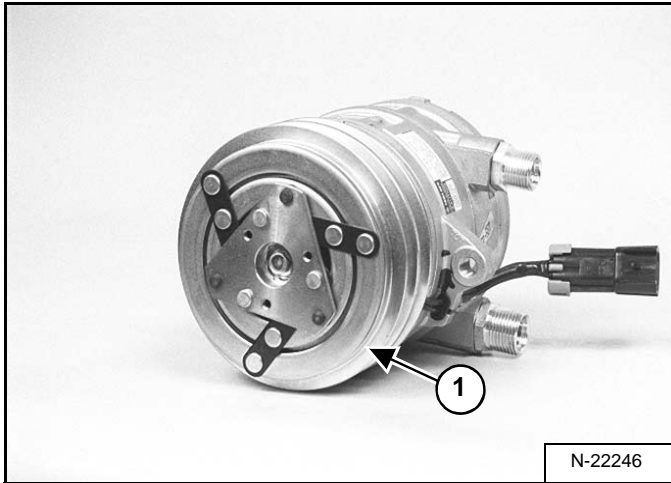


**GENERAL AIR CONDITIONING SERVICE
GUIDELINES (CONT'D)**

Compressor Oil Check (Cont'd)

Figure 70-90-4



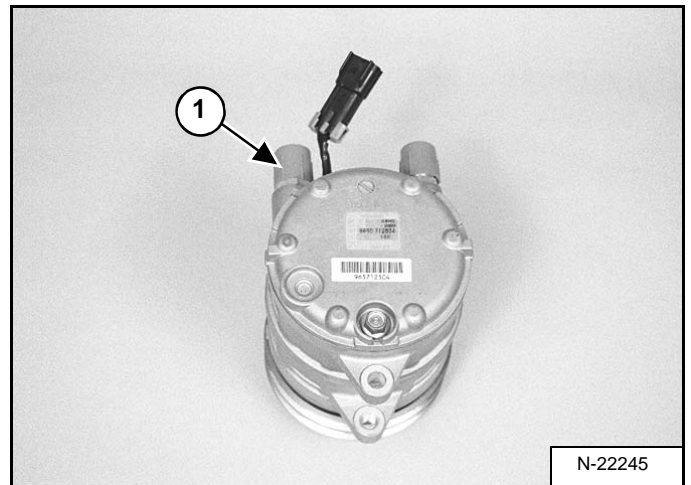
NOTE: After draining the oil through the drain hole and the connectors, extract the remaining oil through the discharge-side connector by rotating the drive pulley (Item 1) [Figure 70-90-4] several times by hand.

Measure the drained oil in a measuring cylinder.

Check the oil for contamination, dirt, metal shavings, or varnish color, discard the oil if contaminated.

NOTE: If metal shavings are found in the compressor oil, replace the complete compressor assembly.

Figure 70-90-5



Add new compressor oil through the suction side connector (Item 1) [Figure 70-90-5].

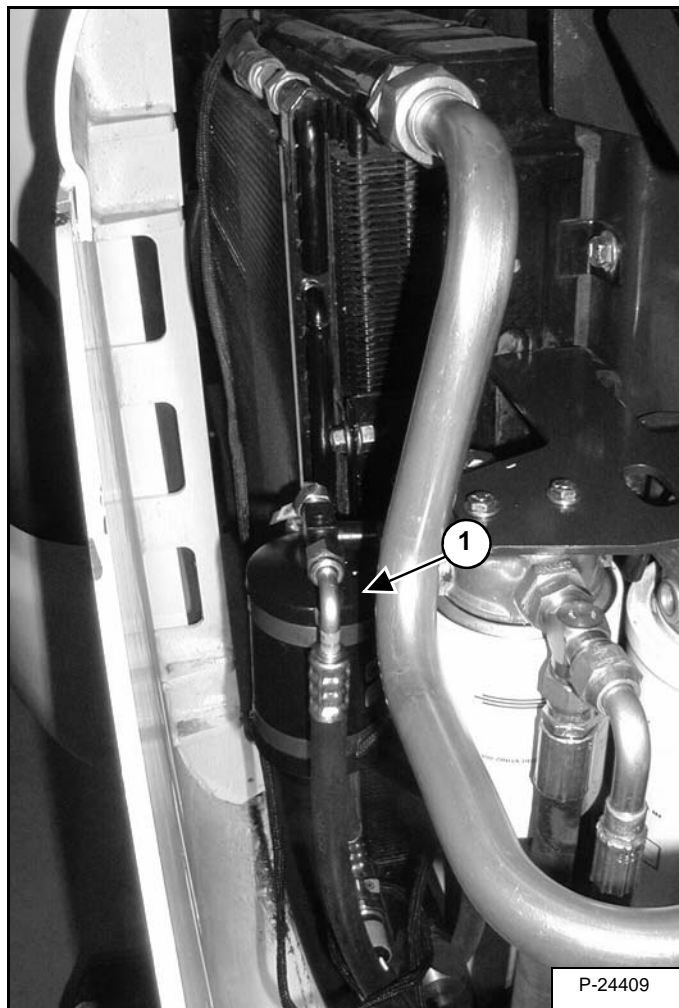
Installation: Add 150 to 170 cc's of PAG oil.

NOTE: The suction port on the compressor is marked with an S and is the larger port on the compressor.

GENERAL AIR CONDITIONING SERVICE GUIDELINES (CONT'D)

Component Replacement And Refrigeration Leaks

Figure 70-90-6



Whenever the A/C system is opened to the atmosphere or there has been a leak in the system, the receiver/drier (Item 1) **[Figure 70-90-6]** must be changed.

Never leave hose fittings, compressor fittings or components uncapped while working on the A/C system.

SYSTEM TROUBLESHOOTING CHART

Blower Motor Does Not Operate

POSSIBLE CAUSE	INSPECTION	SOLUTION
1. Blown Fuse.	Inspect the fuse/wiring.	Replace fuse/repair wiring.
2. Broken wiring or bad connection.	Check the fan motor ground and connectors.	Repair the wiring or connector.
3. Fan motor malfunction.	Check the lead wires from the motor with a circuit tester.	Replace Motor.
4. Resistor malfunction.	Check resistor using a circuit tester.	Replace Resistor.
5. Fan motor switch malfunction.	Check power into and out of the fan switch.	Replace Fan Switch.

Blower motor operates normally, but air flow is insufficient

POSSIBLE CAUSE	INSPECTION	SOLUTION
1. Evaporator inlet obstruction	Check evaporator for plugging.	Remove obstruction and clean evaporator fins with air or water.
2. Air leak.	Check to make sure air hoses are properly hooked to Louvers, and air ducts.	Repair or adjust.
3. Defective thermo. switch (frozen evaporator).	Check thermostat using a circuit tester.	Replace thermostat.

Insufficient cooling although air flow and compressor operation are normal

POSSIBLE CAUSE	INSPECTION	SOLUTION
1. System low on refrigerant.	The high side pressure will be low and bubbles may be present in sight glass on receive drier.	Repair any leaks and recharge the refrigerant to the correct level.
2. Excessive refrigerant.	The high pressure side pressure will be high.	Use refrigerant recovery equipment to capture excess refrigerant. Charge to the correct refrigerant level.

The compressor does not operate at all, or operates improperly

POSSIBLE CAUSE	INSPECTION	SOLUTION
1. Loose drive belt.	The belt is vibrating or oscillating.	Adjust tension.
2. Internal compressor malfunction.	The compressor is locked up and the belt slips.	Replace compressor.
Magnetic clutch related		
3. Low battery voltage.	Clutch slips.	Recharge the battery.
4. Faulty coil.	Clutch slips.	Replace the magnetic clutch.
5. Oil on the clutch surface.	Clutch slips.	Replace or clean the clutch surface.
6. Open oil.	Clutch does not engage and there is not reading when a circuit tester is connected between the coil and terminals.	Replace clutch.
7. Broken wiring or poor ground.	Clutch will not engage. Inspect the ground and connections.	Repair.
8. Wiring harness components.	Test the conductance of the pressure switch, thermostat, Relay, etc.	Check operation.

SYSTEM TROUBLESHOOTING CHART (CONT'D)

Gauge Pressure Related Troubleshooting

Normal compressor suction (low side) and discharge (high side) pressure at ambient temperatures of 86-96 degrees F (30-38 degrees C) and compressor speed of approximately 2000 RPM are:

High pressure side pressure: 210-265 PSI

Low pressure side pressure: 15-33 PSI

As a rule of thumb the high side pressure will be around eight times greater then the low side pressure.

POSSIBLE CAUSE		INSPECTION	SOLUTION
Low pressure side Too high.		The low pressure side pressure normally becomes too high when the high pressure side pressure is too high. As this is explained below, the following inspection is only used when the low pressure side is too high.	
1.	Expansion valve opens too far.	Frost is present on the suction hose.	Replace expansion valve
2.	Defective compressor	The high and low pressure side gauge pressures equalize when the magnetic clutch is disengaged.	Replace compressor.
Low pressure side Too low.			
1.	Low refrigerant charge	The high side pressure will be low and bubbles may be present in sight glass on receiver drier.	Repair any leaks and recharge the refrigerant to the correct level.
2.	Clogged or closed expansion valve.	The expansion valve's inlet side is frosted. Moisture or other Contaminants can be the cause.	Clean or replace the expansion Valve.
3.	Restriction between drier and expansion valve.	Frost on the line between drier and expansion valve. A Negative low pressure reading may be shown.	Flush system or replace hose.
4.	Thermostat malfunction.	The evaporator is frozen.	Adjust thermostat's temperature setting or probe placement or replace thermostat.
High pressure side Too high.			
1.	Poor condenser performance.	Dirty or clogged condenser fins. Condenser fans not Operating.	Clean fins, and/or repair the fan.
2.	Excessive refrigerant.	The high pressure side pressure will be high.	Use refrigerant recovery equipment to capture excess refrigerant. Charge to the correct refrigerant level.
3.	Excessive oil charge	The high pressure side will be high.	Evacuate system. Remove oil from condenser and compressor. Measure oil from compressor and add correct oil charge back into compressor. Flush system with nitrogen. Replace drier.
4.	Air in system.	Pressure is high on both high and low sides.	Evacuate and recharge with Refrigerant.
5.	Restriction in drier, condenser or high pressure line.	High pressure side will be high, and low pressure side will be low.	Evacuate and flush system replacing defective parts.
High pressure side Too low.			
1.	Low refrigerant charge.	The high side pressure will be low and bubbles may be present in sight glass on receiver drier.	Repair any leaks and recharge the refrigerant to the correct level.

SYSTEM TROUBLESHOOTING CHART (CONT'D)

Gauge Pressure Related Troubleshooting (Cont'd)

POSSIBLE CAUSE		INSPECTION	SOLUTION
	System pressures Equal		
1.	Clutch not operating	See magnetic clutch related topics above.	
2.	Compressor not pumping.	Equal high and low pressures.	Replace compressor.



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TEMPERATURE/PRESSURE

Chart

NORMAL EVAPORATOR RANGE	
TEMP F.	PSIG
16	15.69
18	17.04
20	18.43
22	19.87
24	21.35
26	22.88
28	24.47
30	26.10
32	27.79
34	29.52
36	31.32
38	33.17
40	35.07
42	37.03
44	39.05
45	40.09
50	45.48
55	51.27
60	57.47
65	64.10
70	71.19
75	78.75
80	86.80
85	95.40
90	104.40
91	106.30
92	108.20

NORMAL EVAPORATOR RANGE	
TEMP F.	PSIG
93	110.20
94	112.10
95	114.10
100	124.30
102	128.50
104	132.90
106	137.30
108	141.90
110	146.50
112	151.30
114	156.10
116	161.10
118	166.10
120	171.30
122	176.60
124	182.00
126	187.50
128	193.10
130	198.90
135	213.70
140	229.40
145	245.80
150	263.00
155	281.10
160	300.10
166	320.10
170	340.80

Evaporator

Pressures represent gas temperatures inside the coil, not the coil surface. For an estimate of the temperature of the air coming off the coil add 8-10 degrees F. to the temperature on the chart.

Condenser

Temperatures are not ambient temperatures but condensing temperatures. Add 40 degrees F. to the ambient temperature to get the condensing temperature and then refer to the pressure chart to see appropriate pressure for ambient temperature.

Example: Ambient Temperature = 90 degrees F.

90 degrees F.

+40 degrees F.

130 degrees F. condenser temperature = 200 psig

Conditions and pressures will vary from system to system.



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AIR CONDITIONING SERVICE

Chart

Service Company/Phone Number: Date: Machine Model:		Machine Dealer: Customer:	
Machine Serial Number:			
Machine Hours:			
Pre Service Conditions	15 Minutes	30 Minutes	Notes
Ambient Temperature:			
Louver Temperature:			
Cab Temperature at Head Position:			
Temperature into Condenser:			
High Side Pressure			
Low Side Pressure			
Ambient Humidity			
Observations:			
Explain services required:			
Post Service Conditions	15 Minutes	30 Minutes	Notes
Ambient Temperature:			
Louver Temperature:			
Cab Temperature at Head Position:			
Temperature into Condenser:			
High Side Pressure			
Low Side Pressure			
Ambient Humidity			
Observations:			

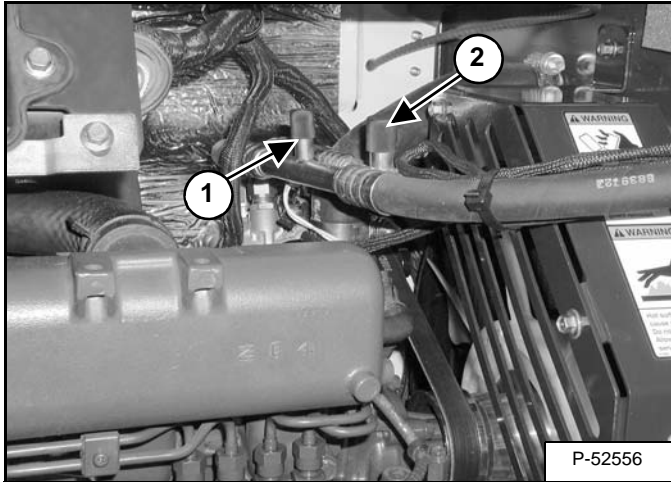


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SYSTEM CHARGING AND RECLAMATION

Reclamation Procedure

Figure 70-130-1



Open the tailgate and locate the low pressure port (Item 1), and high pressure port (Item 2) [Figure 70-130-1].

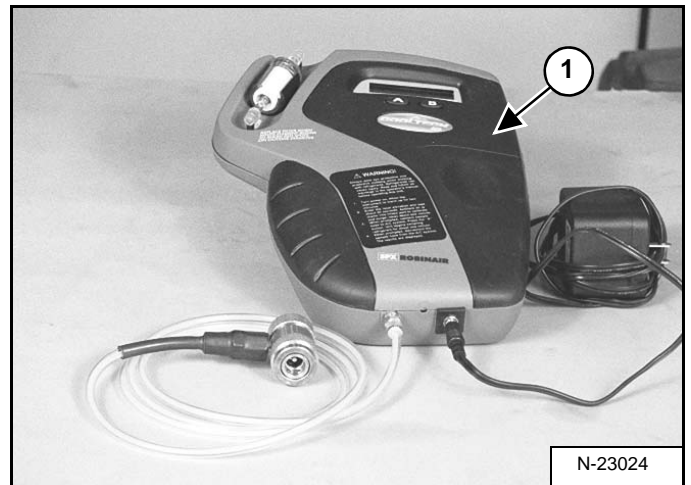
WARNING

In the event of a leak, wear safety goggles. Escaping refrigerant can cause severe injuries to eyes. In contact with a flame, R134a refrigerant gives a toxic gas.

W-2371-0500

NOTE: This procedure is run with the excavator engine OFF, and the A/C switch in the OFF position.

Figure 70-130-2



NOTE: Before reclaiming a refrigeration system, it is recommended to identify the type of refrigerant that is in the A/C system and if it is pure enough to use. The tool MEI 1592, Refrigerant Identifier (Item 1) [Figure 70-130-2] will determine, the kind of refrigerant and any possible harmful or dangerous substances that may be present in the system. Thus preventing mixing of dangerous material with your reclaimed R-134a in your reclaimer, and further contamination to other A/C systems that are reclaimed and charged from your MEL 1581 Recovery/Recycling/Recharging Machine.