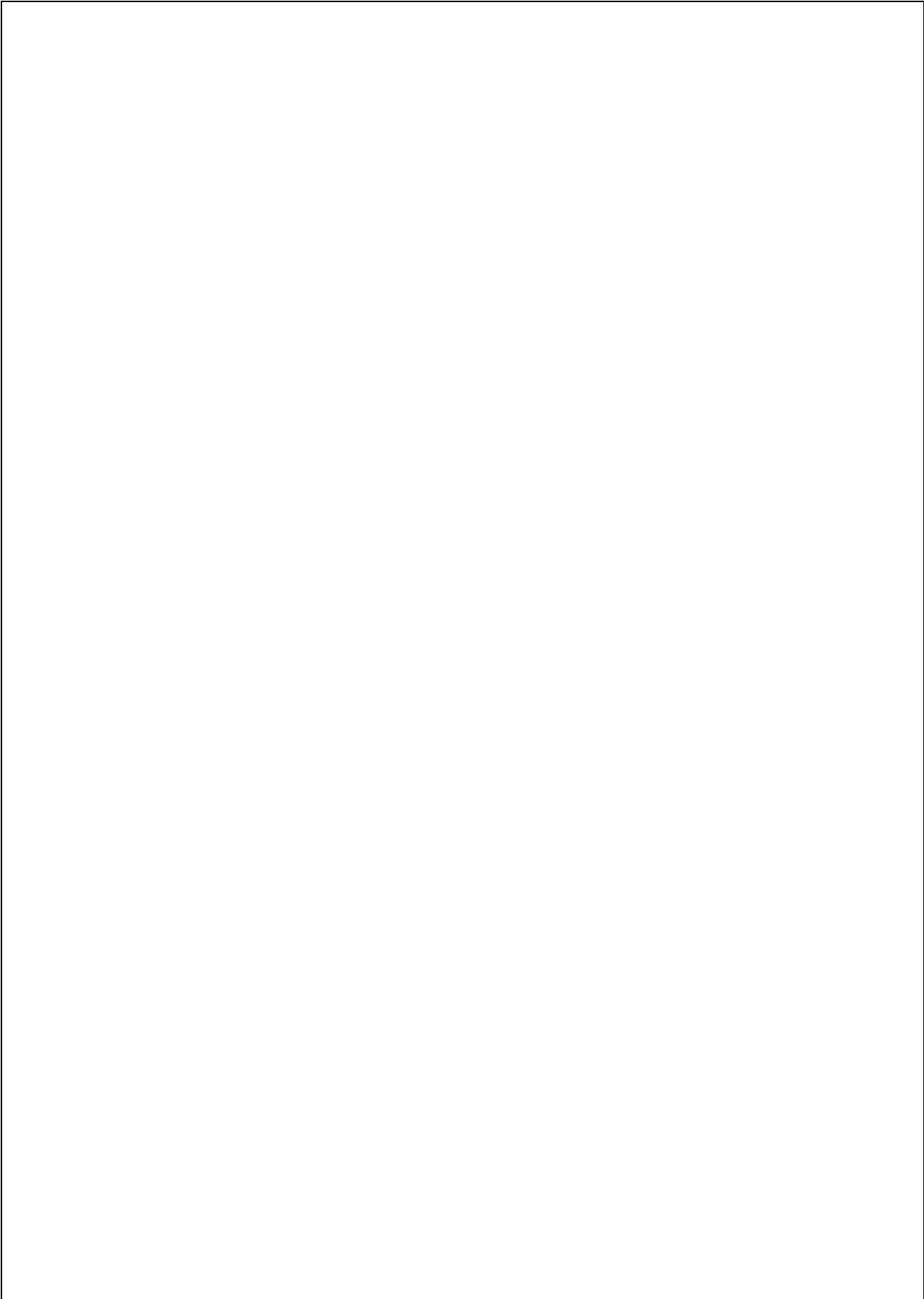
I. Engine Operation

Inspect and maintain engine condition and operation as recommended in the manuals supplied by the engine manufacturer.

J. Fuels and Lubricants

Use only the types and grades of fuels and lubricants recommended in the Ingersoll-Rand Company and Engine Manufacturer's Operator and Maintenance Manuals.

Maintenance Record For Noise Emission Control And Extended Warranty					
Item No.	Description Of Work	Hourmeter Reading	Maint/inspect Date	Location City/state	Work Done By (Name)



Section 4 - General Data



General Data

Models:

Unit Model			P185	XP185
Air Delivery (cfm (litres/sec))			185 (87)	185 (87)
Engine Speed - RPM (Full Load)			2500	2500
Engine Speed - RPM (No Load)			1700	1700

COMPRESSOR

Rated Operating Pressure - psi (kPa)..... 100 psi (689)
 Safety Valve Setting - psi (kPa) 150 psi (1034)
 Net Weight (less fuel) pounds.....2265

ENGINE (DIESEL)

Manufacturer.....John Deere
 Model4045D
 Electrical System 12 VDC

FLUID CAPACITIES

Compressor Lubricant..... 12 quarts (11.4 litres)
 Engine Crankcase Lubricant..... 10.8 quarts (10.2 litres)
 Fuel Tank27 U.S. gal. (103 litres)

UNITS MEASUREMENTS WEIGHTS

Overall Length..... 11.5 (3.5 meters)
 Overall Height5.2 feet (1.46 meters)
 Overall Width5.7 feet (1.74 meters)
 Track Width.....4.9 feet (1.49 meters)
 Weight (with fuel)2325 lbs (1054 kgf)
 Weight (less fuel)2130 lbs (966 kgf)

Tire Size

Tire Size.....	P215/75RX15
Inflation Pressure (cold)	35 psi
Towing Speed (maximum)	65 mph (105 km/hr)

EXPENDABLE SERVICE PARTS

Compressor Oil Filter Element.....	36897353
Compressor Oil Separator Element	54625942
Air Cleaner Element Primary (Compressor)	35393685
Optional Secondary (Compressor)	35393651
Air Cleaner Element (Engine)	35393685
Optional Secondary (Engine).....	35393651
Engine Oil Filter Element	35308030
Engine Fuel Filter Element.....	36534659



Modification or alteration of this machine. Can result in severe injury or death. Do not modify or alter without the express written consent of Ingersoll-Rand Co.

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SECTION 5 - OPERATION



BEFORE TOWING



Failure to follow these instructions CAN cause severe injury or death.

- Assure tow vehicle has towing capacity for weight of this unit as stated on general data decal.
- Position the tow vehicle to align its hitch with the pintle eye or coupler of the compressor.
- Engage the parking brake and chock the tires of the tow vehicle.
- Stand to the side and ensure pin is FULLY inserted (secure) in tube of jack. .
- Crank jack to seat pintle eye or coupler onto hitch. Latch and lock hitch. Cross safety chain(s) under drawbar. Attach to vehicle
- Crank jack to raise pad off the ground. Pull pin from tube of jack.
- Fold jack handle down and forward. Swing up jack tube and FULLY insert pin in tube.
- Remove tire chocks.
- Test brakes, if so equipped.
- Test lights (running, stop, and turn signals).



Always raise (or remove) jack for maximum ground clearance before

towing.

SETTING UP (ALL UNITS)

- Position as level as possible. The design of these units permits a 15 degree sidewise limit on out-of-level operation.
- When the unit is to be operated out-of-level, it is important:
 1. To keep the engine crankcase oil level near the high level mark (with the unit level).
 2. To have the compressor oil level gauge show no more than mid-scale. Do not overfill either the engine crankcase or the compressor lubricating oil system.
 3. The side doors must be closed to maintain a cooling air path and to avoid recirculation hot air.

TOWING



Failure to follow these instructions CAN cause severe injury or death.

- Ensure that tires, wheels and running gear are in good condition and secure.
- Ensure that tires are inflated to 35 psi.
- Do not tow this unit in excess of 65 mph.
- Use a tow vehicle whose towing capacity is greater than the gross weight of this unit.

DISCONNECT

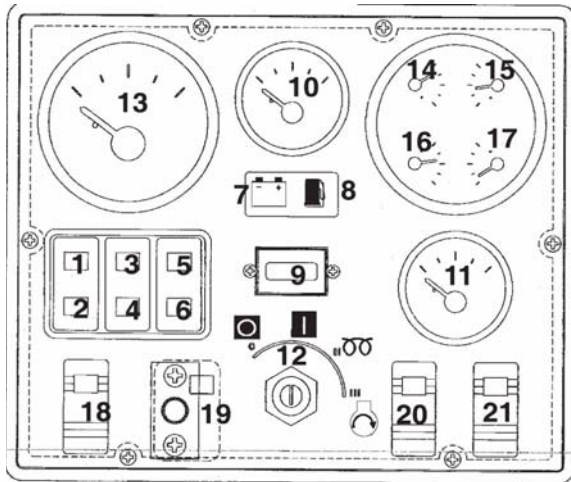
- Engage tow vehicle parking brake.
- Chock tires of compressor.
- Set the vehicle parking brake. Chock wheels of unit.
- Standing to the side, remove pin from tube of jack.
- Disconnect safety chains. Crank jack to raise eye or coupler from hitch. Tow vehicle can be moved.

UTILITY PACKAGE SET-UP (no running gear)

This unit must be located on vehicle bed to allow access for normal servicing and maintenance.

The air going into the inlet must be relatively free of oil, dirt, soot and other debris. It must be no more than 10 degrees F. (5 degrees C) over the ambient temperature.

CONTROL PANEL - Diagnostics/Auto Shutdown (Standard and Optional)



Instruments & Controls (Optional)

1. **High Engine Temperature** - Coolant above 220°F (104°C).
2. **Low Engine Oil Pressure** - 12 psi or less.
3. **High Compressor Temperature** - 248°F (120°C)
4. **Air Filters Restricted** - Needs servicing.
5. **Spare**
6. **Spare**
7. **Alternator Not Charging** - Needs attention.
8. **Low Fuel Level** - Must add fuel to operate.
9. **Hourmeter** - Records running time for maintenance. **(Standard)**
10. **Compressor Discharge Pressure Gauge** - Indicates pressure in receiver tank, psi (kPa). **(Standard)**
11. **Fuel Level Gauge** - Indicates amount of fuel in tank.

12. **Power Switch** - Rotate "ON" to activate system prior to starting. Rotate "OFF" to stop engine. **(Standard)**
13. **Engine Speed Gauge** - Indicates engine speed.
14. **Discharge Air Temp. Gauge** - Indicates in °F (82°C) to 210°F (99°C).
15. **Engine Oil Pressure Gauge** - Indicates engine oil pressure.
16. **Engine Water Temp. Gauge** - Indicates coolant temperature, with normal operating range from 180°F (82°C) to 210°F (99°C).
17. **Voltmeter** - Indicates battery condition.
18. **Ether Inject Button** - Injects a measured shot. USE SPARINGLY.
19. **Service Air Button** - After warm-up, PUSH. Provides full air pressure at the service outlet. Indicates engine speed.
20. **Spare**
21. **Spare**

Note: 9, 10 and 12 are standard.

Before Starting

- Open service valve(s) to ensure pressure is relieved in receiver-separator system. Close valve(s) in order to build up full air pressure and ensure proper oil circulation.
- Check battery for proper connections and condition.
- Check battery for proper connections and condition.
- Check engine coolant level.


WARNING

Do not remove pressure cap from a HOT radiator. Allow radiator to cool down before removing pressure cap. Use extreme care when removing a pressure cap from a liquid cooling system for the engine. The sudden release of pressure from a heated cooling system can result in a loss of coolant and possible severe personal injury.

- Check the engine oil level. Maintain per marks on dipstick.
- Check the fuel level. Add only CLEAN DIESEL fuel for maximum service from the engine.
- Check the compressor lubricating fluid level between bottom and midway of the sight glass on the separator tank.


WARNING

This machine produces loud noise with doors open. Extended exposure to loud noise can cause hearing loss. Wear hearing protection when doors or valve (s) are open.

- Close all doors to maintain a cooling air path and to avoid recirculation of hot air. This will maximize the life of the engine and compressor and protect the hearing of surrounding personnel.
- Be sure no one is IN or ON the compressor unit.


WARNING

Unrestricted air flow from a hose will result in a whipping motion of the hose which can cause severe injury or death. A safety device must be attached to the hose at the source of supply to reduce pressure in case of hose failure or other sudden pressure release. Reference: OSHA regulation 29 CFR Section 1926.302 (b).

Starting

- Turn the POWER switch to "ON".
- Turn Power switch to "START" position to crank engine. Hold switch in "START" position for approximately 5 seconds after engine starts.

NOTICE

Do not operate the starter motor for more than 10 seconds without allowing at least 30 seconds cooling time between start attempts.

Release Power Switch (it will automatically move to the "ON" position) when the engine starts and sustains running.

- Allow engine to warm up 5 to 10 minutes.
- If so equipped, press the "Service Air Button". Open air service valve(s).

Cold Weather Starting

- Turn power switch to the glow plug position and hold 10 seconds. Then turn to start.

NOTICE

Engine is equipped with glow plugs for cold starting aid. Do not use ETHER/starting fluid. Engine damage can occur.

NOTICE

Exercise extreme caution when using a booster battery to start. To jump start: Connect the ends of one booster cable to the positive (+) terminals of each battery. Then connect one end of the other cable

to the negative (-) terminal of the booster battery and the other end to the engine block. NOT TO THE NEGATIVE (-) TERMINAL OF THE WEAK BATTERY.

Units With Optional Diagnostics Lamps

NOTICE

None of the panel lamps should be glowing when machine is operating. If they are, shut unit down and refer to Trouble Shooting Section.

Stopping

NOTICE

Whenever the machine is stopped, air will flow back into the compressor system from devices or systems downstream of the machine unless the service valve is closed. Install a check valve at the machine service valve to prevent reverse flow in the event of an unexpected shutdown when the service valve is open.

Close air service valves.

- Allow the unit to run at idle for 3 to 5 minutes to reduce the engine temperatures.
- Turn Power Switch to “OFF” position.
- When the engine stops, automatic blowdown valve should relieve system air pressure. If automatic blow-down valve malfunction is suspected, open manual blowdown valve.
- Never allow unit to sit under pressure when engine is not running.

WARNING

Since the service valve is closed, air downstream of the valve may be trapped. A vent hole in the service valve will slowly bleed air from the hose. Do not disconnect hoses until all pressure has been vented.

NOTICE

Do NOT wire around or bypass a shutdown sensor or switch.

Machine has shutdown and sensors as follows:

- Low Engine oil pressure, in the engine.
- High engine coolant temperature, in

the engine.

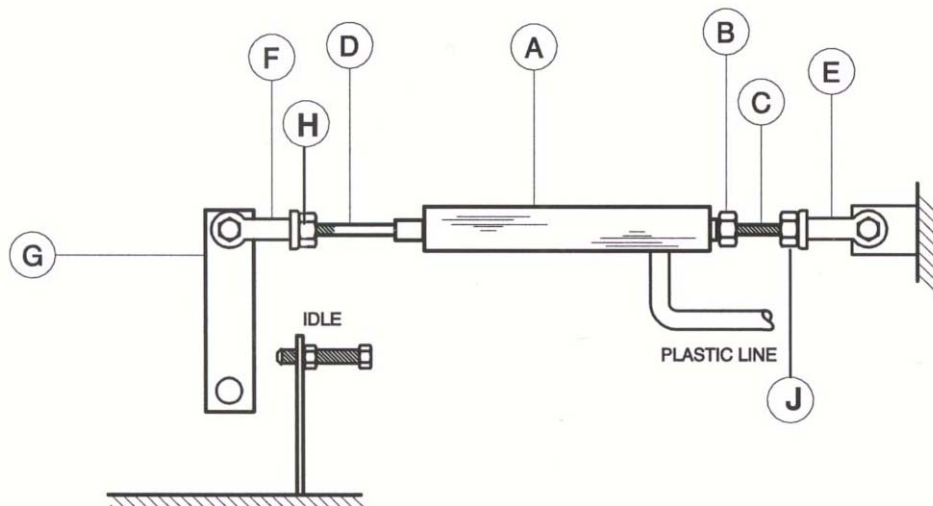
Compressor Air/Oil Temperature:

- At the airend outlet.
- In separator tank.

UNITS WITH DIAGNOSTIC LAMPS

In a shutdown situation, the function of the panel lamps is to indicate what specific failure caused the unit to shut down. These lamps will remain illuminated until the Power Switch is turned “OFF”.

Speed and Pressure Regulator Adjusting Instructions



The engine idle and full speed settings are set and sealed at the factory, and should not be adjusted. Serious injury may result if the full speed is increased. Removal of the seals without authorization could affect the warranty. If speed settings are lost due to engine fuel pump service or other repairs, the speed settings can be reset as follows:

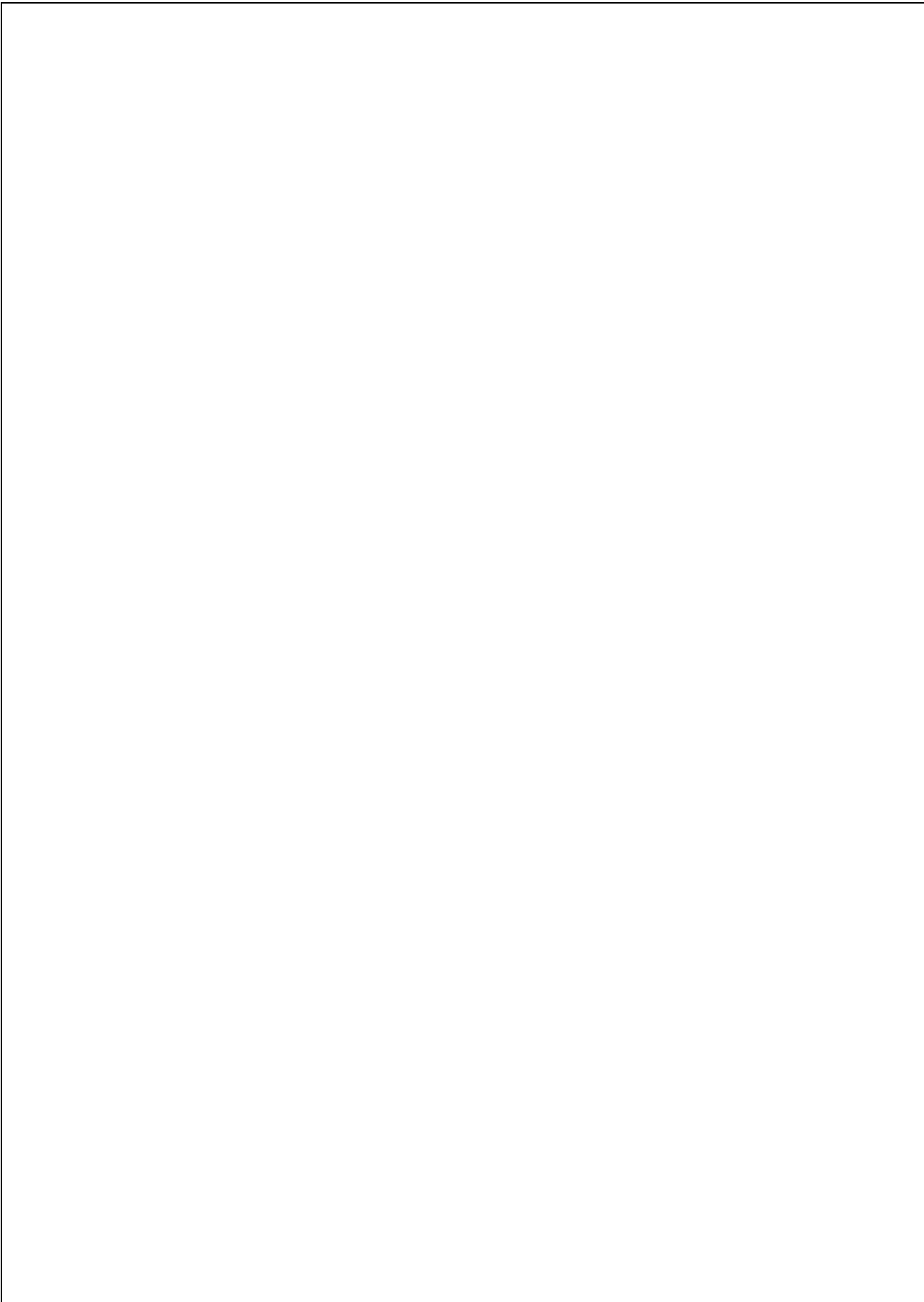
Before Starting

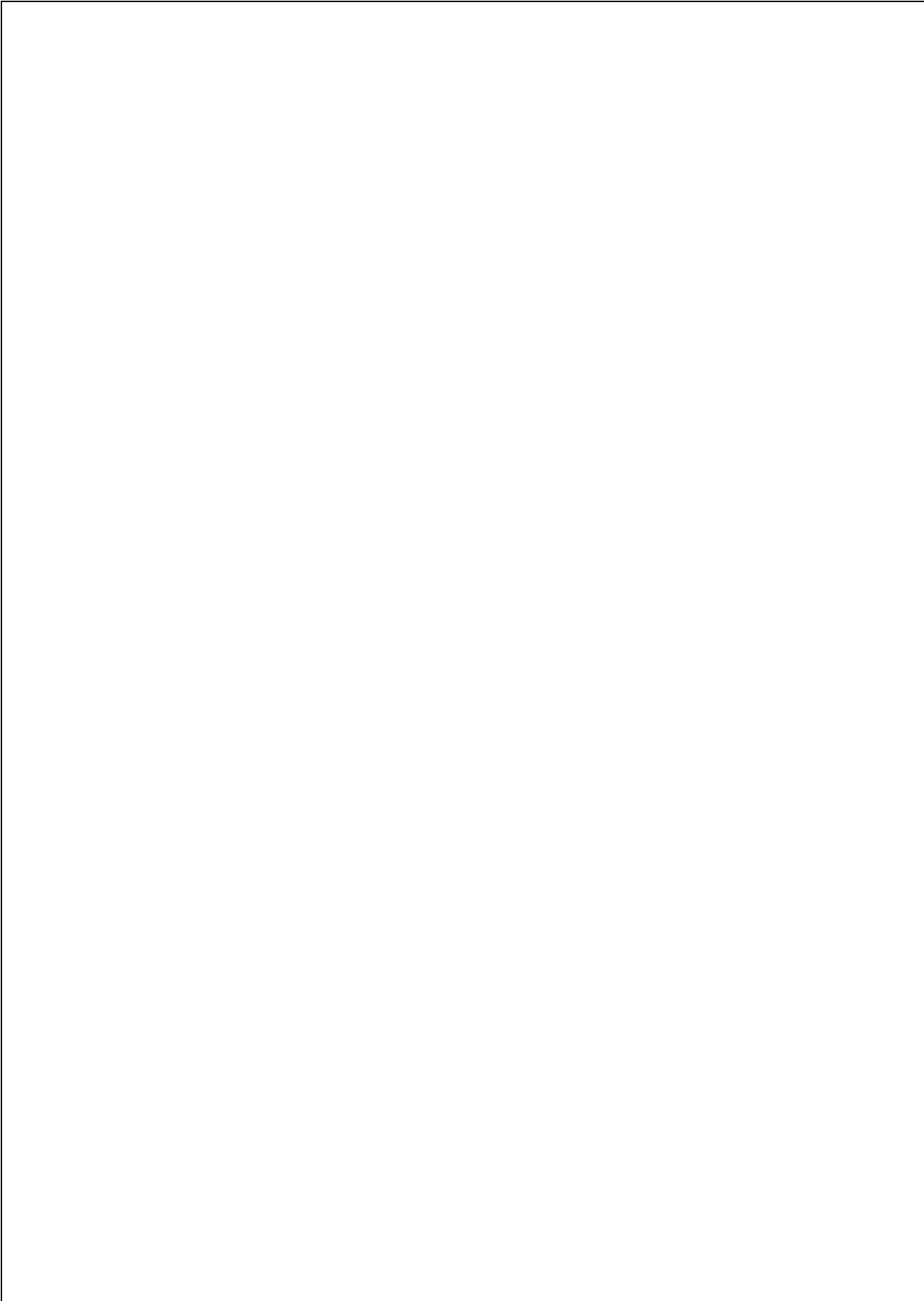
1. At the Pressure Regulator (on service pipe near receiver tank), remove the cover to expose the adjusting screw. Loosen the jam nut and turn screw counterclockwise until tension is no longer felt at the screw. Then, turn screw clockwise one full turn.
2. Close service valve(s).
3. Inspect throttle arm (G) on engine governor to see the arm is resting against the governor stop. Loosen jam nut on air actuating cylinder (A) and then turn cylinder rod (D) until throttle arm (G) is forced against the governor stop.

After Starting Unit

4. If equipped, push the SERVICE AIR button on the control panel, making certain the button does not pop back out. The unit should speed up and then unload (and drop back to IDLE). With the unit unloaded, turn the adjusting screw on the pressure regulator clockwise until the discharge pressure gauge indicates 125-130 psi. Tighten the pressure regulator jam nut. Replace cover.
5. With the service valve closed, adjust IDLE speed (*). Adjust speed using adjusting rod (D). Tighten jam nut (H).
6. Open the service valve and adjust the discharge pressure to 100 psi (700 kPa). Now turn adjusting rod (C) until the proper engine FULL speed setting (*) is reached. Tighten jam nuts (B & J).
7. To obtain maximum CFM at any pressure between 80 psi (550kPa) and maximum pressure rating (*), make adjustment at the pressure regulator to obtain desired discharge pressure at FULL engine speed. Lock adjusting screw and replace cover.

* See General Data Specifications.





Section 6 - MAINTENANCE



Maintenance

CAUTION

Any unauthorized modification or failure to maintain this equipment may make it unsafe and out of factory warranty.

If performing more than visual inspections, disconnect battery cables and open manual blowdown valve.

Use extreme care to avoid contacting hot surfaces (engine exhaust manifold and piping, air receiver and air discharge piping, etc.).

Never operate this machine with any guards removed.

Inch and metric hardware was used in the design and assembly of this unit. Consult the parts manual for clarification of usage.

NOTICE

Disregard any maintenance pertaining to components not provided on your machine.

General

In addition to periodic inspections, many of the components in these units require periodic servicing to provide maximum output and performance. Servicing may consist of pre-operation and post-operation procedures to be performed by the operating or maintenance personnel. The primary function of preventive maintenance is to prevent failure, and consequently, the need

for repair. Preventive maintenance is the easiest and the least expensive type of maintenance. Maintaining your unit and keeping it clean at all times will facilitate servicing.

Scheduled Maintenance

The maintenance schedule is based on normal operation of the unit. This page can be reproduced and used as a checklist by the service personnel. In the event unusual environmental operating conditions exist, the schedule should be adjusted accordingly.

Compressor Oil Level

Check the compressor fluid level when the machine is not operating. Maintain the fluid level between bottom and midway of the sight glass on the separator tank.

Air Cleaner

If this unit is equipped with the Optional Diagnostic Panel, it has an AIR FILTERS RESTRICTED lamp on the instrument panel, covering both the engine and the compressor.

This should be checked daily during operation. If the lamp glows (red) with the unit operating at full speed, servicing of the cleaner element is necessary.

Also weekly squeeze the rubber valve (precleaner dirt dump) on each air cleaner housing to ensure that they are not clogged.

The air filters restricted sensor will automatically reset after the main power switch is turned to "OFF."

To service the air cleaners on all units proceed as follows:

1. Loosen outer wing nut and remove with

MAINTENANCE

SCHEDULE

	Daily	Weekly	Monthly	3 MOS. 250 hours	6 MOS. 500 hours	12 MOS. 1000 hours
Compressor Oil Level	C					
Engine Oil Level	C					
Radiator Coolant Level	C					
Gauges/Lamps	C					
Air Cleaner Service Indicators	C					
Fuel Tank (fill at end of day)	C				DRAIN	
Fuel Water Separator (Drain)	C					
Oil Leaks	C					
Fuel Leaks	C					
Drain Water From Fuel Filters	DRAIN					
Coolant Leaks	C					
Radiator Filler Cap	C					
Air Cleaner PreCleaner Dumps		C				
Fan/Alternator Belts		C				
Battery Connections/Electrolyte		C				
Tire Pressure and Surface		C				
Wheel Lug Nuts			C			
Hoses (oil, air, intake, etc)			C			
Automatic Shutdown System Test			C			
Air Cleaner System Visual			C			
Compressor Oil Cooler Exterior			C	CLEAN		
Engine Radiator Exterior			C	CLEAN		
Fasteners, Guards				C		
Air Cleaner Elements					R	
Fuel/Water Separator Element					R	
Compressor Oil Filter Element					R	
Compressor Oil					R	
Engine Oil Change (initial change @ 50 hrs)				R -non IR fluids	R*	
Engine Oil Filter (initial change @ 50 hrs)				R - non IR fluids	R*	
Wheels (bearings, seals, etc)					C	
Engine Coolant Test					C	R
Fuel Filter Element					R	
Shutdown Switch Settings Test						C
Scavenge Orifice & related parts						CLEAN
Oil Separator Element						R
Lights (running, brake, & turn)	CBT					
Pintle Eye Bolts	CBT					

**R=replace, C=check
(adjust if necessary)
CBT = check before
towing.**

*** Applies only when using IR Protec™
Engine Fluid**

cover. Remove Element.

2. Inspect air cleaner housing for any condition that might cause a leak and correct as necessary.
3. Wipe inside of air cleaner housing with a clean, damp cloth to remove any dirt accumulation, especially in the area where the element seals against the housing.
4. Install new elements in the reverse order to the above. Tighten wing nut firmly.
5. Inspect to ensure that end cap seals tightly 360° around air cleaner body.

In addition, the air cleaner system (housing and piping) should be inspected every month for any leakage paths or inlet obstructions. Make sure the air cleaner mounting bolts and clamps are tight. Check the air cleaner housing for dents or damage which could lead to a leak. Inspect the air transfer tubing from the air cleaner to the compressor and the engine for leaks.

Make sure that all clamps and flange joints are tight.

Gauges

The instruments or gauges are essential for safety, maximum productivity and long service life of the machine. Inspect the gauges and test any diagnostic lamps prior to start-up. During operation observe the gauges and any lamps for proper functioning. Refer to Operating Controls, for the normal readings.

Fuel Tank

CLEAN fuel in the fuel tanks is vitally important and every precaution should be taken to ensure that only clean fuel is poured or pumped into the tank.

When filling the fuel tank on this unit, by methods other than a pump and hose, use a CLEAN non-metallic funnel.

Battery

Keep the battery posts-to-cable connections clean, tight and lightly coated with a grease. Also the electrolyte level in each cell should cover the top of the plates. If necessary, top-up with clean distilled water.

Tires

A weekly inspection is recommended. Tires that have cuts or cracks or little tread should be repaired or replaced. Monthly check the wheel lug nuts for tightness.

Fasteners

Visually check entire unit in regard to bolts, nuts and screws being properly secured. Spot check several capscrews and nuts for proper torque. If any are found loose, a more thorough inspection must be made. Take corrective action.

Table 1:

Wheel Torque Chart	
M12 bolts	Torque (ft-Lbs)
13" wheel	60-70
1/2" lug nuts	
13" wheel	80-90
15" wheel	105-115
16" wheel	105-115
16.5" wheel	105-115
5/8" lug nuts	
16" wheel	190-210
17.5" wheel	190-210

Radiator

NOTICE

The use of water alone in this engine can result in major engine failure. Refer to engine section for coolant recommendation.

Hoses

Each month it is recommended that all of the intake lines to and from the air cleaners, the engine cooling system hoses and all of the flexible hoses used for air, oil, and fuel be inspected.

To ensure freedom from air leaks, all rubber hose joints and the screw-type hose clamps must be absolutely tight. Regular inspection of these connections for wear or deterioration is necessary.

Premature wear of both the engine and compressor is ASSURED whenever dust-laden air is permitted to enter the engine's combustion chamber or compressor intake.

The flexible hoses used in the fuel, oil and air lines on these units are primarily used for their ability to accommodate relative movement between components. It is important they be periodically inspected for wear and deterioration. It is also important the operator does not use the hoses as convenient hand hold or steps. Such use can cause early cover wear and hose failure.

NOTICE

Some of the airlines are nylon tubing. The associated fittings are "push-in"

design. Features are as follows:

Pulling on the tubing will cause the inner sleeve to withdraw and compress, thus tightening the connection. The tubing can be withdrawn only while holding the sleeve against the fitting. The tubing can be removed and replaced numerous times without losing its sealing ability.

To install the nylon tubing, make a mark (with tape or grease pencil) approximately 7/8 inch from the end of the tubing. Insert the tubing into the sleeve and "push-in" past the first resistance to the bottom. The mark should be approximately 1/16 inch from the sleeve, for the 3/8 inch O.D. tubing; 1/8 inch for the 0.25 inch O.D. tubing. This will ensure that tubing is fully engaged in the sealing mechanism.

Compressor Oil Filters

The oil filter must be replaced every 500 hours of operation or six (6) months, whichever comes first.

To service oil filters it will first be necessary to shut the unit down. Wipe off any external dirt and oil from the exterior of the filter to minimize any contamination from entering the lubrication system. Proceed as follows:

WARNING

High pressure air can cause severe injury or death from hot oil and flying parts. Always relieve pressure before removing caps, plugs, covers or other parts from pressurized air system.

1. Open the service air valve(s) to ensure that system is relieved of all pressure. Close the valve(s).
2. Turn the spin-on filter element counterclockwise to remove it from the filter housing. Inspect the filter.

3. Inspect the oil filter head to be sure the gasket was removed with the oil filter element. Clean the gasket seal area on the oil filter head.

NOTICE

Installing a new oil filter element when the old gasket remains on the filter head, will cause an oil leak and can cause property damage.

4. Lubricate the new filter gasket with the same oil being used in the machine.
5. Install new filter by turning the element clockwise until gasket makes initial contact. Tighten an additional 1/2 to 3/4 turn.
6. Start unit and allow to build up to rated pressure. Check for leaks before placing unit back into service.

Compressor Oil Cooler

The compressor lubricating and cooling oil is cooled by means of the fin and tube-type oil cooler, located beside the radiator. The lubricating and cooling oil, flowing internally through the core section, is cooled by the air stream from the cooling fan flowing past the core section. When grease, oil and dirt accumulate on the exterior surfaces of the oil cooler, its efficiency is impaired.

Each month it is recommended that the oil cooler be cleaned by directing compressed air which contains a nonflammable, non-caustic safety solvent through the core of the oil cooler. This should remove the accumulation of grease, oil and dirt from the exterior surfaces of the oil cooler core so that the entire cooling area can transmit the heat of the lubricating and cooling oil to air stream.

In the event foreign deposits, such as sludge and lacquer, accumulate in the oil cooler to the extent that its cooling efficiency is impaired, a resulting high discharge air temperature is likely to occur, causing shut down of the unit. To correct this situation it will be necessary to clean it using a cleaning compound in accordance with the manufacturer's recommendations.

Compressor Oil

The lubricating and cooling oil must be replaced every 500 hours of operation or six (6) months, whichever comes first. Refer to warranty section about extended warranty.

Receiver-Separator Systems

⚠ WARNING

High pressure air can cause severe injury or death from hot oil and flying parts. Always relieve pressure before removing caps, plugs, covers or other parts from pressurized air system.

- Open service valve at end of machine.
- Ensure pressure is relieved, with BOTH:
 - Discharge air pressure gauge reads zero (0).
 - No air discharging from service valve.

Remove plug in bottom of separator tank to drain compressor oil.

When adding oil, remove and replace (make tight) plug on side of separator tank.

In the compressor lubricating and cooling system, separation of the oil from the compressed air takes place in the receiver-separator tank. As the compressed air enters the tank, the change in velocity and direction drop out most of the oil from the air.

Additional separation takes place in the oil separator element which is located in the top of the tank.

Any oil accumulation in this separator element is continuously drained off by means of a scavenge tube which returns the accumulated oil to the system.

The life of the oil separator element is dependent upon the operating environment (soot, dust, etc.) and should be replaced every twelve months or 1000 hours.

Scavenge Line



High pressure air can cause severe injury or death from hot oil and flying parts. Always relieve pressure before removing caps, plugs, covers or other parts from pressurized air system.

The scavenge line originates at the receiver-separator tank cover and terminates at the compressor air-end near the oil filter element. An orifice check valve is located on the scavenge tube.

Once a year or every 1000 hours of operation, whichever comes first, replace the separator element and clean the scavenge orifice/check valve.

NOTE: Excessive oil carry-over may be caused by an oil-logged separator element. Do not replace element without first performing the following maintenance procedure:

1. Check oil level. Maintain as indicated earlier in this section.
2. Thoroughly clean scavenge line, any orifice and check valve.
3. Assure minimum pressure valve/orifice is operational.

4. Run unit at rated operating pressure for 30 to 40 minutes to permit element to clear itself.

Exterior Finish Care

This unit was painted and heat cured at the factory with a high quality, thermoset polyester powder coating. The following care will ensure the longest possible life from this finish.

1. If necessary to remove dust, pollen, etc. from housing, wash with water and soap or dish washing liquid detergent. Do not scrub with a rough cloth, pad, etc.
2. If grease removal is needed, a fast evaporating alcohol or chlorinated solvent can be used. Note: This may cause some dulling of the paint finish.
3. If the paint has faded or chalked, the use of a commercial grade, non-abrasive car wax may partially restore the color and gloss.

Field Repair of Texture Paint

1. The sheet metal should be washed and clean of foreign material and then thoroughly dried.
2. Clean and remove all grease and wax from the area to be painted using Duponts 3900S Cleaner prior to sanding.
3. Use 320 grit sanding paper to repair any scratches or defects necessary.
4. Scuff sand the entire area to be painted with a red scotch brite pad.
5. Wipe the area clean using Duponts 3900S.
6. Blow and tack the area to be painted.
7. Apply a smooth coat of Duponts 1854S Tuffcoat Primer to all bare metal areas and allow to dry.

8. Apply 2 medium - wet coats of Duponts 222S Adhesion Promoter over the entire area to be painted, with a 5 minute flash in between coats.
9. To apply the texture coat, use Duponts 1854S Tuffcoat Primer. The proper technique to do this is to spray the Tuffcoat Primer using a pressure pot and use about 2-5 pounds of air pressure. This will allow the primer to splatter causing the textured look.

NOTE: You must be careful not to put too much primer on at one time, this will effect the amount of texture that you are trying to achieve. Allow the texture coat to flash for 20 minutes or until dry to touch.

10. Apply any of Duponts Topcoat Finishes such as Imron™ or Centari™ according to the label instructions.

NOTE: To re-topcoat the textured surfaces when sheet metal repairs are not necessary, follow steps 1, 2, 4, 5, 6, 8 and 10.

Section 7 - LUBRICATION



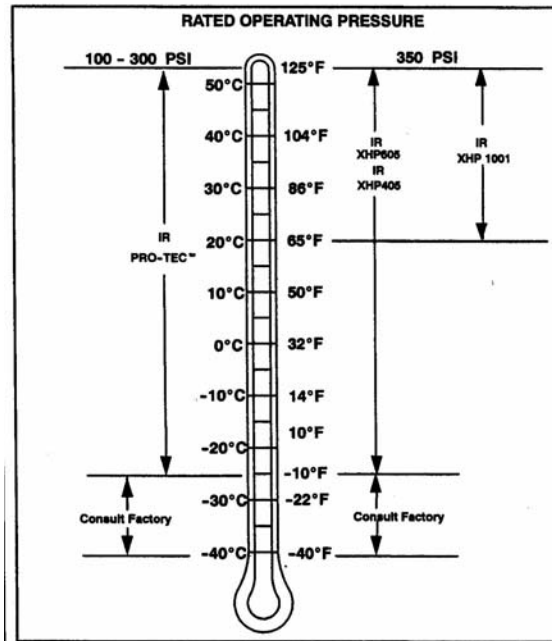
Lubrication

Portable Compressor Fluid Chart

Refer to these charts for correct compressor fluid required. Note that the selection of fluid is dependent on the design operating pressure of the machine and the ambient temperature expected to be encountered before the next oil change.

NOTE: Fluids listed as “preferred” are required for extended warranty.

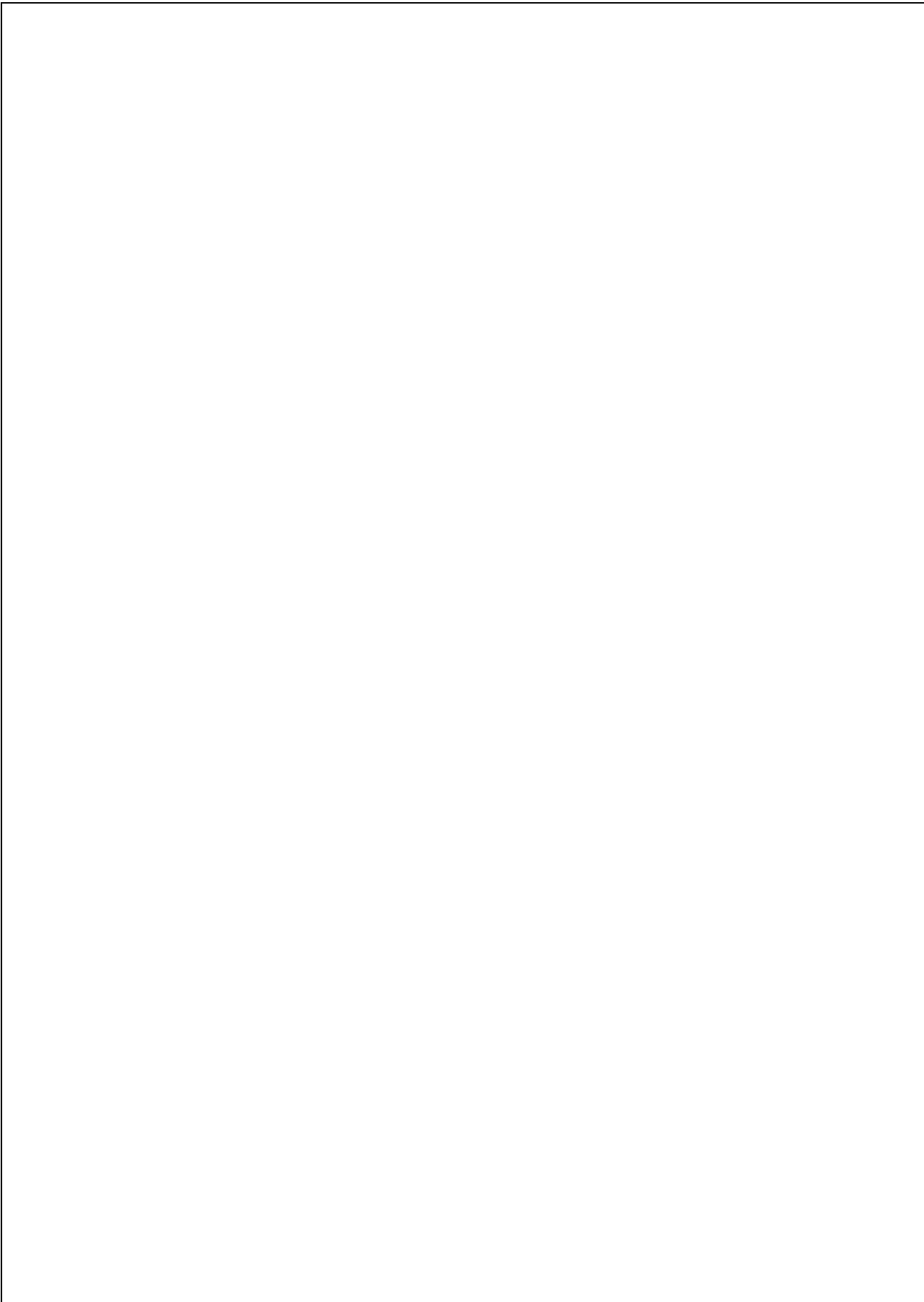
Compressor oil carryover (oil consumption) may be greater with the use of alternative fluids.

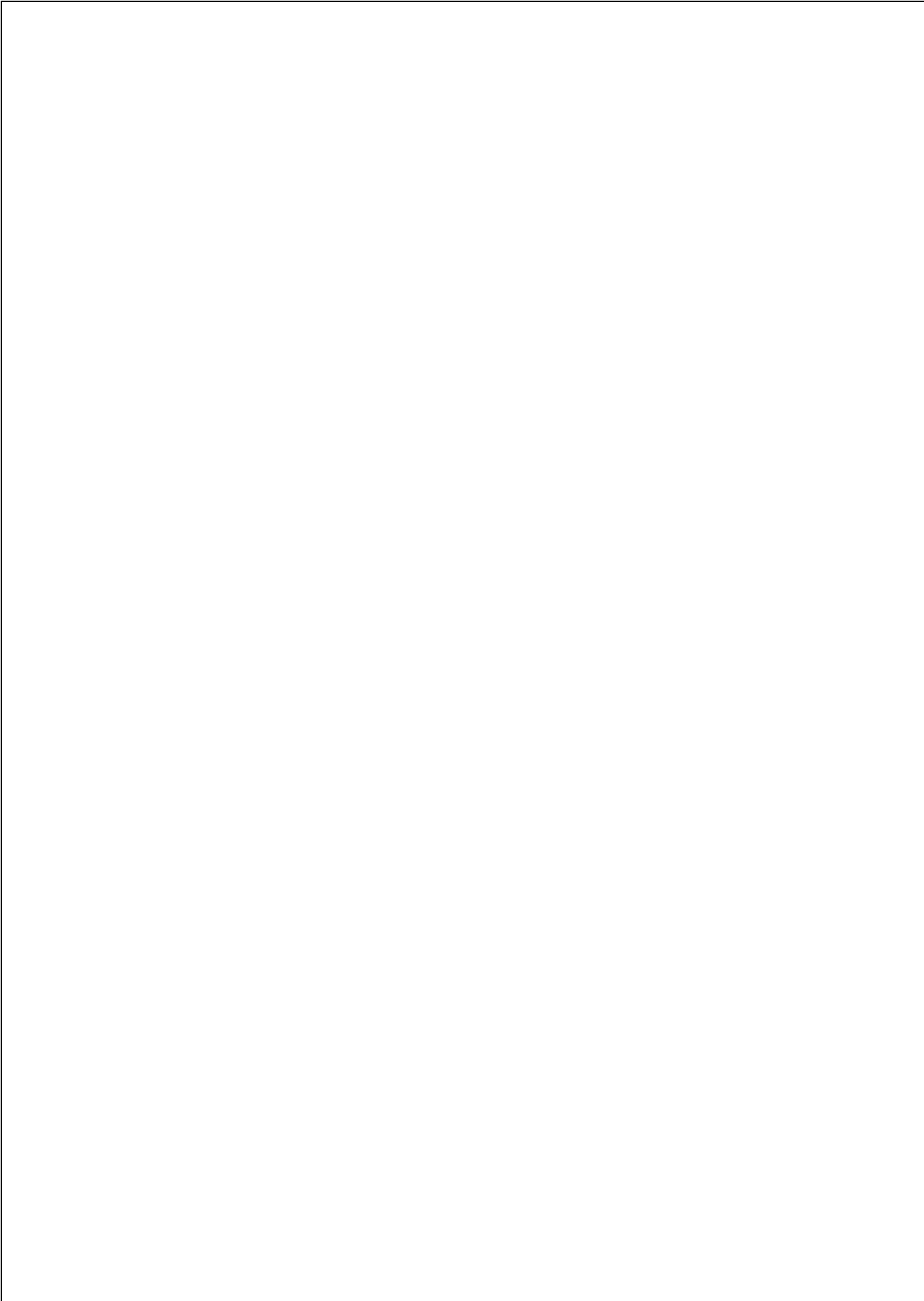


Preferred Ingersoll-Rand Fluids - Use of these fluids with original I-R filters can extend airend warranty. Refer to operator’s manual warranty section for details or contact your IR representative.

Design Operating Pressure	Ambient Temperature	Specification
100 psi to 300 psi	-10°F to 125°F (-23°C to 52°C)	Preferred: IR Pro•Tec™ Alternate: ISO Viscosity Grade 46 with rust and oxidation inhibitors, designed for air compressor service.
350 psi	(-23°C to 52°C) -10°F to 125°F	Preferred: IR XHP 605 Alternate: IR XHP405 ISO Viscosity Grade 68 Group 3 or 5 with rust and oxidation inhibitors designed for air compressor service.
	65°F to 125°F (-18°C to 52°C)	Preferred: XHP605 IR XHP1001

Ingersoll-Rand Preferred Fluids	1 gal. (3.8 Litre)	5 gal. (19.0 Litre)	55 gal. (208.2 Litre)	220 gal. (836 Litre)
Preferred:				
IR Pro-Tec™	36899698	36899706	36899714	36899722
IR XHP605	-	22252076	22252050	22252068
IR XHP1001	-	35612738	35300516	-
XHP405	-	22252126	22252100	22252118
Engine Oil	54480918	36875938	36866903	





Section 1 - Trouble Shooting



Trouble Shooting

Introduction

Trouble shooting for a portable air compressor is an organized study of a particular problem or series of problems and a planned method of procedure for investigation and correction. The trouble shooting chart that follows includes some of the problems that an operator may encounter during the operation of a portable compressor.

The chart does not attempt to list all of the troubles that may occur, nor does it attempt to give all of the answers for correction of the problems. The chart does give those problems that are most apt to occur. To use the trouble shooting chart:

- A. Find the “complaint” depicted as a bold heading.
- B. Follow down that column to find the potential cause or causes. The causes are listed in order (1,2,3 etc.) to suggest an order to follow in trouble shooting.

Action Plan

A. Think Before Acting

Study the problem thoroughly and ask yourself these questions:

1. What were the warning signals that preceded the trouble?
2. Has a similar trouble occurred before?
3. What previous maintenance work has been done?
4. If the compressor will still operate, is it safe to continue operating it to make further checks?

B. Do The Simplest Things First

Most troubles are simple and easily corrected. For example, most complaints are “low capacity” which may be caused by too low an engine speed or “compressor overheats” which may be caused by low oil level.

Always check the easiest and most obvious things first; following this simple rule will save time and trouble.

NOTE: For trouble shooting electrical problems, refer to the Wiring Diagram Schematic found in Parts List Section.

C. Double Check Before Disassembly

The source of most compressor troubles can be traced not to one component alone, but to the relationship of one component with another. Too often, a compressor can be partially disassembled in search of the cause of a certain trouble and all evidence is destroyed during disassembly. Check again to be sure an easy solution to the problem has not been overlooked.

D. Find And Correct Basic Cause

After a mechanical failure has been corrected, be sure to locate and correct the cause of the trouble so the same failure will not be repeated. A complaint of “premature breakdown” may be corrected by repairing any improper wiring connections, but something caused the defective wiring. The cause may be excessive vibration.

Trouble Shooting Chart

Bold Headings depict the COMPLAINT - Subheadings indicate CAUSES

NOTE: Subheadings suggest sequence to follow troubleshooting.

Table 1: Unit Shutdown

Cause	Corrective Action
Out of Fuel	Add CLEAN diesel Fuel
Compressor Oil Level Too Low	Add correct oil
Compressor Oil Temp. Too High	See Table 10
Engine Water Temp. Too High	Check coolant level. If necessary, Add.
Loose Wire Connection	Wiggle wires at switches & connector blocks. Make repairs.
Low Fuel Level Shutdown Switch	Replace switch.
Defective Discharge Air Temp. Switch	Replace switch.
Defective Engine Oil Pressure Switch	Replace switch.
Broken Engine Fan Belt	Replace fan belt.
Engine Oil Pressure Too Low	See Table 3 and Table 4.
Defective Shutdown Solenoid	Replace solenoid.
Malfunctioning Relay	Replace relay.
Blown Fuse	Replace fuse/Check for Short.
* < 10 Volts at Shutdown Solenoid	Check battery and alternator. Make repairs.
Engine Malfunctioning	See Trouble Shooting in Engine Section.
Airend Malfunctioning	See Table 10.

Table 2: Won't Start/Run:

Cause	Corrective Action
Out of Fuel	Add CLEAN diesel Fuel
Clogged Fuel Filters	Service filters.
Compressor Oil Level Too Low	Add corrected oil
Loose Wire Connection	Repair or replace connection.
Low Battery Voltage	Check electrolyte level. Check connections.
* <10 Volts at Shutdown Solenoid	Charge battery and alternator. Make repairs.
Defective Alternator	Replace/Repair Alternator
Out of Fuel	Add CLEAN fuel.
Engine Water Temp. Too High	Check fluid level. If necessary, Add.
Malfunctioning Start Switch	Replace switch.
Defective D2 Diode	Replace D2 Diode.
Blown Fuse	Replace fuse/Check for Short.
Engine Oil Pressure Too Low	See Table 3 and Table 4.
Compressor Oil Temp. Too High	See Table 10.
Defective Discharge Air Temp. Switch	Replace switch.
Defective Engine Oil Pressure Switch	Replace switch.

Defective Shutdown Solenoid	Replace solenoid.
Defective Engine Temp. Switch	Replace Switch
Defective Separator Tank Temp Switch	Replace Switch
Defective Low Fuel Shutdown Switch	Replace Switch
Malfunctioning Relay	Replace relay.
Engine Malfunctioning	See Trouble Shooting in Engine Section.
Airend Malfunctioning	See Table 10.

Table 3: Engine Temperature Lamps Stays On:

Complaint	Corrective Action
Dirty Cooler	Clean exterior of cooler.
Operating Pressure Too High	Reduce pressure to spec.
Recirculation of Cooling Air	Close side doors.
Dirty Operating Conditions	Move unit to cleaner environment.
* Out of Level >15 degrees	Relocate or reposition unit.
* Ambient Temp. >125°F (52°C)	Above spec limit.
Loose Wire Connection	Repair or replace.
Broken Engine Fan Belt	Replace fan belt set.
Malfunctioning Circuit Board	Replace circuit board.

Table 4: Engine Oil Pressure Lamp Stays On:

Complaint	Corrective Action
Low Oil Level	Add oil.
Clogged Oil Filter Element(s)	Replace element(s).
Out of Level >15 degrees	Relocate or reposition.
Loose Wire Connection.	Repair or replace.
Wrong Lube Oil	See Engine Oil Spec. Change oil.
Malfunctioning circuit board	Replace circuit.
Engine Malfunctioning	See Trouble Shooting in Engine Section.

Table 5: Engine Temperature Lamps Stays Off:

Complaint	Corrective Action
Bulb Burned Out	Replace circuit board.
Shorted Wire (Hot)	Repair short.
Malfunctioning circuit board	Replace circuit board.

Table 6: Engine Oil Pressure Lamp Stays Off:

Complaint	Corrective Action
Bulb Burned Out	Replace circuit board.
Shorted Wire (Hot)	Repair short.
Malfunctioning circuit board	Replace circuit board.

Table 7: Alternator Lamp Stays On:

Complaint	Corrective Action
Low Battery Voltage	Check electrolyte level. Add if necessary.
Loose or Broken Belts	Tighten or replace belt set.
	Check connectors. Clean & tighten.
	Recharge battery.
Malfunctioning Alternator	Repair or replace alternator.
Shorted wire (ground)	Repair short.

Table 8: Alternator Lamp Stays Off:

Complaint	Corrective Action
Bulb Burned Out	Replace circuit board.
Loose Wire Connection	Repair or replace connector.
Malfunctioning circuit board	Replace circuit board.

Table 9: Unit Fails To Shutdown:

Complaint	Corrective Action
Defective Low Fuel Shutdown Switch	Pull wire off shutdown solenoid. Replace switch.
Defective Discharge Air Temperature Switch	Pull wire off. Replace switch.
Defective Sep. Temp. Switch	Replace switch.
Defective Engine Temp. Switch	Replace switch.
Defective Engine Oil Pressure Switch	Pull wire off. Replace switch.
Defective Shutdown Solenoid	Carefully block air inlet to stop engine.
Malfunctioning Relay	Replace relay.
Defective Start Switch	Pull wire off shutdown solenoid. Replace defective item.
Wire Shorted Hot	Repair short.

Table 10: Excessive Compressor Oil Temperature:

Complaint	Corrective Action
Dirty Cooler	Clean exterior surfaces.
Low Oil Level	Add oil. Look for any leaks.
Clogged Oil Filter Elements	Replace elements. Change oil.
Operating Pressure Too High	Reduce pressure to spec.
Dirty Operating Conditions	Move unit to cleaner environment.
Ambient Temp. > 125°F (52°C)	Above spec limit.
Out of Level > 15 degrees	Relocate or reposition unit.
Wrong Lube Oil	Check spec in this manual.
Recirculation Of Cooling Air	Close side doors. Replace belly pan.
Malfunctioning Thermostat	Replace thermostat in bypass valve.
Loose or Broken Belts	Tighten or replace belt set.
Defective Oil Cooler Relief Valve	Replace valve.

Defective Minimum Pressure Valve	Repair or replace valve.
Malfunctioing Fan	Check fan belt tension. Tighten or replace belt set.
Blocked or Restricted Oil Lines	Clean by flushing or replace.
Airend Malfunctioing	See Tables 11, 12, 13, 15, 16 or 18.

Table 11: Engine RPM Down

Complaint	Corrective Action
Clogged Fuel Filter	Clean primary filter. Replace final filter. Drain tanks. Add CLEAN fuel.
Dirty Air Filter	Clean or replace elements.
Operating Pressure Too High	Reduce pressure to spec limit.
Incorrect Pressure Regulator Adjustment	Adjust regulator.
Incorrect Linkage Adjustment	Adjust linkage.
Wrong Air Filter Element	Install correct element.
Malfunctioing Pressure Regulator	Replace regulator.
Malfunctioing Air Cylinder	Replace air cylinder and adjust.
Defective Separator Element	Install new element.
Engine Malfunctioing	See Trouble Shooting in Engine Section.
Airend Malfunctioing	Consult Dealer.

Table 12: Excessive Vibration

Complaint	Corrective Action
Dirty Fuel/Filters	Replace filters/fuel.
Engine idle speed too low.	Raise "No Load" speed.
Rubber Mounts, Loose or Damaged	Tighten or replace.
Anti-rumble valve not working.	Repair or Replace.
Drive Coupling Defective	Replace coupling.
Defective Fan	Replace fan.
Engine Malfunctioing	See Trouble Shooting in Engine Section.
Airend Malfunctioing	See Table 15 and 17.

Table 13: Low CFM

Complaint	Corrective Action
Engine RPM too Low	Adjust RPM
Malfunctioing Air Cylinder	Replace air cylinder.
Incorrect Linkage Adjustment	Adjust linkage.
Malfunctioing Inlet Unloader	Inspect valve.
Dirty Air Filter	Clean or replace elements.
Incorrect Pressure Regulator Adjustment	Adjust linkage.
Malfunctioing Pressure Regulator	Replace regulator.
Wrong Air Filter Element	Install correct element.
Defective Separator Element	Install new element.
Defective Minimum Pressure Valve	Repair or replace valve.

Table 14: Short Air Cleaner Life

Complaint	Corrective Action
Inadequate Element Cleaning	Install new element.
Dirty Operating Conditions	Move unit to cleaner environment.
Incorrect Stopping Procedure	Read procedure in this manual.
Wrong Air Filter Element	Install proper element.

Table 15: Excessive Oil In Air

Complaint	Corrective Action
High Oil Level	Read procedure in this manual.
Clogged Scavenge Orifice	Remove scavenge orifice. Clean and Replace.
Incorrect Oil	Replace by spec. in this manual.
Defective Scavenge Check Valve	Remove check valve. Replace with new valve.
Out of Level > 15 degrees	Relocate or reposition unit.
Defective Separator Element	Remove element. Install new.
Scavenge Tube Blocked	Remove scavenge tube. Clean and Replace.
Sep. Tank Blow Down Too Quickly	Allow unit to blow down automatically.
Defective Minimum Pressure Valve	Remove valve. Repair valve and replace.

Table 16: Oil Seal Leak

Complaint	Corrective Action
Contaminated Lube Oil	Drain and flush system. Add new CLEAN oil. Replace seal.
Blocked or Restricted Oil Line(s)	Remove, clean and replace line(s). Replace seal.
Malfunctioning Seal	Consult dealer. Replace seal.
Scored Shaft	See instructions in new seal kit.

Table 17: Will Not Unload

Complaint	Corrective Action
Incorrect Pressure Regulator Adjustment	Adjust regulator.
Leak in Regulator Piping	Find and repair leak(s).
Malfunctioning Pressure Regulator	Replace regulator.
Malfunctioning Inlet Valve Unloader	Inspect valve. Repair/Replace.
Defective Separator Element	Remove element. Install new.
Ice in Regulation Lines/Orifice	Apply heat to line(s) and or orifice.

Table 18: Oil In Air Cleaner

Complaint	Corrective Action
Incorrect Stopping Procedure	Read Procedure in this manual.
Malfunctioning Unloader	Repair/Replace.

Table 19: Safety Valve Relieves

Complaint	Corrective Action
Operating Pressure Too High	Reduce pressure to spec limit.
Incorrect Pressure Regulator Adjustment	Refer to Section 6 in this manual.
Malfunctioning Pressure Regulator	Replace regulator.
Leak In Regulator Piping	Repair leak(s).
Malfunctioning Inlet Unloader	Inspect valve. Repair/Replace.
Defective Separator Element	Remove element. Install new.
Defective Safety Valve	Replace safety valve.
Ice in Regulation Lines/Orifice	Remove ice.

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