TROUBLESHOOTING

Use the table below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

										-	•		-		
See Page	AC-17	AC-23	-	AC-51		AC-48	AC-52	AC-44	AC-43		ł	I	AC-49	AC-49	AC-46
Part Name	rigerant	sion	nt volume	ect A/C control lever adjustment	ect outlet air control	lay	control switch			m for refrigerant	fuse	ain relay	relay No. 2	relay No. 3	motor
Trouble	pect volume of ref	ect drive belt tensi	ect engine coolar			Heater main re	Blower speed o	Blower resistor	Blower motor	spect cooing syste	Condenser fan	Radiator fan ma	Condenser fan	Condenser fan	Condenser fan
	lns	Ins	lns	lns	lns	1		r	r	lns			r	1	
No blower operation						1	4	3	2						
No air temperature control			1	2											
No compressor operation	1					7	9								
Compressor operates intermittently	1									2					
No condenser fan operation											1	2	3	4	6
No cool air comes out	1	2													
Cool air comes out intermittently	1	2													
Cool air comes out only at high engine rpm	1	2													
insufficient cooling	1	2								3					
No engine idle up when A/C switch on															
No warm air comes out			1	2						_					

						7						Pressure switch	AC-45
						8						Water temperature switch	
		J	ω						[Insp	ect refrigerant lines	_
					4			сл				Compressor	AC-30
					ω			4				Magnetic clutch	AC-30
												Condenser	AC-38
												Receiver	AC-37
				თ								Evaporator	AC-40
			1	4								Expansion valve	AC-40
					ъ						Inspect refrigeration control		
		i						N				A/C fuse	-
								œ				A/C switch	AC-53
						5		ω				Magnetic clutch relay	_
							ω	თ				Pressure switch	AC-45
		6		6			5	11				Thermistor	AC-47
	2	4		з		6	4	10				A/C amplifier	AC55
	ω			7			6	12		Wiring and wiring connections			
										Vacuum switching valve (VSV)		AC-41	
З										Heater radiator _		-	

REFRIGERANT SYSTEM INSPECTION WITH MANIFOLD GAUGE SET

This is a method in which the trouble is located by using a manifold gauge set.

(See "USE OF MANIFOLD GAUGE SET" on page AC-14)

Read the manifold gauge pressure when the following conditions are established:

(a) Temperature at the air inlet with the switch set at RECIRC is 30 - 35 °C (86 - 95 °F)

(b) Engine running at 1,500 rpm

(c) Blower speed control switch set at high

(d) Temperature control set at max. cool

HINT: It should be noted that the gauge indications may vary slightly due to ambient temperature conditions.

1. NORMALLY FUNCTIONING REFRIGERATION SYSTEM

Gauge reading:

Low pressure side:

0.18 – 0.25 MPa (1.5 – 2.5 kgf/cm²)

High pressure side:

1.37 – 1.57 MPa (14 – 16 kgf/cm²)



2. MOISTURE PRESENT IN REFRIGERATION SYSTEM

Condition: Periodically cools and then fails to cool						
Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy			
 During operation, pressure on low pressure side sometimes be- comes a vacuum and sometimes nor- mal 	Moisture entered in re- frigeration system freezes at expansion valve orifice and temporarily stops cycle, but normal state is restored after a time when .the ice melts	 Drier In oversaturated state Moisture in refrigeration system freezes at expansion valve orifice and blocks circulation of refrigerant 	 (1) Replace receiver/drier (2) Remove moisture in cycle through repeat– edly evacuating air (3) Charge new refrigerant to proper amount 			

3. INSUFFICIENT REFRIGERANT

Condition: Insufficient cooling							
Symptom seen in							
Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy				
 Pressure low on both low and high pressure sides Bubbles seen in sight glass continuously Insufficient cooling performance 	 Gas leakage at some place in re- frigeration system 	 Insufficient refrigerant in system ↓ Refrigerant leaking 	 (1) Check for gas leakage with leek detector and repair if necessary (2) Charge refrigerant to proper amount (3) If pressure indicated value is near 0 when connected to gauge, create the vacuum after inspecting and repairing the location of the leak 				

4. POOR CIRCULATION OF REFRIGERANT

	Condition: Insufficient cooling						
Ī	Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy			
	 Pressure low on both low and high pressure sides Frost on tubes from 	 Refrigerant flow ob- structed by dirt in re- ceiver 	Receiver clogged	Replace receiver			

5. REFRIGERANT DOES NOT CIRCULATE

Condition: Does not cool (Condition: Does not cool (Cools from time to time in some cases)					
Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy			
 Vacuum indicated on low pressure side, very low pressure in- dicated on high pres- sure side Frost or dew seen on piping before and af- ter receiver/drier or expansion valve 	 Refrigerant flow ob- structed by moisture or dirt in refrigeration system Refrigerant flow ob- structed by gas leak- age from expansion valve heat sensing tube 	• Refrigerant does not circulate	 (1) Check heat sensing tube, expansion valve and EPR (2) Clean out dirt in expansion valve by blowing with air If not able to remove dirt, replace expansion valve (3) Replace receiver (4) Evacuate air and charge new refrigerant to proper amount. For gas leakage from heat sensing tube, replace expansion valve. 			

6. REFRIGERANT OVERCHARGE OR INSUFFICIENT COOLING OF CONDENSER

Condition: Insufficient Cooling						
Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy			
 Pressure too high on both low and high pressure sides No air bubbles seen through the sight glass even when the engine rpm is low- ered. 	 Unable to develop sufficient performance due to excessive refrigerant in system Insufficient cooling of con- denser 	 Excessive refrigerant in cycle → refrigerant over-charged Condenser cooling insufficient → condenser fins clogged or fan motor faulty 	 (1) Clean condenser (2) Check fan motor operation (3) If (1) and (2) are in normal state, check amount of refrigerant Charge proper amount of refrigerant 			

7. AIR PRESENT IN REFRIGERATION SYSTEM

Condition: Insufficient Cooling							
NOTE: These gauge indications are shown when the refrigeration system has been opened and the refrigerant charged without vacuum purging.							
Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy				
 Pressure too high on both low and high pressure sides The low pressure piping is hot to the touch Bubbles seen in sight glass 	Air-entered in refrig- eration system	 Air present in refrigera- tion system Insufficient vacuum purging 	 (1) Check compressor oil to see if dirty or insufficient (2) Evacuate air and charge new refrigerant 				

8. EXPANSION VALVE IMPROPERLY MOUNTED/HEAT SENSING TUBE DEFECTIVE (OPENS TOO WIDE)

	Condition: Insufficient cooling							
	No41s2							
	Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy				
•	Pressure too high on both low and high pressure sides Frost or large amount of dew on piping on low pressure side	 Trouble in expansion valve or heat sensing tube not installed correctly 	 Excessive refrigerant in low pressure piping	 (1) Check heat sensing tube installed condition (2) If (1) is normal, check expansion valve Replace if defective 				

9. DEFECTIVE COMPRESSION COMPRESSOR

Condition: Does not cool							
Symptom seen in	Probable cause	Diagnosis	Remedy				
retrigeration system			Remeay				
 Pressure too high on low pressure side Pressure too low on high pressure side 	 Internal leak in com- pressor 	 Compression defective ↓ Valve leaking or broken, sliding parts 	Repair or replace compressor				