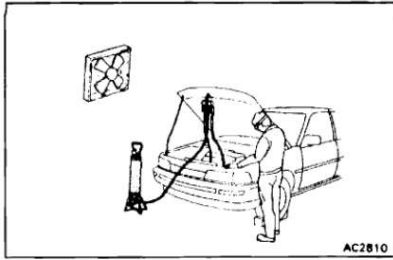


AIR CONDITIONING

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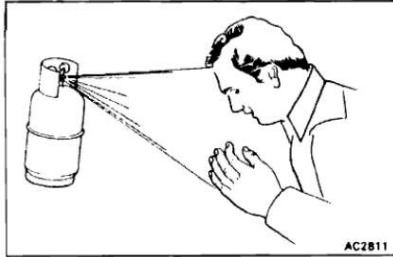


AC2810

PRECAUTION HANDLING PRECAUTIONS FOR REFRIGERANT

AC2813-1B

1. DO NOT HANDLE REFRIGERANT IN ENCLOSED AREA OR NEAR OPEN FLAME
2. ALWAYS WEAR EYE PROTECTION



AC2811

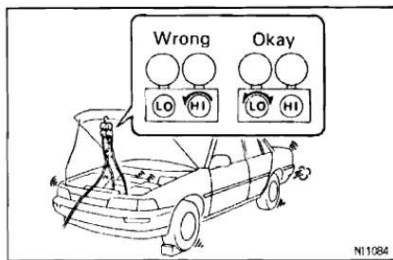
3. BE CAREFUL THAT LIQUID REFRIGERANT DOES NOT GET IN YOUR EYES OR ON YOUR SKIN
If liquid refrigerant gets in your eyes or on your skin:
 - (a) Wash the area with lots of cool water.
CAUTION: Do not rub your eyes or skin.
 - (b) Apply clean petroleum jelly to the skin.
 - (c) Go immediately to a physician or hospital for professional treatment.

HANDLING PRECAUTIONS FOR REFRIGERANT CONTAINER

AC1190-0B

1. NEVER HEAT CONTAINER OR EXPOSE IT TO NAKED FLAME
2. BE CAREFUL NOT TO DROP CONTAINER AND NOT TO APPLY PHYSICAL SHOCKS TO IT

AC



NI1084

PRECAUTIONS WHEN CHARGING REFRIGERANT

AC2818-1H

1. DO NOT OPERATE COMPRESSOR WITHOUT ENOUGH REFRIGERANT IN REFRIGERATION SYSTEM
If there is not enough refrigerant in the refrigeration system, oil lubrication will be insufficient and compressor burnout may occur, so take care to avoid this.
2. DO NOT OPEN HIGH PRESSURE MANIFOLD VALVE WHILE COMPRESSOR IS OPERATING

If the high pressure valve is opened, refrigerant flows in the reverse direction and could cause the charging cylinder to rupture, so open and close the only low pressure valve.

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3. BE CAREFUL NOT TO OVERCHARGE SYSTEM WITH REFRIGERANT

If refrigerant is overcharged, it causes problems such as insufficient cooling, poor fuel economy, engine overheating etc.

GAS LEAK TEST DESCRIPTION

AC191-07

1. PERFORM IN THESE CONDITIONS:

- Stop engine.
- Secure good ventilation (If not, the gas leak detector may react to volatile gases which are not refrigerant, such as evaporated gasoline and exhaust gas.)
- Repeat the test 2 or 3 times.
- Make sure that there is some refrigerant remaining in the refrigeration system.

When compressor is OFF: approximately 392 — 588 KPa (4 — 6 kgf/cm², 57 — 85 psi)

2. GAS LEAK TEST IN COOLING UNIT

- (a) Bring the gas leak detector close to the drain hose before performing the test.

HINT:

- After the blower motor is stopped, leave the cooling unit for more than 15 minutes.
- Expose the gas leak detector sensor under the drain hose.
- When bring the gas leak detector close to the drain hose, make sure that the gas leak detector does not react to the volatile gases.

If such reaction is unavoidable, the vehicle must be lifted up.

- (b) If gas leak is not detected on the drain hose, remove the blower resistor from the cooling unit. Then insert the gas leak detector sensor into the unit and perform the test.

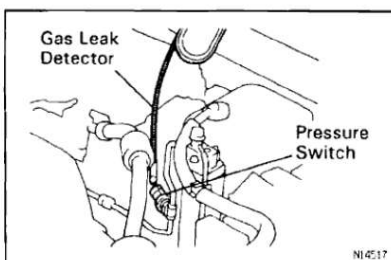
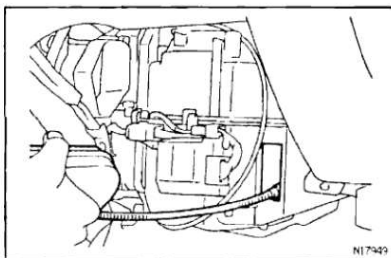
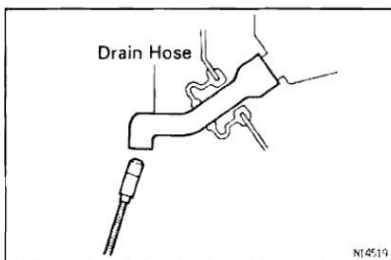
3. GAS LEAK TEST AT PRESSURE SWITCH

Disconnect the connector and leave the pressure switch for approximately 20 minutes. Then bring the gas leak detector close to the pressure switch and perform the test.

4. GAS LEAK TEST AT REFRIGERANT LINES

Bring the gas leak detector close to the refrigerant lines and perform the test.

HINT: Make sure that there is no dirt on joints.



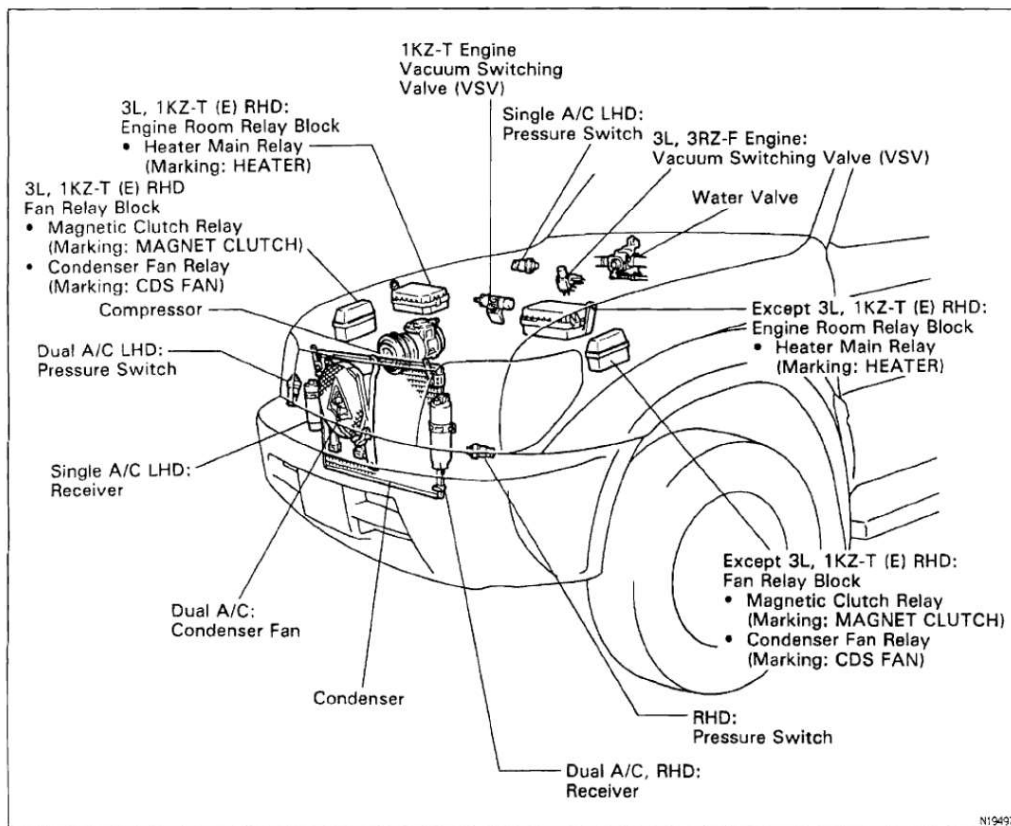
SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

AC08B-10

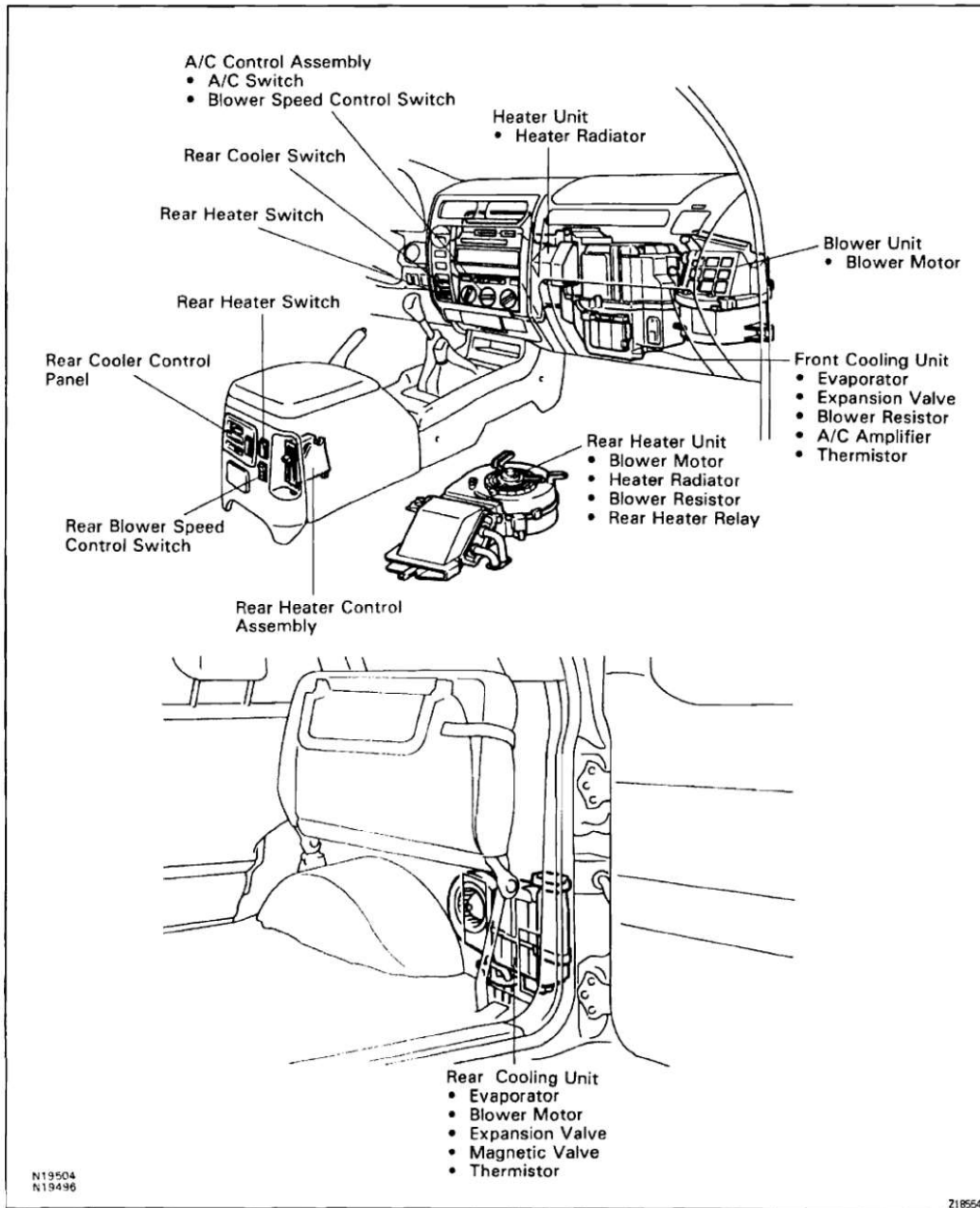
The LAND CRUISER/LAND CRUISER PRADO is equipped with an SRS (Supplemental Restraint System) such as the driver airbag and front passenger airbag. Failure to carry out service operations in the correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly lead to a serious accident. Further, if a mistake is made in servicing the SRS, the SRS may fail to operate when required. Before servicing (including removal or installation of parts, inspection and replacement), be sure to read the following items carefully, then follow the correct procedure described in the repair manual.

DESCRIPTION PARTS LOCATION

AC2TA-01



PARTS LOCATION (Cont'd)

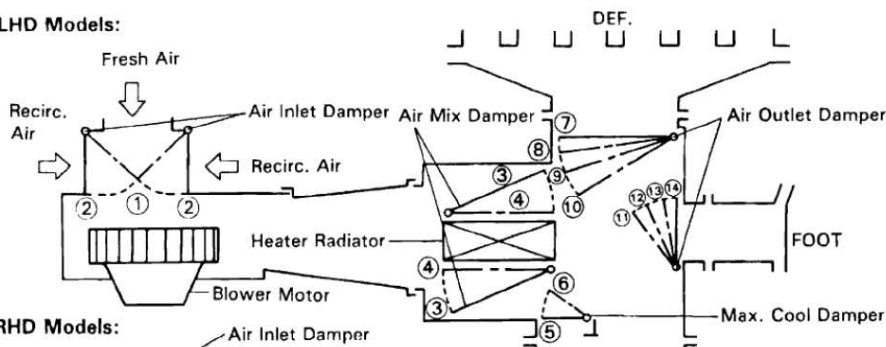


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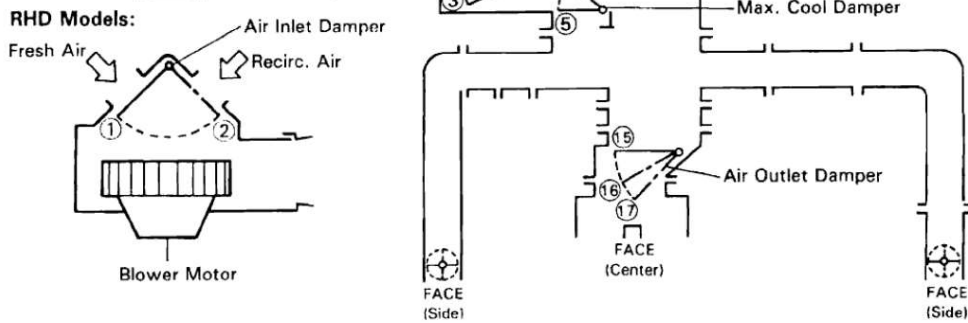
AC

DAMPER POSITIONS

LHD Models:



RHD Models:



Damper Name	A/C Control Lever Position	Damper Position	Air Flow Vents			
			FACE		FOOT	DEF
			Center	Side		
Air Inlet Damper	Recirc.	(1)				
	Fresh	(2)				
Air Mix Damper	WARM (Red) ↔ COOL (Blue)	(3) ↔ (4)				
Max. Cool Damper	COOL ↔ Max. COOL	(5) ↔ (6)				
Air Outlet Damper	Face	(7) (14) (17)	○	○		
	Bi-Level	(7) (13) (16)	○	○	○	
	Foot	(8) (11) (15)		○	○	○
	Foot/Def.	(9) (12) (15)		○	○	○
	Def.	(10) (14) (15)		○		○

The size of the circle (○) indicates the proportion of air flow volume

PREPARATION

SST (SPECIAL SERVICE TOOLS)

AC68H-1T

	07110-58060 Air Conditioner Service Tool Set	
	(07117-58060) Refrigerant Drain Service Valve	
	(07117-58070) T-Joint	
	(07117-58080) Quick Disconnect Adapter	Discharge (diam. 16 mm)
	(07117-58090) Quick Disconnect Adapter	Suction (diam. 13 mm)
	(07117-78050) Refrigerant Charging Gauge	
	(07117-88060) Refrigerant Charging Hose	Discharge (Red)
	(07117-88070) Refrigerant Charging Hose	Suction (Blue)
	(07117-88080) Refrigerant Charging Hose	Utility (Green)
	07112-15020 Seal Plate Remover	
	07112-66040 Magnetic Clutch Remover	
	07112-76060 Magnetic Clutch Stopper	
	07112-85010 Lip Seal Protector	

AIR CONDITIONING — PREPARATION

	07112-85020 Lip Seal Presser	
	07112-85030 Lip Seal Remover	
	07114-84010 Snap Ring Pliers	
	07114-84020 Snap Ring Pliers	
	07116-38360 Gas Leak Detector Assembly	
	07117-48130 Vacuum Pump (220 V)	Rated voltage AC 220 V
	07117-48140 Vacuum Pump (240 V)	Rated voltage AC 240 V

RECOMMENDED TOOLS

AC86J-1A

	09082-00040 TOYOTA Electrical Tester.	
	09216-00021 Belt Tension Gauge .	
	09216-00030 Belt Tension Gauge Cable .	

LUBRICANT

AC8V5-1B

Item	Capacity	Classification
Compressor oil	—	ND—OIL 8 or equivalent
When replacing receiver	20 cc (0.7 fl.oz.)	
When replacing condenser	40 cc (1.4 fl.oz.)	
When replacing evaporator	40 cc (1.4 fl.oz.)	

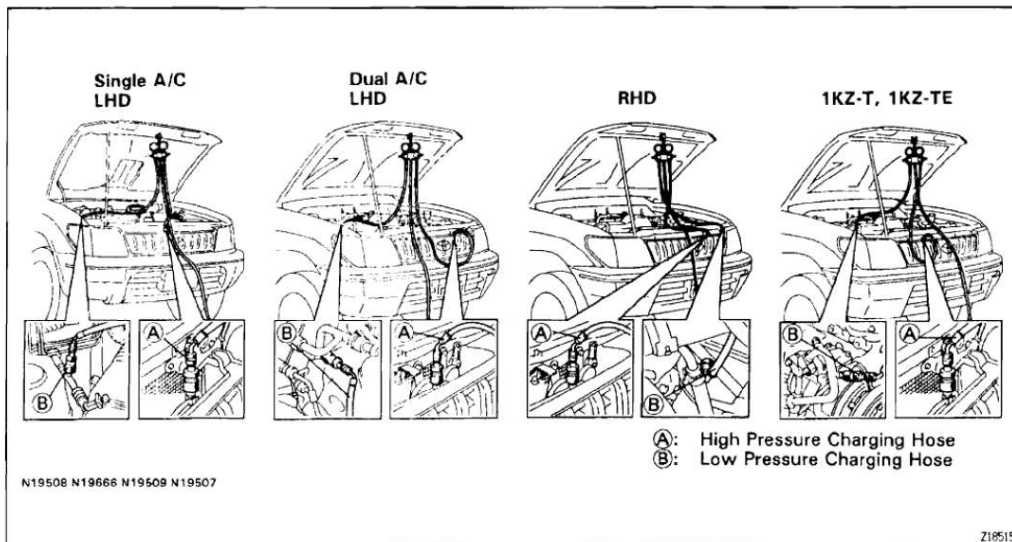
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AC

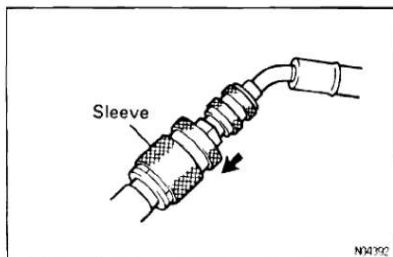
USE OF MANIFOLD GAUGE SET

MANIFOLD GAUGE SET INSTALLATION

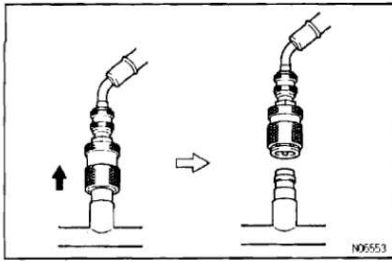
AC3TC-01



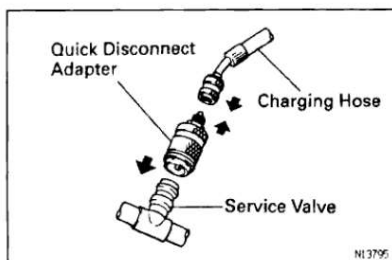
1. **CONNECT CHARGING HOSES TO MANIFOLD GAUGE SET**
Tighten the nuts by hand.
CAUTION: Do not connect the wrong hoses.
2. **CONNECT QUICK DISCONNECT ADAPTERS TO CHARGING HOSES**
Tighten the nuts by hand.
3. **CLOSE BOTH HAND VALVES OF MANIFOLD GAUGE SET**
4. **REMOVE CAPS FROM SERVICE VALVES ON REFRIGERANT LINE**



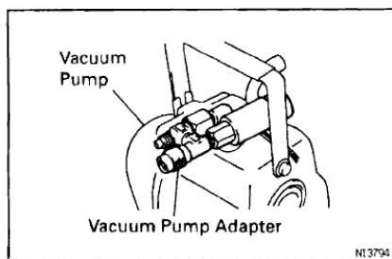
5. **CONNECT QUICK DISCONNECT ADAPTERS TO SERVICE VALVES**
HINT: Push the quick disconnect adapter onto the service valve, then slide the sleeve of the quick disconnect adapter downward to lock it.

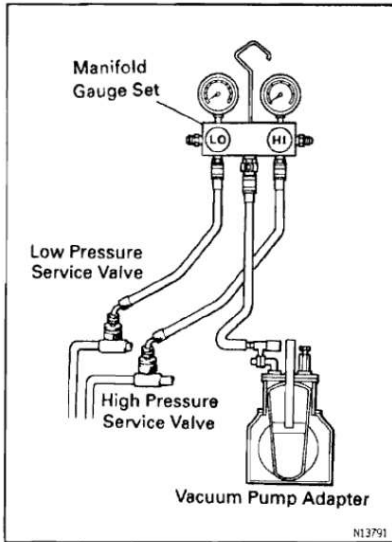
**MANIFOLD GAUGE SET REMOVAL**

1. CLOSE BOTH HAND VALVES OF MANIFOLD GAUGE SET
2. DISCONNECT QUICK DISCONNECT ADAPTERS FROM SERVICE VALVES ON REFRIGERANT LINE
HINT: Slide the sleeve of the quick disconnect adapter upward to unlock the adapter and remove it from the service valve.
3. INSTALL CAPS TO SERVICE VALVES ON REFRIGERANT LINE

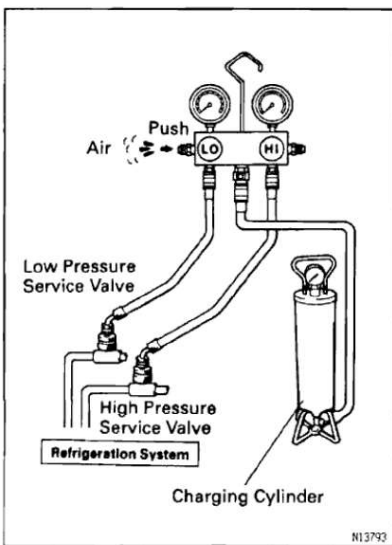
**EVACUATING AIR IN REFRIGERATION SYSTEM AND CHARGING WITH REFRIGERANT**

1. CONNECT QUICK DISCONNECT ADAPTERS TO CHARGING HOSES
2. REMOVE CAPS FROM SERVICE VALVES ON REFRIGERANT LINES
3. INSTALL MANIFOLD GAUGE SET ON SERVICE VALVES
 - (a) Close both hand valves of manifold gauge set.
 - (b) Connect the quick disconnect adapters to the service valves.
4. EVACUATE AIR FROM REFRIGERATION SYSTEM
 - (a) Connect the vacuum pump adapter to the vacuum pump.





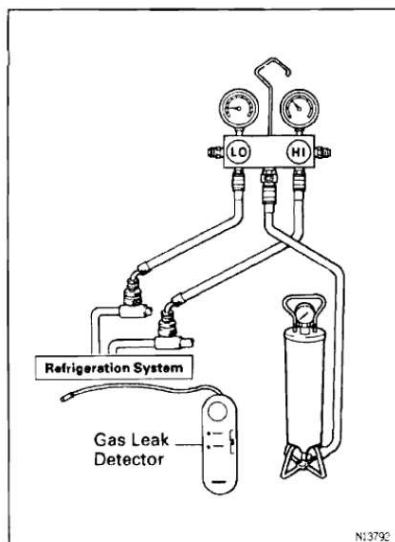
- (b) Connect the center hose of the manifold gauge set to the vacuum pump adapter.
- (c) Open both the high and low hand valves and run the vacuum pump.
- (d) After 10 minutes or more, check that the low pressure gauge indicates 750 mmHg (30 in.Hg) or more.
HINT: If the reading is not 750 mmHg (30 in.Hg) or more, close both hand valves of manifold gauge set and stop the vacuum pump.
Check the system for leaks and repair as necessary.
- (e) Close both the high and low hand valves and stop the vacuum pump.
- (f) Leave the system in this condition for 5 minutes or more and check that there is no gauge indicator.



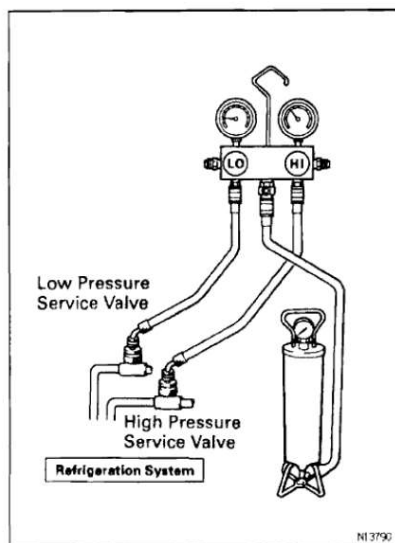
5. INSTALL CHARGING CYLINDER

HINT: When handling the charging cylinder, always follow the direction given in the instruction manual.

- (a) Charge the proper amount of refrigerant in charging cylinder.
- (b) Connect the center hose to the charging cylinder.
CAUTION: Do not open both high and low hand valves of manifold gauge set.
- (c) Open the valve of the charging cylinder.
- (d) Press the valve core on the side of the manifold gauge and expel the air inside of the center hose.

**6. INSPECT REFRIGERATION SYSTEM FOR LEAKS**

- Open the high pressure hand valve and charge refrigerant.
- When the low pressure gauge indicates 98 kPa (1 kgf/cm², 14 psi), close the high pressure hand valve.
- Using a gas leak detector, check the system for leakage.
- If leak is found, repair the faulty component or connection. Add evacuate air from refrigeration system (Refer to 4).

**7. CHARGE REFRIGERANT INTO REFRIGERANT SYSTEM**

If there is no leak after refrigerant leak check charge, the proper amount of refrigerant into refrigeration system.

CAUTION:

- Never run the engine when charging the system through the high pressure side.
- Do not open the low pressure hand valve when the system is being charged with liquid refrigerant.

- Open the high pressure hand valve fully.
- Charge specified amount of refrigerant, then close the high pressure hand valve.

HINT: A fully charged system is indicated by the sight glass being free of any bubbles.

8. REMOVE MANIFOLD GAUGE SET FROM SERVICE VALVES

- Close both hand valves of the manifold gauge set.
- Disconnect the quick disconnect adapters from the service valves.

9. INSTALL CAPS TO SERVICE VALVES ON REFRIGERANT LINES

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-21	—	AC-22	AC-82	—	—	—	AC-76	AC-76	AC-66	AC-81
Part Name	Refrigerant volume	Engine coolant volume	Drive belt	A/C control cables	HEATER Fuse	A.C Fuse	CDS FAN Fuse (Dual A/C)	Heater main relay	Magnetic clutch relay	Blower motor	Blower speed control switch
No blower operation					1			2		3	4
No air temperature control		1		2							
No compressor operation	1					2		3	4		
Compressor operates intermittently	1		6					2	3		
No condenser fan operation							1				
No cool air comes out	1		2	6							
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							
A/C indicator does not light up											

CONDITIONING – TROUBLESHOOTING

5		Blower resistor	AC-67
		Condenser fan relay (Dual A/C)	AC-76
		Condenser fan motor (Dual A/C)	AC-72
	6	Compressor	AC-44
	7	Condenser	AC-59
		Receiver	AC-58
		Evaporator	AC-62
		Expansion valve	AC-62
		Refrigerant lines	AC-28
	9	A/C switch	AC-81
	10	A/C amplifier	AC-77
	7	Pressure switch	AC-74
	5	Magnetic clutch	AC-44
	8	Thermistor	AC-64
		Vacuum switching valve (3L, 1KZ-T 3RZ-F)	AC-71
		Heater radiator	AC-61
		Water valve	AC-69
	11	Wire harness	—

AC

Rear Heater:

See Page	AC-21	—	AC-76	AC-86	AC-84	AC-62	AC-64	AC-62	AC-67	AC-68	AC-78	—
Part Name	Refrigerant volume	RR A/C Fuse	Rear A/C relay	Rear cooler switch	Rear cooler control panel	Rear expansion valve	Rear cooler thermistor	Rear evaporator	Rear cooler blower motor	Rear cooler blower resistor	A/C amplifier	Wire harness
Trouble												
No blower operation		1	2		3				4	5		6
No blower control					1				3	2		4
No cool air comes out	1					2		3				
No temperature control					1	2		3			4	5
Rear A/C indicator does not light up		1	2	3							4	5

V08074

Rear A/C:

See Page	—	—	AC-76	AC-89	AC-87	AC-61	AC-67	AC-68	AC-88	—
Part Name	Engine coolant volume	RR HTR Fuse	Rear heater relay	Rear heater switch	Rear heater control assembly	Rear heater radiator	Rear heater blower motor	Rear heater blower resistor	Rear blower speed control switch	Wire harness
Trouble										
No blower operation		1	2	3			6	5	4	7
No blower control								2	1	3
No warm air comes out	1					2				
Rear heater indicator does not light up				1						2
No temperature control	1				2					

V08075

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-9)

Read the manifold gauge pressure when the these 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

AC022-09

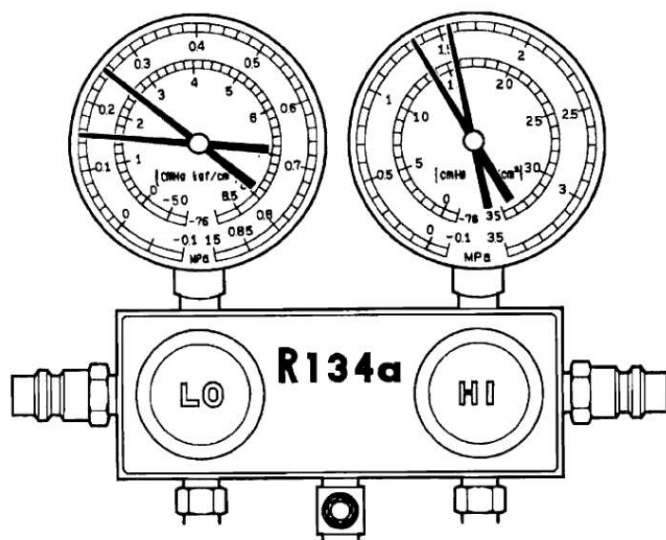
Gauge reading:

Low pressure side:

0.15 – 0.25 MPa (1.5 – 2.5 kgf/cm²)

High pressure side:

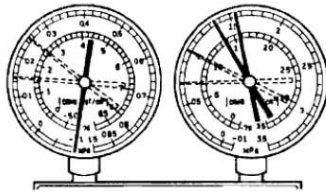
1.37 – 1.57 MPa (14 – 16 kgf/cm²)



NO4147

2. MOISTURE PRESENT IN REFRIGERATION SYSTEM

Condition: Periodically cools and then fails to cool



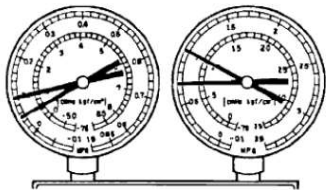
N04148

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
During operation, pressure on low pressure side sometimes becomes a vacuum and sometimes normal	Moisture entered in refrigeration 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	- Replace receiver/drier - Remove moisture in cycle through repeatedly evacuating air - Charge proper amount of new refrigerant

V01034

3. INSUFFICIENT REFRIGERANT

Condition: Insufficient cooling



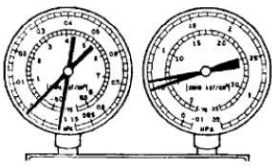
N04149

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 refrigeration system	- Insufficient refrigerant in system ↓ - Refrigerant leaking	- Check for gas leakage with leak detector and repair if necessary - Charge proper amount of refrigerant - If indicated pressure value is near 0 when connected to gauge, create the vacuum after inspecting and repairing the location of the leak

V01035

4. POOR CIRCULATION OF REFRIGERANT

Condition: Insufficient cooling



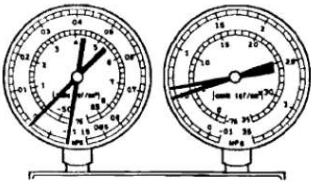
N04150

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
• Pressure low on both low and high pressure sides • Frost on tubes from receiver to unit	• Refrigerant flow obstructed by dirt in receiver	• Receiver clogged	• Replace receiver

V01030

5. REFRIGERANT DOES NOT CIRCULATE

Condition: Does not cool (Cools from time to time in some cases)



N04150

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
• Vacuum indicated on low pressure side, very low pressure indicated on high pressure side • Frost or dew seen on piping before and after receiver/drier or expansion valve	• Refrigerant flow obstructed by moisture or dirt in refrigeration system • Refrigerant flow obstructed by gas leakage from expansion valve heat sensing tube	• Refrigerant does not circulate	(1) Check heat sensing tube, expansion valve (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.

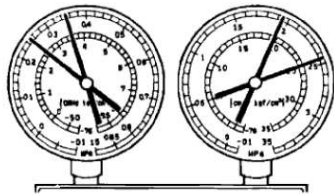
V08076

AC

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6. REFRIGERANT OVERCHARGE OR INSUFFICIENT COOLING OF CONDENSER

Condition: Insufficient Cooling



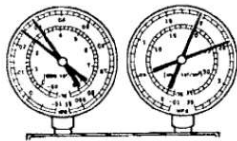
N04151

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 lowered.	- Unable to develop sufficient performance due to excessive refrigerant in system - Insufficient cooling of condenser	- Excessive refrigerant in cycle → refrigerant overcharged - 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

V01032

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.

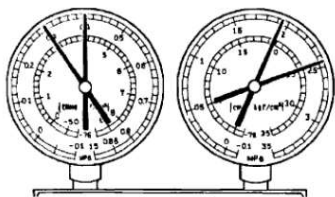
N04153

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 refrigeration system	- Air present in refrigeration system - Insufficient vacuum purging	(1) Check compressor oil to see if it is dirty or insufficient (2) Evacuate air and charge new refrigerant

V01033

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

Condition: Insufficient cooling



Symptom seen in refrigeration system

- Pressure too high on both low and high pressure sides
- Frost or large amount of dew on piping on low pressure side

Probable cause

- Trouble in expansion valve or heat sensing tube not installed correctly

Diagnosis

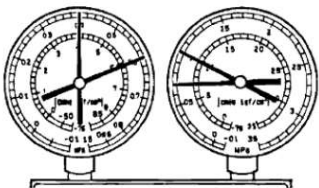
- Excessive refrigerant in low pressure piping
- ↓
- Expansion valve opened too wide

Remedy

- (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 refrigeration system

- Pressure too high on low pressure side
- Pressure too low on high pressure side

Probable cause

- Internal leak in compressor

Diagnosis

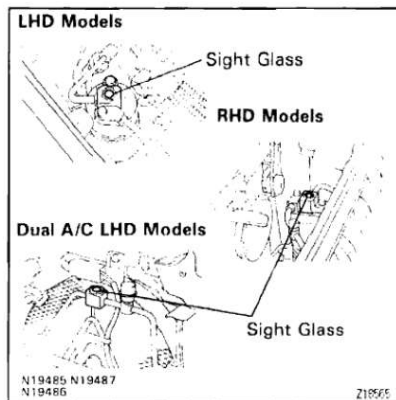
- Compression defective
- ↓
- Valve leaking or broken sliding parts

Remedy

- Repair or replace compressor

AC

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REFRIGERANT VOLUME REFRIGERANT VOLUME INSPECTION

AC217-01

1. **SET VEHICLE IN THESE CONDITIONS:**
 - (a) Run engine at approx. 1,500 rpm
 - (b) Fully open the doors
2. **SET A/C CONTROL ASSEMBLY IN THESE CONDITIONS:**
 - (a) Blower speed control switch to HI
 - (b) A/C switch ON
 - (c) Air inlet control dial to "RECIRC."
 - (d) Temperature control dial MAX. COOL
3. **INSPECT AMOUNT OF REFRIGERANT**
Observe the sight glass on the liquid tube.

Item	Symptom	Amount of refrigerant	Remedy
1	Bubbles present in sight glass	Insufficient*	(1) Check for gas leakage with gas leak detector and repair if necessary (2) Add refrigerant until bubbles disappear
2	No bubbles present in sight glass	None, sufficient or too much	Refer to items 3 and 4
3	No temperature difference between compressor inlet and outlet	Empty or nearly empty	(1) Check for gas leakage with gas leak detector and repair if necessary (2) Add refrigerant until bubbles disappear
4	Temperature between compressor inlet and outlet is noticeably different	Correct or too much	Refer to items 5 and 6
5	Immediately after air conditioner is turned off, refrigerant in sight glass stays clear	Too much	(1) Discharge refrigerant (2) Evacuate air and charge proper amount of purified refrigerant
6	When air conditioner is turned off, refrigerant foams and then stays clear	Correct	—

* Bubbles in the sight glass with ambient temperatures higher than usual can be considered normal if cooling is sufficient.

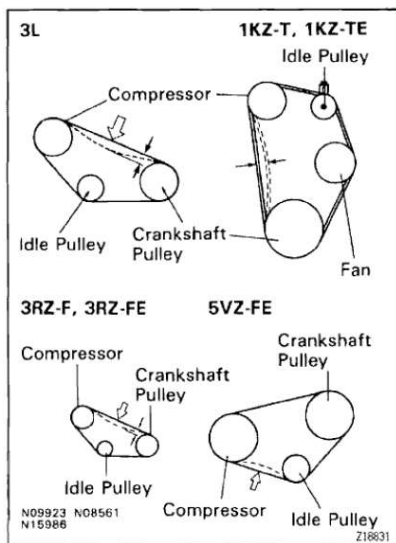
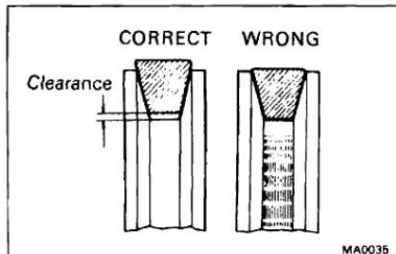
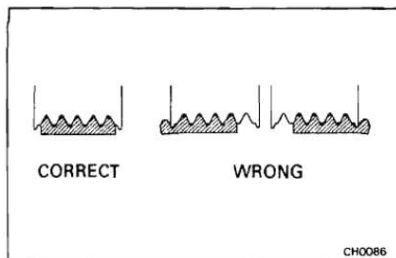
REFRIGERANT CHARGE VOLUME

AC218-01

Specified amount:

Single A/C: 700 ± 50 g (24.69 ± 1.76 oz.)

Dual A/C: 950 ± 50 g (33.51 ± 1.76 oz.)



DRIVE BELT TENSION ON—VEHICLE INSPECTION

AC21K-01

1. INSPECT DRIVE BELT'S INSTALLATION CONDITION

3RZ-F, 3RZ-FE and 5VZ-FE Engine Models:

Check that the drive belt fits properly in the ribbed grooves.

3L, 1KZ-T and 1KZ-TE Engine Models:

Visually check the belt for cracks, oiliness or wear. Check that the belt does not touch the bottom of the pulley groove.

2. CHECK DRIVE BELT DEFLECTION

- (a) Using a belt tension gauge, apply a load of 9.8 N (10 kgf, 22 lbf).

- (b) Measure drive belt deflection.

Drive belt deflection:

3L Engine Models:

New belt: 13.0 – 15.0 mm (0.51 – 0.59 in.)

Used belt: 17.0 – 21.0 mm (0.67 – 0.83 in.)

1KZ-T and 1KZ-TE Engine Models:

New belt: 13.0 – 15.0 mm (0.51 – 0.59 in.)

Used belt: 15.0 – 21.0 mm (0.51 – 0.83 in.)

3RZ-F and 3RZ-FE Engine Models:

New belt: 10.0 – 13.0 mm (0.39 – 0.51 in.)

Used belt: 13.0 – 18.0 mm (0.51 – 0.71 in.)

5VZ-FE Engine Models:

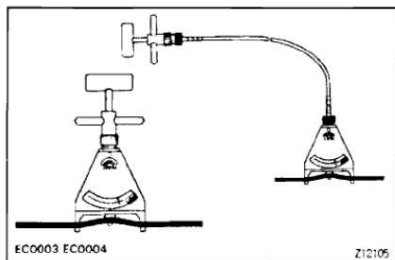
New belt: 3.5 – 5.0 mm (0.14 – 0.20 in.)

Used belt: 5.0 – 7.0 mm (0.20 – 0.28 in.)

HINT:

- "New belt" refers to a belt which has been used less than 5 minutes on a running engine.
- "Used belt" refers to a belt which has been on a running engine for 5 minutes or more.

If one belt has any of the above defects, replace both belts.

**Reference:**

Using a belt tension gauge, check the drive belt tension.

Drive belt tension:**3L Engine Models:**

New belt: 441 — 444 N (45 — 68 kgf)

Used belt: 264 — 441 N (27 — 45 kgf)

1KZ-T and 1KZ-TE Engine Models:

New belt: 372 — 608 N (38 — 62 kgf)

Used belt: 196 — 392 N (20 — 30 kgf)

3RZ-F and 3RZ-FE Engine Models:

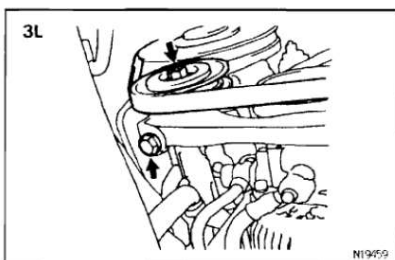
New belt: 593 — 823 N (61 — 84 kgf)

Used belt: 353 — 530 N (36 — 54 kgf)

5VZ-FE Engine Models:

New belt: 519 — 755 N (53 — 77 kgf)

Used belt: 196 — 392 N (20 — 30 kgf)

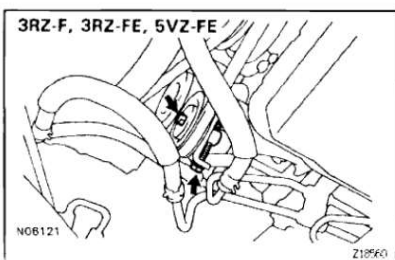
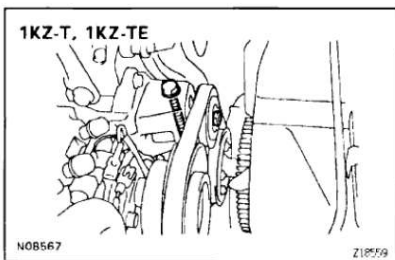
**DRIVE BELT REMOVAL**

AC21J-91

1. 3RZ-F, 3RZ-FE and 5VZ-FE Engine Models:
REMOVE PS PUMP DRIVE BELT

2. REMOVE DRIVE BELT

- (a) Except 1KZ-T and 1KZ-TE Engine Models:
Remove the engine under cover.
- (b) Loosen the idle pulley lock nut.
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)
- (c) Loosen the adjusting bolt and remove the drive belt.



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DRIVE BELT INSTALLATION

AC2TK-01

Installation is in the reverse order of removal.

IDLE—UP SPEED**IDLE—UP SPEED INSPECTION**

AC2TL-01

1. **WARM UP ENGINE**
2. **SET VEHICLE IN THESE CONDITIONS:**
 - (a) Blower speed control switch HI
 - (b) A/C switch ON
 - (c) Temperature control dial MAX COOL
 - (d) Put gear shift in neutral
3. **INSPECT IDLE—UP SPEED**

3L Engine Models

Magnetic clutch condition	Idle speed
Magnetic clutch not engaged	700 $\pm$ 50 rpm
Magnetic clutch engaged	950 $\pm$ 50 rpm

If idle speed is not as specified, adjust the idle—up speed or check the VSV and A/C amplifier circuit.

1KZ—T and 1KZ—TE Engine Models

Magnetic clutch condition	Idle speed
Magnetic clutch not engaged	700 $\pm$ 50 rpm
Magnetic clutch engaged	950 $\pm$ 50 rpm

1KZ—T Engine Models:

If idle speed is not as specified, adjust the idle—up speed or check the VSV and A/C amplifier circuit.

1KZ—TE Engine Models:

If idle speed is not as specified, check the air intake system.

3RZ—F and 3RZ—FE Engine Models

Magnetic clutch condition	Idle speed
Magnetic clutch not engaged	700 $\pm$ 50 rpm
Magnetic clutch engaged	900 $\pm$ 50 rpm

3RZ—F Engine Models:

If idle speed is not as specified, adjust the idle—up speed or check the VSV and A/C amplifier circuit.

3RZ—FE Engine Models:

If idle speed is not as specified, check the IAC valve and air intake system.

5VZ—FE Engine Models

Magnetic clutch condition	Idle speed
Magnetic clutch engaged	700 $\pm$ 50 rpm
Magnetic clutch not engaged	850 $\pm$ 50 rpm

If idle speed is not as specified, check the IAC valve and air intake system.

IDLE—UP SPEED ADJUSTMENT

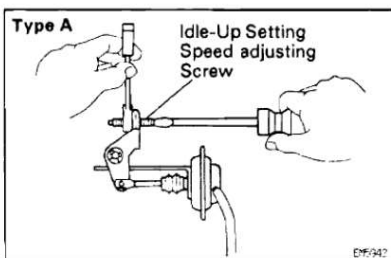
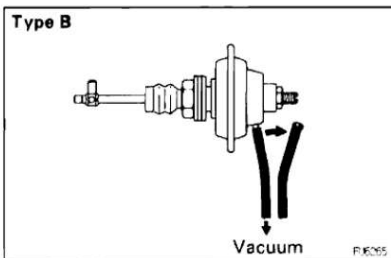
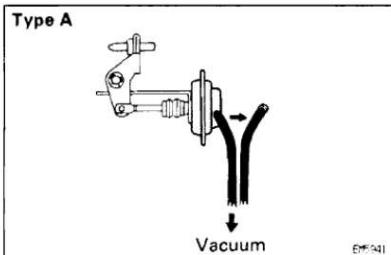
AC2TM-01

3L Engine Models:**1. SET VEHICLE IN THESE CONDITIONS:**

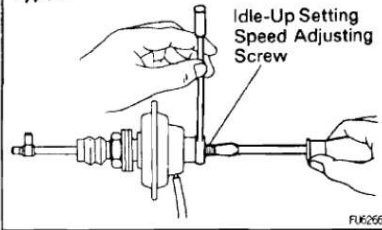
- Engine at normal operating temperature
- Injection timing set correctly
- Put gear shift in neutral
- Idle speed set correctly

2. CONNECT TACHOMETER**3. ADJUST IDLE—UP SETTING SPEED**

- Start the engine.
- Set the A/C control assembly in these conditions:
 - A/C switch to ON
 - Blower speed control switch to HI
 - Air inlet control dial to "RECIRC"
 - Air outlet control dial to "FACE"
 - Temperature control dial to "COOL"
- Disconnect the vacuum hose from the idle—up actuator.
- Apply vacuum to the idle—up actuator.
- Race the engine to 2,500 rpm a few seconds, release the throttle and check the idle—up setting speed.
A/C idle—up setting speed:
950 rpm
- Adjust the idle—up setting speed by turning the idle—up setting speed adjusting screw.
- Race the engine to 2,500 rpm for a few seconds, release the throttle and recheck the A/C idle—up setting speed.
- Connect the vacuum hose to the idle—up actuator.



Type B



IDLE—UP SPEED ADJUSTMENT 1KZ—T Engine Models:

1. SET VEHICLE IN THESE CONDITIONS:

- (a) Engine at normal operating temperature
- (b) Put gear shift in neutral
- (c) Idle speed set correctly

2. CONNECT TACHOMETER

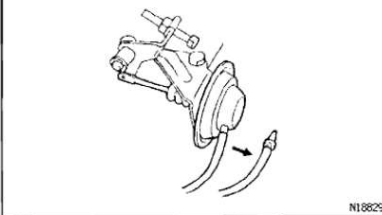
3. ADJUST IDLE—UP SETTING SPEED

- (a) Start engine.
- (b) Set A/C control assembly in these conditions:
 - A/C switch ON
 - Blower speed control switch to HI
 - Air inlet control dial to "RECIRC"
 - Air outlet control dial to "FACE"
 - Temperature control dial to "COOL"
- (c) Disconnect the vacuum hose from the idle—up actuator.
- (d) Apply vacuum to the idle—up actuator.
- (e) Race the engine to 2,500 rpm for a few seconds, release the throttle and check the idle—up setting speed.

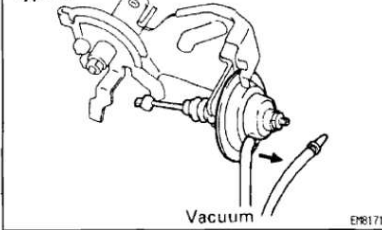
A/C idle—up setting speed:
950 rpm

- (f) Adjust the idle—up setting speed by turning the idle—up setting speed adjusting bolt.
- (g) Race the engine to 2,500 rpm for a few seconds, release the throttle and recheck the A/C idle—up setting speed.
- (h) Connect the vacuum hose to the idle—up actuator.

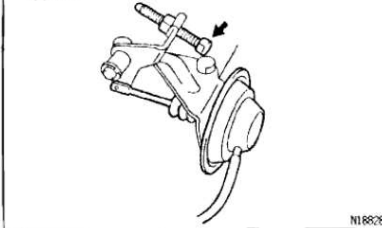
Type A

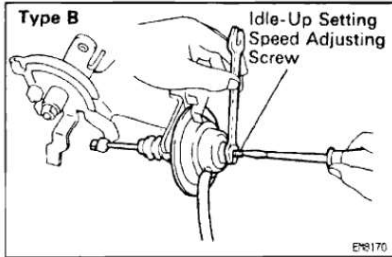


Type B



Type A





IDLE—UP SPEED ADJUSTMENT

3RZ—F Engine:

1. SET VEHICLE IN THESE CONDITIONS:

- (a) Engine at normal operating temperature
- (b) Put gear shift in neutral
- (c) Idle speed set correctly

2. CONNECT TACHOMETER

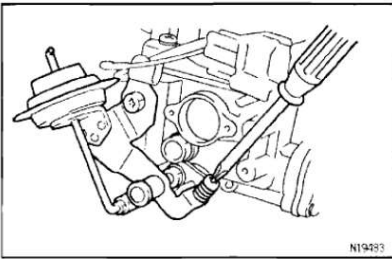
3. ADJUST IDLE—UP SETTING SPEED

- (a) Start engine.
- (b) Set A/C control assembly in these conditions:
 - A/C switch ON
 - Blower speed control switch to HI
 - Air inlet control lever to "RECIRC"
 - Temperature control dial to "COOL"
- (c) Race the engine to 2,500 rpm for a few seconds, release the throttle and check the idle—up setting speed.

A/C idle—up setting speed:

900 rpm

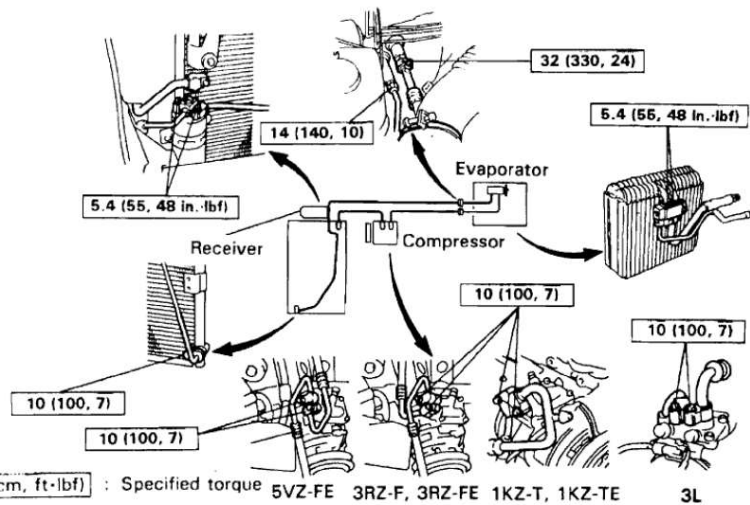
- (d) Adjust the idle—up setting speed by turning the idle—up speed adjust screw.
- (e) Race the engine to 2,500 rpm for a few seconds, release the throttle and recheck the A/C idle—up setting speed.



REFRIGERANT LINES

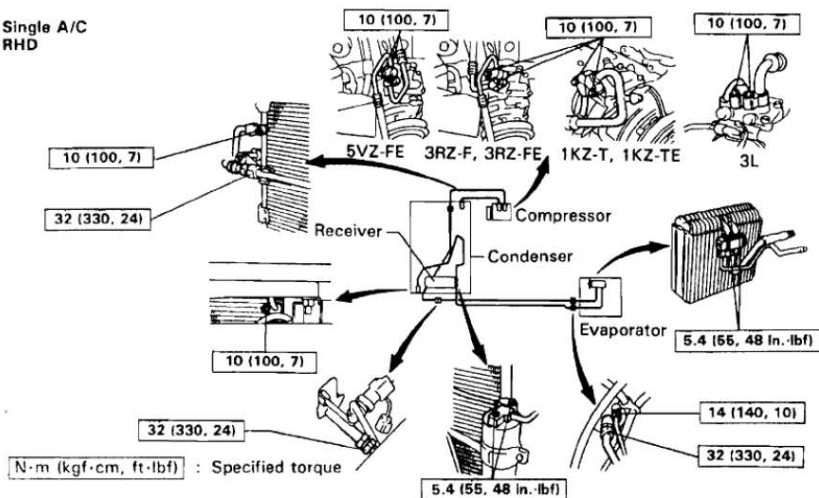
TIGHTENING TORQUE OF REFRIGERATION LINES

Single A/C
LHD



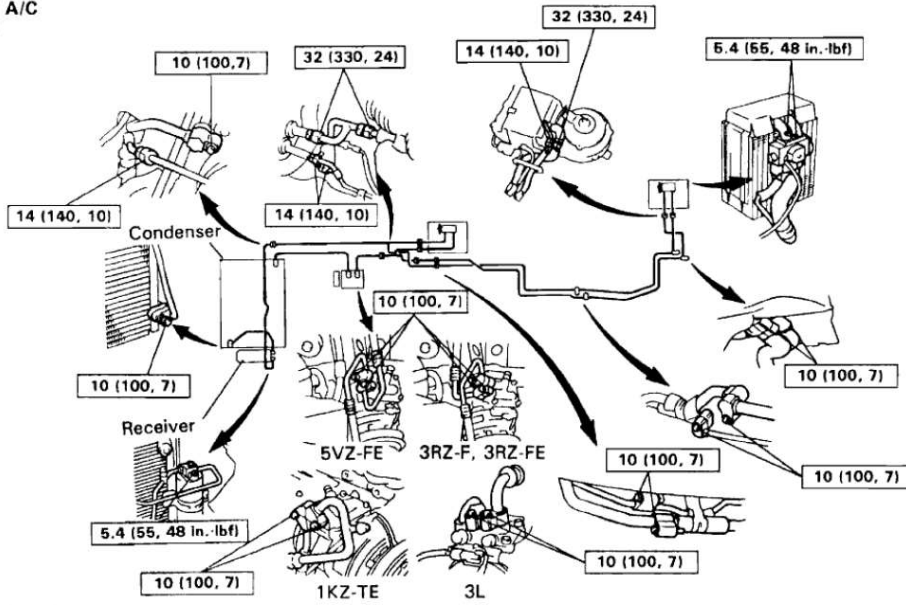
N19502

Single A/C
RHD



N19501

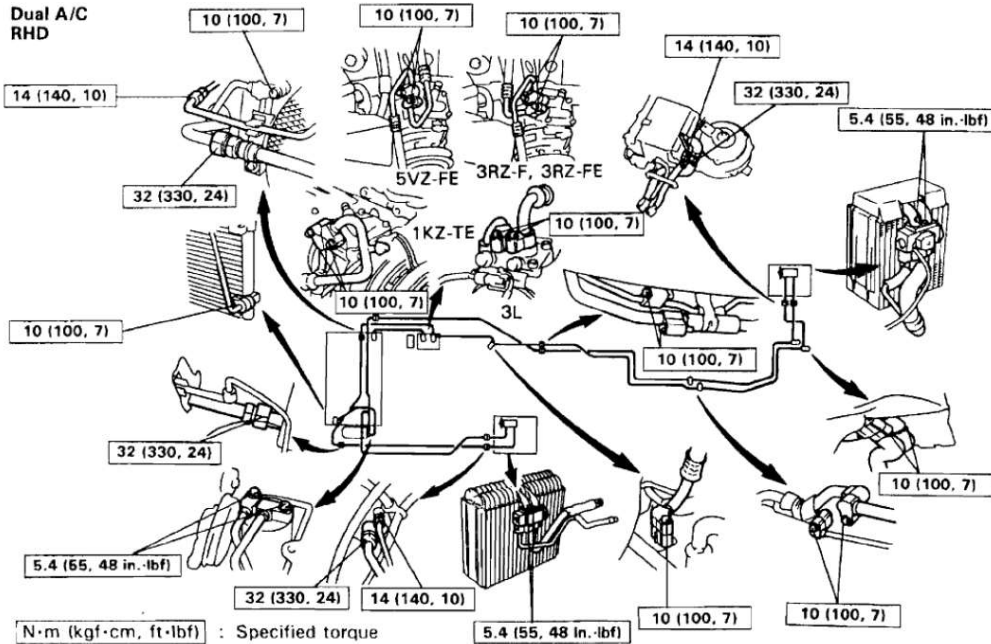
Dual A/C
LHD



N·m (kgf·cm, ft·lbf) : Specified torque

NI 9499

Dual A/C
RHD



N·m (kgf·cm, ft·lbf) : Specified torque

NI 9500

ON — VEHICLE INSPECTION

1. **INSPECT HOSES AND TUBES FOR LEAKAGE**
Using a gas leak detector, check for leakage of refrigerant.
2. **INSPECTION HOSE AND TUBE CONNECTIONS FOR LOOSENESS**

REFRIGERANT LINES REPLACEMENT

AC2TR-01

1. **DISCHARGE REFRIGERANT IN REFRIGERATION SYSTEM**

2. **REPLACE FAULTY TUBE OR HOSE**

NOTICE: Cap the open fittings immediately to keep moisture or dirt out of the system.

3. **TORQUE CONNECTIONS TO SPECIFIED TORQUE**

NOTICE: Connections should not be torque tighter than the specified torque.

Compressor x Discharge hose

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

Compressor x Suction hose

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

Condenser x Discharge hose

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

Condenser x Liquid tube

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

Receiver x Liquid tube

Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)

Front cooling unit x Liquid tube

Torque: 14 N·m (140 kgf·cm, 10 ft·lbf)

Front cooling unit x Suction hose

Torque: 32 N·m (330 kgf·cm, 24 ft·lbf)

Expansion valve x Evaporator

Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)

Rear cooling unit x Liquid tube

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

Rear expansion valve x Rear evaporator

Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)

Rear cooling unit x Suction tube

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

Liquid lines (Piping joint)

Torque: 14 N·m (140 kgf·cm, 10 ft·lbf)

Liquid lines (Block joint)

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

Suction lines (Piping joint)

Torque: 32 N·m (330 kgf·cm, 24 ft·lbf)

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Suction lines (Block joint)

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

4. EVACUATE AIR IN REFRIGERATION SYSTEM AND CHARGE WITH REFRIGERANT

Specified amount:

Single A/C: 700 ± 50 g (24.69 ± 1.76 oz.)

Dual A/C: 950 ± 50 g (33.51 ± 1.76 oz.)

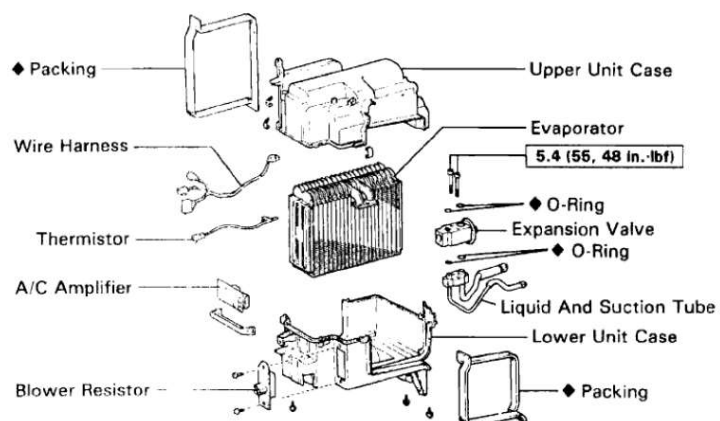
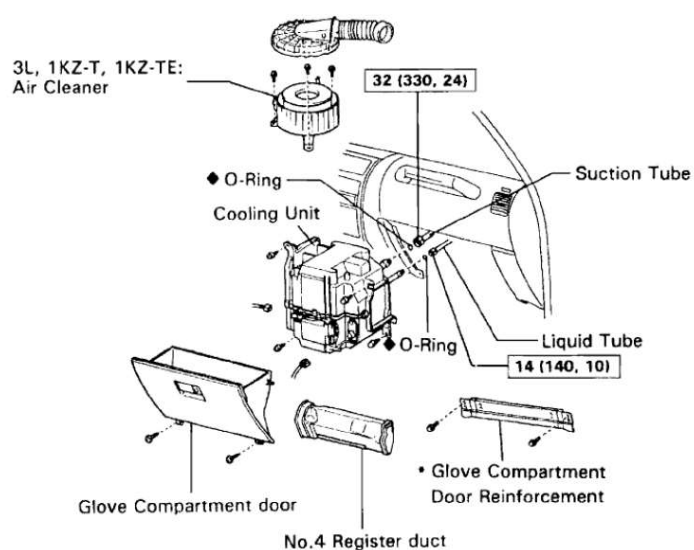
5. INSPECT FOR LEAKAGE OF REFRIGERANT

Using a gas leak detector, check for leakage of refrigerant.

6. INSPECT A/C OPERATION

FRONT COOLING UNIT COMPONENTS

AC317-01

N19493
N18278

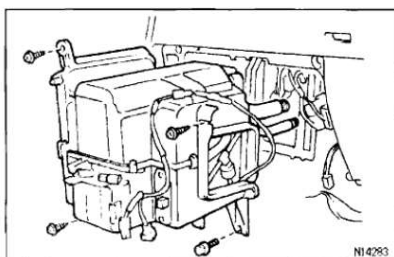
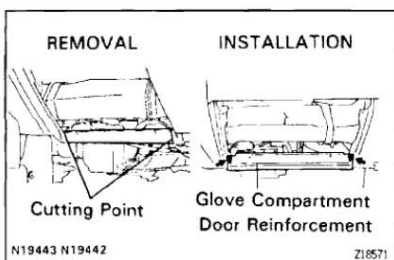
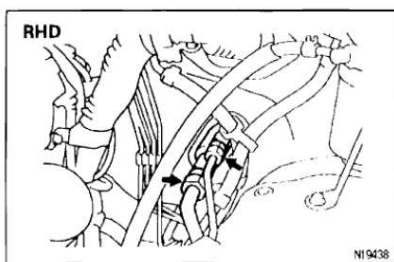
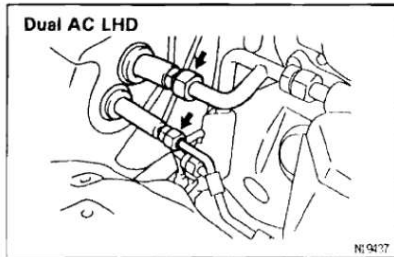
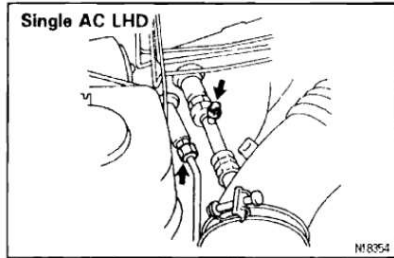
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

*: Substitution part (Only in time of installation)

718555

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FRONT COOLING UNIT REMOVAL

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

INSTALLATION HINT: Evacuate air from refrigeration system.

Charge system with refrigerant and inspect for leakage of refrigerant.

Specified amount:

Single A/C: 700 ± 50 g (24.69 ± 1.76 oz.)

Dual A/C: 950 ± 50 g (33.51 ± 1.76 oz.)

2. 3L, 1KZ-T and 1KZ-TE Engine Models:

REMOVE AIR CLEANER

3. DISCONNECT SUCTION HOSE AND LIQUID TUBE FROM COOLING UNIT FITTINGS

Loosen the 2 nuts and disconnect the both tubes.

Torque:

Liquid tube: 14 N·m (140 kgf·cm, 10 ft·lbf)

Suction tube: 32 N·m (330 kgf·cm, 24 ft·lbf)

REMOVAL NOTICE: Cap the open fittings immediately to keep moisture or dirt out of the system.

INSTALLATION HINT: Lubricate 2 new O-rings with compressor oil and install the tubes.

4. REMOVE THESE PARTS:

- (a) Suction and liquid tube grommets
- (b) Drain hose grommets
- (c) Glove compartment door
(See page BO-55)
- (d) No.4 register duct

5. REMOVE COOLING UNIT

- (a) Using a knife, cut off the reinforcement of glove compartment.

INSTALLATION HINT: Install the glove compartment door reinforcement (supply parts), instead of cutting reinforcement.

Part No. 55558-60050

- (b) Disconnect the connectors.
- (c) Remove the 3 screws, bolt and cooling unit.

FRONT COOLING UNIT DISASSEMBLY

AC3TW-01

1. REMOVE THESE PARTS:

- (a) A/C amplifier.
- (b) Wire harness.

2. REMOVE BLOWER RESISTOR

Remove the 2 screws and blower resistor.

3. SEPARATE UPPER AND LOWER UNIT CASES

- (a) Using a knife, cut off the each packing.
- (b) Remove 3 clips and 3 screws.
- (c) Separate the upper and lower unit case.

4. REMOVE EVAPORATOR FROM LOWER UNIT CASE

ASSEMBLY HINT: If evaporator was replaced, add compressor oil to the compressor.

Add 40 — 50 cc (1.4 — 1.7 fl.oz.)

Compressor oil:

ND—OIL 8 or equivalent

5. REMOVE THERMISTOR

Pull out the thermistor from evaporator.

6. REMOVE EXPANSION VALVE

Using a hexagon wrench, remove the 2 bolts and separate the expansion valve and evaporator.

Torque: 5.4 N·m (55 kgf·cm, 48 in.-lbf)

ASSEMBLY HINT: Lubricate 4 new O-rings with compressor oil and install the tubes.

AC3TW-01

FRONT COOLING UNIT ASSEMBLY

Assembly is in the reverse order of disassembly.

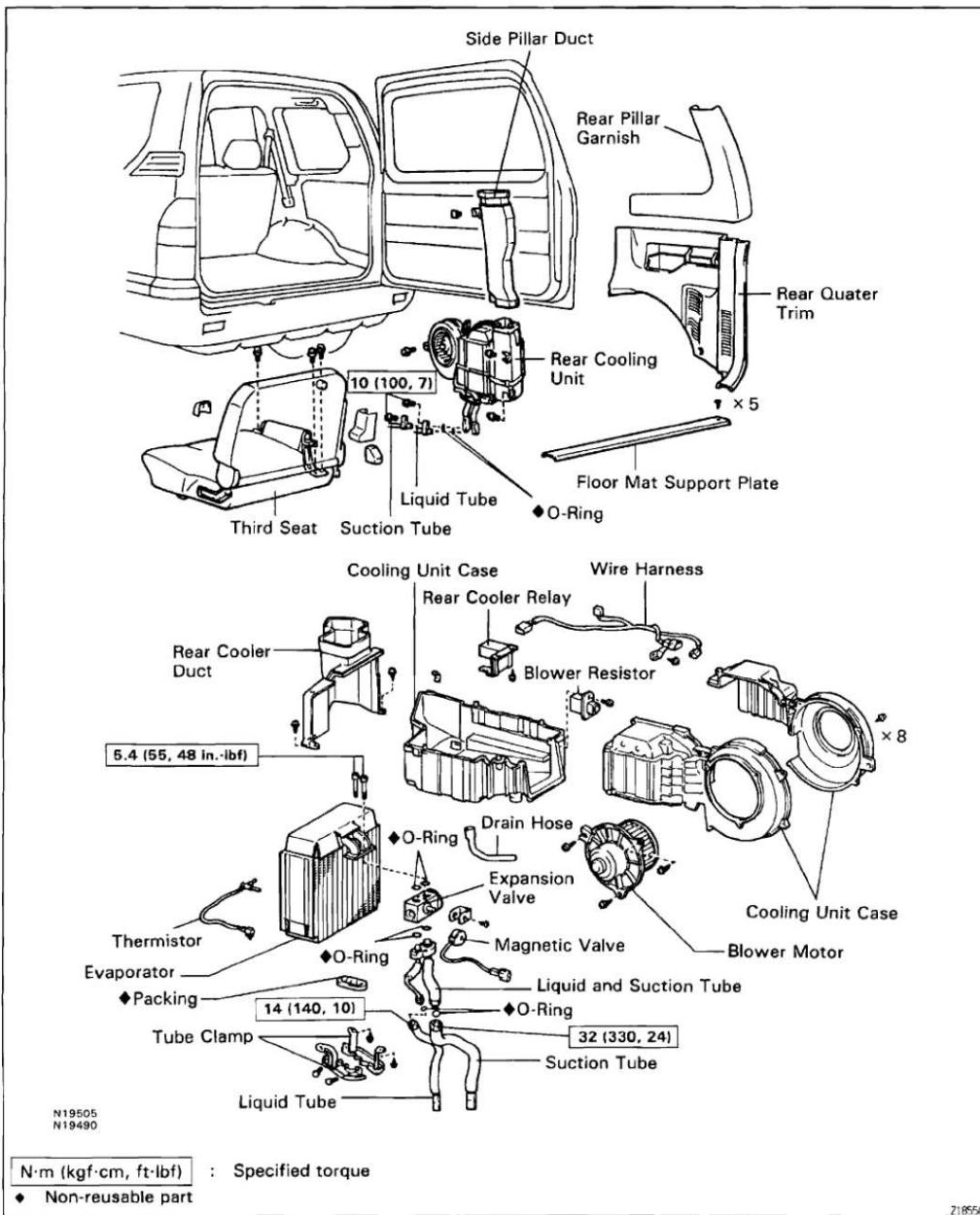
FRONT COOLING UNIT INSTALLATION

AC3TX-01

Installation is in the reverse order of removal.

REAR COOLING UNIT COMPONENTS

AC2TY-01



REAR COOLING UNIT REMOVAL**1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM**

INSTALLATION HINT: Evacuate air from refrigeration system.

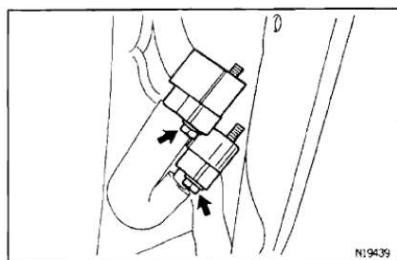
Charge system with refrigerant and inspect for leakage of refrigerant.

Specified amount:

$950 \pm 50 \text{ g}$ ($33.51 \pm 1.76 \text{ oz.}$)

2. REMOVE THESE PARTS:

- (a) Third seat
- (b) Floor mat support plate
- (c) Rear quarter trim
- (d) Rear pillar garnish

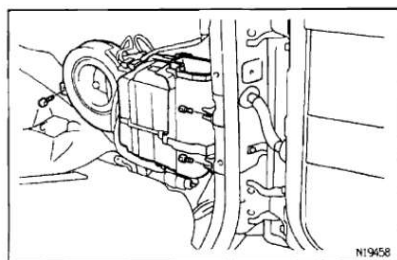
**3. DISCONNECT LIQUID AND SUCTION TUBE**

Remove the 2 bolts and disconnect the both tube.

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

REMOVAL NOTICE: Cap the open fittings immediately to keep moisture or dirt out of the system.

INSTALLATION HINT: Lubricate 2 new O-rings with compressor oil and install the tubes.

**4. REMOVE REAR COOLING UNIT**

- (a) Remove the side pillar duct.
- (b) Remove the 3 screws and cooling unit, then disconnect the connector.

REAR COOLING UNIT DISASSEMBLY**1. REMOVE BLOWER MOTOR**

- (a) Disconnect the connector.
- (b) Remove the 3 screws and blower motor.

2. REMOVE BLOWER RESISTOR

- (a) Disconnect the connector.
- (b) Remove the 2 screws and blower resistor.

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3. REMOVE THESE PARTS:

- (a) Rear cooler relay
- (b) Wire harness

4. REMOVE REAR COOLER DUCT

Remove the 2 screws and duct.

5. DISCONNECT LIQUID TUBE AND SUCTION TUBE

- (a) Remove the 4 screws and tube clamp.
- (b) Remove the packing from the suction tube.
- (c) Loosen the 2 nuts and disconnect both tubes.

Torque:

Liquid tube: 14 N·m (140 kgf·cm, 10 ft·lbf)

Suction tube: 32 N·m (330 kgf·cm, 24 ft·lbf)

DISASSEMBLY NOTICE: Cap the open fittings immediately to keep moisture or dirt out of the system.

ASSEMBLY HINT: Lubricate 2 new O-rings with compressor oil and install the tubes.

6. SEPARATE COOLING UNIT CASES

Remove the 8 screws and separate unit cases.

7. REMOVE EVAPORATOR

ASSEMBLY HINT: If evaporator was replaced, add compressor oil to the compressor.

Add 40 — 50 cc (1.4 — 1.7 fl.oz.)

Compressor oil:

ND—OIL 8 or equivalent

8. REMOVE THERMISTOR FROM EVAPORATOR**9. REMOVE EXPANSION VALVE WITH MAGNETIC VALVE**

Using a hexagon wrench, remove the 2 bolts and separate the expansion valve and evaporator.

Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)

REASSEMBLY HINT: Lubricate 4 new O-rings with compressor oil and install the tubes.

10. REMOVE MAGNETIC VALVE

Remove the screw and the valve.

REAR COOLING UNIT ASSEMBLY

ACS01-01

Assembly is in the reverse order of disassembly.

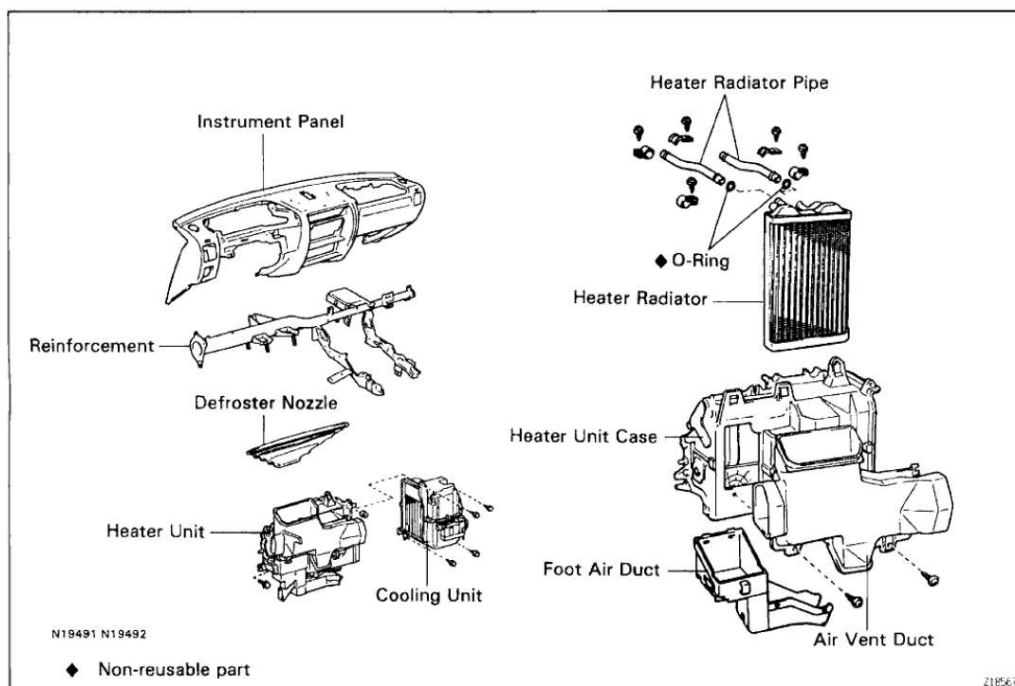
REAR COOLING UNIT INSTALLATION

ACS02-01

Installation is in the reverse order of removal.

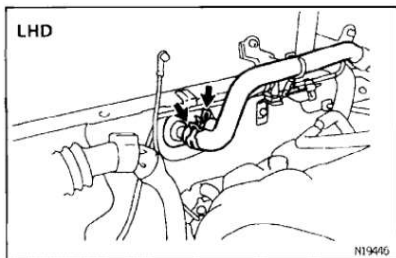
FRONT HEATER UNIT COMPONENTS

AC303-01

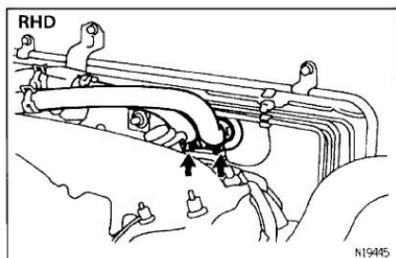


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LHD



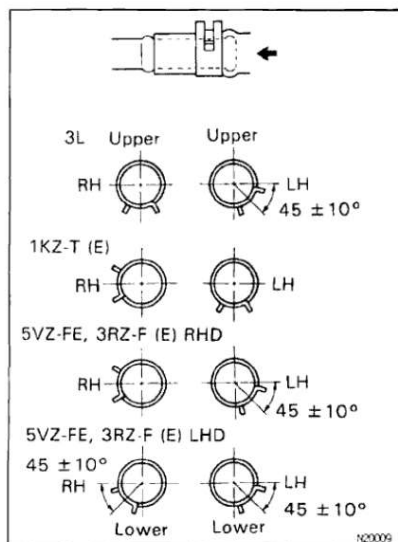
RHD



HEATER UNIT REMOVAL

1. REMOVE FRONT COOLING UNIT
(See page AC-32)
2. DRAIN ENGINE COOLANT FROM RADIATOR
REMOVAL HINT: It is not necessary to drain out all the coolant.
3. DISCONNECT WATER HOSES FROM HEATER RADIATOR PIPES

AC304-01

**INSTALLATION HINT:**

- Push the water hose onto the heater radiator pipe as far as the ridge on the pipe.
- Install the hose clip in a position, as shown in the illustration.

4. REMOVE INSTRUMENT PANEL AND REINFORCEMENT

(See page BO-55)

5. REMOVE AIR BAG SENSOR ASSEMBLY

(See page RS-32)

6. REMOVE HEATER UNIT

Remove the nut and 2 bolts then remove the heater unit.

HEATER UNIT DISASSEMBLY

AC208-01

1. REMOVE PACKING**2. REMOVE HEATER RADIATOR**

(a) LHD Models:

Remove the 3 screws and 3 plates.

RHD Models:

Remove the 2 screws and 2 plates.

(b) Pull out the heater radiator.

(c) Remove the 2 screws and heater radiator pipes from heater radiator.

3. REMOVE AIR VENT DUCT

Remove the 2 screws and duct.

4. REMOVE FOOT AIR DUCT

Release the 3 claws and remove the duct.

AC208-01

HEATER UNIT ASSEMBLY

Assembly is in the reverse order of disassembly.

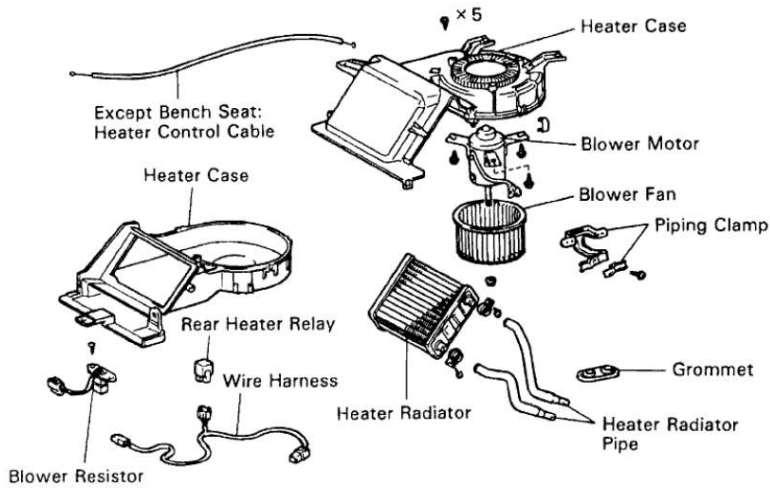
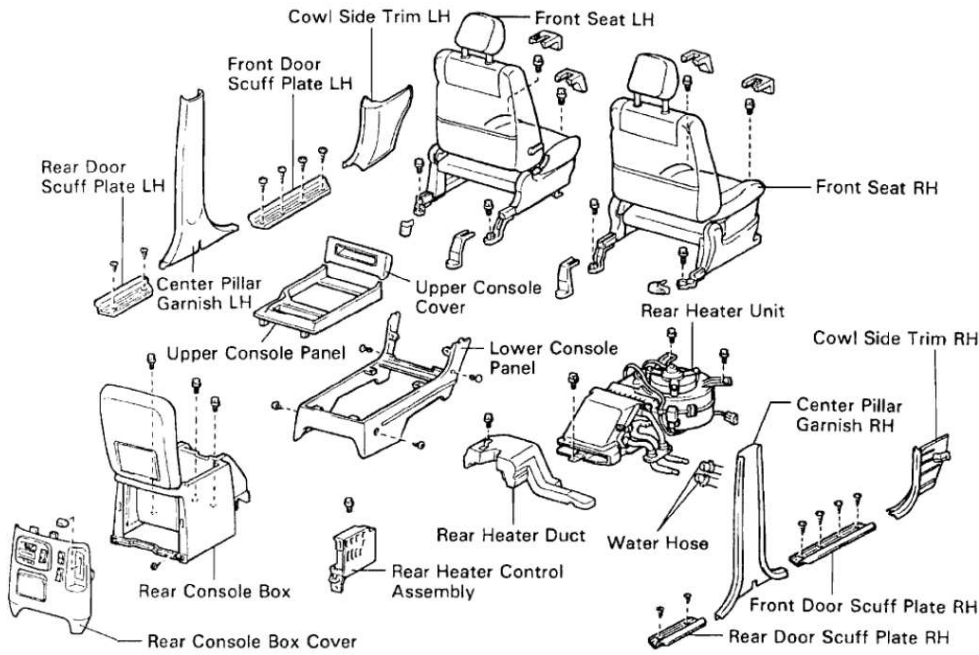
HEATER UNIT INSTALLATION

AC207-01

Installation is in the reverse order of removal.

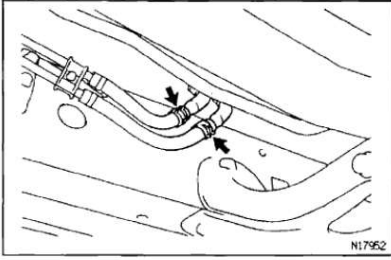
REAR HEATER UNIT COMPONENTS

AC208-01

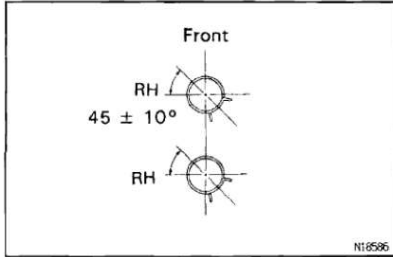
N19483
N19506

Z19557

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**REAR HEATER UNIT REMOVAL**

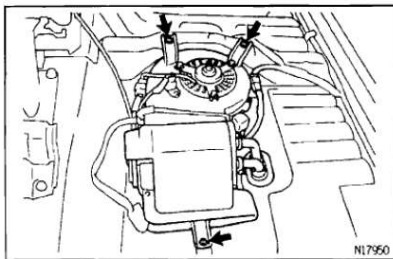
1. **DRAIN ENGINE COOLANT FROM RADIATOR**
REMOVAL HINT: It is not necessary to drain out all coolant.
2. **DISCONNECT WATER HOSES**



INSTALLATION HINT: Install the hose clip in a position, as shown in the illustration.

3. REMOVE THESE PARTS:

- (a) Cowl side trim
- (b) Front door scuff plates LH, RH
- (c) Rear door scuff plates LH, RH
- (d) Center pillar garnish LH, RH
- (e) Front seats
- (f) Upper console cover
- (g) Upper console panel
- (h) Lower console panel
- (i) Rear console box cover
- (j) Rear console box cover
- (k) Rear heater control assembly

**4. REMOVE REAR HEATER UNIT**

- (a) Slide the floor carpet backward.
- (b) Disconnect the connector.
- (c) Remove the bolt and rear heater duct.
- (d) Remove the 3 screws and rear heater unit.

REAR HEATER UNIT DISASSEMBLY**1. REMOVE THESE PARTS:**

- (a) Blower resistor
- (b) Rear heater relay
- (c) Wire harness

2. REMOVE HEATER RADIATOR

- (a) Remove the 2 screws and pull out the heater radiator.
- (b) Remove the screw and heater piping clamp.
- (c) Remove the 2 screws and heater radiator pipes.

3. SEPARATE HEATER CASES

Remove the 5 screws and 4 clips and separate the heater cases.

4. REMOVE BLOWER MOTOR

- (a) Remove the 3 screws and motor.
- (b) Remove the nut and blower fan.

AC2UR-01

REAR HEATER UNIT ASSEMBLY

Assembly is in the reverse order of disassembly.

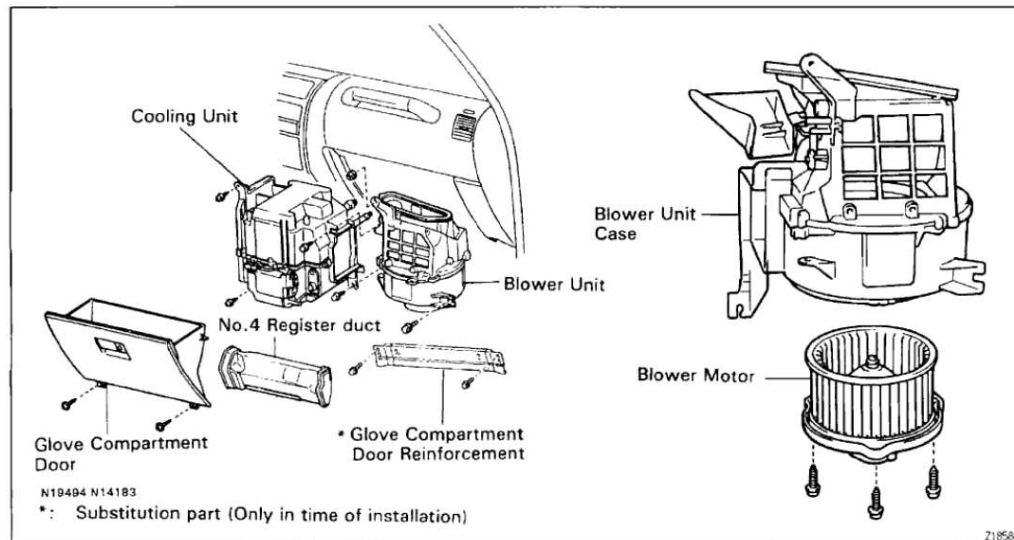
REAR HEATER UNIT INSTALLATION

AC2UR-01

Installation is in the reverse order of removal.

BLOWER UNIT COMPONENTS

AC2UR-01



BLOWER UNIT REMOVAL**1. REMOVE FRONT COOLING UNIT**

(See page AC-32)

2. REMOVE BLOWER UNIT

- (a) Disconnect the connector from the blower motor.
- (b) Disconnect the air inlet damper control cable from the blower unit.

INSTALLATION HINT: For installing the control cable, refer to "A/C CONTROL CABLES ADJUSTMENT" on page AC-82.

- (c) Remove the nut, bolt and blower unit.

BLOWER UNIT DISASSEMBLY

AC2UF-01

REMOVE BLOWER MOTOR

Remove the 3 screws and blower motor.

BLOWER UNIT ASSEMBLY

AC2UG-01

Assembly is in the reverse order of disassembly.

BLOWER UNIT INSTALLATION

AC2UH-01

Installation is in the reverse order of removal.

COMPRESSOR ON—VEHICLE INSPECTION

AC2UJ-91

Magnetic Clutch:

1. MAKE THESE VISUAL CHECKS:

- (a) Leakage of grease from the clutch bearing.
- (b) Signs of oil on the pressure plate or rotor.

Repair or replace, as necessary.

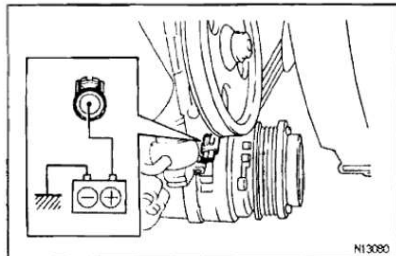
2. INSPECT MAGNETIC CLUTCH BEARING FOR NOISE

- (a) Start engine.
- (b) Check for abnormal noise from near the compressor when the A/C switch is OFF.

If abnormal noise is being emitted, replace the magnetic clutch.

3. INSPECT MAGNETIC CLUTCH

- (a) Disconnect the connector from the magnetic clutch.
 - (b) Connect the positive (+) lead from the battery to the terminal on the magnetic clutch connector and the negative (−) lead to the body ground.
 - (c) Check that the magnetic clutch is energized.
- If operation is not as specified, replace the magnetic clutch.



Compressor:

1. INSTALL MANIFOLD GAUGE SET

(See page AC-9)

2. START ENGINE

3. INSPECT COMPRESSOR FOR METALLIC SOUND

Check that there is a metallic sound from the compressor when the A/C switch is turned on.

If metallic sound is heard, replace the compressor assembly.

4. INSPECT PRESSURE OF REFRIGERATION SYSTEM

See "REFRIGERANT SYSTEM INSPECTION WITH MANIFOLD GAUGE SET" on page AC-16.

5. STOP ENGINE

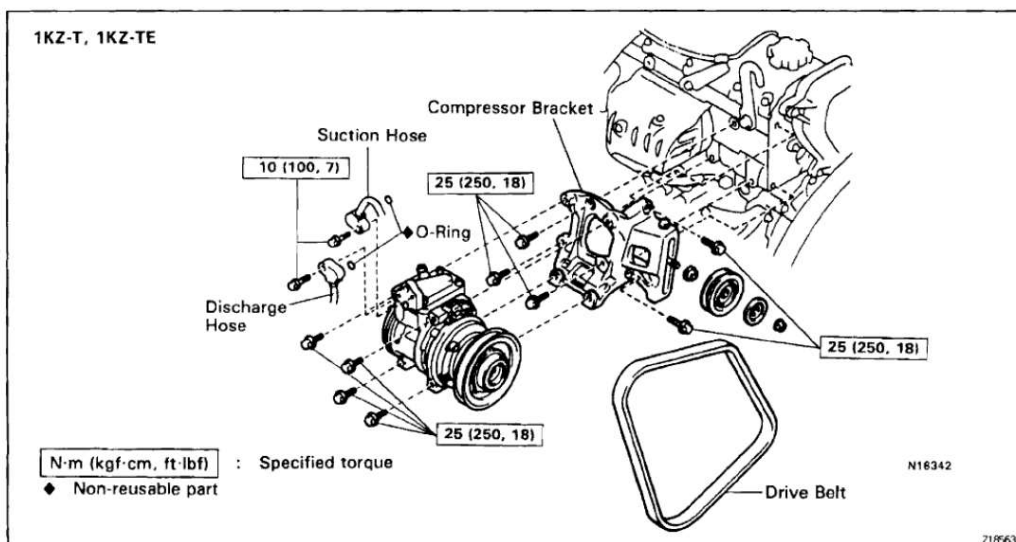
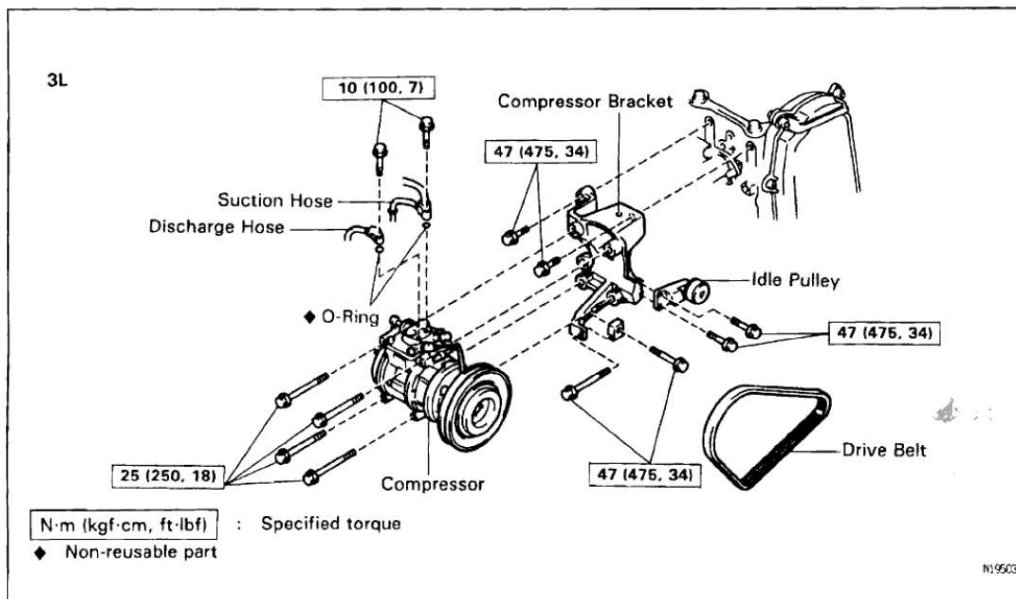
6. INSPECT VISUALLY FOR LEAKAGE OF REFRIGERANT FROM SAFETY SEAL

Using a gas leak detector, check for leakage of refrigerant.

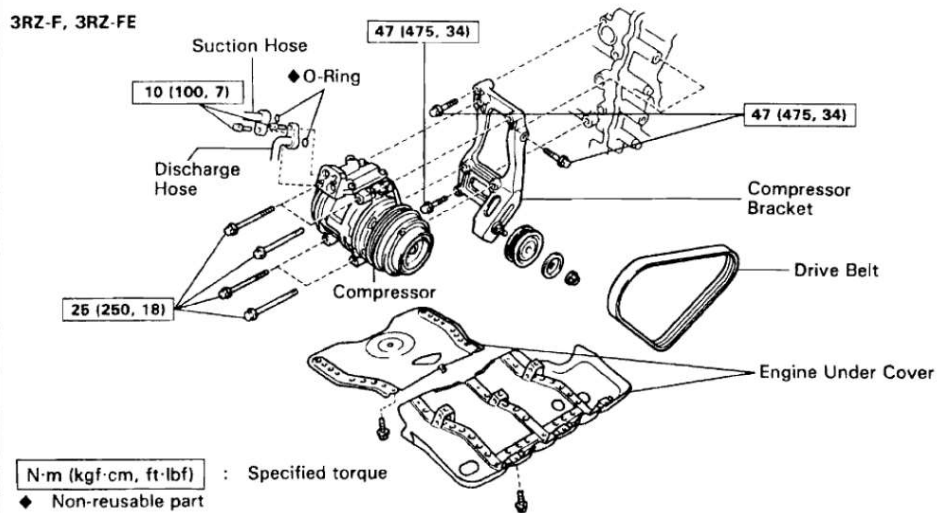
If there is any leakage, replace the shaft seal.

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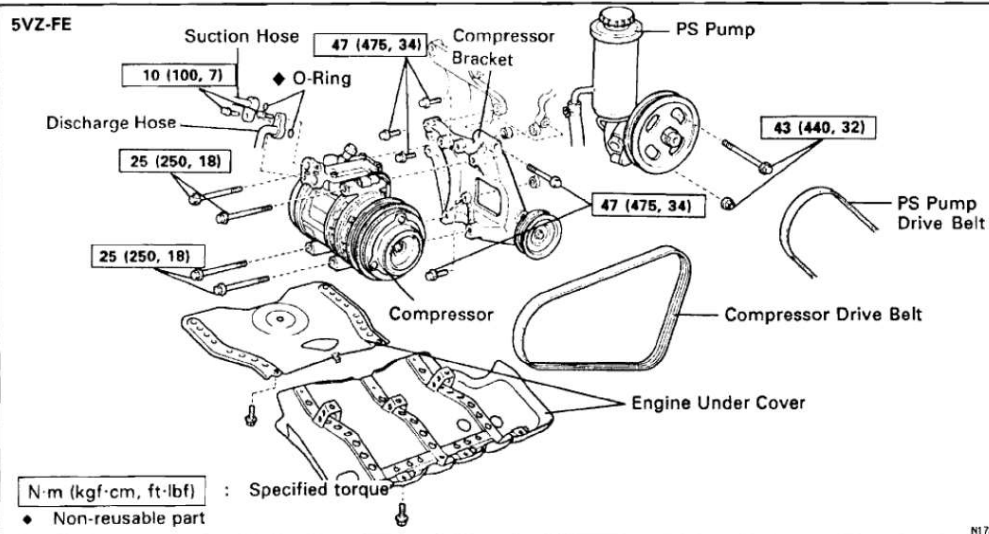
COMPRESSOR REMOVAL



3RZ-F, 3RZ-FE



5VZ-FE

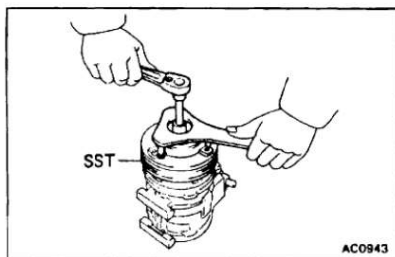
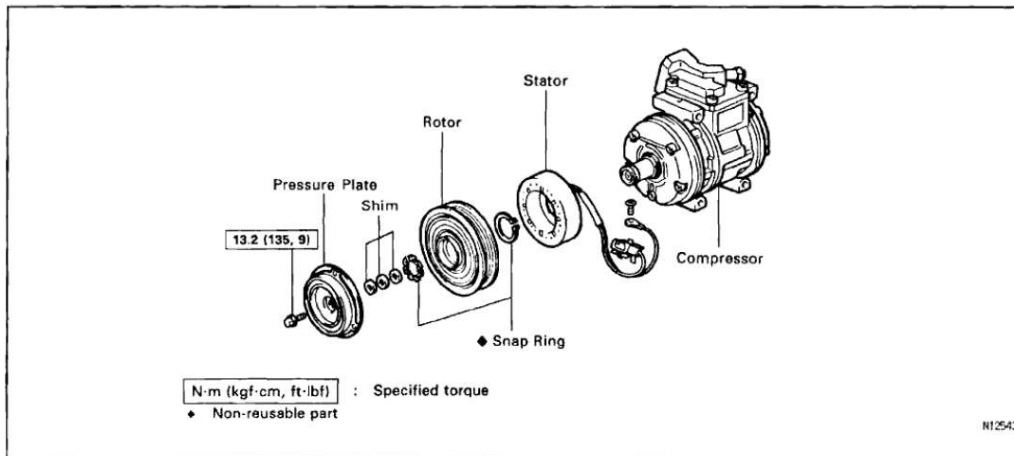


1. RUN ENGINE AT IDLE SPEED WITH A/C ON FOR APPROX. 10 MINUTES WITH A/C ON
2. STOP ENGINE
3. DISCONNECT NEGATIVE (–) TERMINAL CABLE FROM BATTERY
4. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

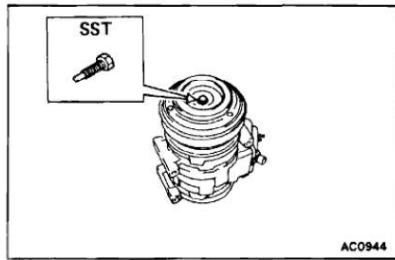
5. Except 1KZ-T and 1KZ-TE Engine Models:
REMOVE ENGINE UNDER COVER
6. **DISCONNECT DISCHARGE AND SUCTION HOSES**
Remove the 2 bolts and disconnect the both hoses.
NOTICE: Cap the open fitting immediately to keep moisture or dirt out of the system.
7. **REMOVE DRIVE BELT**
(See page AC-23)
8. 5VZ-FE Engine Models:
REMOVE PS PUMP SET BOLTS
9. **REMOVE COMPRESSOR**
 - (a) Disconnect the connector.
 - (b) Remove the 4 bolts and compressor.

MAGNETIC CLUTCH DISASSEMBLY

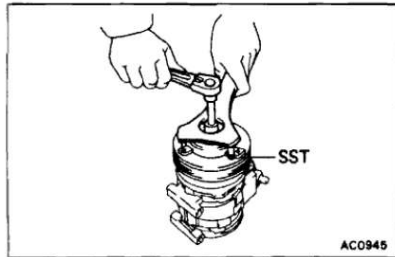
AC3UL-01



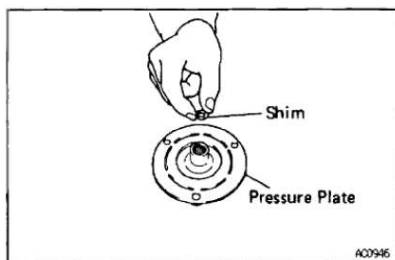
1. **REMOVE PRESSURE PLATE**
 - (a) Using SST and a socket wrench, remove the shaft bolt.
- Torque: 13.2 N-m (135 kgf-cm, 9 ft-lbf)**
SST 07112-76060



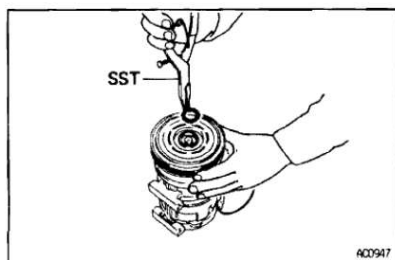
- (b) Install a SST on the pressure plate.
SST 07112-66040



- (c) Using SST and a socket wrench, remove the pressure plate.
SST 07112-66040, 07112-76060

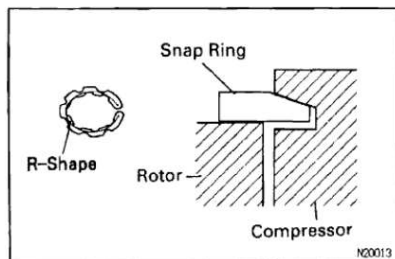


- (d) Remove the shims from the pressure plate.

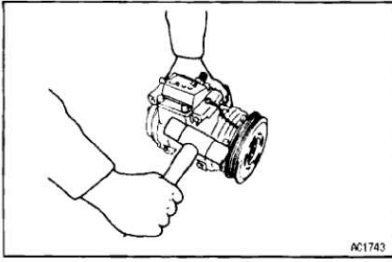


2. REMOVE ROTOR

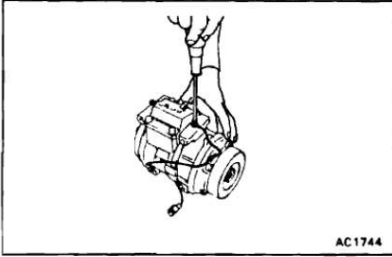
- (a) Using SST, remove the snap ring.
SST 07114-84020



REASSEMBLY NOTICE: The snap ring should be installed so that its beveled side faces up.

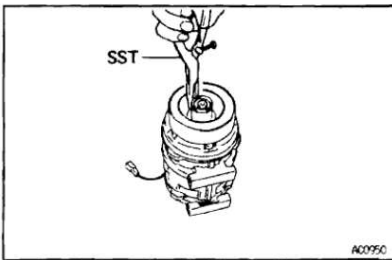


- (b) Using a plastic hammer, tap the rotor off the shaft.
DISASSEMBLY NOTICE: Be careful not to damage the pulley when tapping on the rotor.

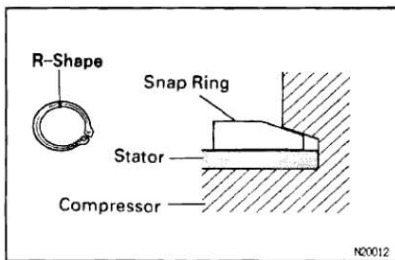


3. REMOVE STATOR

- (a) Disconnect the stator lead wire from the compressor housing.



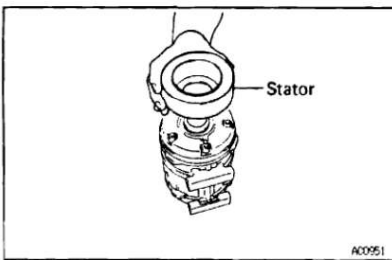
- (b) Using SST, remove the snap ring.
 SST 07114-84020



ASSEMBLY NOTICE: The snap ring should be installed so that its beveled side faces up.

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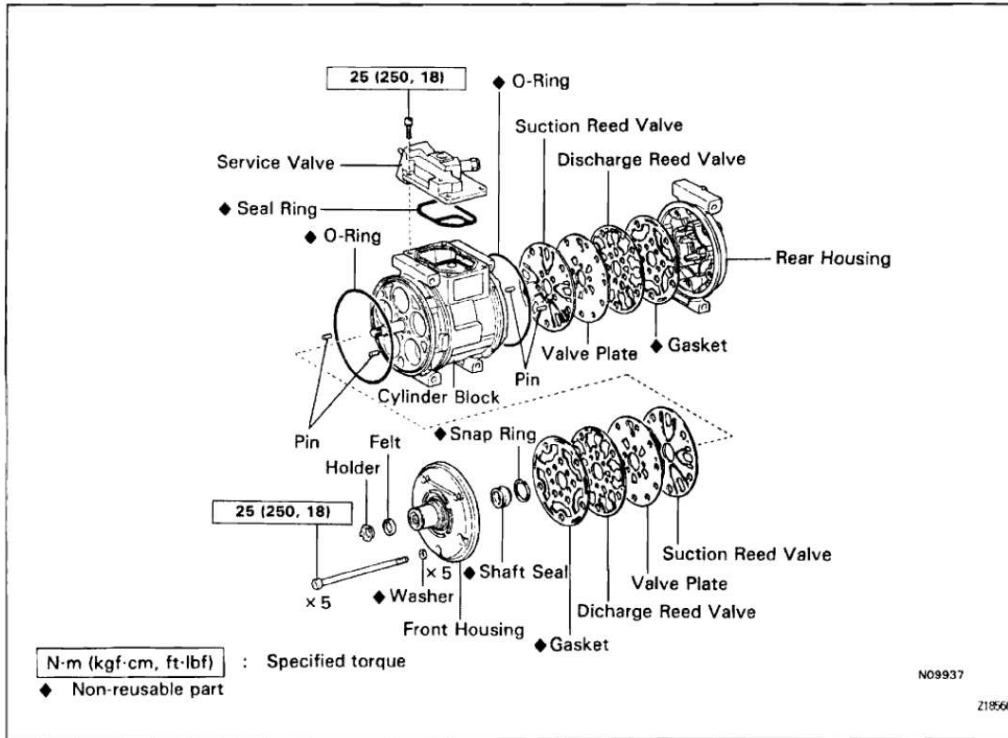
AC



- (c) Remove the stator.

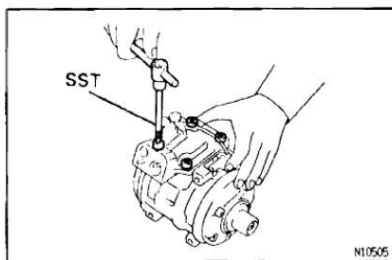
SHAFT SEAL REPLACEMENT

AC30M-01

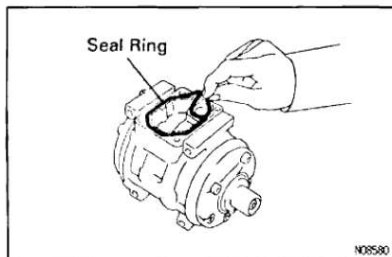


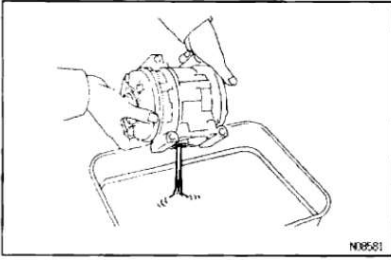
1. REMOVE SERVICE VALVE

- (a) Using SST, remove the bolts holding the service valve.
SST 07110-61050



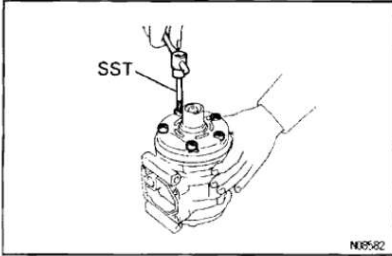
- (b) Remove the seal ring from the cylinder block. Discard the seal ring.





2. DRAIN COMPRESSOR OIL INTO MEASURING FLASK

Measure the quantity of drained oil because the same amount should be replaced later.

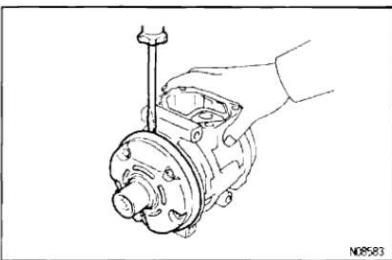


3. REMOVE FRONT HOUSING

- (a) Using SST, remove the 5 through bolts.

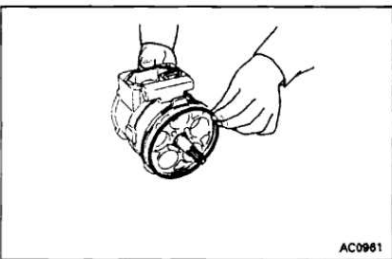
SST 07110-61050

HINT: Do not reuse the 5 washers.

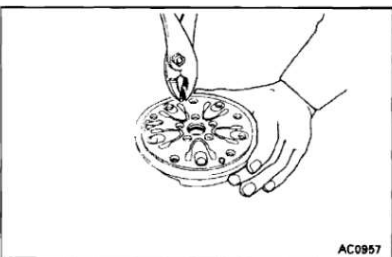


- (b) Using a screwdriver, remove the front and rear housing.

NOTICE: Be careful not to scratch the sealing surface of the front housing.



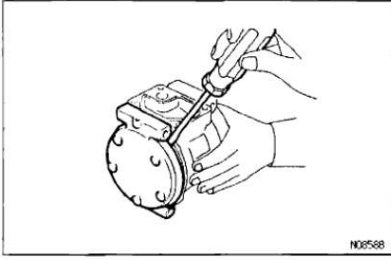
- (c) Remove the front O-rings.
Discard the O-ring.



4. REMOVE 2 PINS FROM FRONT HOUSING

5. REMOVE THESE PARTS FROM FRONT HOUSING:

- (a) Suction reed valve
- (b) Valve plate
- (c) Discharge reed valve
- (d) Gasket

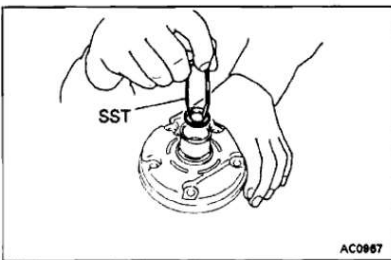
**6. REMOVE REAR HOUSING**

Using a screwdriver, remove the rear housing.

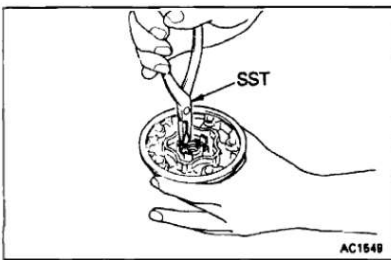
NOTICE: Be careful not to scratch the sealing surface of the rear housing.

**7. REMOVE 2 PINS FROM REAR HOUSING****8. REMOVE THESE PARTS FROM REAR HOUSING:**

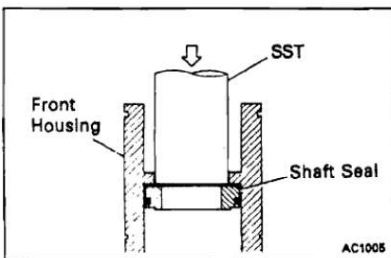
- (a) Suction reed valve
- (b) Valve plate
- (c) Discharge reed valve
- (d) Gasket

**9. REMOVE FELT**

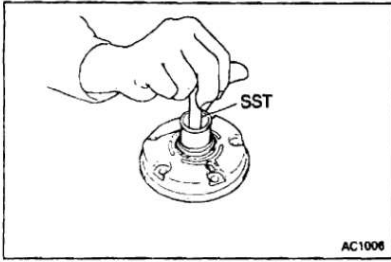
- (a) Set SST on the shaft.
SST 07112-15020
- (b) Pull out the felt with felt holder of the front housing.

**10. REMOVE SHAFT SEAL**

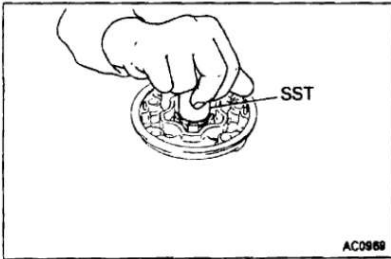
- (a) Using SST, remove the snap ring from the front housing.
SST 07114-87010



- (b) Set SST on the shaft seal.
07112-85030



- (c) Using SST, put the shaft seal out of the front housing.
SST 07112-85030

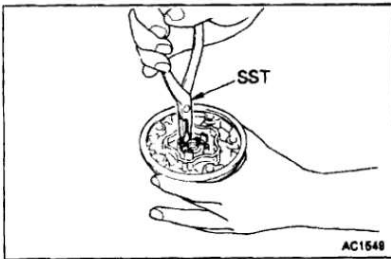


11. INSTALL NEW SHAFT SEAL

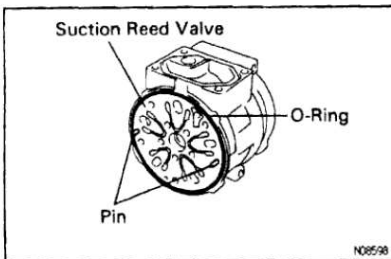
- (a) Fit the new shaft seal onto SST, and install the shaft seal into the front housing.

SST 07112-85020

HINT: Clean up the surface of the shaft seal with compressor oil.

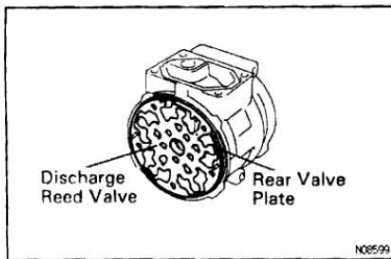


- (b) Using SST, install the snap ring into the front housing.
SST 07114-84010



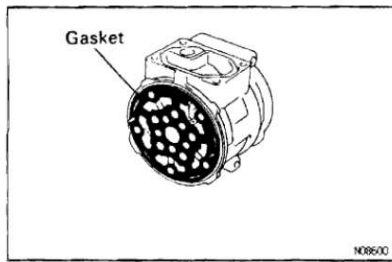
12. INSTALL REAR HOUSING

- (a) Install 2 pins in the rear cylinder.
(b) Lubricate a new O-ring with compressor oil. Install the O-ring in the rear cylinder.
(c) Install the rear suction value over the pins on the rear cylinder.

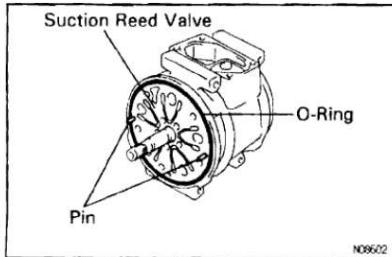


- (d) Install the rear valve plate together with the discharge valve over the pins on the rear cylinder.

HINT: The rear valve plate is marked with an "R".

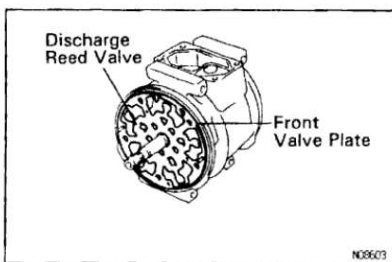


- (e) Lubricate a new gasket with compressor oil and install the gasket on the valve plate.
- (f) Install the rear housing on the rear cylinder.

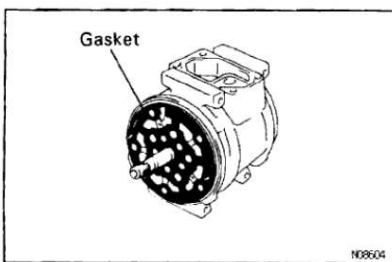


13. INSTALL FRONT HOUSING

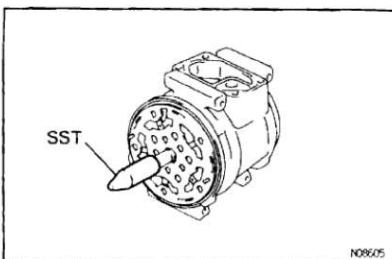
- (a) Install the 2 pins in the front cylinder.
- (b) Lubricate a new O-ring with compressor oil and install the O-ring in the front housing.
- (c) Install the front suction valve over the pins on the front cylinder.



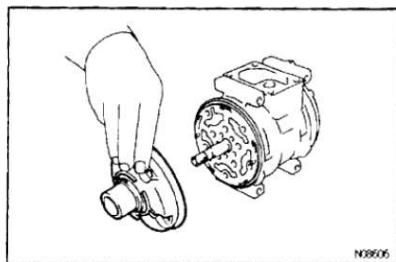
- (d) Install the front valve plate together with the discharge valve over the pins on the front cylinder.
- HINT: The front valve plate is marked with an "F".



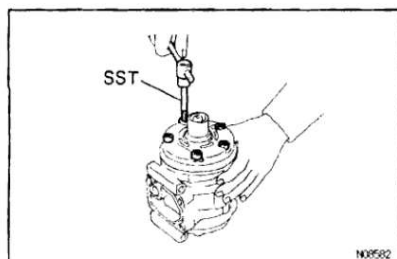
- (e) Lubricate a new gasket with compressor oil and install the gasket on the valve plate.



- (f) Set SST on the shaft to protect the lip seal.
- SST 07112-85010



- (g) Install the front housing on the front cylinder.
- (h) Pull out the SST from the front housing.

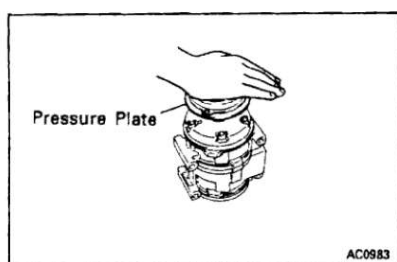


14. TIGHTEN 5 THROUGH BOLTS

Using SST and a torque wrench, gradually tighten the 5 through bolts in 2 or 3 passes.

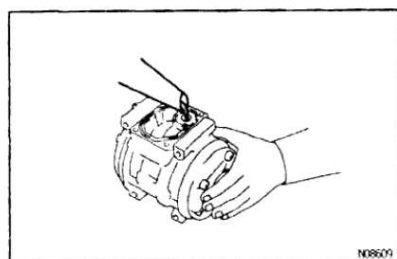
SST 07110-61050

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)



15. INSTALL FELT

- (a) Set the felt with felt holder to the front housing.
- (b) Using pressure plate of magnetic clutch, install the felt.

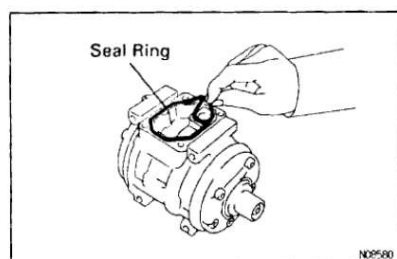


16. POUR COMPRESSOR OIL INTO COMPRESSOR

Add the same quantity of oil as was removed, plus 20 cc (0.7 fl.oz.), into the compressor.

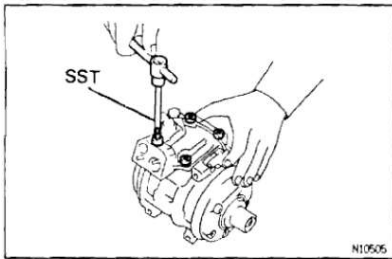
Compressor oil:

ND—OIL 8 or equivalent

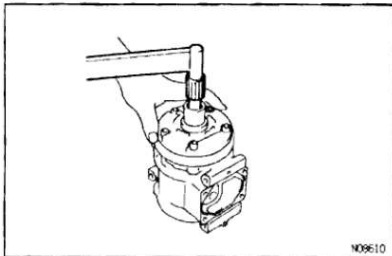


17. INSTALL SERVICE VALVE

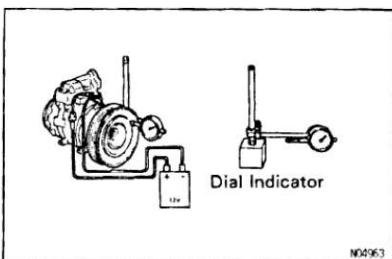
- (a) Lubricate a new seal ring with compressor oil and install the seal ring in the service valve.



- (b) Install the service valve on the compressor. Using SST and a torque wrench, tighten the bolts.
SST 07110-61050
Torque: 25 N·m (260 kgf·cm, 18 ft·lbf)



- 18. CHECK SHAFT STARTING TORQUE**
Torque: 2.9 N·m (30 kgf·cm, 26 in.-lbf)



MAGNETIC CLUTCH ASSEMBLY

Assembly is in the reverse order of disassembly.
CHECK CLEARANCE OF MAGNETIC CLUTCH

- Set the dial-indicator to the pressure plate of the magnetic clutch.
- Connect the magnetic clutch lead wire to the positive (+) terminal of the battery.
- Check the clearance between the pressure plate and rotor when connecting the negative (–) terminal of the battery.

Standard clearance:

$0.5 \pm 0.15 \text{ mm (0.020} \pm 0.059 \text{ in.)}$

If the clearance is not within standard clearance, adjust the clearance using shims to obtain the standard clearance.

COMPRESSOR INSTALLATION**1. INSTALL COMPRESSOR**

- (a) Install the compressor with 4 bolts.
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

- (b) Connect the connector.

2. INSTALL AND CHECK DRIVE BELT

(See page AC-22)

3. CONNECT DISCHARGE AND SUCTION HOSES

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

NOTICE: Hoses should be connected immediately after the caps have been removed.

HINT: Lubricate 2 new O-rings with compressor oil and install the hoses.

- 4. Except 1KZ-T and 1KZ-TE Engine Models:**

INSTALL ENGINE UNDER COVER

- 5. 5VZ-FE Engine Models:**

INSTALL PS PUMP SET BOLTS

Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

- 6. CONNECT NEGATIVE (-) TERMINAL CABLE TO BATTERY**

- 7. EVACUATE AIR FROM REFRIGERATION SYSTEM**

- 8. CHARGE SYSTEM WITH REFRIGERANT**

Specified amount:

Single A/C: 700 ± 50 g (24.69 ± 1.76 oz.)

Dual A/C: 950 ± 50 g (33.51 ± 1.76 oz.)

- 9. INSPECT FOR LEAKAGE OF REFRIGERANT**

Using a gas leak detector, check for leakage of refrigerant.

If there is leakage, check the tightening torque at the joints.

RECEIVER ON—VEHICLE INSPECTION

AC2U0-01

INSPECT FITTINGS FOR LEAKAGE

Using a gas leak detector, check for leakage.

If there is leakage, check the tightening torque at the joints.

RECEIVER REMOVAL

AC2UR-01

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

INSTALLATION HINT: Evacuate air from refrigeration system.

Charge system with refrigerant and inspect for leakage of refrigerant.

Specified amount:

Single A/C: 700 ± 50 g (24.69 ± 1.76 oz.)

Dual A/C: 950 ± 50 g (33.51 ± 1.76 oz.)

2. REMOVE RADIATOR GRILLE

3. DISCONNECT 2 LIQUID TUBES FROM RECEIVER

Remove the 2 bolts and disconnect the both tubes.

Torque: 5.4 N·m (55 kgf·cm, 48 in.-lbf)

REMOVAL NOTICE: Cap the open fittings immediately to keep moisture or dirt out of the system.

INSTALLATION HINT: Lubricate 2 new O-rings with compressor oil and install the tubes.

4. REMOVE RECEIVER

- (a) Remove the holder bolt and pull out the receiver downward.

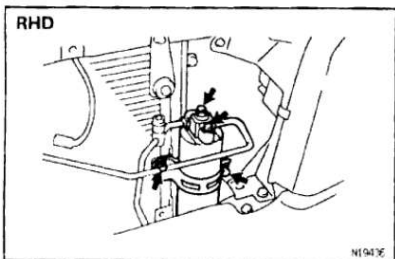
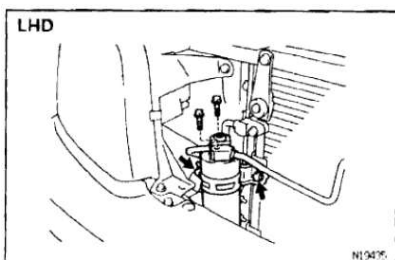
INSTALLATION HINT: If receiver was replaced, add compressor oil to the compressor.

Add 20 cc (0.71 fl.oz.)

Compressor oil:

ND-OIL 8 or equivalent

- (b) Remove the bolt and holder.



RECEIVER INSTALLATION

AC2UR-01

Installation is in the reverse order of removal.

CONDENSER ON—VEHICLE INSPECTION

AC2UT-01

1. INSPECT CONDENSER FINS FOR BLOCKAGE OR DAMAGE

If the fins are clogged, wash them with water and dry with compressed air.

NOTICE: Be careful not to damage the fins.

If the fins are bent, straighten them with a screwdriver or pliers.

2. INSPECT CONDENSER AND FITTINGS FOR LEAKAGE

Repair as necessary.

CONDENSER REMOVAL

AC2UU-01

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

INSTALLATION HINT: Evacuate air from refrigeration system.

Charge system with refrigerant and inspect for leakage of refrigerant.

Specified amount:

Single A/C: 700 ± 50 g (24.69 ± 1.76 oz.)

Dual A/C: 950 ± 50 g (33.51 ± 1.76 oz.)

2. REMOVE THESE PARTS:

- (a) Radiator grill
- (b) Horn
- (c) Receiver and holder
(See page AC-58)

AC

3. REMOVE LIQUID TUBE

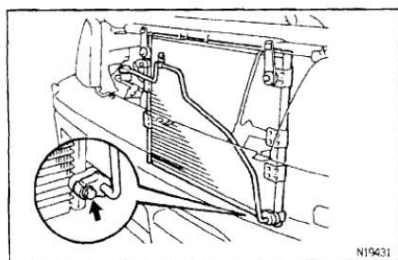
Single A/C:

Remove the bolt and remove the liquid tube.

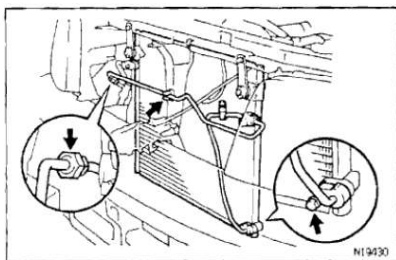
Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

REMOVAL NOTICE: Cap the open fittings immediately to keep moisture or dirt out of the system.

INSTALLATION HINT: Lubricate a new O-ring with compressor oil and install the tube.



N19431

**Dual A/C LHD Models:**

Loosen the nut and bolt, then remove the liquid tubes.

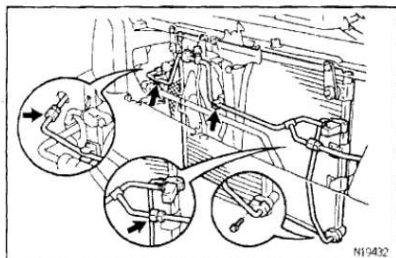
Torque:

Block joint: 10 N·m (100 kgf·cm, 7 ft·lbf)

Piping joint: 14 N·m (140 kgf·cm, 10 ft·lbf)

REMOVAL NOTICE: Cap the open fittings immediately to keep moisture or dirt out of the system.

INSTALLATION HINT: Lubricate 2 new O-rings with compressor oil and install the tube.

**Dual A/C RHD Models:**

Loosen the 2 nut and bolt, then remove the liquid tubes.

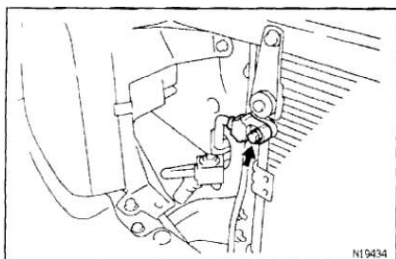
Torque:

Block joint: 10 N·m (100 kgf·cm, 7 ft·lbf)

Piping joint: 14 N·m (140 kgf·cm, 10 ft·lbf)

REMOVAL NOTICE: Cap the open fittings immediately to keep moisture or dirt out of the system.

INSTALLATION HINT: Lubricate 3 new O-rings with compressor oil and install the tube.

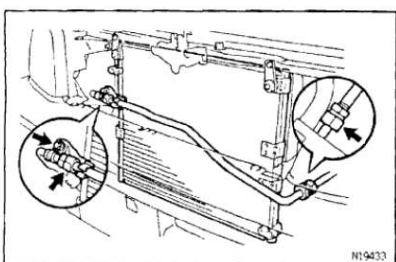
**3. DISCONNECT DISCHARGE HOSE**

Remove the bolt and disconnect the discharge hose.

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

REMOVAL NOTICE: Cap the open fittings immediately to keep moisture or dirt out of the system.

INSTALLATION HINT: Lubricate a new O-ring with compressor oil and install the hose.

**4. RHD Models Only:****REMOVE SUCTION TUBE**

(a) Remove the screw from the piping clamp.

(b) Loosen the 2 nuts and remove the tube.

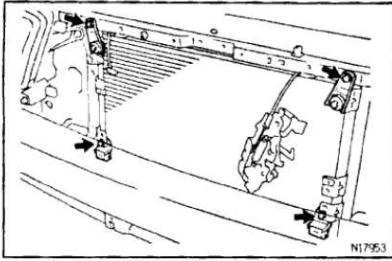
Torque: 32 N·m (330 kgf·cm, 24 ft·lbf)

REMOVAL NOTICE: Cap the open fittings immediately to keep moisture or dirt out of the system.

INSTALLATION HINT: Lubricate 2 new O-rings with compressor oil and install the tube.

5. Dual A/C Models Only:**REMOVE CONDENSER FAN**

(See page AC-73)

**6. REMOVE CONDENSER**

- (a) Remove the 2 bolts from condenser upper mountings.
- (b) Remove the 2 bolts from condenser lower mountings.
- (c) Pull the condenser forward and pull it upward.

INSTALLATION HINT: If condenser was replaced, add compressor oil to the compressor.

Add 40–50 cc (1.4–1.7 fl.oz.)

Compressor oil:

ND—OIL 8 or equivalent

CONDENSER INSTALLATION

AC20UW-01

Installation is in the reverse order of removal.

HEATER RADIATOR**HEATER RADIATOR REMOVAL AND INSTALLATION**

AC20UW-01

Front Heater:

(See "FRONT HEATER UNIT" on page AC—38)

Rear Heater:

(See "REAR HEATER UNIT" on page AC—40)

HEATER RADIATOR INSPECTION

AC20UW-01

1. INSPECT FINS FOR BLOCKAGE

If the fins are clogged, clean them with compressed air.

NOTICE: Never use water to clean the evaporator.

2. INSPECT FITTINGS FOR CRACKS OR SCRATCHES

Repair as necessary.

AC

EVAPORATOR EVAPORATOR REMOVAL AND INSTALLATION

AC3UV-01

Front A/C:

(See "FRONT COOLING UNIT" on page AC-32)

Rear Cooler:

(See "REAR COOLING UNIT" on page AC-35)

EVAPORATOR INSPECTION

AC3UZ-01

1. CHECK EVAPORATOR FINS FOR BLOCKAGE

If the fins are clogged, clean them with compressed air.

NOTICE: Never use water to clean the evaporator.

2. CHECK FITTINGS FOR CRACKS OR SCRATCHES

Repair as necessary.

EXPANSION VALVE ON-VEHICLE INSPECTION

AC3V0-01

1. CHECK QUANTITY OF GAS DURING REFRIGERA- TION CYCLE

2. INSTALL MANIFOLD GAUGE SET

(See page AC-9)

3. RUN ENGINE

Run the engine at 1,500 rpm for at least 5 minutes.

Then check that the high pressure reading is 1.37–1.57 MPa (14–16 kgf/cm², 199–228 psi).

4. CHECK EXPANSION VALVE

If the expansion valve is faulty, the low pressure reading will drop to 0 kPa (0 kgf/cm², 0 psi).

HINT: When the low pressure drops to 0 kPa (0 kgf/cm², 0 psi), feel the receiver's IN and OUT sides for 0 temperature difference.

FRONT EXPANSION VALVE REMOVAL AND INSTALLATION

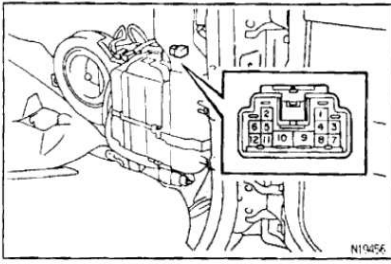
AC3V1-01

Front A/C:

(See "FRONT COOLING UNIT" on page AC-32)

Rear Cooler:

(See "REAR COOLING UNIT" on page AC-35)



MAGNETIC VALVE ON—VEHICLE INSPECTION

AC63-01

1. REMOVE THESE PARTS:

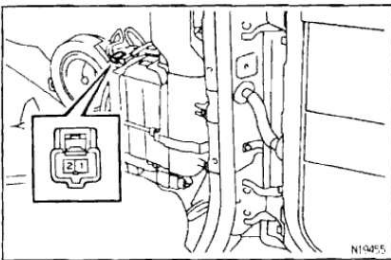
- (a) Third seat RH
- (b) Rear quarter trim
- (c) Side pillar duct

2. INSPECT MAGNETIC VALVE CONTINUITY

Wire Harness Side:

- (a) Disconnect the connector from rear cooling unit.
- (b) Using an ohmmeter, check the continuity between terminals 2 and 5.

If continuity is not as specified, proceed next inspection.



Magnetic Valve Side:

- (a) Disconnect the connector from the magnetic valve.
- (b) Using an ohmmeter, check the continuity between terminals.

If continuity is not as specified, replace the magnetic valve.

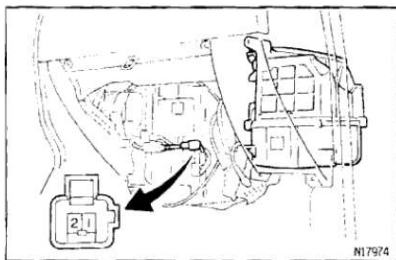
If continuity is as specified, replace the wire harness of rear cooling unit.

MAGNETIC VALVE REMOVAL AND INSTALLATION

AC63-01

AC

(See "REAR COOLING UNIT" on page AC—35)



THERMISTOR ON — VEHICLE INSPECTION

AC21V4-01

Front A/C:

1. REMOVE GLOVE COMPARTMENT DOOR
(See page BO-55)

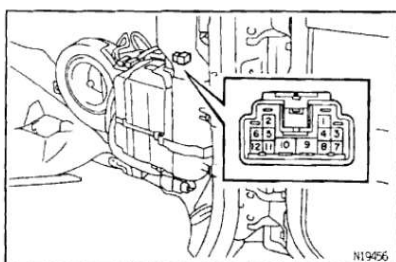
2. INSPECT THERMISTOR RESISTANCE

- (a) Disconnect the connector.
- (b) Measure resistance between terminals.

Standard resistance:

1,500 Ω at 25°C (77°F)

If resistance is not as specified, replace the thermistor.



ON — VEHICLE INSPECTION

AC21V8-01

Rear Cooler:

1. REMOVE THESE PARTS:

- (a) Third seat RH
- (b) Rear quarter trim
- (c) Pillar duct

2. INSPECT THERMISTOR RESISTANCE

Wire Harness Side:

- (a) Disconnect the connector.
- (b) Measure resistance between terminals 3 and 4.

Standard resistance:

1,500 Ω at 25°C (77°F)

If resistance is not as specified, proceed next inspection.

Thermistor Side:

- (a) Disconnect the connector.
- (b) Measure resistance between terminals.

Standard resistance:

1,500 Ω at 25°C (77°F)

If resistance is not as specified, replace the thermistor.

If resistance is as specified, replace the wire harness of rear cooling unit.



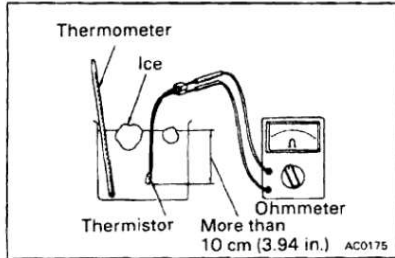
THERMISTOR REMOVAL AND INSTALLATION

Front A/C:

(See "FRONT COOLING UNIT" on page AC-32)

Rear Cooler:

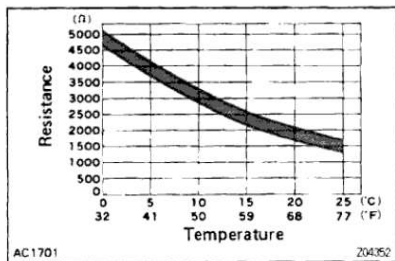
(See "REAR COOLING UNIT" on page AC-35)

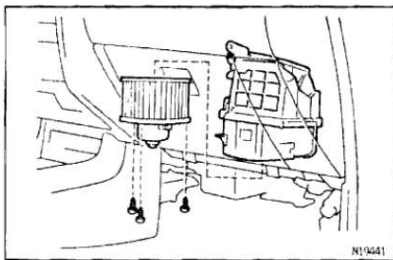


THERMISTOR INSPECTION

INSPECT THERMISTOR RESISTANCE

- Place the thermistor in cold water, and while changing the temperature of the water, measure resistance at the connector and at the same time, measure temperature of the water with a thermometer.
- Compare the 2 readings on the chart. If resistance value is not as specified, replace the thermistor.



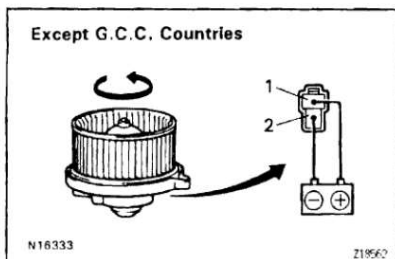


BLOWER MOTOR FRONT BLOWER MOTOR REMOVAL

AC3V8-01

REMOVE BLOWER MOTOR

- (a) Disconnect the connector from the blower motor.
- (b) Remove the 3 screws and blower motor.



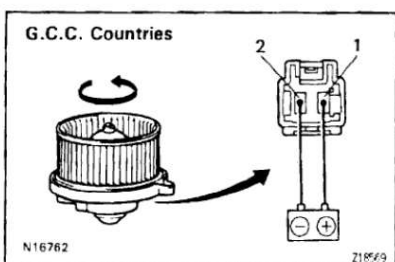
FRONT BLOWER MOTOR INSPECTION

AC3V8-01

INSPECT BLOWER MOTOR OPERATION

(): G.C.C. Countries

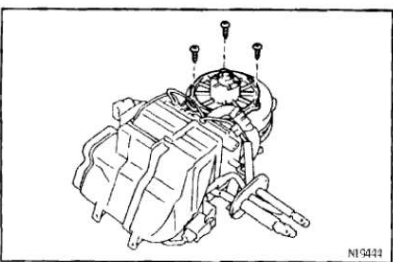
Connect the positive (+) lead from the battery to terminal 1(2) and the negative (-) lead to terminal 2 (1), then check that the motor operations smoothly. If operation is not as specified, replace the blower motor.



FRONT BLOWER INSTALLATION

AC3V8-01

Installation is in the reverse order of removal.



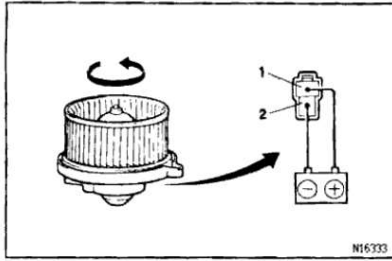
REAR COOLER BLOWER MOTOR REMOVAL

AC3V8-01

1. REMOVE REAR COOLING UNIT
(See page AC-35)

2. REMOVE BLOWER MOTOR

- (a) Disconnect the connector.
- (b) Remove the 3 screws and blower motor.



REAR COOLER BLOWER MOTOR INSPECTION

AC2VC-01

INSPECT BLOWER MOTOR OPERATION

Connect the positive (+) lead from the battery to terminal 1 and the negative (-) lead to terminal 2, then check that the motor operations smoothly. If operation is not as specified, replace the blower motor.

REAR COOLER BLOWER MOTOR INSTALLATION

AC2VD-01

Installation is in the reverse order of removal.

REAR HEATER BLOWER MOTOR REMOVAL AND INSTALLATION

AC2VE-01

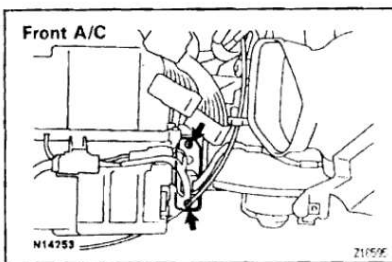
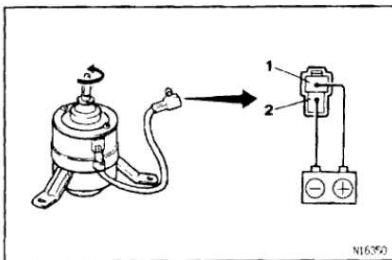
(See "REAR HEATER UNIT" on page AC-38)

REAR HEATER BLOWER MOTOR INSPECTION

AC2VF-01

INSPECT BLOWER MOTOR OPERATION

Connect the positive (+) lead from the battery to terminal 1 and the negative (-) lead to terminal 2, then check that the motor operations smoothly. If operation is not as specified, replace the motor.



BLOWER RESISTOR BLOWER RESISTOR REMOVAL

AC2VB-01

Front A/C:

1. REMOVE THESE PARTS:

- (a) Glove compartment door
(See page BO-55)
- (b) No.4 heater to register duct
(See page BO-55)

2. REMOVE BLOWER RESISTOR

- (a) Disconnect the connector.
- (b) Remove the 2 screws and blower resistor.

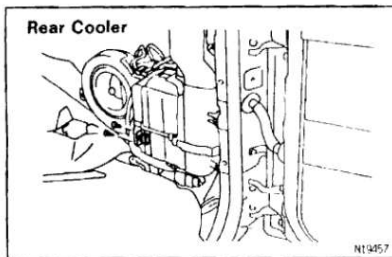
Rear Cooler:

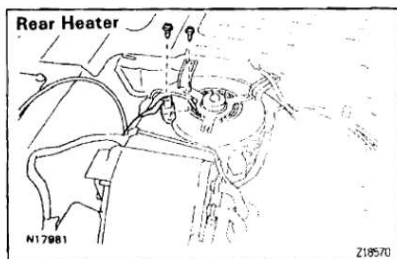
1. REMOVE THESE PARTS:

- (a) Floor mat support plate
- (b) Rear quarter trim

2. REMOVE BLOWER RESISTOR

- (a) Disconnect the connector.
- (b) Remove the 2 screws and blower resistor.



**Rear Heater:****1. REMOVE THESE PARTS:**

- (a) Front seats
- (b) Front consol panel
- (c) Rear consol panel

2. REMOVE BLOWER RESISTOR

- (a) Slide the floor carpet backward.
- (b) Disconnect the connector.
- (c) Remove the 2 screws and blower resistor.

BLOWER RESISTOR INSPECTION

AC2VM-01

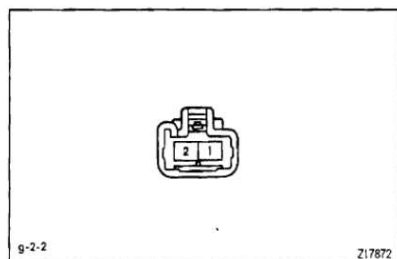
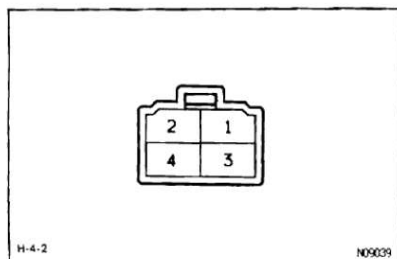
INSPECT BLOWER RESISTOR RESISTANCE**Front A/C:**

Tester connection	condition	Specified condition
1-4	Constant	$2.2 \pm 0.1 \Omega$
1-3	Constant	$1.2 \pm 0.2 \Omega$
1-2	Constant	$0.8 \pm 0.2 \Omega$

If resistance is not as specified, replace the blower resistor.

Rear Cooler:

Check the blower resistor in the same way for "FRONT A/C BLOWER RESISTOR".

**Rear Heater:**

Measure resistance between terminals.

Standard resistance

$$3.2 \pm 0.2 \Omega$$

If resistance is not within the specification, replace the blower resistor.

BLOWER RESISTOR INSTALLATION

AC2VJ-01

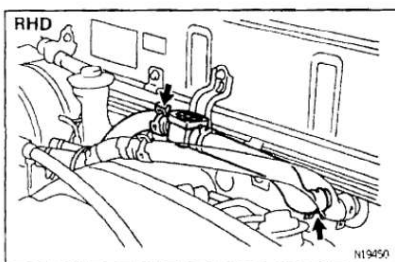
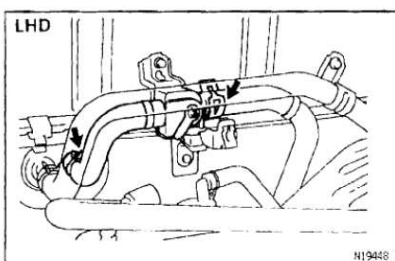
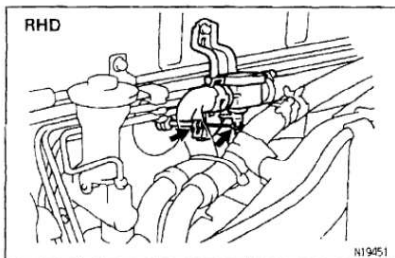
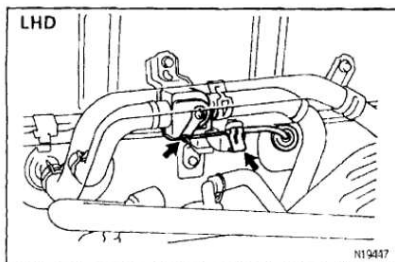
Installation is in the reverse order of removal.

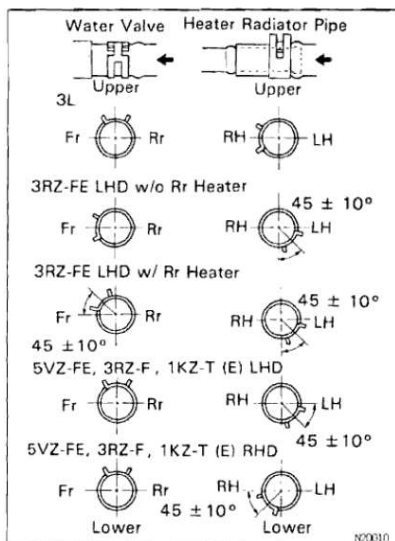
WATER VALVE WATER VALVE REMOVAL

AC21VK-01

1. **DRAIN ENGINE COOLANT FROM RADIATOR**
REMOVAL HINT: It is not necessary to drain out all the coolant.
2. **DISCONNECT WATER VALVE CONTROL CABLE FROM WATER VALVE**
INSTALLATION HINT: For installing the control cable, refer to "A/C CONTROL CABLES ADJUSTMENT" page AC-82.

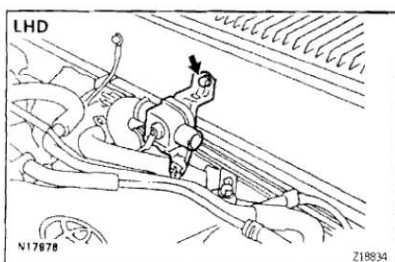
3. **DISCONNECT WATER HOSES**
 - (a) Disconnect the water hose from the water valve.
 - (b) Disconnect the water hose from the heater radiator pipe.





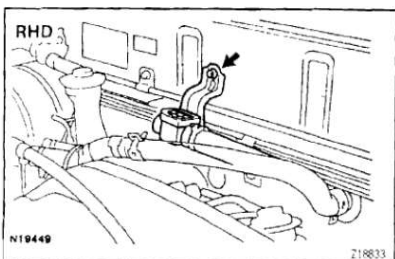
INSTALLATION HINT:

- Push the water hose on to the heater radiator pipe as far as the ridge on the pipe and install the hose clip.
- Install the hose clip in a position, as shown in the illustration.



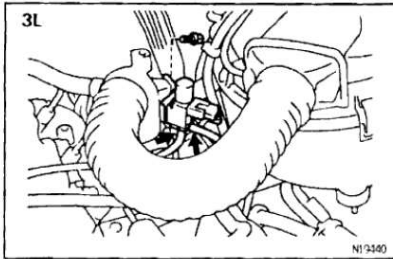
4. REMOVE WATER VALVE

Remove the bolt and water valve.



WATER VALVE INSTALLATION

Installation is in the reverse order of removal.

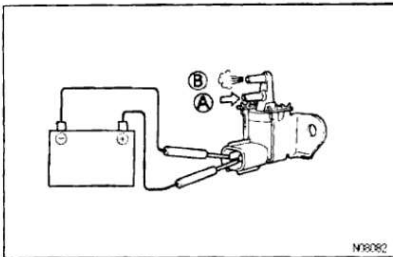
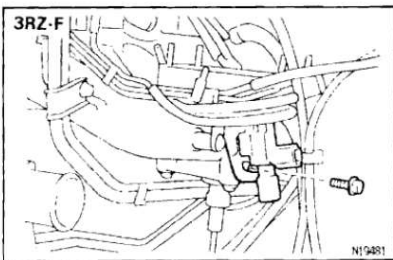
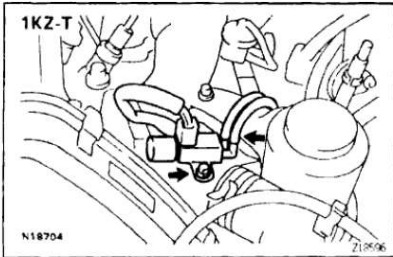


VACUUM SWITCHING VALVE (VSV)

VACUUM SWITCHING VALVE INSPECTION

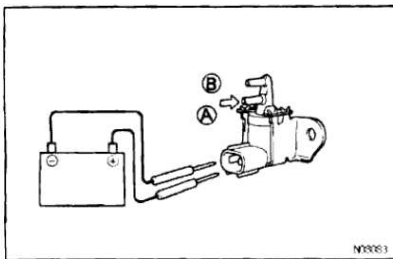
1. REMOVE VSV

Disconnect the 2 hoses, and remove the bolt and VSV.

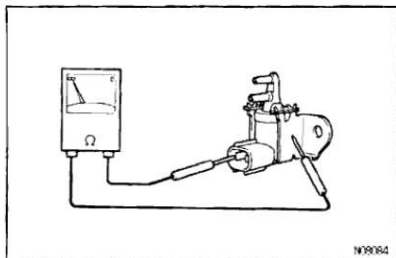


2. CHECK VACUUM CIRCUIT CONTINUITY IN VSV BY BLOWING AIR INTO PIPES

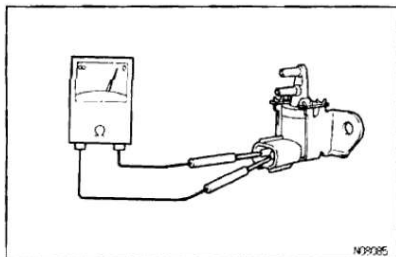
- Connect the VSV terminals to the battery terminals as illustrated.
- Blow into pipe "A" and check that air comes out of pipe "B".



- Disconnect the battery.
 - Blow into pipe "A" and check that air does not come out of pipe "B".
- If a problem is found, replace the VSV.

**3. CHECK FOR SHORT CIRCUIT**

Using an ohmmeter, check that there is no continuity between each terminal and the VSV body. If there is continuity, replace the VSV.

**4. CHECK FOR OPEN CIRCUIT**

Using an ohmmeter, measure resistance between terminals.

Resistance:

143.5 Ω

If resistance value is not as specified, replace the VSV.

CONDENSER FAN

ON – VEHICLE INSPECTION

ACVX-01

1. INSPECT COOLING FAN OPERATION

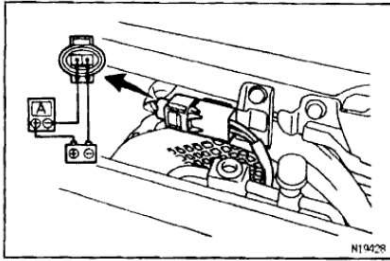
Inspect the condenser fan operation, as shown in the chart below.

Test conditions:

- Ignition switch ON
- Blower speed control switch position "HI"
- A/C switch ON
- Rear cooler switch ON
- Rear cooler blower speed control switch "HI"
- Temperature control dial "MAX COOL"
- Rear cooler temperature control lever "MAX COOL"
- Install manifold gauge set

Condition	Fan operation
Refrigerant pressure is less than 1,520 kPa (32 kgf/cm ² , 220 psi)	Not rotate
Refrigerant pressure is 1,520 kPa (32 kgf/cm ² , 220 psi) or above	Rotate

If operation is not as specified, proceed next inspection.

**2. INSPECT COOLING FAN MOTOR OPERATION**

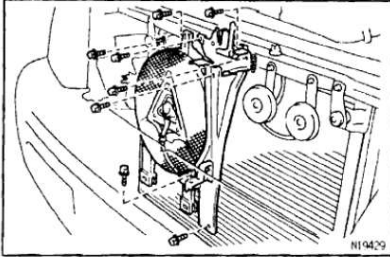
- (a) Disconnect the cooling fan connector.
- (b) Connect battery and ammeter.
- (c) Check that the cooling fan rotates smoothly, and check that the reading on the ammeter.

Specified amperage: 1.5 A or below

If operation is not as specified, replace the fan motor.
If operation is as specified, check the pressure switch or condenser fan relay.

CONDENSER FAN MOTOR REMOVAL

AC3V9-01

**1. REMOVE THESE PARTS:**

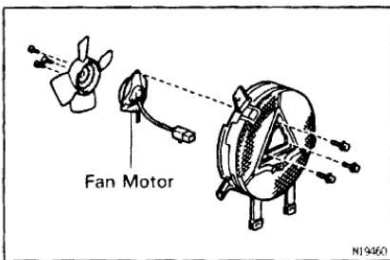
- (a) Radiator grill
- (b) Hood lock
- (c) Hood lock brace
- (d) Liquid tube
(See page AC-59)
- (e) RHD Models:
Suction tube
(See page AC-59)

2. REMOVE CONDENSER FAN

- (a) Disconnect the connector.
- (b) Remove the 2 bolts and condenser fan.

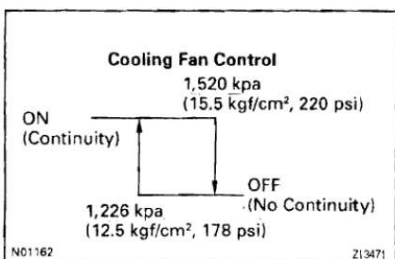
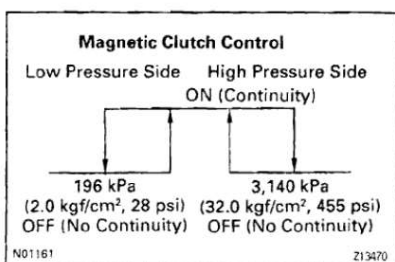
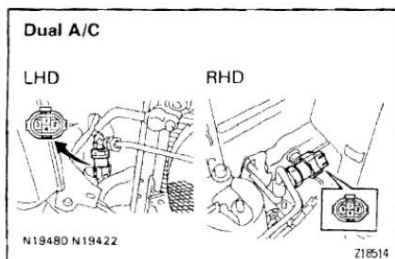
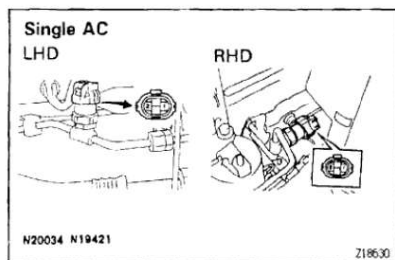
3. REMOVE FAN MOTOR

- (a) Disconnect the wire harness clamps from the fan shroud.
- (b) Remove the 3 screws and fan motor with fan.
- (c) Remove the 3 screws and fan motor from fan.

**CONDENSER FAN MOTOR INSTALLATION**

AC3V9-01

Installation is in the reverse order of removal.



PRESSURE SWITCH ON—VEHICLE INSPECTION

AC2VR-01

1. INSTALL MANIFOLD GAUGE SET
(See page AC-9)
2. RHD and Dual A/C Models:
REMOVE RADIATOR GRILL
3. RUN ENGINE AT APPROX. 1,500 RPM
4. INSPECT PRESSURE SWITCH OPERATION

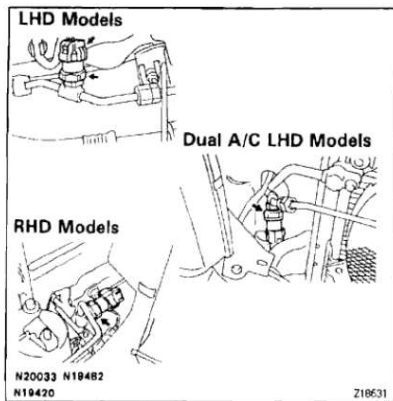
Magnetic Clutch Control:

(): Single A/C

- (a) Connect the positive (+) lead from the ohmmeter to terminal 4(2) and the negative (–) lead to terminal 1.
- (b) Check continuity between terminals when refrigerant pressure is changed, as shown in the illustration. If operation is not as specified, replace the pressure switch.

Cooling Fan Control (Dual A/C Only):

- (a) Connect the positive (+) lead from the ohmmeter to terminal 2 and the negative (–) lead to terminal 3.
- (b) Check continuity between terminals when refrigerant pressure is changed, as shown in the illustration. If operation is not as specified, replace the pressure switch.



PRESSURE SWITCH REMOVAL

AC2V6-01

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

INSTALLATION HINT: Evacuate air from refrigeration system.

Charge system with refrigerant and inspect for leakage of refrigerant.

Specified amount:

Single A/C: 700 ± 50 g (24.69 ± 1.76 oz.)

Dual A/C: 950 ± 50 g (33.51 ± 1.76 oz.)

2. RHD and Dual A/C Models: REMOVE RADIATOR GRILL

3. REMOVE PRESSURE SWITCH FROM LIQUID TUBE

Disconnect the connector and remove the pressure switch.

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

INSTALLATION HINT: Lubricate a new O-ring with compressor oil and install the switch.

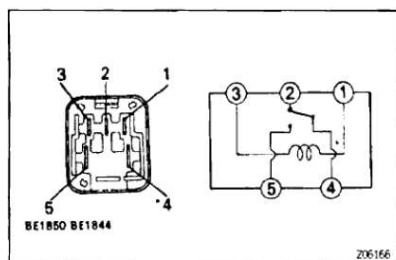
HINT: Lock the switch mount on the tube with an open end wrench, being careful not to deform the tube, and remove the switch.

PRESSURE SWITCH INSTALLATION

AC2V7-01

Installation is in the reverse order of removal.

AC



RELAY

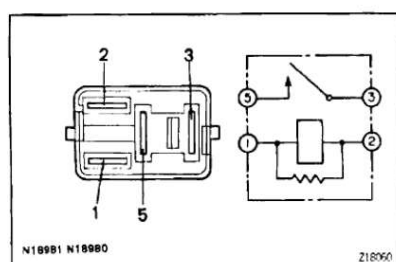
RELAY INSPECTION

AC3VU-61

1. INSPECT HEATER MAIN RELAY (Marking: HEATER) CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 - 3 2 - 4	Continuity
Apply B+ between terminals 1 and 3.	4 - 5	Continuity

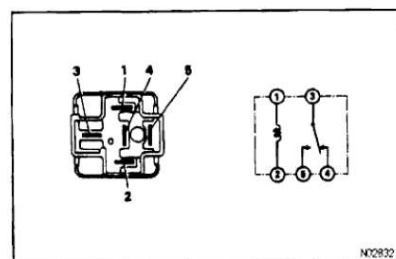
If continuity is not as specified, replace the relay.



2. INSPECT MAGNETIC CLUTCH RELAY (Marking: MAGNET CLUTCH) CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 - 2	Continuity
Apply B+ between terminals 1 and 2.	3 - 5	Continuity

If continuity is not as specified, replace the relay.



3. INSPECT REAR HEATER RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 - 2 3 - 4	Continuity
Apply B+ between terminals 1 and 2.	3 - 5	Continuity

If continuity is not as specified, replace the relay.

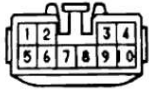
4. INSPECT CONDENSER FAN RELAY (Marking: CDS FAN) CONTINUITY

Check the relay in the same way for magnetic clutch relay.

5. INSPECT REAR COOLER RELAY CONTINUITY

Check the relay in the same way for heater main relay.

Wire harness side



e-10-1

Z15513

AIR CONDITIONER AMPLIFIER ON—VEHICLE INSPECTION

AC2VV-01

Single A/C:

INSPECT AMPLIFIER CIRCUIT

- (a) Disconnect the amplifier connector and inspect the connector on wire harness side, as shown in the chart below.

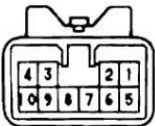
Test conditions:

- Ignition switch ON
- Blower speed switch HI
- Temperature control lever Max. Cool

Tester connection	Condition	Specified condition
4 — Ground	Constant	Continuity
6 — 2	Constant	Continuity
3 — Engine (and ECT) ECU terminal ACT (1KZ—TE, 3RZ—FE, 5VZ—FE)	Constant	Below 1V
8 — Engine (and ECT) ECU terminal AC1 (1KZ—TE, 3RZ—FE, 5VZ—FE)	Constant	Below 1V
7 — Ground (1KZ—T)	Turn ignition switch to START	Battery voltage
9 — Ground (3L, 1KZ—T, 3RZ—F)	Constant	Approx. 40 Ω
2 — 10	Constant	Approx. 1.5 kΩ at 25°C (77 °F)
9 — Ground	Constant	Approx. 3.8 Ω
5 — Ground	A/C switch ON	Battery voltage
5 — Ground	A/C switch OFF	No voltage
5 — Ground	Mode lever DEF. position	Battery voltage

If circuit is as specified, try replacing the amplifier with a new one. If the circuit is not as specified, inspect the circuits connected to other parts.

From back side



e-10-2

Z15514

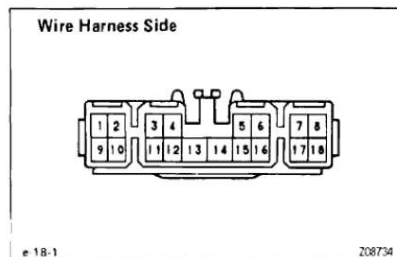
- (b) Connect the connector to amplifier and inspect wire harness side connector from the back side, as shown in the chart below.

Test conditions

- Ignition switch ON
- Blower speed switch HI
- A/C switch ON
- Temperature control lever Max Cool
- Set on manifold gauge set

Tester connection	Condition	Specified condition
1 — Ground	Refrigerant pressure 196 — 1,340 kPa	Battery voltage
1 — Ground	Refrigerant pressure less than 196 or more than 3,140 kPa	No voltage

If circuit is as specified, try replacing the amplifier with a new one. If the circuit is not as specified, inspect the circuits connected to other parts.



ON — VEHICLE INSPECTION

Dual A/C:

INSPECT AMPLIFIER CIRCUIT

- (a) Disconnect the amplifier connector and inspect the connector on wire harness side, as shown in the chart below.

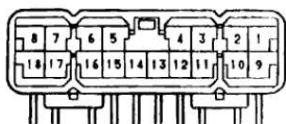
Test conditions:

- Ignition switch ON
- Front blower speed switch HI
- Rear cooler blower switch HI
- Temperature control levers Max. Cool

Tester connection	Condition	Specified condition
6 — Ground	Constant	Continuity
8 — Engine (and ECT) ECU terminal AC1 (1KZ—TE, 3RZ—FE, 5VZ—FE)	Constant	Below 1 V
10 — Engine (and ECT) ECU terminal ACT (1KZ—TE, 3RZ—FE, 5VZ—FE)	Constant	Below 1 V
6 — Ground (3L, 1KZ—T)	Constant	Approx. 40 Ω
8 — Ground (3RZ—F)	Constant	Approx. 40 Ω
4 — 16	Constant	Approx. 1.5 kΩ
7 — 16	Constant	Approx. 1.5 kΩ
7 — 17	Rear cooler temp. lever at "COOL" position	Approx. 0 Ω
7 — 17	Rear cooler temp. lever at "OFF" position	Approx. 3 kΩ
2 — Ground	Rear cooler switch ON	Below 4 V
2 — Ground	Rear cooler switch OFF	No voltage
11 — Ground	Front A/C switch ON	Battery voltage
11 — Ground	Front A/C switch OFF	No voltage
15 — Ground	Ignition switch ON	Battery voltage
15 — Ground	Ignition switch OFF	No voltage
18 — Ground (1KZ—T)	Turn ignition switch to START	Battery voltage

If circuit is as specified, try replacing the amplifier with a new one. If the circuit is not as specified, inspect the circuits connected to other parts.

From Back Side



e-18-2-A

Z19561

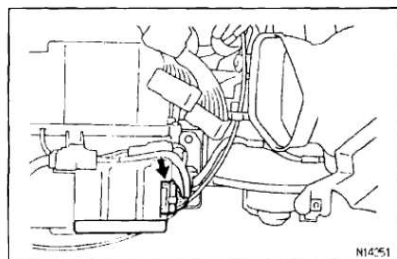
- (b) Connect the connector to amplifier and inspect wire harness side connector from the back side, as shown in the chart below.

Test conditions

- Ignition switch ON
- Front blower speed switch HI
- A/C switch ON
- Rear cooler switch ON
- Rear cooler blower switch HI
- Temperature control levers Max. Cool
- Install manifold gauge set

Tester connection	Condition	Specified condition
13 — Ground	Refrigerant pressure 196 — 1,340 kPa	Battery voltage
13 — Ground	Refrigerant pressure less than 196 or more than 3,140 kPa	No voltage
8 — Ground	Rear cooler switch ON	Battery voltage
8 — Ground	Rear cooler switch OFF	No voltage

If circuit is as specified, try replacing the amplifier with a new one. If the circuit is not as specified, inspect the circuits connected to other parts.



N14251

A/C AMPLIFIER REMOVAL

AC2VX-01

1. REMOVE GLOVE COMPARTMENT DOOR
(See page BO-55)
2. REMOVE A/C AMPLIFIER
 - (a) Disconnect the connector from the amplifier.
 - (b) Remove amplifier cover.
 - (c) Remove the amplifier from the cooling unit.

A/C AMPLIFIER INSTALLATION

AC2VX-01

Installation is in the reverse order of removal.

AIR CONDITIONER CONTROL ASSEMBLY

ON — VEHICLE INSPECTION

AC3VZ-01

INSPECT A/C CONTROL LEVERS OPERATION

Move the control lever and dials left and right and check for stiffness and binding through the full range of the levers.

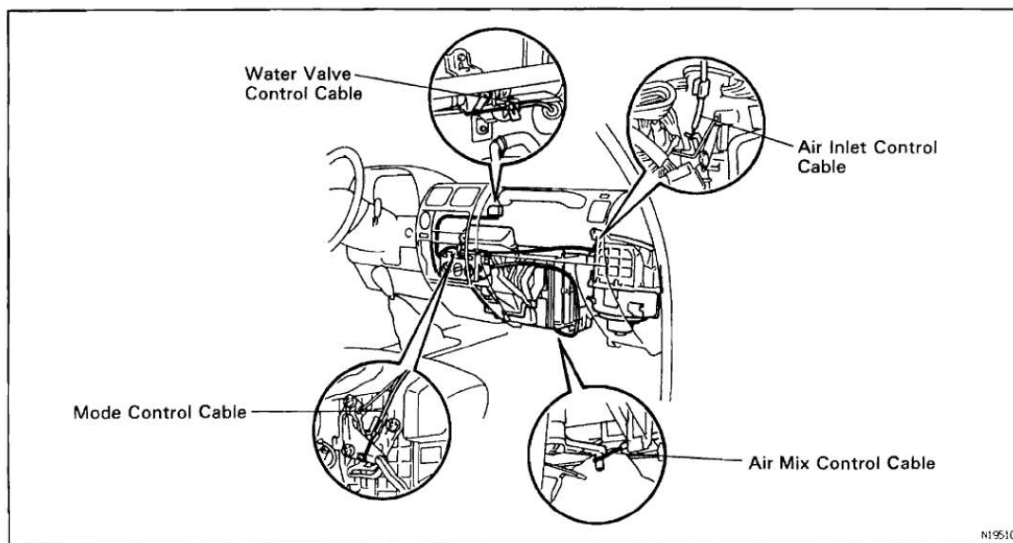
A/C CONTROL ASSEMBLY REMOVAL

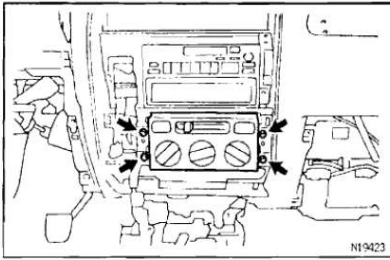
AC3W0-01

1. REMOVE THESE PARTS:

- (a) Glove compartment door
(See page BO-55)
- (b) Front door scuff plate driver side
(See page BO-55)
- (c) Cowl side trim driver side
(See page BO-55)
- (d) Center cluster finish panel No. 1
(See page BO-55)
- (e) No. 4 heater to register duct
(See page BO-55)
- (f) Instrument lower finish panel
(See page BO-55)
- (g) No. 1 heater to register duct
(See page BO-55)

2. DISCONNECT A/C CONTROL CABLES

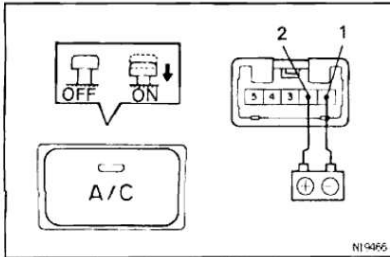




N19423

3. REMOVE A/C CONTROL ASSEMBLY

Remove the 4 screws and pull out the A/C control assembly, then disconnect the connectors.

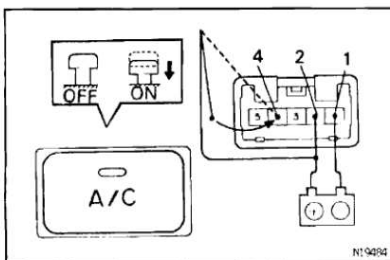


N19466

A/C CONTROL ASSEMBLY INSPECTION**1. INSPECT A/C INDICATOR OPERATION**

- Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1.
- Push the A/C button in and then check that the indicator lights up.

If operation is not as specified, replace the switch.



N19494

2. INSPECT DIMMING OPERATION

- Connect the positive (+) lead from the battery terminal 2 and the negative (–) lead to terminal 1, while press the switch.
- Connect the positive (+) lead from battery to terminal 4 and then check that the indicator dims.

If operation is not as specified, replace the switch.

3. INSPECT A/C SWITCH CONTINUITY

Condition/ Circuit	Tester connection	Specified condition
OFF	—	No continuity
ON	2 – 5	Continuity
Illumination circuit	3 – 4	Continuity

Switch continuity:

If continuity is not as specified, replace the switch.

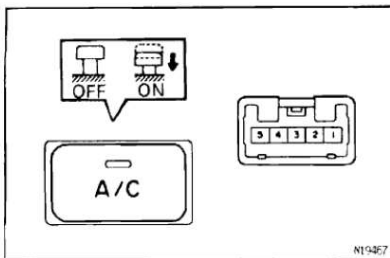
Illumination circuit:

If continuity is not as specified, replace the bulb.

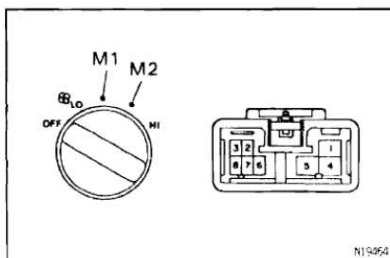
4. INSPECT BLOWER SPEED CONTROL SWITCH CONTINUITY

Position/ Circuit	Tester connection	Specified condition
OFF	—	No continuity
LO	1 – 8	Continuity
M1	1 – 6 – 8	Continuity
M2	1 – 5 – 8	Continuity
HI	1 – 4 – 8	Continuity
Illumination circuit	2 – 3	Continuity

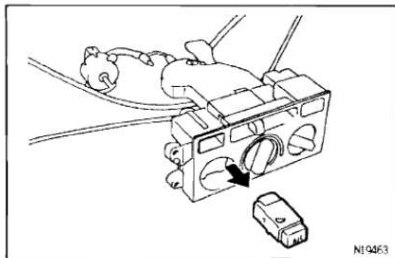
If continuity is not as specified, replace the A/C control assembly.



N19467



N19464



A/C SWITCH REMOVAL

AC2W3-01

1. REMOVE A/C SWITCH

Release the claw and pull out the A/C switch.

A/C SWITCH INSTALLATION

AC2W3-01

Installation is in the reverse order of removal.

A/C CONTROL ASSEMBLY INSTALLATION

AC2W4-01

Installation is in the reverse order of removal.

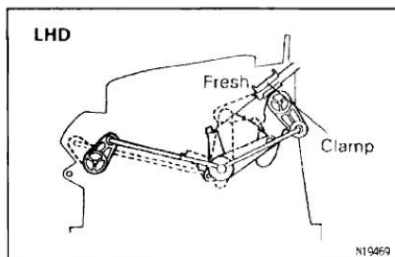
HINT: If cable's adjustment is in need, refer to "A/C CONTROL CABLES ADJUSTMENT".

A/C CONTROL CABLES ADJUSTMENT

AC2W5-01

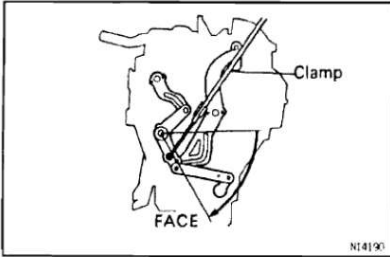
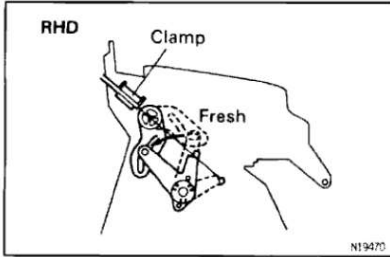
1. SET A/C CONTROL LEVER AND DIALS IN THESE CONDITIONS:

- (a) Air inlet control lever to the "FRESH" position
- (b) Mode control dial to the "FACE" position
- (c) Temperature control dial to the "COOL" position

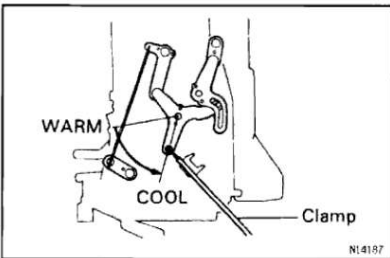


2. ADJUST AIR INLET CONTROL CABLE

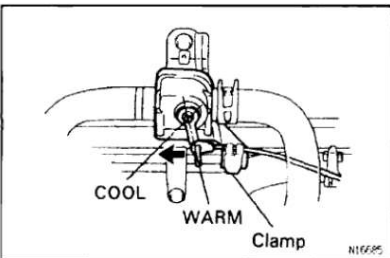
Set the air inlet damper on "FRESH" position and install the control cable and lock the clamp.

**3. ADJUST MODE CONTROL CABLE**

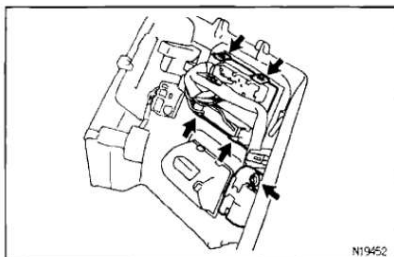
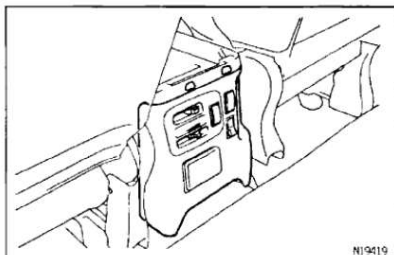
Set the mode damper on "FACE" position and install the control cable and lock the clamp.

**4. ADJUST AIR MIX CONTROL CABLE**

Set the air mix damper on "COOL" position and install the control cable and lock the clamp.

**5. ADJUST WATER VALVE CONTROL CABLE**

Set the water valve on "COOL" position, install the control cable and lock the clamp.



REAR COOLER CONTROL PANEL

REAR COOLER CONTROL PANEL REMOVAL

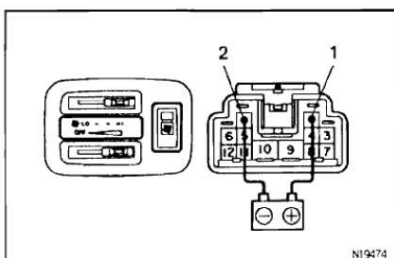
AC23W6-01

1. REMOVE REAR CONSOL PANEL

Release the 6 craws and pull out the panel then disconnect the connectors.

2. REMOVE REAR COOLER CONTROL PANEL

- Remove the screw of connector bracket.
- Remove the cooler control knobs.
- Release the 4 craws and pull out the rear cooler control panel.



REAR COOLER CONTROL PANEL INSPECTION

AC23W7-01

1. INSPECT PANEL ILLUMINATION

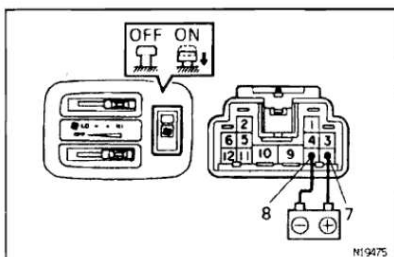
Connect the positive (+) lead from the battery to terminal 1 and negative (-) lead to terminal 2, then check that the illuminations light up.

If illumination does not light up, replace the panel.

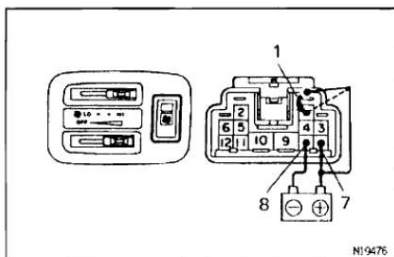
2. INSPECT REAR COOLER SWITCH OPERATION

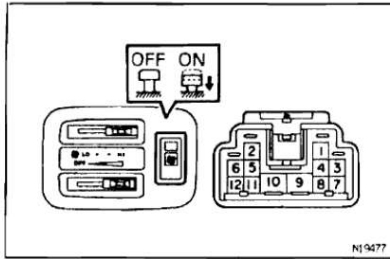
Indicator Operation:

- Connect the positive (+) lead from the battery to terminal 7 and the negative (-) lead to terminal 8, then check that the indicator lights up while switch is pressed. If operation is not as specified, replace the panel.



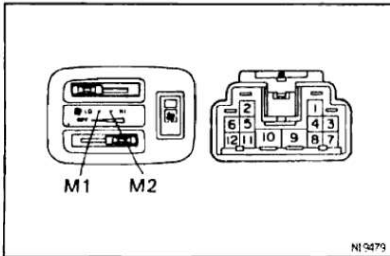
- Connect the positive (+) lead from the battery to terminal 7 and the negative (-) lead to terminal 8, while press the switch.
- Connect the positive (+) lead from the battery to terminal 1, then check that the indicator dims. If operation is not as specified, replace the panel.



**Continuity:**

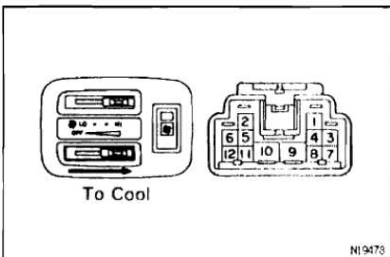
Switch position	Tester connection	Specified condition
OFF	—	No continuity
ON	8 — 11	Continuity

If continuity is not as specified, replace the panel.

**3. INSPECT BLOWER SPEED CONTROL SWITCH CONTINUITY**

Switch position	Tester connection	Specified condition
LO	—	No continuity
M1	6 — 10	Continuity
M2	10 — 12	Continuity
HI	9 — 10	Continuity

If continuity is not as specified, replace the panel.

**4. INSPECT TEMPERATURE CONTROL SWITCH OPERATION**

- Check that there is no continuity between terminals 3 and 4, when lever position is OFF.
- Check that the resistance between terminals 3 and 4 decrease from approx. 3 k Ω to 0 Ω , when lever is moved "COOL" position.

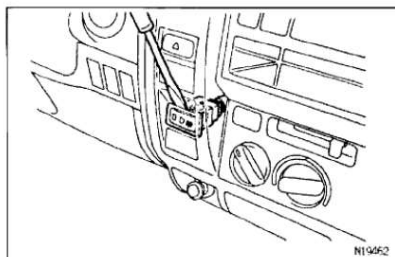
If resistance is not as specified, replace the panel.

REAR COOLER CONTROL PANEL INSTALLATION

Installation is in the reverse order of removal.

AC-85

AC



N19462

REAR COOLER SWITCH

REAR COOLER SWITCH REMOVAL

AC3W8-01

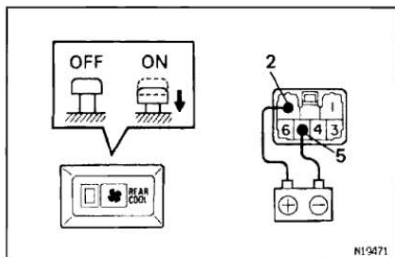
REMOVE SWITCH

Using a screwdriver, remove the switch, then disconnect the connector.

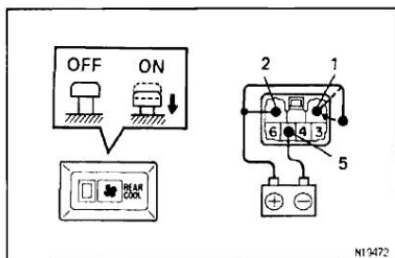
REMOVAL HINT: Tape the screwdriver tip before use.

REAR COOLER SWITCH INSPECTION

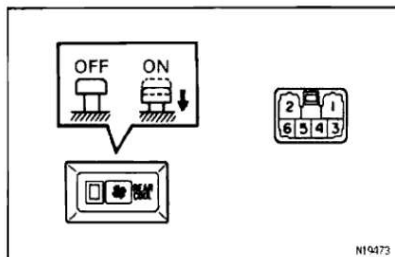
AC3W8-01



N19471



N19472



N19473

1. INSPECT INDICATOR OPERATION

- Connect the positive (+) lead from the battery to terminal 2 and the negative (-) lead to terminal 5, then check that the indicator lights up while switch is pressed.
- Connect the positive (+) lead from the battery to terminal 2 and the negative (-) lead to terminal 5, while press the switch.
- Connect the positive (+) lead from the battery to terminal 1 and check that the indicator dims. If operation is not as specified, replace the panel.

2. INSPECT SWITCH CONTINUITY

Position/ Circuit	Tester connection	Specified condition
ON	4 - 5	Continuity
OFF	5 - 8	Continuity
Illumination circuit	1 - 2	Continuity

Switch continuity:

If continuity is not as specified, replace the switch.

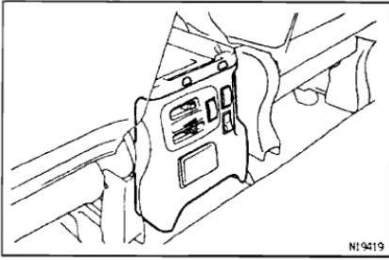
Illumination circuit:

If continuity is not as specified, replace the bulb.

REAR COOLER SWITCH INSTALLATION

AC3W8-01

Installation is in the reverse order of removal.



REAR HEATER CONTROL ASSEMBLY REAR HEATER CONTROL ASSEMBLY REMOVAL

1. REMOVE REAR CONSOL PANEL

- (a) Pull out the heater control knob.
- (b) Release the 6 claws and pull out the panel, then disconnect the connectors.

2. REMOVE REAR CONSOLE BOX

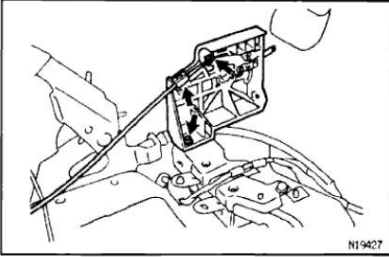
(See page 80—55)

3. REMOVE REAR HEATER CONTROL ASSEMBLY

- (a) Disconnect heater control cable from heater control assembly.

INSTALLATION HINT: For installing the control cable refer to "HEATER CONTROL CABLE ADJUSTMENT".

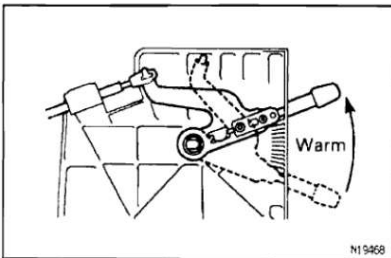
- (b) Remove the 2 screws and remove the heater control cable assembly.



REAR HEATER CONTROL ASSEMBLY INSTALLATION

Installation is in the reverse order of removal.

HINT: If cable's adjustment is in need, refer to "HEATER CONTROL CABLE ADJUSTMENT".

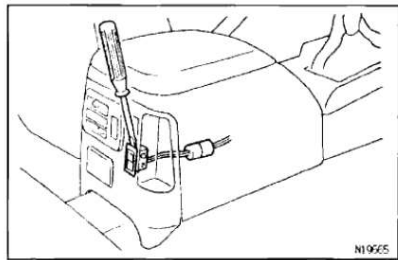


HEATER CONTROL CABLE ADJUSTMENT

1. SET DAMPER CONTROL LEVER TO "WARM" POSITION

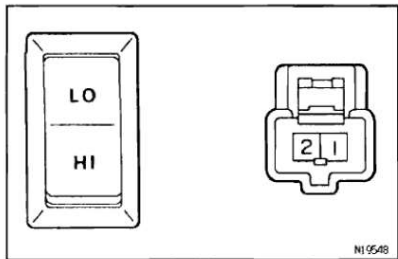
2. ADJUST REAR HEATER CONTROL CABLE

Set the rear heater control lever to "WARM" position, install the control cable and lock the clamp.



REAR BLOWER SPEED CONTROL SWITCH
REAR BLOWER SPEED CONTROL SWITCH
REMOVAL

REMOVE SWITCH
Using a screwdriver, pull out the switch then disconnect the connector.
REMOVAL HINT: Tape the screwdriver tip before use.



REAR BLOWER SPEED CONTROL SWITCH
INSPECTION

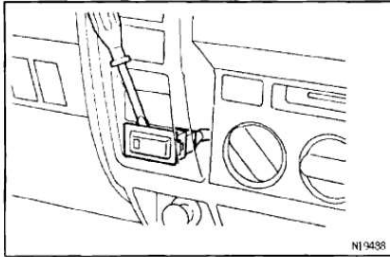
INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
LO	1 - 2	No continuity
HI	1 - 2	Continuity

If continuity is not as specified, replace the switch.

REAR BLOWER SPEED CONTROL SWITCH
INSTALLATION

Installation is in the reverse order of removal.



N19438

REAR HEATER SWITCH

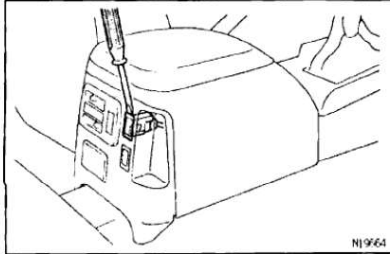
REAR HEATER SWITCH REMOVAL

AC3WJ-01

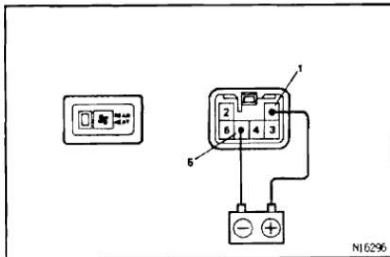
REMOVE SWITCH

Using a screwdriver, pull out the switch then disconnect the connector.

REMOVAL HINT: Tape the screwdriver tip before use.



N19664



N16296

REAR HEATER SWITCH INSPECTION

AC3WJ-01

1. INSPECT REAR HEATER INDICATOR OPERATION

Connect the positive (+) lead from the battery to terminal 1 and negative (-) lead to terminal 5 and then check that the indicator lights up.

If operation is not as specified, replace the switch.

2. INSPECT REAR HEATER SWITCH CONTINUITY

Condition/ Circuit	Tester connection	Specified condition
OFF	3 - 4	Continuity
ON	4 - 5	Continuity
Illumination circuit	2 - 6	Continuity

Switch Continuity:

If continuity is not as specified, replace the switch.

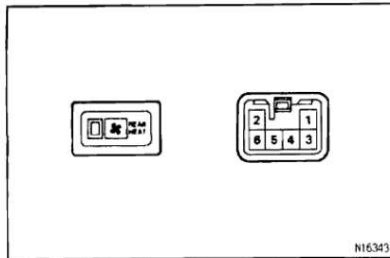
Illumination Circuit:

If continuity is not as specified, test the bulb.

REAR HEATER SWITCH INSTALLATION

AC3WJ-01

Installation is in the reverse order of removal.



N16343

SERVICE SPECIFICATIONS

SERVICE DATA

AC90M-01

Refrigerant volume	Single A/C	700 ± 50 g (24.69 ± 1.76 oz.)
	Dual A/C	950 ± 50 g (33.51 ± 1.76 oz.)
Drive belt deflection (Apply load of 9.8 N)		
3L	New belt	13.0 – 17.0 mm (0.51 – 0.67 in.)
	Used belt	17.0 – 21.0 mm (0.67 – 0.83 in.)
1KZ–T, 1KZ–TE	New belt	13.0 – 15.0 mm (0.51 – 0.59 in.)
	Used belt	15.0 – 21.0 mm (0.51 – 0.83 in.)
3RZ–F, 3RZ–FE	New belt	10.0 – 13.0 mm (0.39 – 0.51 in.)
	Used belt	13.0 – 18.0 mm (0.51 – 0.71 in.)
5VZ–FE	New belt	3.5 – 5.0 mm (0.14 – 0.20 in.)
	Used belt	5.0 – 7.0 mm (0.20 – 0.28 in.)
Drive belt tension		
3L	New belt	441 – 444 N (45 – 88 kgf)
	Used belt	264 – 441 N (27 – 45 kgf)
1KZ–T, 1KZ–TE	New belt	372 – 608 N (38 – 62 kgf)
	Used belt	196 – 392 N (20 – 30 kgf)
3RZ–F, 3RZ–FE	New belt	598 – 823 N (61 – 84 kgf)
	Used belt	353 – 530 N (36 – 54 kgf)
5VZ–FE	New belt	519 – 755 N (53 – 77 kgf)
	Used belt	196 – 392 N (20 – 30 kgf)
Idle-up speed		
3L	Magnetic clutch not engaged	700 ± 50 rpm
	Magnetic clutch engaged	950 ± 50 rpm
1KZ–T, 1KZ–TE	Magnetic clutch not engaged	700 ± 50 rpm
	Magnetic clutch engaged	950 ± 50 rpm
3RZ–F, 3RZ–FE	Magnetic clutch not engaged	700 ± 50 rpm
	Magnetic clutch engaged	900 ± 50 rpm
5VZ–FE	Magnetic clutch not engaged	700 ± 50 rpm
	Magnetic clutch engaged	850 ± 50 rpm
Magnetic clutch clearance		0.5 ± 0.15 mm (0.020 ± 0.0059 in.)

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TORQUE SPECIFICATIONS

AC2WE-01

Part tightened	N-m	kgf-cm	ft-lbf
Compressor x Compressor bracket	25	250	18
Compressor bracket x Engine	47	475	34
Idle pulley x Compressor bracket	39	400	29
Compressor x Discharge hose	10	100	7
Compressor x Suction hose	10	100	7
Condenser x Discharge hose	10	100	7
Condenser x Liquid tube	10	100	7
Receiver x Liquid tube	5.4	55	48 in.-lbf
Front cooling unit x Liquid tube	14	140	10
Front cooling unit x Suction hose	32	330	24
Front evaporator x Expansion valve	5.4	55	48 in.-lbf
Rear cooling unit x Liquid tube	10	100	7
Rear cooling unit x Suction tube	10	100	7
Rear evaporator x Rear expansion valve	5.4	55	48 in.-lbf
Pressure plate x Compressor	13.2	135	9
Service valve x Cylinder block	25	250	18
Front housing x Cylinder block	25	250	18
Liquid lines (Block joint)	10	100	7
Liquid lines (Piping joint)	14	140	10
Suction lines (Block joint)	10	100	7
Suction lines (Piping joint)	32	330	24
PS pump x Engine	43	440	32



OVERSEAS SERVICE DIVISION
TOYOTA MOTOR CORPORATION

PRINTED IN JAPAN
First Printing: May 14, 1965 C1-96051-70