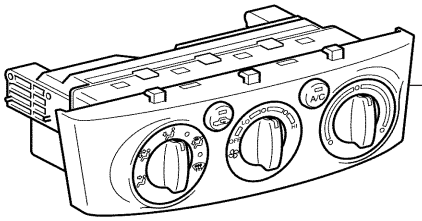
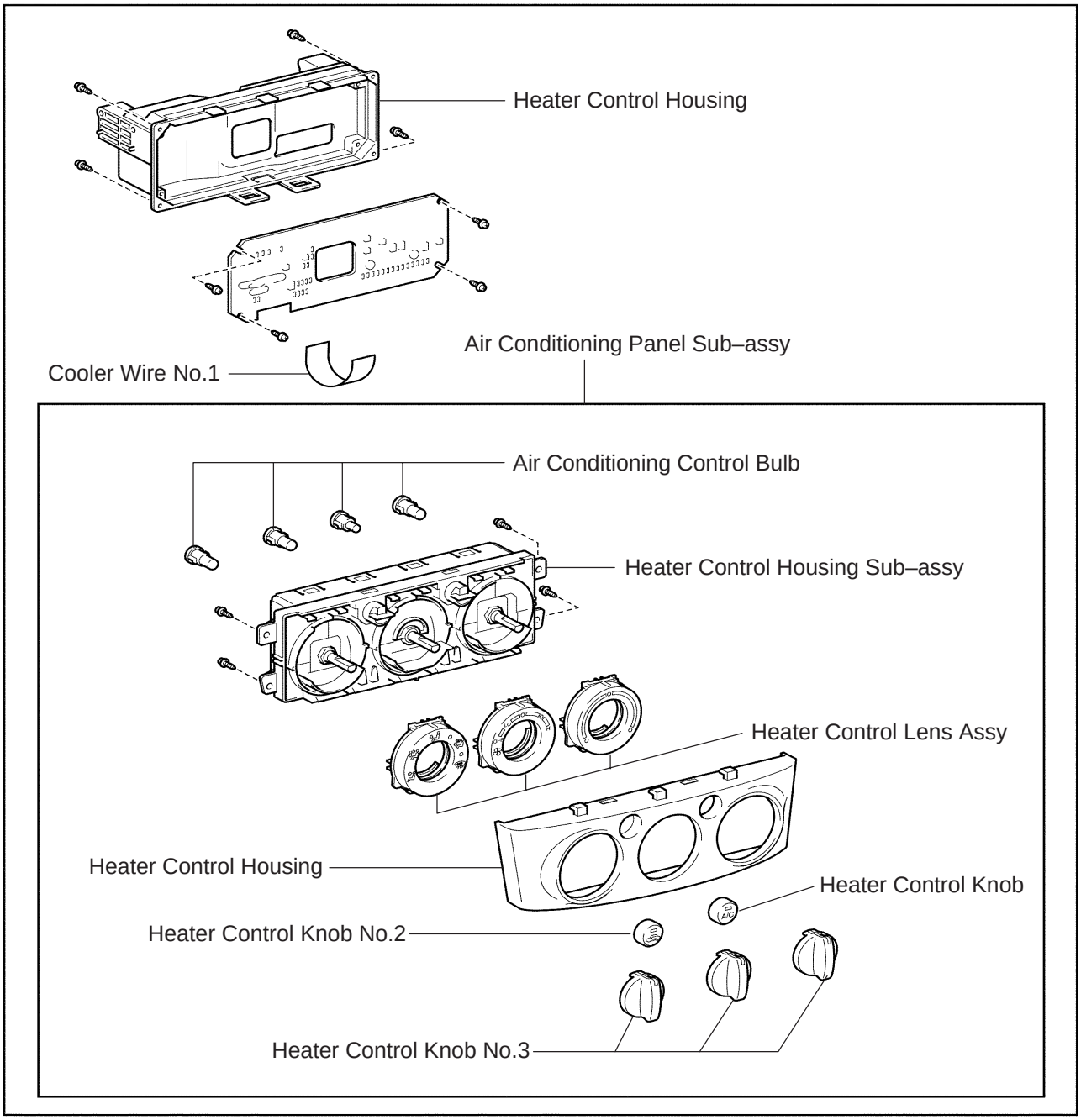
AIR CONDITIONING CONTROL ASSY

COMPONENTS

550YT–01

Manual A/C:





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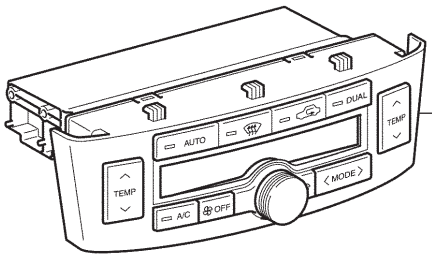
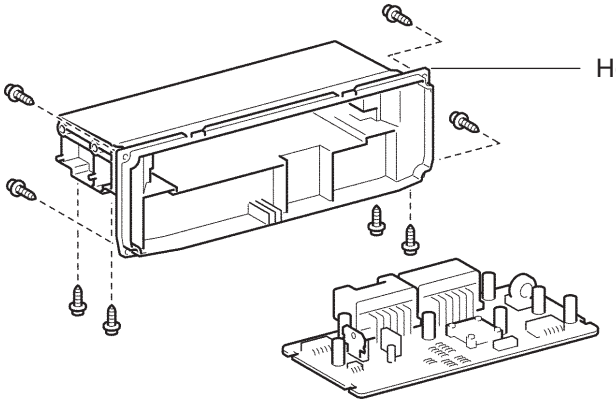
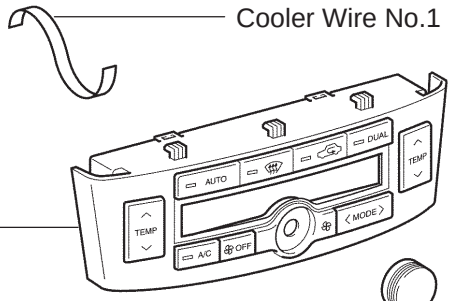
Auto A/C:



Air Conditioning Control Assy



Heater Control Housing



Cooler Wire No.1

Air Conditioning Panel Sub–assy

Control Knob Sub–assy

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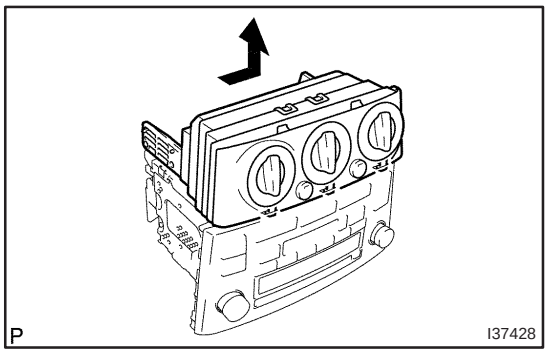
550YU–01

OVERHAUL

HINT:

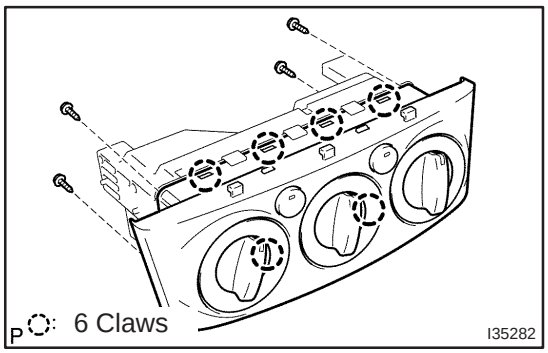
COMPONENTS: See page 55–48

1. **REMOVE INSTRUMENT CLUSTER FINISH PANEL GARNISH NO.2 (See page 71–11)**
2. **REMOVE INSTRUMENT PANEL REGISTER ASSY CTR (See page 71–11)**
3. **REMOVE CONSOLE PANEL SUB–ASSY UPPER (See page 71–11)**
4. **REMOVE RADIO RECEIVER ASSEMBLY W/BRACKET (See page 67–5)**
5. **REMOVE RADIO BRACKET NO.1 (See page 67–5)**
6. **REMOVE RADIO BRACKET NO.2 (See page 67–5)**



7. REMOVE AIR CONDITIONING CONTROL ASSY

(a) Remove the air conditioning control assy as shown in the illustration.

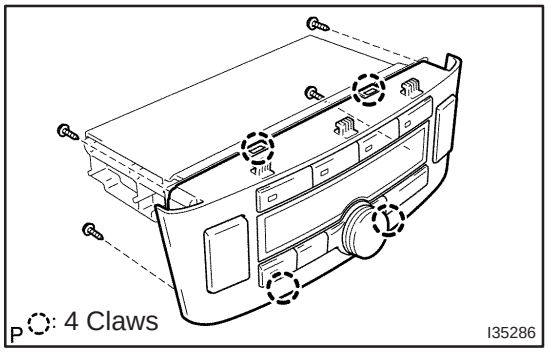


8. REMOVE AIR CONDITIONING PANEL SUB–ASSY

(a) Remove the 4 screws.

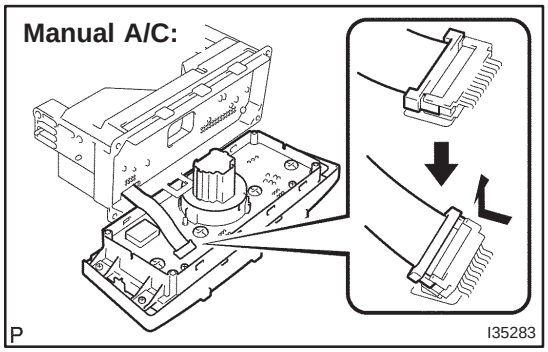
(b) Manual A/C:

Release the 6 claw fittings and disconnect the air conditioning panel sub–assy.

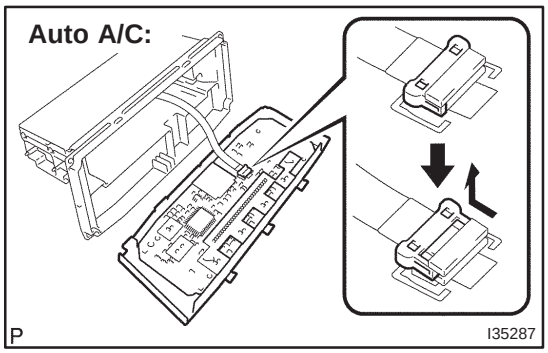


(c) Auto A/C:

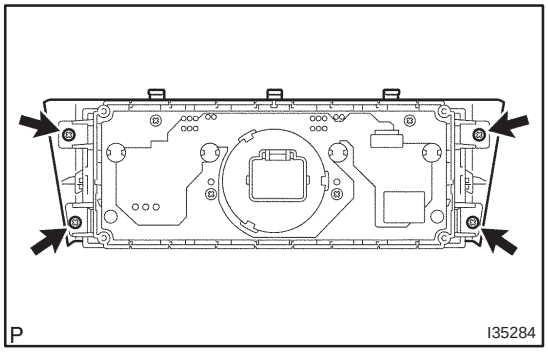
Release the 4 claw fittings and disconnect the air conditioning panel sub–assy.



(d) Disconnect the cooler wire No.1 as shown in the illustration.



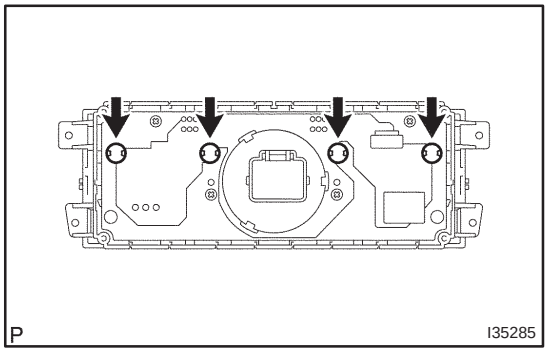
9. REMOVE HEATER CONTROL KNOB NO.3 (MANUAL AIR CONDITIONING)
10. REMOVE CONTROL KNOB SUB–ASSY (AUTO AIR CONDITIONING)
11. REMOVE HEATER CONTROL KNOB (MANUAL AIR CONDITIONING)
12. REMOVE HEATER CONTROL KNOB NO.2 (MANUAL AIR CONDITIONING)



13. REMOVE HEATER CONTROL HOUSING (MANUAL AIR CONDITIONING)

(a) Release the 4 claw fittings and remove the 4 screws and the heater control housing.

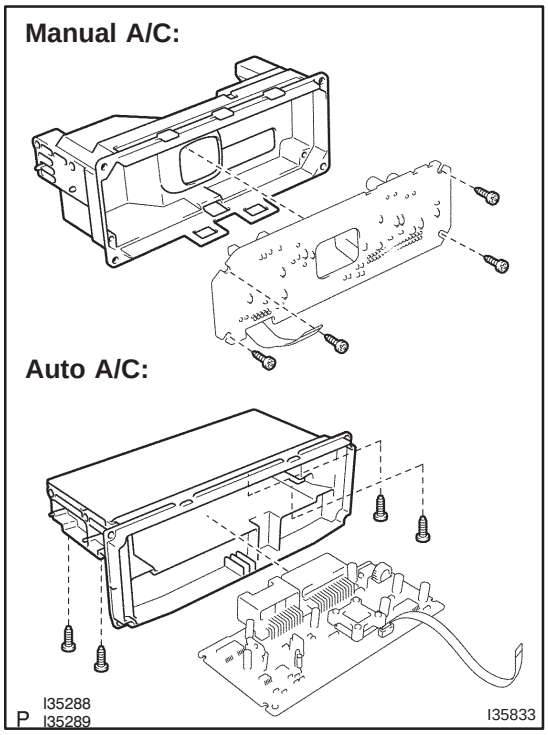
14. REMOVE HEATER CONTROL LENS ASSY (MANUAL AIR CONDITIONING)
15. REMOVE HEATER CONTROL LENS ASSY (MANUAL AIR CONDITIONING)
16. REMOVE HEATER CONTROL LENS ASSY (MANUAL AIR CONDITIONING)



17. REMOVE AIR CONDITIONING CONTROL BULB (MANUAL AIR CONDITIONING)

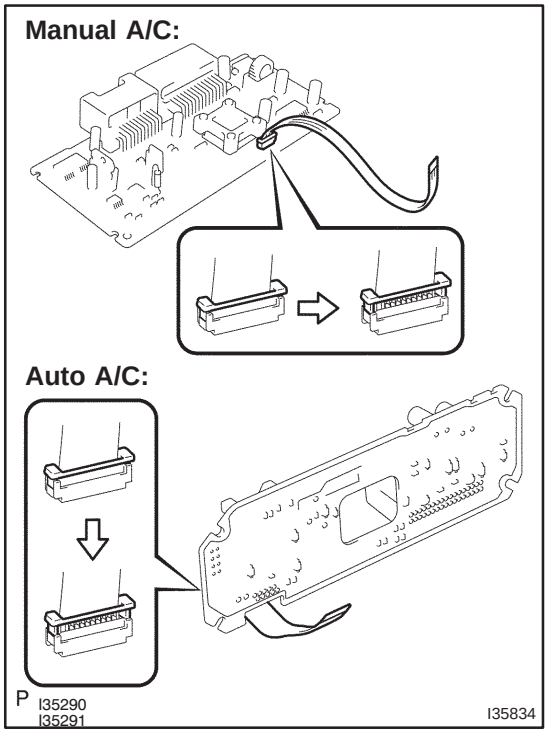
(a) Remove the 4 air conditioning control bulbs.

18. REMOVE HEATER CONTROL HOUSING SUB–ASSY (MANUAL AIR CONDITIONING)



19. REMOVE HEATER CONTROL HOUSING

(a) Remove the 4 screws and the heater control housing.



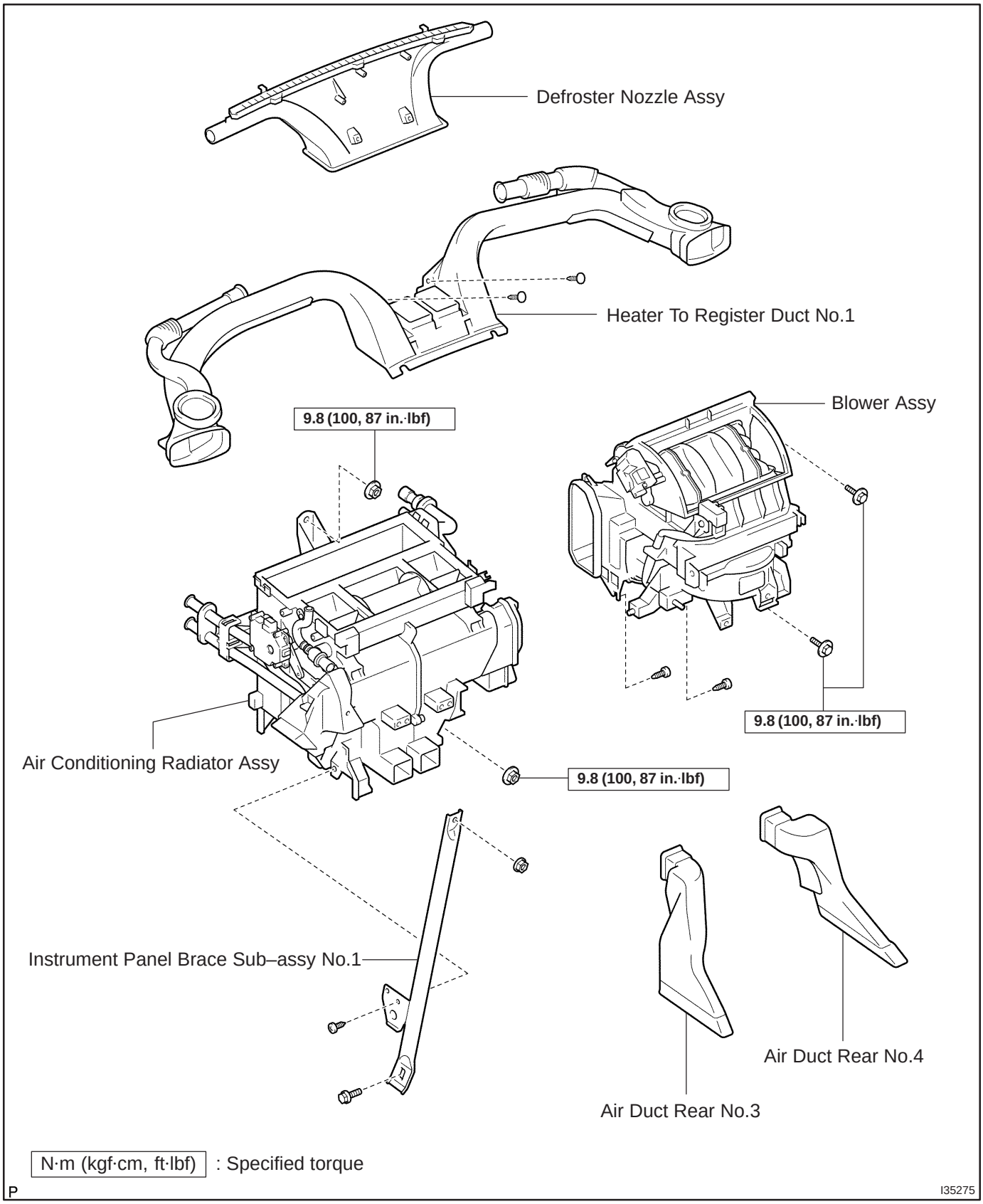
20. REMOVE COOLER WIRE NO.1

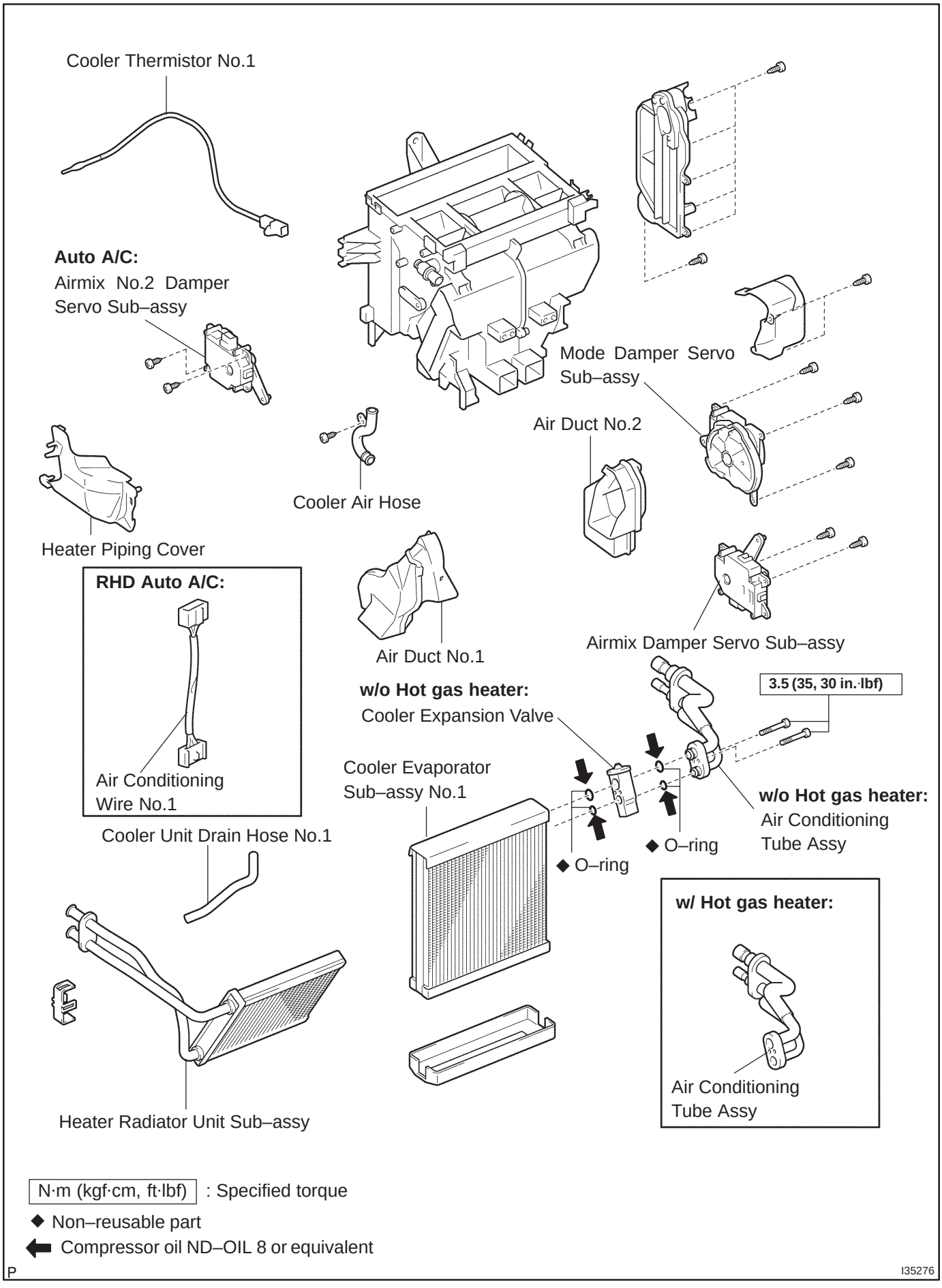
(a) Remove the cooler wire No.1 as shown in the illustration.

AIR CONDITIONING RADIATOR ASSY

COMPONENTS

550YV–01




Cooler Thermistor No.1
Auto A/C:
Airmix No.2 Damper Servo Sub–assy
Mode Damper Servo Sub–assy
Air Duct No.2
Cooler Air Hose
Heater Piping Cover
RHD Auto A/C:
Air Conditioning Wire No.1
Air Duct No.1
Airmix Damper Servo Sub–assy
w/o Hot gas heater:
Cooler Expansion Valve
3.5 (35, 30 in.·lbf)
Cooler Evaporator Sub–assy No.1
w/o Hot gas heater:
Air Conditioning Tube Assy
◆ O–ring
◆ O–ring
Cooler Unit Drain Hose No.1
w/ Hot gas heater:
Air Conditioning Tube Assy
Heater Radiator Unit Sub–assy
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non–reusable part
Compressor oil ND–OIL 8 or equivalent
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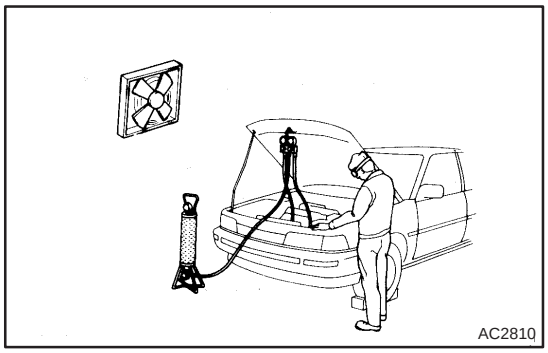
AIR CONDITIONING SYSTEM

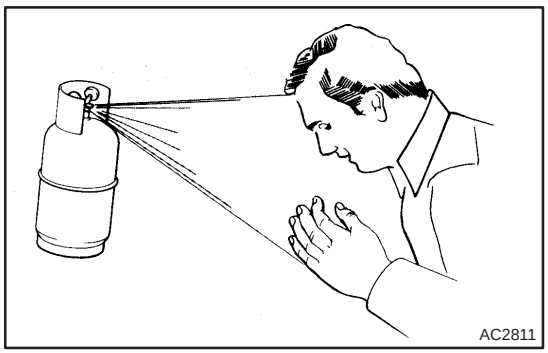
PRECAUTION

5507E–03



1. DO NOT HANDLE REFRIGERANT IN AN ENCLOSED AREA OR NEAR AN OPEN FLAME

2. ALWAYS WEAR EYE PROTECTION



3. BE CAREFUL NOT TO GET LIQUID REFRIGERANT 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 cold water.

CAUTION:

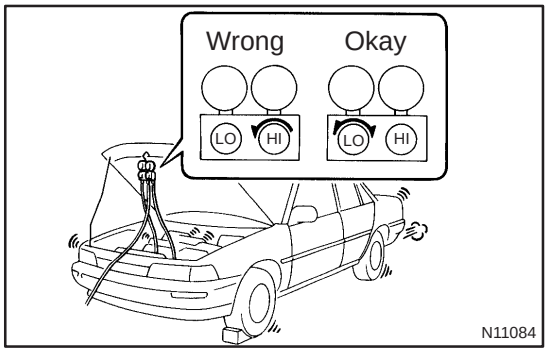
Do not rub your eyes or skin.

(b) Apply clean petroleum jelly to the skin.

(c) Go immediately to a hospital or see a physician for professional treatment.

4. NEVER HEAT CONTAINER OR EXPOSE IT TO NAKED FLAME

5. BE CAREFUL NOT TO DROP CONTAINER AND NOT TO APPLY PHYSICAL SHOCKS TO IT



6. DO NOT OPERATE COMPRESSOR WITHOUT ENOUGH REFRIGERANT IN REFRIGERANT SYSTEM

If there is not enough refrigerant in the refrigerant system, oil lubrication will be insufficient and compressor may burnout may occur, so take care to avoid this, necessary care should be taken.

7. DO NOT OPEN HIGH PRESSURE MANIFOLD VALVE WHILE COMPRESSOR IS OPERATING

Open and close the only low pressure valve. If the high pressure valves are opened, refrigerant flows in the reverse direction and cause the charging cylinder to rupture.

8. 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.

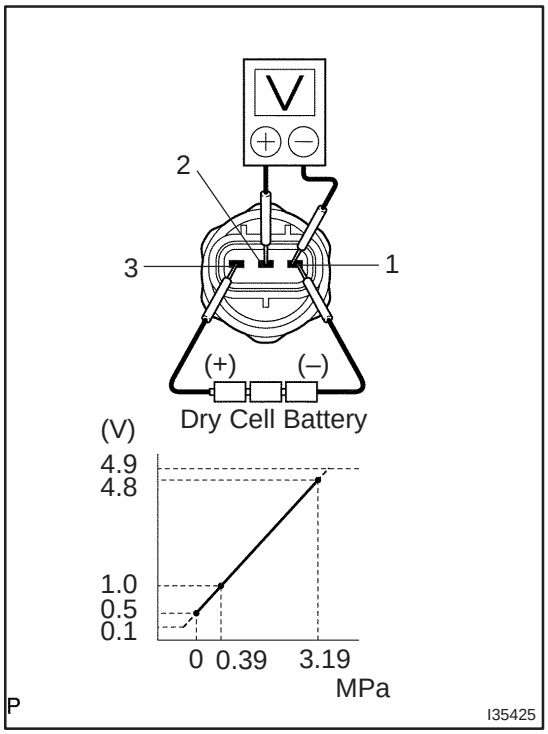
9. DO NOT OPERATE ENGINE AND COMPRESSOR WITH NO REFRIGERANT IS FILLED

CAUTION:

This may damage the inside of the compressor because the compressor parts always moves regardless of whether the A/C system is turned on or off.

550ZC–01

ON–VEHICLE INSPECTION



1. INSPECT AIR CONDITIONER PRESSURE SENSOR

(a) Disconnect the pressure SW connector.

(b) Install the manifold gauge set (See page 55–38).

(c) Connect the positive (+) lead from the three 1.5 V dry cell batteries to terminal 3 and negative (–) lead to terminal 1.

(d) Check the voltage between terminals 2 and 1 of pressure sensor.

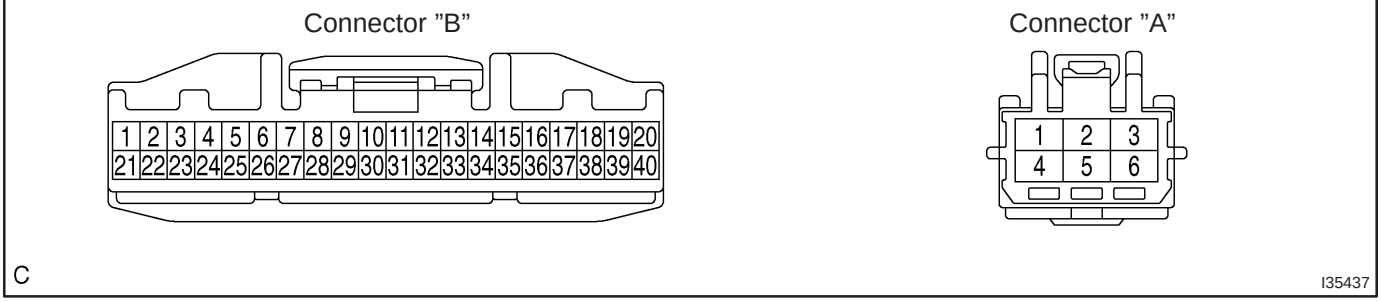
Standard:

The voltage varies with on the refrigerant pressure as shown in the chart.

2. INSPECT AIR CONDITIONING CONTROL ASSY

(a) Disconnect the connector from air conditioning control assy and inspect the connector on wire harness side, as shown in the table.

Wire Harness Side:



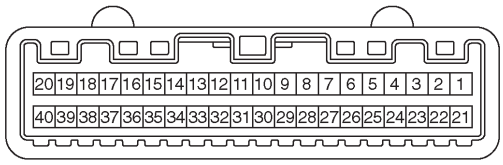
Symbols (Terminal No.)	Condition	Specified condition
IG (B1) – GND (B40)	Ignition switch: LOCK → ON	0 → 10 to 14 V
+B (B2) – GND (B40)	Always	10 to 14 V
GND (B40) – Body ground	Always	Continuity

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

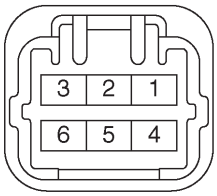
(b) Connect the connector to air conditioning control assy and inspect wire harness side connector from the back side, as shown in the table.

From Back Side:

Connector "B"



Connector "A"



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Symbols (Terminal No.)	Condition	Specified condition
HI (A4) – GND (A1)	Ignition switch ON Turn blower dial: OFF → HI	No continuity → Continuity
M2 (A5) – GND (A1)	Ignition switch: ON Turn blower dial: OFF → M2	No continuity → Continuity
M1 (A6) – GND (A1)	Ignition switch: ON Turn blower dial: OFF → M1	No continuity → Continuity
GND (A1) – Body ground	Ignition switch: ON Turn blower dial: OFF → LO	No continuity → Continuity
RDEFIN (B4) – GND (B40) (*1)	Ignition switch : ON Rear DEF switch: ON	10 to 14 V
S5–2 (B5) – GND (B40)	Ignition switch: ON	5.0 V
S5–3 (B6) – GND (B40)	Ignition switch: ON	5.0 V
S5 (B7) – GND (B40)	Ignition switch: ON	5.0 V
MPX+ (B9) – GND (B40)	Communication circuit	–
FRS (B10) – GND (B40)	Ignition switch: ON R/F switch: RECIRCURATION → FRESH	10 to 14 → 0 V
REC (B11) – GND (B40)	Ignition switch: ON R/F switch: FRESH → RECIRCURATION	10 to 14 → 0 V
AOD (B12) – GND (B40)	Ignition switch: ON Mode control dial: DEF	10 to 14 V
AOF (B13) – GND (B40)	Ignition switch: ON Mode control dial: FACE	10 to 14 V
MGV (B14) – GND (B40) (*2)	Start engine Hot gas heater: Operate	10 to 14 → 0 V
AMH (B15) – GND (B40)	Ignition switch: ON Temperature control dial: MAX HOT	10 to 14 V
AMC (B16) – GND (B40)	Ignition switch: ON Temperature control dial: MAX COOL	10 to 14 V
SOL+ (B17) – GND (B40)	Start engine Compressor: Operate	Pulse generation
ILL+ (B21) – GND (B40)	Ignition switch: ON Turn light control switch: OFF → ON	0 → 10 to 14 V
HOTGASIN (B22) – GND (B40) (*2)	Ignition switch: ON Heater switch: ON	10 to 14 V
CFAN (B23) – GND (B40)	Start engine Condenser fan: operate	10 to 14 → 0 V
RPTC1 (B28) – GND (B40)	PTC heater: Operate	Above 7.5 V
MPX– (B29) – GND (B40)	Communication circuit	–
TE (B31) – GND (B40)	Evaporator temperature: 0°C (32°F) → 15°C (59°F)	2.0 to 2.4 → 1.4 to 1.8 V

Symbols (Terminal No.)	Condition	Specified condition
PRE (B32) – GND (B40)	Start engine Refrigerant pressure: 0 Pa (0 kgf/cm^2, 0 psi) → 3,138 MPa (32.0 kgf/cm^2, 455 psi)	0.5 to 4.8 V
TPM (B33) – GND (B40)	Ignition switch: ON Mode control dial: DEF → FACE	1 → 4 V
TP (B34) – GND (B40)	Ignition switch: ON Temperature control dial: MAX HOT → MAX COOL	1 → 4 V
HRIN (B35) – GND (B40)	Ignition switch: ON Front blower: Operate	Below 1.0 V
SG–2 (B36) – Body ground	Always	Continuity
SG–3 (B37) – Body ground	Always	Continuity
SG (B38) – Body ground	Always	Continuity
SG–4 (B39) – Body ground	Always	Continuity
GND (B40) – Body ground	Always	Continuity
PBLT (B24) – GND (B40)	Ignition switch: ON Seat belt signal: OFF → ON	10 to 14 → Below 1.0 V
PBKIG (B25) – GND (B40)	Ignition switch: ON Parking brake switch: OFF → ON	10 to 14 → Below 1.0 V
ALT (B26) – GND (B40)	Start engine	Pulse generation

(*1) Petrol only

(*2) Diesel (standard) only

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

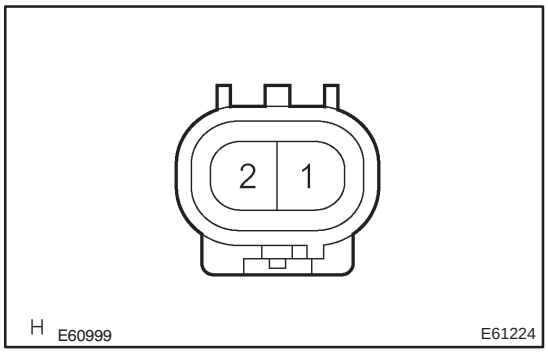
550RQ–02

PROBLEM SYMPTOMS TABLE

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.

Symptom	Suspect Area	See page
Whole functions of the A/C system does not operate.	4. ECU–B fuse 5. A/C amplifier assy 6. Wire harness or connector	– 55–3 –
Air Flow Control : No blower operation	1. Blower resistor 2. Heater relay 3. Blower w/ fan motor sub–assy 4. A/C amplifier assy 5. Wire harness or connector	55–7 55–7 55–7 55–3 –
Air Flow Control : No blower control	1. Blower w/fan motor sub–assy 2. Blower resistor 3. A/C amplifier assy 4. Wire harness or connector	55–7 55–7 55–3 –
Air Flow Control : Insufficient air out	1. Blower w/fan motor sub–assy 2. Blower resistor 3. A/C amplifier assy 4. Wire harness or connector	55–7 55–7 55–3 –
Temperature Control : No cool air comes out	1. Volume of refrigerant 2. Drive belt tension 3. Refrigerant pressure 4. Cooler compressor assy 5. Pressure sensor 6. Condenser fan 7. Air mix damper servo sub–assy 8. A/C amplifier assy 9. Wire harness or connector	55–24 55–46 55–24 55–7 55–3 – 55–7 55–3 –
Temperature Control : No warm air comes out	1. Engine coolant volume 2. Cooler thermistor No.1 3. Air mix damper servo sub–assy 4. A/C amplifier assy 5. Heater radiator unit sub–assy 6. Wire harness or connector	55–7 55–3 55–7 55–3 – –
Temperature Control : Output air is warmer or cooler than the set temperature or response is slow.	1. A/C amplifier assy 2. Air mix damper servo sub–assy 3. Air mix level	55–3 55–7 –
Temperature Control : No temperature control	1. A/C amplifier assy 2. Air mix damper servo sub–assy 3. Air mix level	55–3 55–7 –
No air inlet control	1. Recirculation damper servo sub–assy 2. A/C amplifier assy 3. Wire harness or connector	55–7 55–3 –
No air outlet control	1. A/C amplifier assy 2. Mode damper servo sub–assy 3. Mode lever	55–3 55–7 –
Engine idle up does not occur, or is continuous	1. Idle up switch 2. Cooler compressor assy 3. A/C amplifier assy 4. Wire harness or connector	55–7 55–7 55–3 –
Brightness does not changes when rheostat volume or light control switch it turned.	1. Illumination light system 2. A/C amplifier assy 3. Wire harness or connector	– 55–3 –

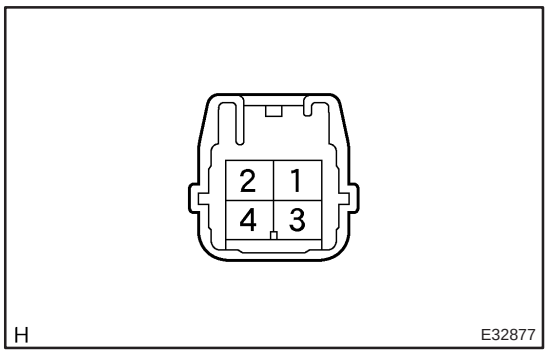
INSPECTION



1. INSPECT COMPRESSOR (MANUAL AIR CONDITIONING)

(a) Measure the resistance between terminals 1 and 2.
Resistance: 10 to 11 Ω at 25°C (77°F)

If the resistance is not as specified, replace the compressor assy.

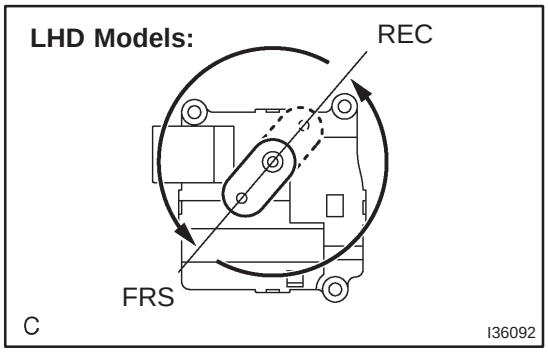


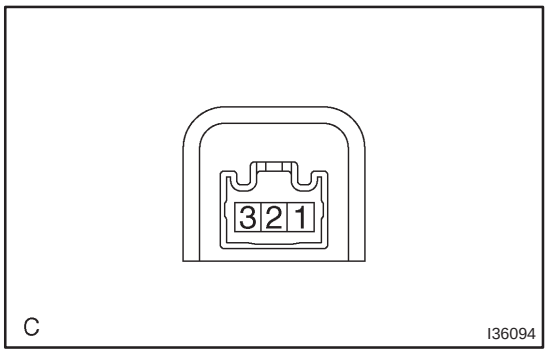
2. INSPECT BLOWER RESISTOR (MANUAL AIR CONDITIONING)

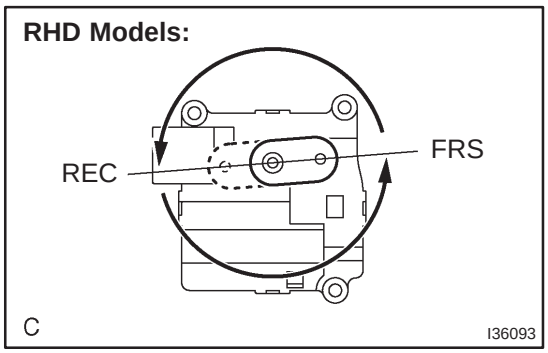
(a) Measure resistance between terminals, as shown in the table.

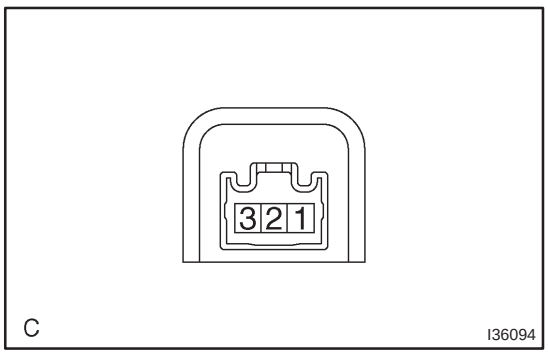
Tester connection	Specified condition
1 – 2	1.404 to 1.716 Ω
1 – 3	0.504 to 0.616 Ω
1 – 4	3.024 to 3.696 Ω

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









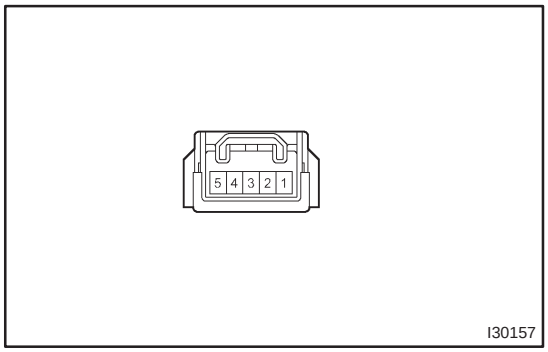
3. INSPECT RECIRCULATION DAMPER SERVO SUB–ASSY (MANUAL AIR CONDITIONING)

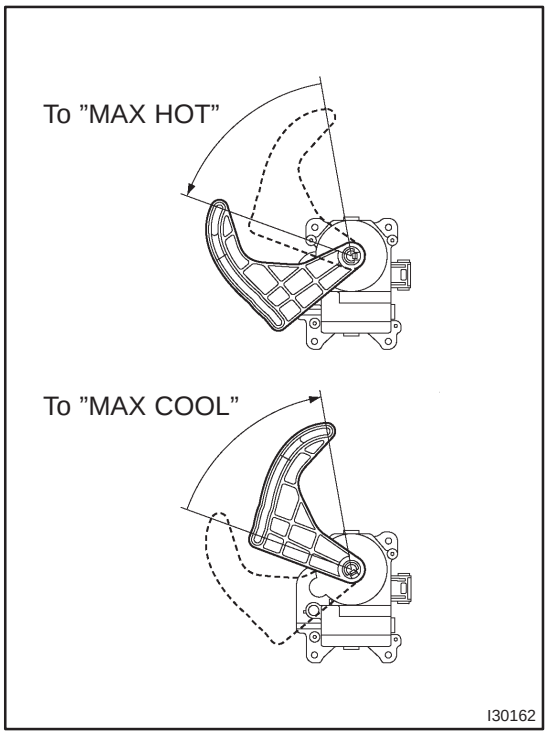
(a) Inspect servomotor operation.

(1) Connect the positive (+) lead from the battery to terminal 3 and negative (–) lead to terminal 2, then check that the arm turns to ”FRS” side smoothly.

(2) Connect the positive (+) lead from the battery to terminal 3 and negative (–) lead to terminal 1, then check that the arm turns to ”REC” side smoothly.

If operations are not as specified, replace the mode damper servomotor.





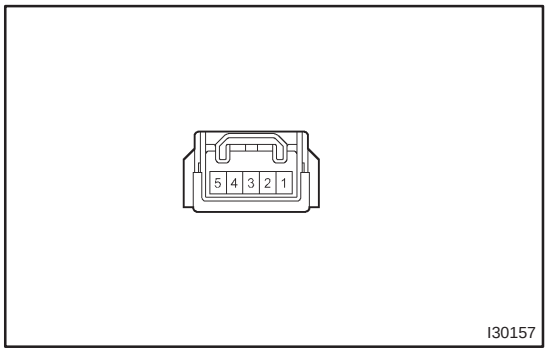
4. INSPECT AIRMIX DAMPER SERVO SUB–ASSY (MANUAL AIR CONDITIONING)

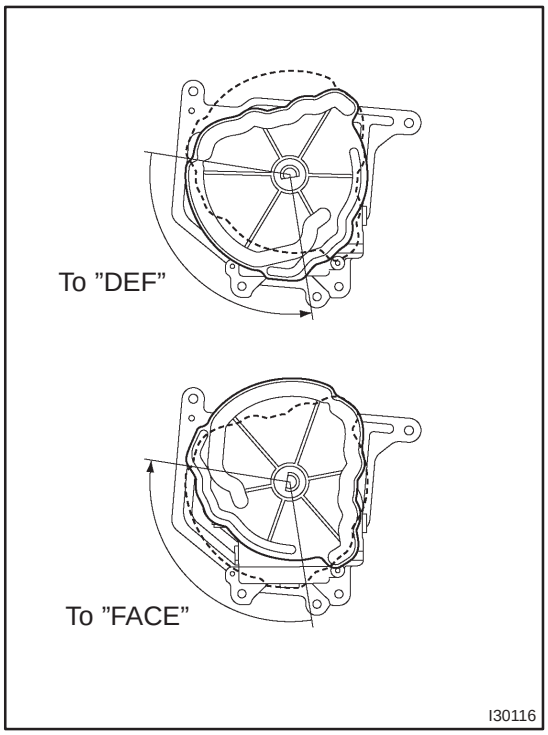
(a) Inspect servomotor operation.

(1) Connect the positive (+) lead from the battery to terminal 4 and negative (–) lead to terminal 5, then check that the arm turns to ”MAX COOL” side smoothly.

(2) Connect the positive (+) lead from the battery to terminal 5 and negative (–) lead to terminal 4, then check that the arm turns to ”MAX HOT” side smoothly.

If operations are not as specified, replace the servomotor.





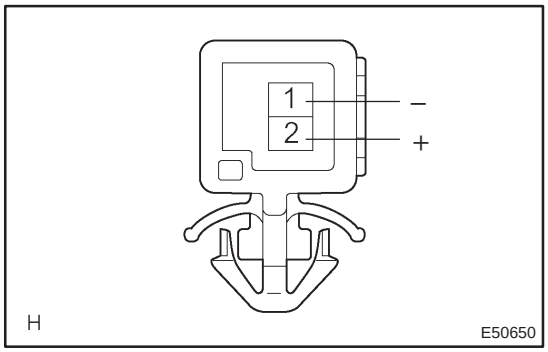
5. INSPECT MODE DAMPER SERVO SUB–ASSY (MANUAL AIR CONDITIONING)

(a) Inspect servomotor operation.

(1) Connect the positive (+) lead from the battery to terminal 4 and negative (–) lead to terminal 5, then check that the arm turns to ”DEF” side smoothly.

(2) Connect the positive (+) lead from the battery to terminal 5 and negative (–) lead to terminal 4, then check that the arm turns to ”FACE” side smoothly.

If operations are not as specified, replace the servomotor.



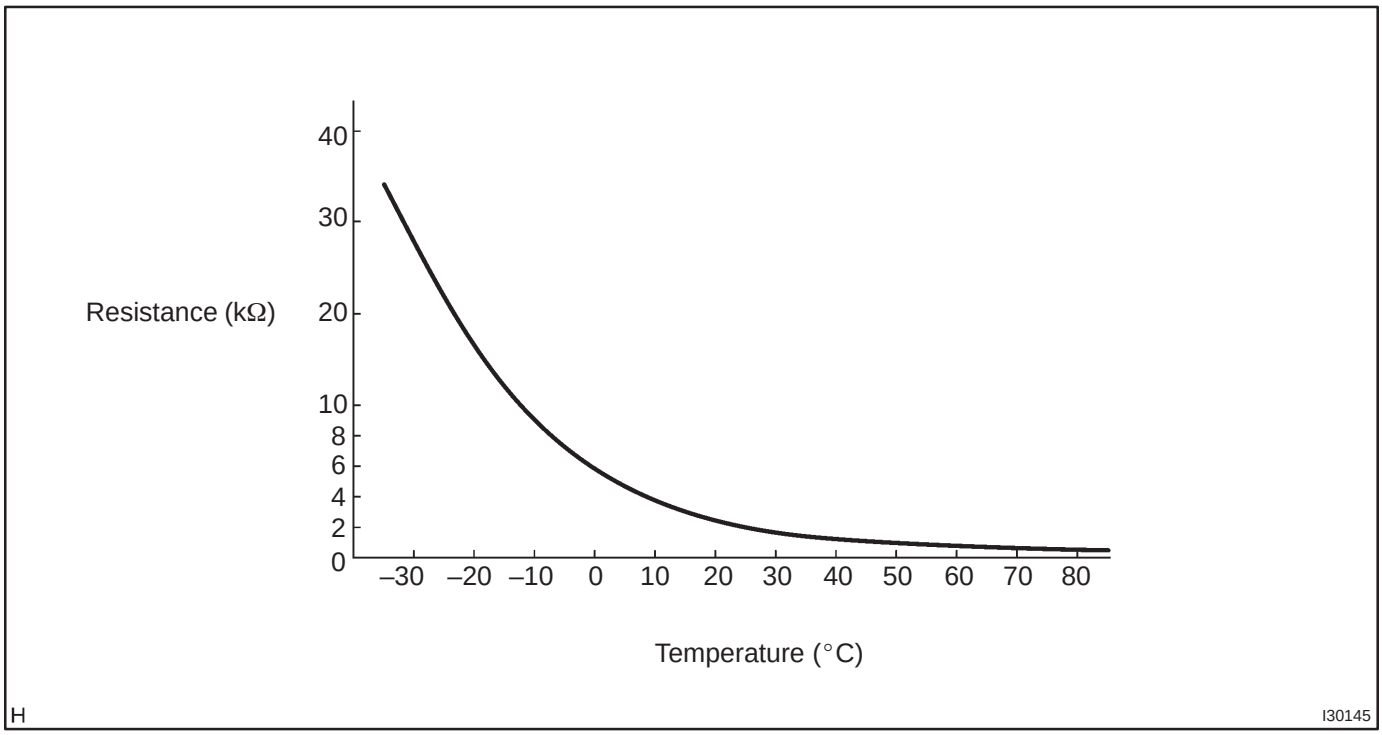
6. INSPECT COOLER THERMISTOR NO.1 (MANUAL AIR CONDITIONING)

(a) Check the resistance between terminal 1 and 2 of cooler thermistor No. 1 at each temperature, as shown in the graph.

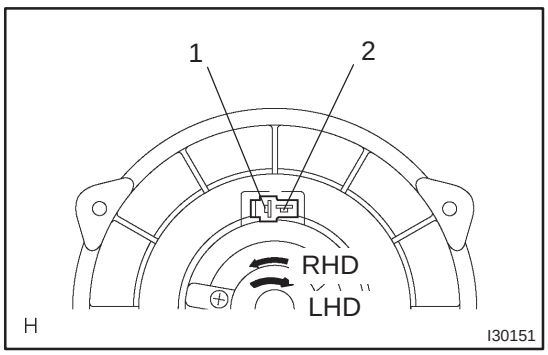
Standard: 1,500 Ω at 25°C (77°F)

HINT:

As the temperature increases, the resistance decreases.



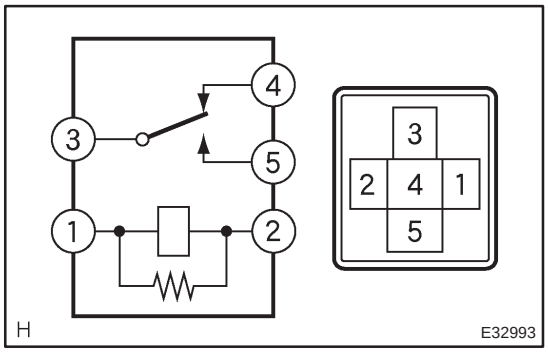
If resistance value is not as specified, replace the sensor.



7. INSPECT BLOWER W/FAN MOTOR SUB–ASSY (MANUAL AIR CONDITIONING)

(a) Connect the positive (+) lead from the battery to terminal 1 and negative (–) to terminal 2, then check that the motor operation smoothly.

If operation is not as specified, replace the blower motor.



8. INSPECT HEATER RELAY (MANUAL AIR CONDITIONING)

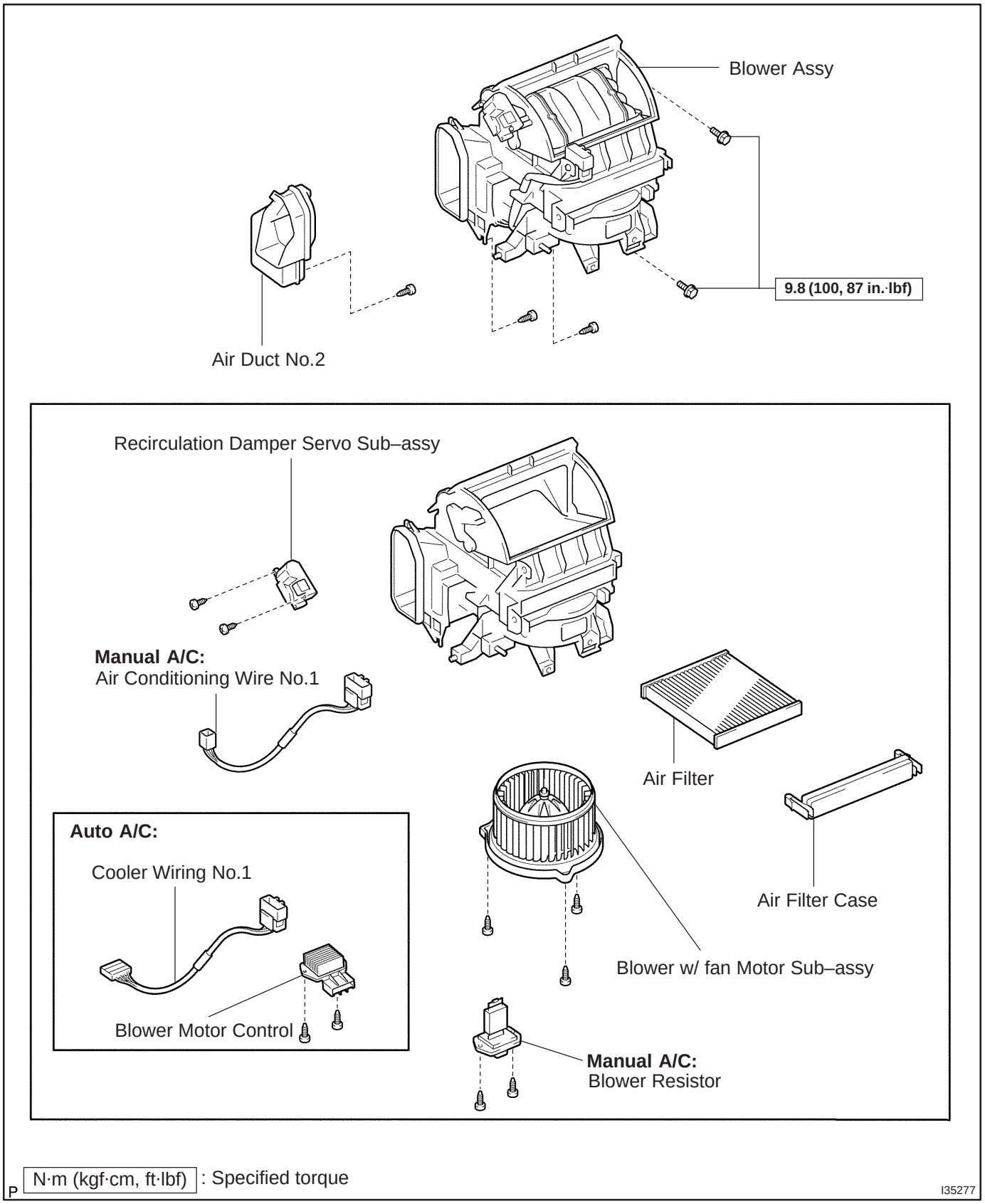
Terminal No.	Specified condition
3–5	No continuity
	Less than 1 Ω (When battery voltage applied to terminals 1 and 2.)
3–4	Less than 1 Ω
	No continuity (When battery voltage applied to terminals 1 and 2.)
1–2	Constant continuity

If continuity is not as specified, replace the rear cooler relay.

BLOWER ASSY

COMPONENTS

550YQ–01



OVERHAUL

HINT:

COMPONENTS: See page 55–64

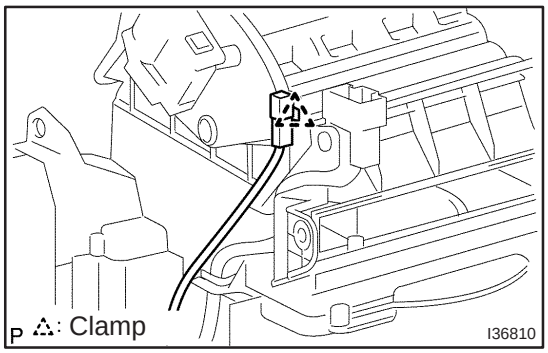
1. REMOVE INSTRUMENT PANEL LOWER ASSY (See page 71–11)

HINT:

Refer to the instructions for removal of the instrument panel lower assy.

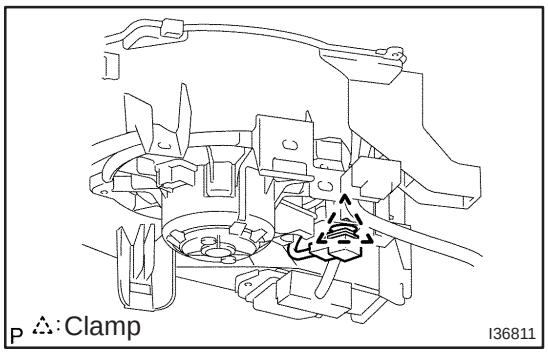
2. REMOVE ECM (See page 10–65)

3. REMOVE AIR DUCT NO.2 (See page 55–55)

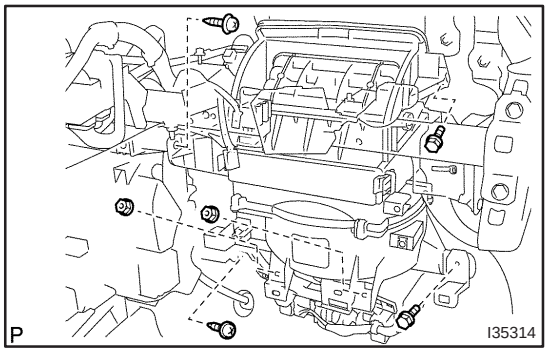


4. REMOVE BLOWER ASSY

(a) Disconnect the connector and the clamp.



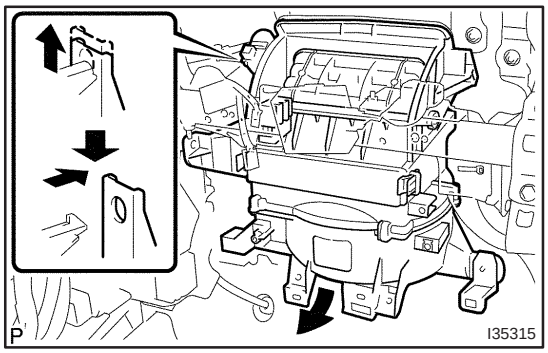
(b) RHD Auto A/C:
Disconnect the connector and the clamp.



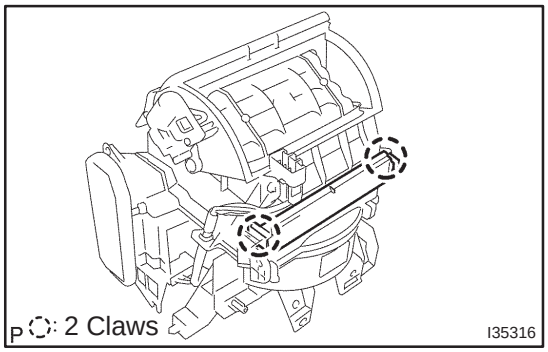
(c) Disconnect the connectors.

(d) Remove the 2 nuts.

(e) Remove the 2 bolts and the 2 screws.



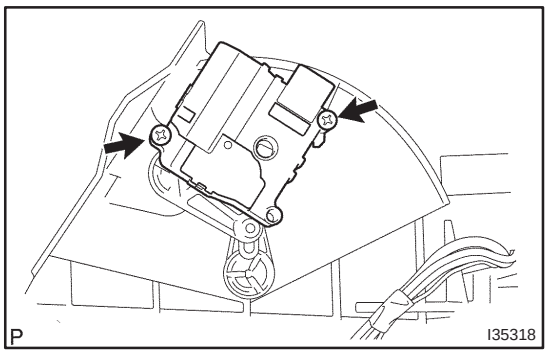
(f) Release the claw fitting and remove the blower assy.



5. REMOVE AIR FILTER CASE

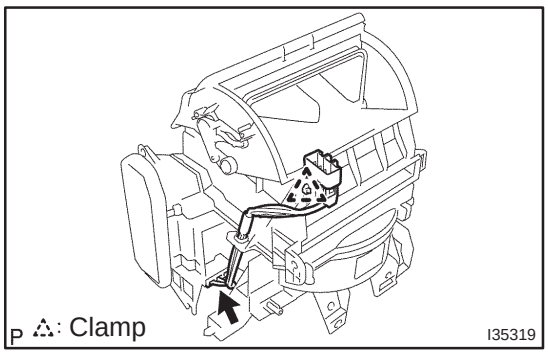
(a) Release the 2 claw fittings and remove the air filter case.

6. REMOVE AIR FILTER



7. REMOVE RECIRCULATION DAMPER SERVO SUB–ASSY

(a) Remove the 2 screws and the recirculation damper servo sub–assy.



8. REMOVE AIR CONDITIONING WIRENO1 (MANUAL AIR CONDITIONING)

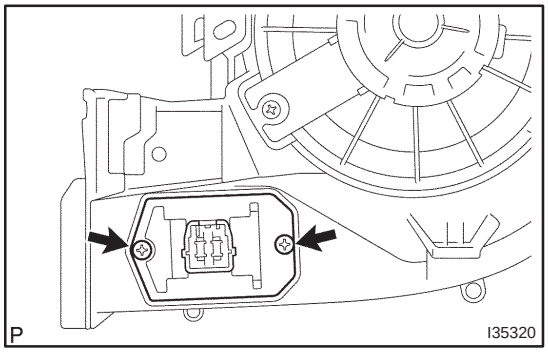
(a) Disconnect the connector.

(b) Release the clump and remove the air conditioning wire No.1.

9. REMOVE COOLER WIRING NO.1 (AUTO AIR CONDITIONING)

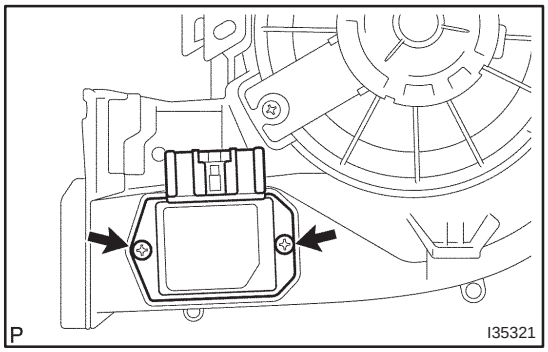
HINT:

Disconnection of the cooler wiring No.1 is the same as the air conditioning wire No.1.



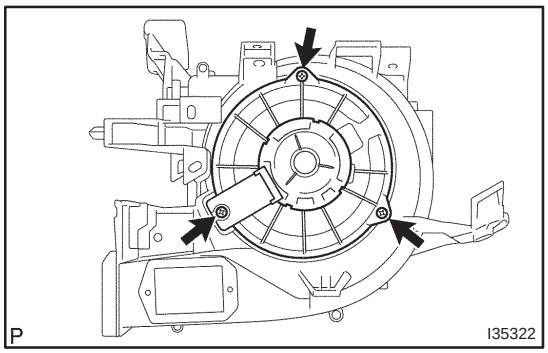
10. REMOVE BLOWER RESISTOR (MANUAL AIR CONDITIONING)

(a) Remove the 2 screws and the blower resistor.



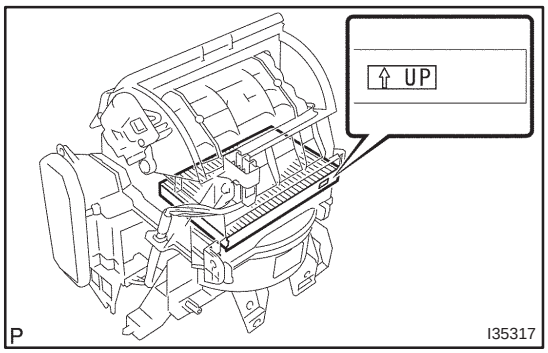
11. REMOVE BLOWER MOTOR CONTROL (AUTO AIR CONDITIONING)

(a) Remove the 2 screws and the blower motor control.



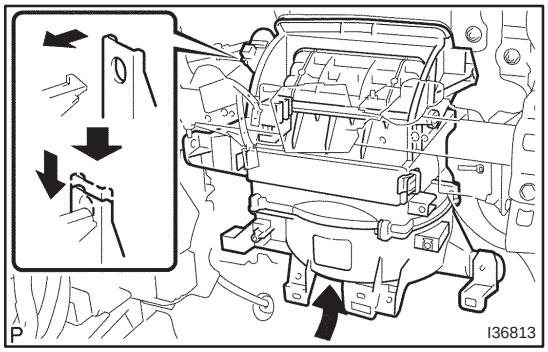
12. REMOVE BLOWER W/FAN MOTOR SUB–ASSY

(a) Remove the 3 screws and the blower w/ fun motor sub–assy.



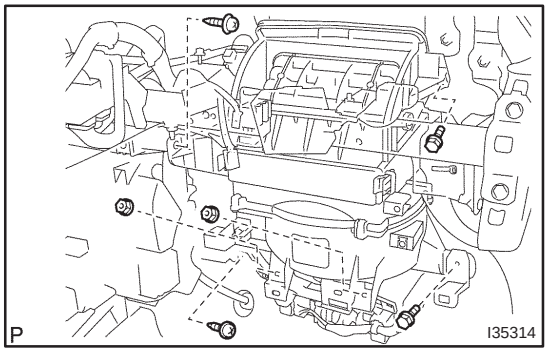
13. INSTALL AIR FILTER

(a) Install the air filter as shown in the illustration.



14. INSTALL BLOWER ASSY

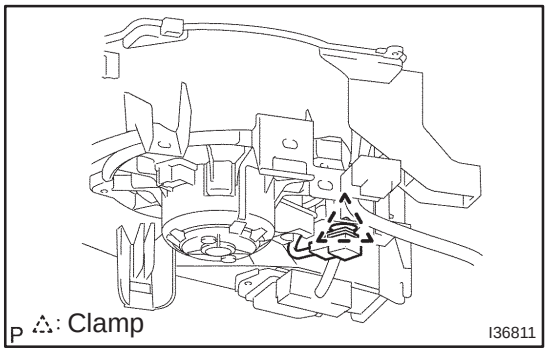
(a) Install the blower assy with the claw fitting.



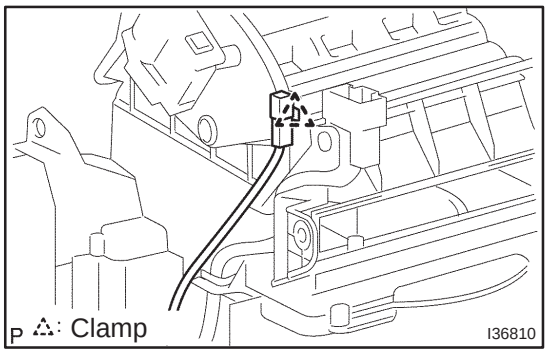
(b) Install the blower assy with the 2 bolts and the 2 screws.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf) (Bolt)

(c) Install the 2 nuts.

(d) Connect the connectors.



(e) RHD Auto A/C:
Connect the connector and the clamp.



(f) Connect the connector and the clamp.

COMBUSTION TYPE POWER HEATER SYSTEM

550ZG–01

ON–VEHICLE INSPECTION

NOTICE:

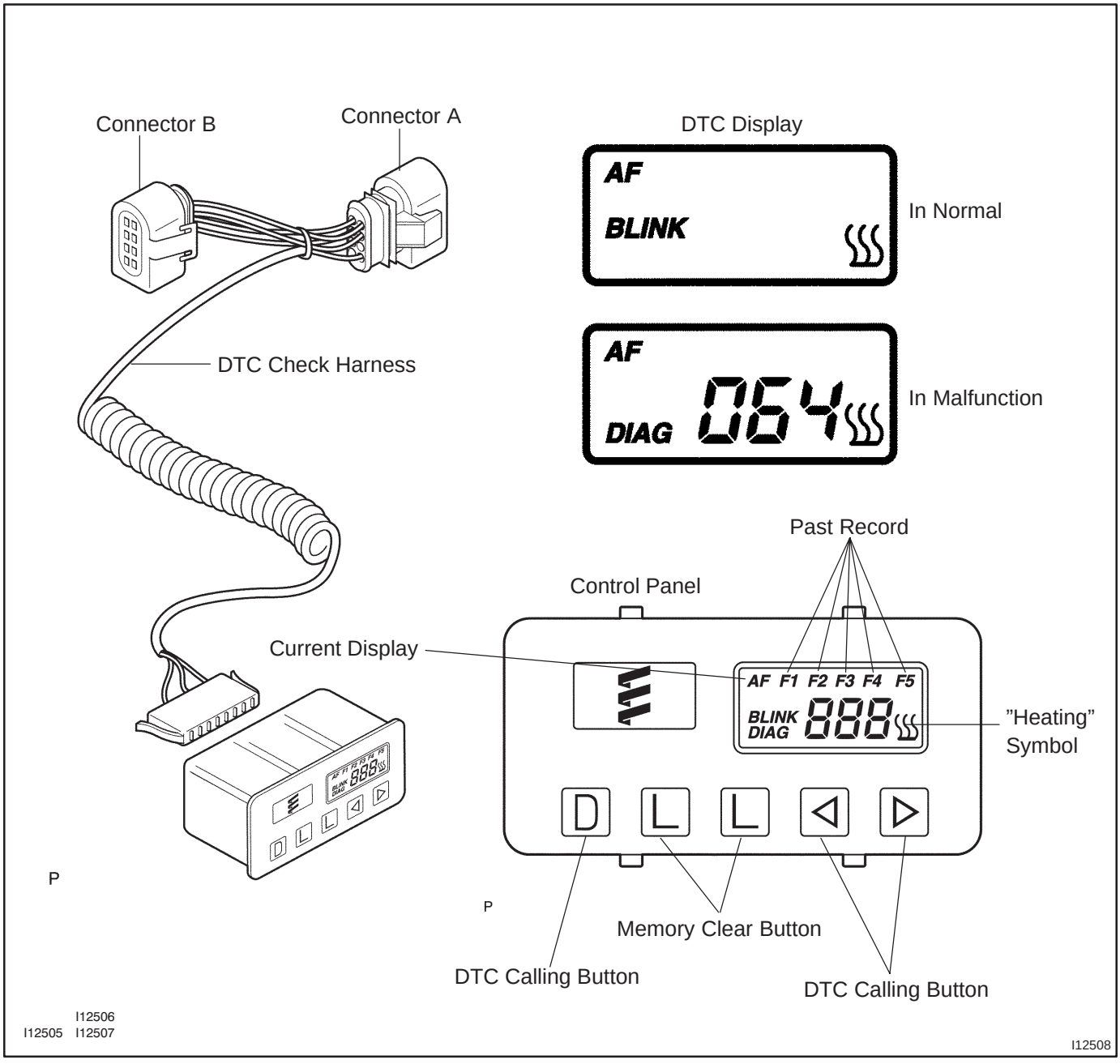
- **If the glow plug breaks, the ECU detects the breakage and stops the automatic operation, so the burner heater does not activate. (For other failures, similarly activated.)**
- **The cause of failures (such as voltage malfunction, overheating malfunction, short–circuit or breakage of functional components, etc.) and repair methods are shown by connecting the DTC tester and reading the DTC.**

1. DIAGNOSTICS FUNCTION

(a) Connect the DTC tester between the connector A (Vehicle harness) of DTC check harness and connector B (Power heater harness).

(b) Start the engine.

(c) Pressing the DTC calling button displays a 3–digit number DTC.



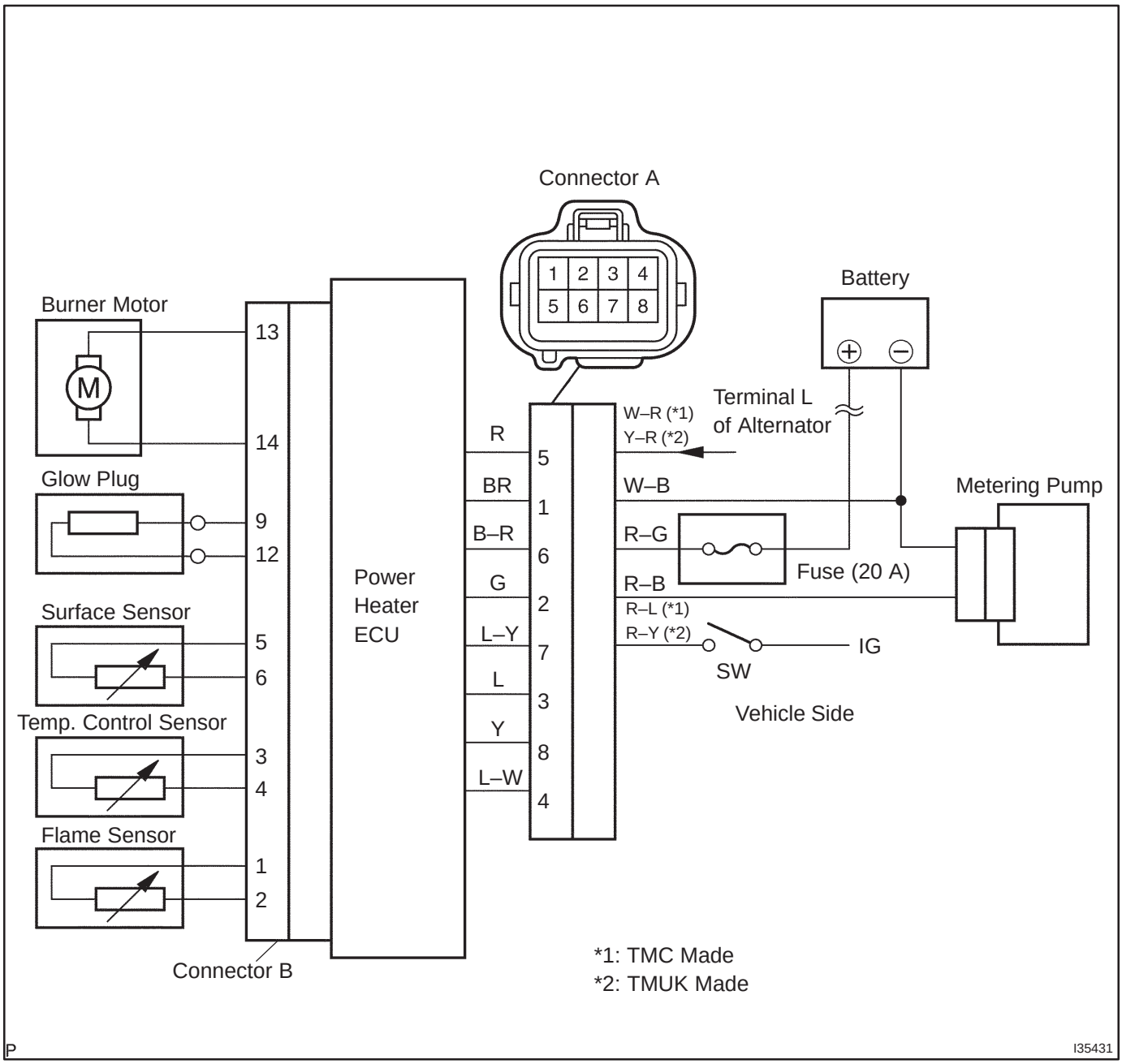
2. DESCRIPTION OF DISPLAY AND BUTTONS

(a) AF: Current Value Malfunction (Blinking at current failure)
Diag: DTC (Example: 064 Flame sensor break)
Memory Clear button: Deletion of faulty memory (Press both buttons together for longer than 2 seconds)
> Button: Scroll up of faulty memory (The past 5 codes can be stored.)
< Button: Scroll down of faulty memory (The past 5 codes can be stored.)

3. FAULTY MEMORY

(a) The ECU is able to store up to 5 pieces of faulty memory. If it is full, the new data is written over F5.

4. WIRING DIAGRAM



5. DIAGNOSTIC TROUBLE CODE CHART

If a malfunction code is displayed during the DTC check, check the circuit listed for the code in the table below and proceed to the appropriate page.

DTC No.	Description of fault	Comment / Remedy
000	No malfunction	–
010 011	Overvoltage shutoff Undervoltage shutoff	Voltage between 1 and 5 at connector A > 16 V Voltage between 1 and 5 at connector A < 10.2 V (Voltage values must be present > 20 seconds) Check battery, regulator and electrical leads.
012	Overheating	Check temperature at temperature or overheating sensor > 125 °C Check water circuit.
014	Possible overheating detected (Hardware threshold value)	Difference of measured values at temperature sensor > 15 °C (min. 70 °C water temperature and metering pump in operation); Check temperature sensor and overheating sensor, replace if necessary.
017	Overheating detected (Hardware threshold value)	Temperature at temperature or overheating sensor > 130 °C, emergency OFF if DTC No. 012 or 014s not applicable; Check water circuit, temperature sensor and overheating sensor, replace if necessary.
020	Glow plug break	Check glow plug, replace if necessary.
021	Glow plug output overload	Check glow plug, replace if necessary.
030	Combustion air blower motor EMF outside perm. range.	Blower impeller or burner motor fammed (frozen solid, dirty, etc.) Remedy jam, replace burner motor if necessary.
031	Combustion air blower motor break	Check the lead to combustion air motor (burner motor) for continuity, replace if necessary.
032	Combustion air blower motor short–circuit	Check combustion air blower motor (burner motor), replace if necessary. Check supply lead (chafed, etc.).
047	Metering pump short–circuit	Check the supply lead to metering pump for short–circuit, check metering pump, replace if necessary.
048	Metering pump break	Check the supply lead to metering pump for continuity, remedy break, replace metering pump if necessary.
051	Cold blow time exceeded	At start, if flame sensor above 70 °C, > 240 sec.; Check exhaust gas combustion air supply, check flame sensor, replace if necessary.
052	Safety time exceeded	When all perm. start attempts used up; Check the fuel delivery and fuel supply. Check exhaust gas and combustion air ducts.
054	Flame cutout, High setting	Check the fuel delivery and fuel supply. Check exhaust gas combustion air ducts. If combustion OK → Check the flame sensor, replace if necessary.
056	Flame cutout, LOW setting	
060	Temperature control sensor break	Check connecting leads. Resistance value between 2 and 10 connector B > 2 MΩ (if break)
061	Temperature control sensor short–circuit	Check connecting leads. Resistance value between 2 and 10 at connector B < 2 MΩ (If short– circuit)
064	Flame sensor break	Check connecting leads. Resistance value between 7 and 14 at connector B > 3,040 Ω (If break)
065	Flame sensor short–circuit	Check connecting leads. Resistance value between 7 and 14 at connector B > 780 Ω (If short–circuit)

DTC No.	Description of fault	Comment / Remedy
071	Surface sensor break	Check connecting leads. Resistance value between 4 and 11 at connector B > 2 MΩ (If break)
072	Surface sensor short–circuit	Check connecting leads. Resistance value between 4 and 11 at connector B > 50 Ω (If short–circuit)
090 092 093	Control unit detective (Internal fault / Reset) Control unit detective (ROM error) Control unit detective (RAM error)	Control unit malfunction due to interference voltage from vehicle electrical system; possible causes low batteries, chargers, other sources of interference; eliminate interference voltages. Internal faults detected in microprocessor / memory detected. Replace control unit.
097	Internal control unit faults	Other faults which cannot lead to DTC No. 90, 92 and 93, replace control unit.

550ZH–01

INSPECTION

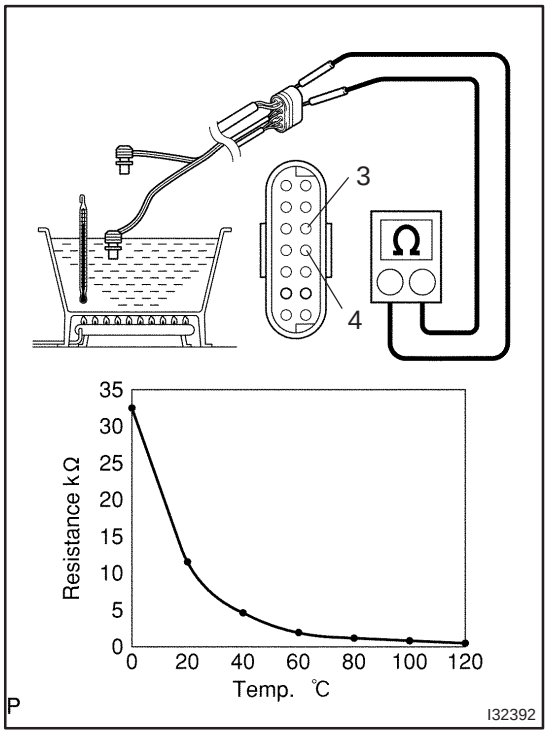
1. INSPECT HEATER ASSY

(a) Inspect the water temperature sensor.

(1) Using an ohmmeter, measure the resistance between the terminals 3 and 4 of heater wire.

Resistance: Refer to the graph

If the resistance is not as specified, replace the heater wire.

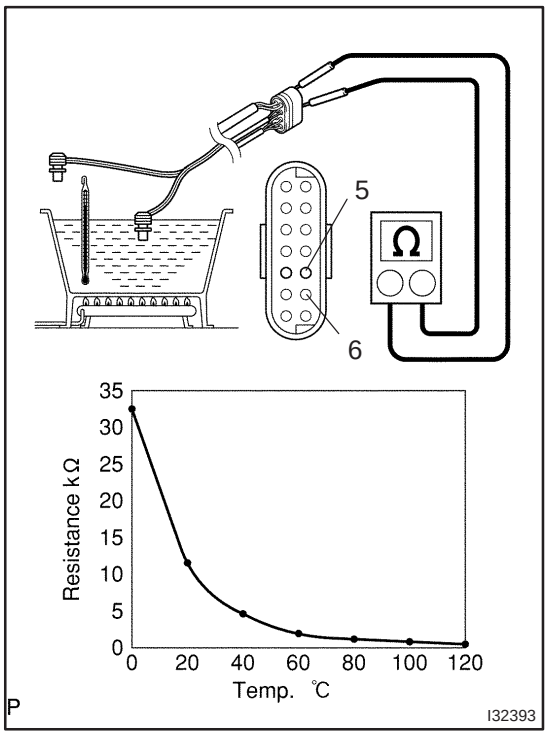


(b) Inspect the overheat sensor.

(1) Using an ohmmeter, measure the resistance between the terminals 5 and 6 of heater wire.

Resistance: Refer to the graph

If the resistance is not as specified, replace the heater wire.

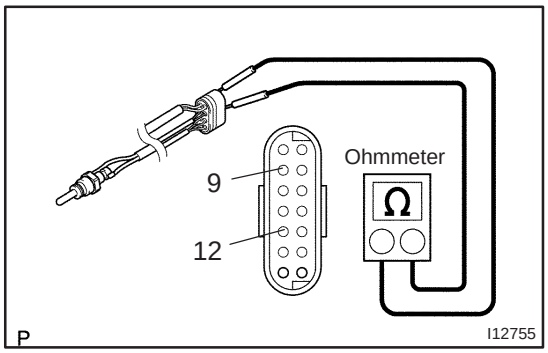


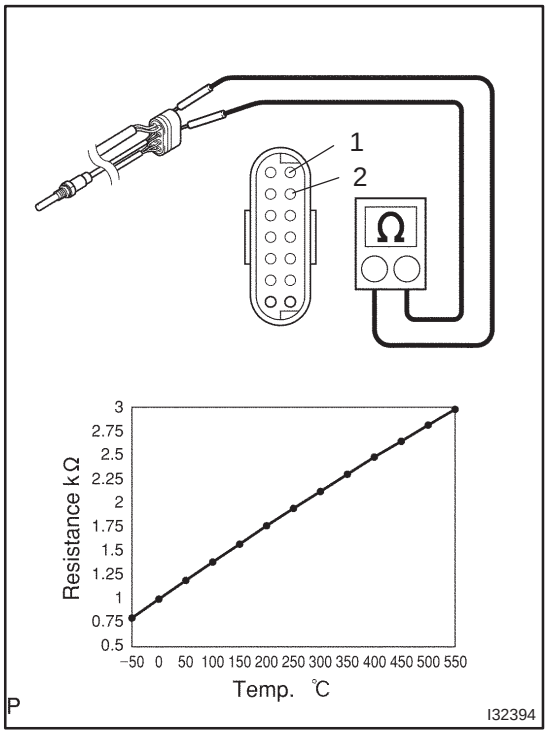
(c) Inspect the glow plug.

(1) Using an ohmmeter, check the continuity by measure the resistance between terminals 9 and 12 of heater wire.

Standard resistance: about 0.5 Ω (20°C, reference value)

If the resistance is over 1 Ω, replace the heater wire.



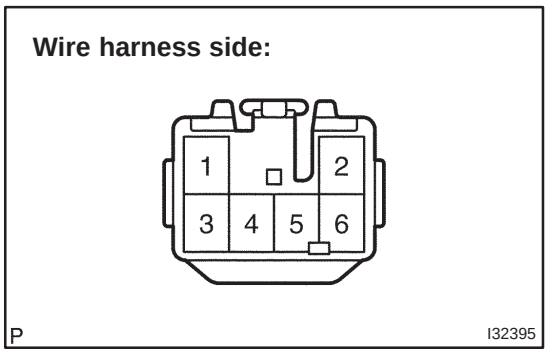


(d) Inspect the flame sensor.

(1) Using an ohmmeter, measure the resistance between terminals 1 and 2 of heater wire.

Resistance: Refer to the graph

If the resistance is not as specified, replace the heater wire.

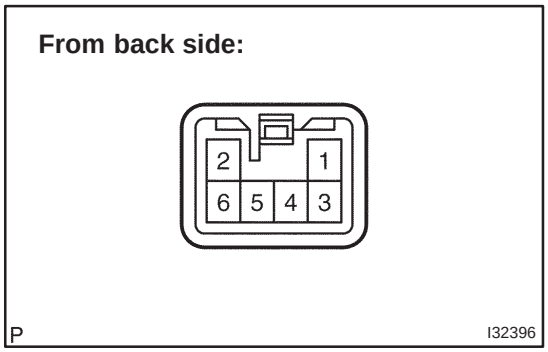


2. INSPECT HETER SWITCH ASSY

(a) Disconnect the connector from the power heater switch and inspect the connector on the wire harness side, as shown in the chart.

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity
4 – Ground	Constant	Continuity
3 – Ground	Turn ignition switch ON	Battery voltage
3 – Ground	Turn ignition switch OFF	No voltage
1 – Ground	Turn light control switch TAIL or HEAD	Battery voltage
1 – Ground	Turn light control switch OFF	No voltage

- If the circuit is as specified, replace the power heater switch.
- If the circuit is not as specified, inspect the circuits connected to other parts.



(b) Connect the connector to the power heater switch and inspect the connector from the back side, as shown in the chart.

Tester connection	Condition	Specified condition
6 – Ground	Turn the ignition switch ON and power heater switch ON	Battery voltage
6 – Ground	Turn the ignition switch ON and power heater switch OFF	No voltage

- If the circuit is not as specified, replace the power heater switch.

ELECTRICAL TYPE POWER HEATER SYSTEM

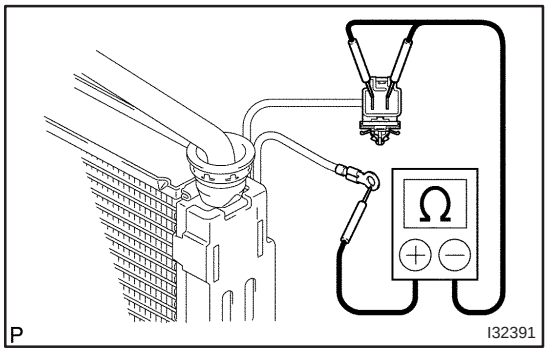
PROBLEM SYMPTOMS TABLE

550ZE–01

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.

Symptom	Suspect Area	See page
PTC heater does not operate, when perform in these conditions: • Engine coolant temp.: 70°C (158°F) or below • Engine speed: 650 rpm or above • Temperature control selector: MAX. HOT • Ambient temperature: Below 10°C (50°F)	1. HTR1 Fuse 2. HTR2 Fuse 3. HTR1 relay 4. HTR2 relay 5. PTC heater 6. ECM 7. Wire harness	– – – – 55–14 – –

550ZF–01



INSPECTION

1. INSPECT HEATER ASSY

(a) Check continuity.

(1) Using an ohmmeter, check for continuity between each terminal of connector and earth wire.

If no continuity, replace the heater radiator.

ELECTRICAL TYPE POWER HEATER SYSTEM

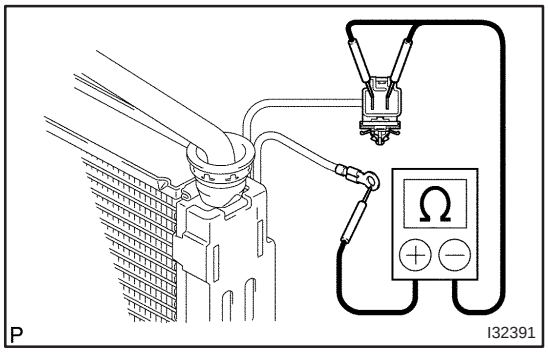
PROBLEM SYMPTOMS TABLE

550ZE–01

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.

Symptom	Suspect Area	See page
PTC heater does not operate, when perform in these conditions: • Engine coolant temp.: 70°C (158°F) or below • Engine speed: 650 rpm or above • Temperature control selector: MAX. HOT • Ambient temperature: Below 10°C (50°F)	1. HTR1 Fuse 2. HTR2 Fuse 3. HTR1 relay 4. HTR2 relay 5. PTC heater 6. ECM 7. Wire harness	– – – – 55–14 – –

550ZF–01



INSPECTION

1. INSPECT HEATER ASSY

(a) Check continuity.

(1) Using an ohmmeter, check for continuity between each terminal of connector and earth wire.

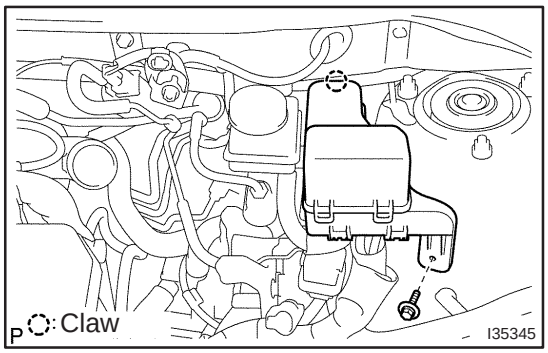
If no continuity, replace the heater radiator.

HEATER ASSY

REPLACEMENT

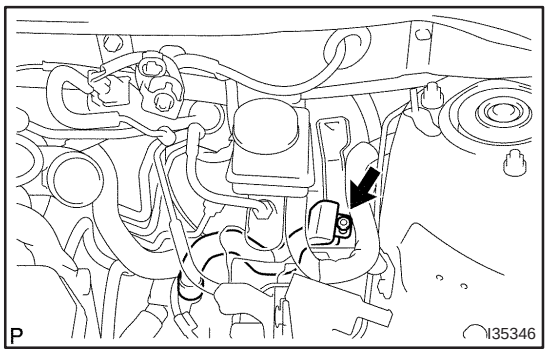
550YS–01

1. REMOVE AIR CLEANER ASSY (See page 11–82)
2. REMOVE FUEL FILTER ASSY (See page 11–82)

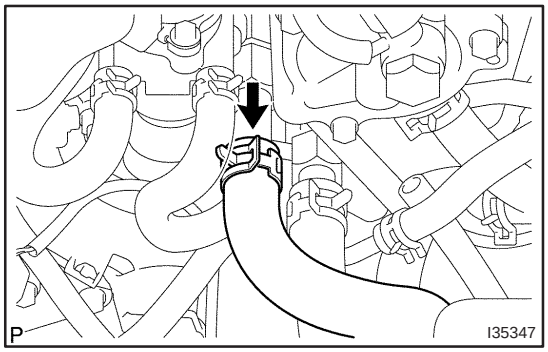


3. REMOVE AIR DUCT NO.3

(a) Release the claw fitting and remove the bolt and the engine room relay No.2 block.



(b) Remove the clip and the air duct No.3.

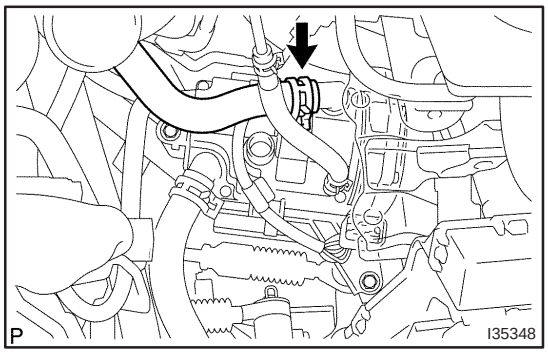


4. DISCONNECT HEATER INLET WATER HOSE

(a) Using pliers, grip the claws of the clip and slide the clip to disconnect the heater inlet water hose.

HINT:

Prepare a support plate and waste to catch the leaked coolant.

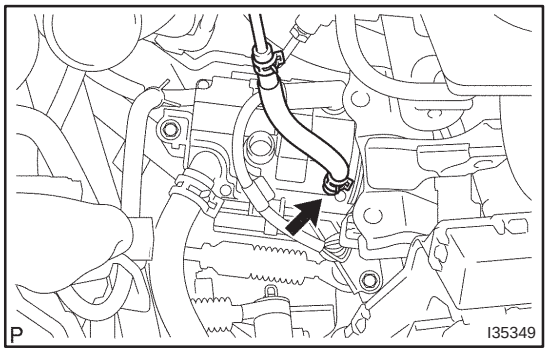


5. DISCONNECT HEATER WATER INLET HOSE A

(a) Using pliers, grip the claws of the clip and slide the clip to disconnect the heater inlet water hose A.

HINT:

Prepare a support plate and waste to catch the leaked coolant.



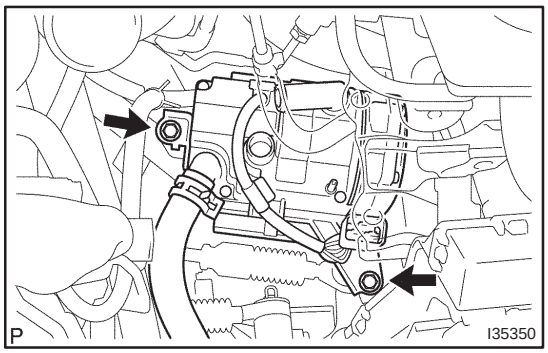
6. REMOVE HEATER ASSY

(a) Using pliers, grip the claws of the clip and slide the clip to disconnect the heater fuel hose.

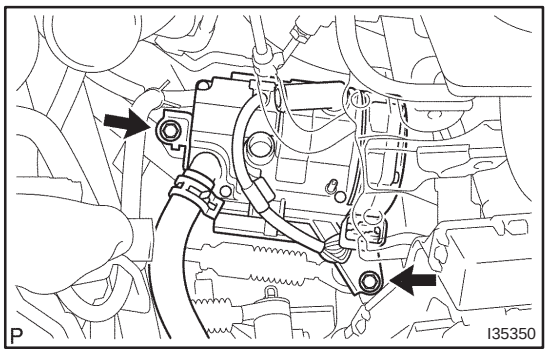
HINT:

Prepare a support plate and waste to catch the leaked fuel.

(b) Disconnect the connector.



(c) Remove the 2 bolts and the heater assy.

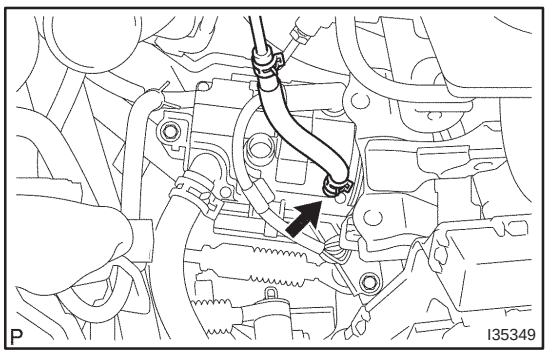


7. INSTALL HEATER ASSY

(a) Install the heater assy with the 2 bolts.

Torque: 7.5 N·m (76 kgf·cm, 66 in.·lbf)

(b) Connect the connector.



(c) Install the heater fuel hose.

HINT:

Prepare a support plate and waste to catch the leaked fuel.

8. INSTALL FUEL FILTER ASSY (See page 11–82)
9. INSTALL AIR CLEANER ASSY (See page 11–82)
10. ADD ENGINE COOLANT (See page 16–44)
11. CHECK FOR ENGINE COOLANT LEAKS (See page 16–37)
12. CHECK FUEL LEAK (See page 11–56)

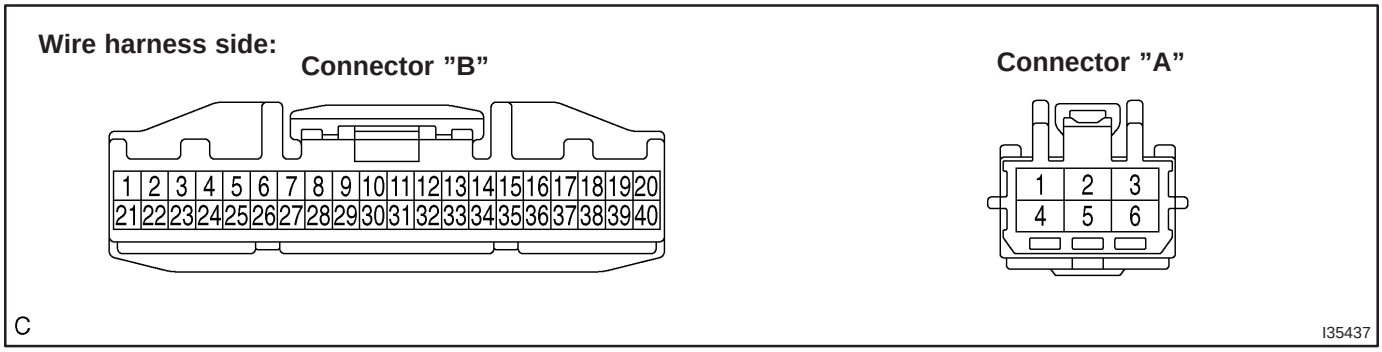
HOT GAS TYPE POWER HEATER SYSTEM

550ZI–01

ON–VEHICLE INSPECTION

1. INSPECT AIR CONDITIONING CONTROL ASSY

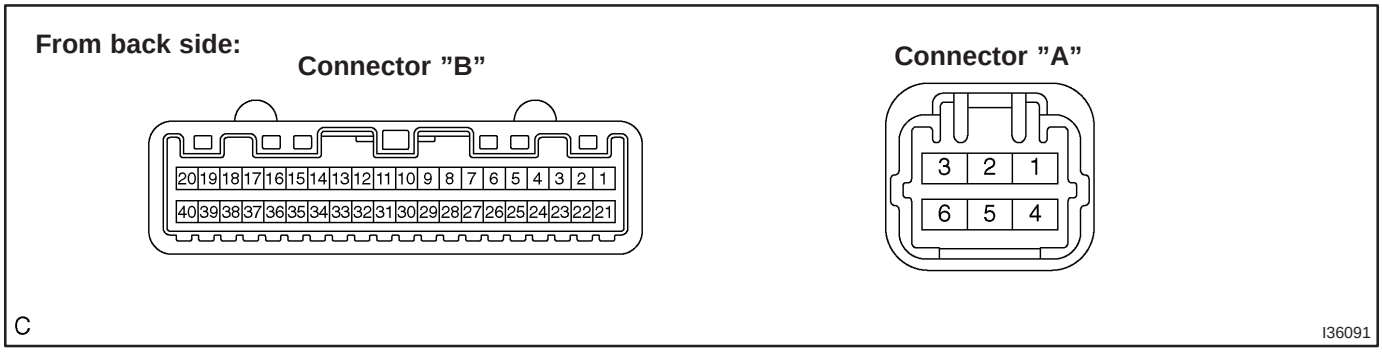
(a) Disconnect the connector from air conditioning control assy and inspect the connector on wire harness side, as shown in the table.



Symbols (Terminal No.)	Wiring Color	Condition	STD Voltage (V)
SOL+ (B17) – GND (B40)	R – W–B	Start engine Compressor: Operate	Pulse generation
MGV (B14) – GND (B40) (*1)	R–Y – W–B	Start engine Compressor: Operate	Pulse generation
HOT GAS IN (B22) – GND (B40) (*1)	R–Y – W–B	IG SW: ON Hot Gas SW: ON	Battery positive voltage

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

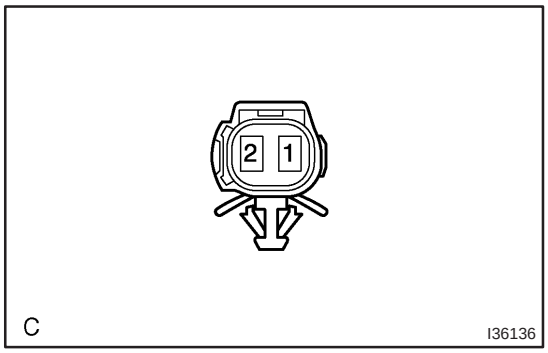
(b) Connect the connector to air conditioning control assy and inspect wire harness side connector from the back side, as shown in the table.



Symbols (Terminal No.)	Condition	Specified condition
HI (A4) – GND (A1)	Ignition switch ON Turn blower dial: OFF → HI	No continuity →Continuity
M2 (A5) – GND (A1)	Ignition switch ON Turn blower dial: OFF → M2	No continuity →Continuity
M1 (A6) – GND (A1)	Ignition switch ON Turn blower dial: OFF → M1	No continuity →Continuity
GND (A1) – Body ground	Ignition switch ON Turn blower dial: OFF → LO	No continuity →Continuity

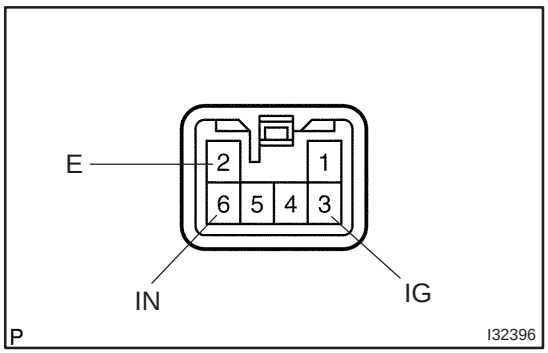
550ZJ–01

INSPECTION



1. INSPECT W/RECEIVER CONDENSER ASSY

(a) Apply voltage between terminals and check that the refrigerant passages switch.



2. INSPECT HETER SWITCH ASSY

(a) Check that the continuity to the follwing terminals.

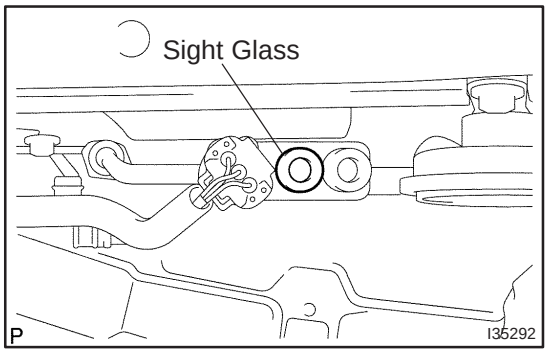
Standard:

Heater switch condition	Connecting terminals	Standard value
ON	IG – IN	Continuity
OFF	IG – IN	No continuity
ON	IG – E	Continuity
OFF	IG – E	No continuity

REFRIGERANT

ON–VEHICLE INSPECTION

550Z7–01



1. RHD AZ Engine series:
INSPECT REFRIGERANT VOLUME

(a) Observe the sight glass on the cooler refrigerant liquid pipe A.

Test conditions:

- All doors are fully open.
- Temperature control dial is at ”MAX. COOL”.
- Engine is running at 1,500 rpm.
- Blower speed control switch is at ”HI”.
- A/C switch is ON.

Item	Symptom	Amount of refrigerant	Corrective Actions
1	Bubbles exist	Insufficient*	(1) Check for gas leakage and repair if necessary (2) Add refrigerant until bubbles disappear
2	No bubbles exist	Empty, insufficient or excessive	Refer to 3 and 4
3	No temperature difference between compressor inlet and outlet	Empty or nearly empty	(1) Check for gas leakage and repair if necessary (2) Add refrigerant until bubbles disappear
4	Considerable temperature difference between compressor inlet and outlet	Proper or excessive	Refer to 5 and 6
5	Immediately after air conditioning is turned off, refrigerant remains clear	Excessive	(1) Discharge refrigerant (2) Vacuum and supply proper amount of new refrigerant
6	Immediately after air conditioning is turned off, refrigerant foams and then becomes clear	Proper	–

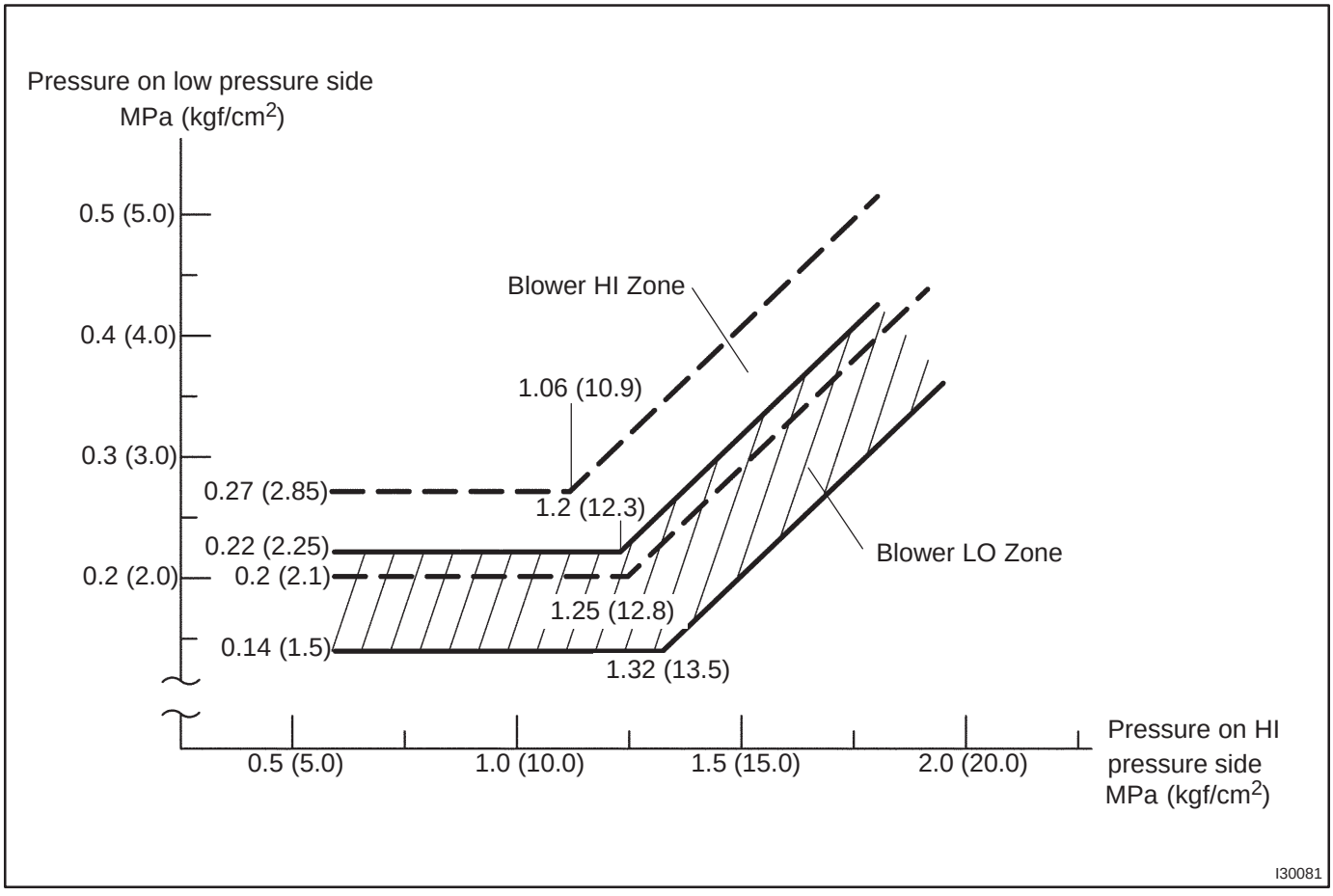
*: Bubbles in the sight glass with ambient temperatures higher than usual can be considered normal if cooling is sufficient.

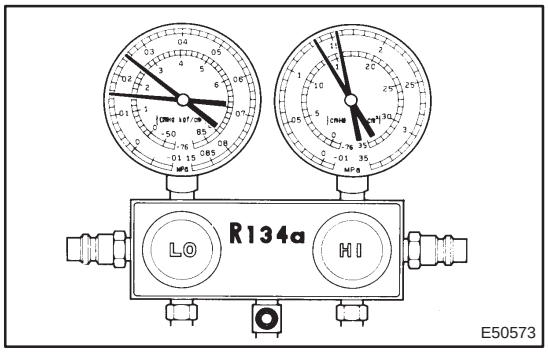
2. w/o Hot gas heater:
INSPECT REFRIGERANT PRESSURE WITH MANIFOLD GAUGE SET

(a) This is a method to specify the trouble area by using a manifold gauge set. Read the manifold gauge pressure when the following conditions are fullfilled.
Test conditions:

- Engine has been warmed up.
- All doors are fully open.
- A/C switch is ON.
- Engine is running at 1,500 rpm.
- Air inlet mode selector switch is at RECIRE.
- Temperature control dial is at ”MAX. COOL”.
- Blower speed control switch is at ”HI”.
- Temperature at the air inlet is 30 – 35 ˚C (86 – 95 ˚F).

Gauge readings (Reference)

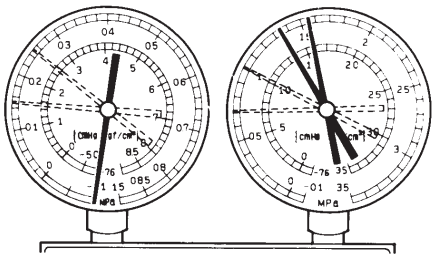




(1) When the refrigerant volume is proper:
Gauge reading:
Low pressure side:
0.15 – 0.25 MPa (1.5 – 2.5 kgf/cm^2)
High pressure side:
1.37 – 1.57 MPa (14 – 16 kgf/cm^2)

(2) When there is moisture in the refrigeration system:

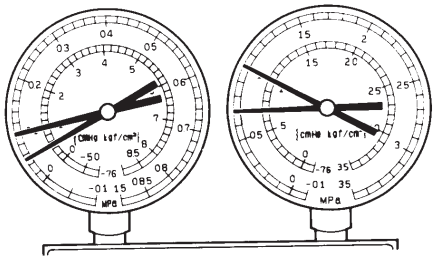
Condition : Air conditioning system periodically repeats proper and improper function.



Symptom	Probable cause	Diagnosis	Remedy
During operation, pressure on low pressure side cycles between normal and vacuum	Moisture in refrigeration system freezes at expansion valve orifice, causing a temporary stop of cycle. However, when it melts, normal state is restored	• Drier is overly saturated • Moisture in refrigeration system freezes at expansion valve orifice and blocks circulation of refrigerant	(1) Replace cooler drier (2) Remove moisture in cycle by repeatedly vacuuming (3) Supply proper amount of new refrigerant

(3) When cooling is insufficient:

Condition: Air conditioning system does not function effectively.

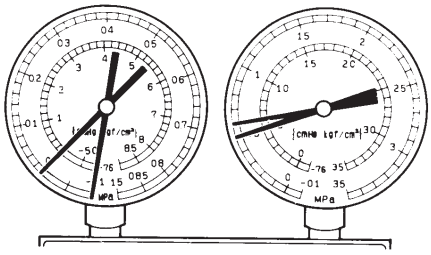


I22118

Symptom	Probable cause	Diagnosis	Corrective Actions
• Pressure is low on both low and high pressure sides • RHD AZ engine series: Bubbles are seen through sight glass continuously • Cooling performance is insufficient	Gas leakage in refrigeration system	• Insufficient refrigerant • Refrigerant leakage	(1) Check for gas leakage and repair if necessary (2) Supply proper amount of new refrigerant (3) If indicated pressure value is close to 0 when connected to the gauge, vacuum after inspecting and repairing the location of leakage.

(4) When the circulation of the refrigerant is poor:

Condition: Air conditioning system does not function effectively.

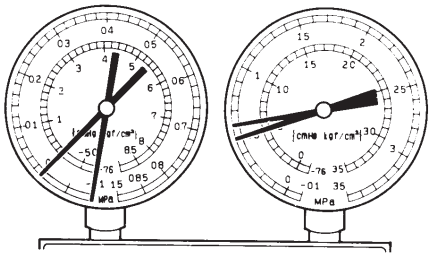


I22119

Symptom	Probable cause	Diagnosis	Corrective Action
• Pressure is low on both low and high pressure sides • Frost exists on piping from condenser to A/C unit	Refrigerant flow is obstructed by dirt in condenser	Condenser is clogged	Replace condenser

(5) When the refrigerant does not circulate:

Condition: Air conditioning system does not function. (Sometimes it may function)

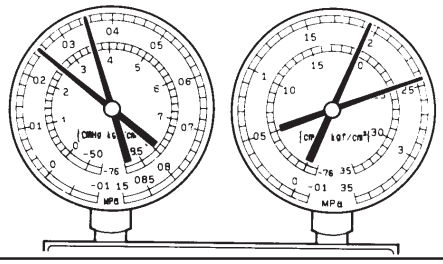


I22120

Symptom	Probable cause	Diagnosis	Corrective Actions
• Vacuum is indicated on low pressure side, and extreamly low pressure is indicated on high pressure side • Frost or dew is seen on piping on both sides of condenser or expansion valve	• Refrigerant flow is obstructed by moisture or dirt in refrigeration system • Refrigerant flow is obstructed by gas leak from expansion valve	Refrigerant does not circulate	(1) Check the expansion valve (2) Clean out dirt on expansion valve by blowing air (3) Replace condenser (4) Vacuum and supply proper amount of new refrigerant (5) For gas leakage from expansion valve, replace expansion valve

(6) When the refrigerant is overcharged or cooling of condenser is insufficient:

Condition : Air conditioning system does not function effectively.

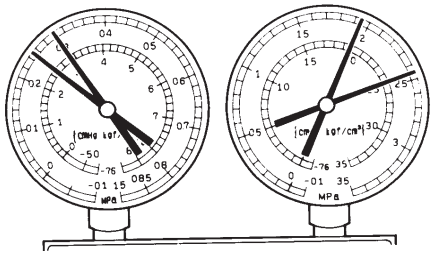


I22121

Symptom	Probable cause	Diagnosis	Remedy
• Pressure is extreamly high on both low and high pressure sides • RHD AZ engine series: No air bubbles are seen through sight glass even when engine rpm lowers	• Excessive refrigerant • Cooling performance of condenser is insufficient	• Excessive refrigerant • Cooling performance of condenser is insufficient	(1) Clean condenser (2) Check condenser fan motor operation (3) If (1) and (2) are in normal state, check the amount of refrigerant and supply proper amount of refrigerant

(7) When there is air in the refrigeration system:

Condition: Air conditioning system does not function.



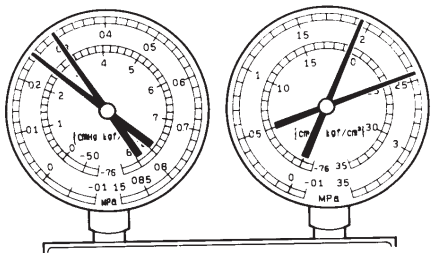
NOTE : These gauge indications occur when the refrigeration system opens and the refrigerant is charged without vacuuming.

I22122

Symptom	Probable cause	Diagnosis	Corrective Actions
• Pressure is extreamly high on both low and the high pressure sides • The low pressure piping is too hot to touch • RHD AZ engine series: Bubbles can be seen through sight glass	Air in refrigeration system	• There is air in refrigeration system • Vacuuming is insufficient	(1) Check it compressor oil is dirty or insufficient (2) Vacuum and supply new refrigerant

(8) When the expansion valve malfunctions:

Condition : Air conditioning system does not function effectively.

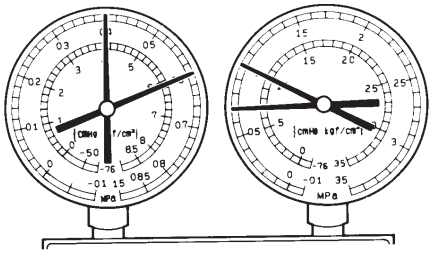


I22123

Symptom	Probable cause	Diagnosis	Corrective Actions
• Pressure is extreamly high on both low and high pressure sides • Frost or dew is on piping on low pressure side	Trouble with expansion valve	• Excessive refrigerant in low pressure piping • Expansion valve opened too wide	Replace expansion valve

(9) When the compressor is defective:

Condition : Air conditioning system does not function.



I22124

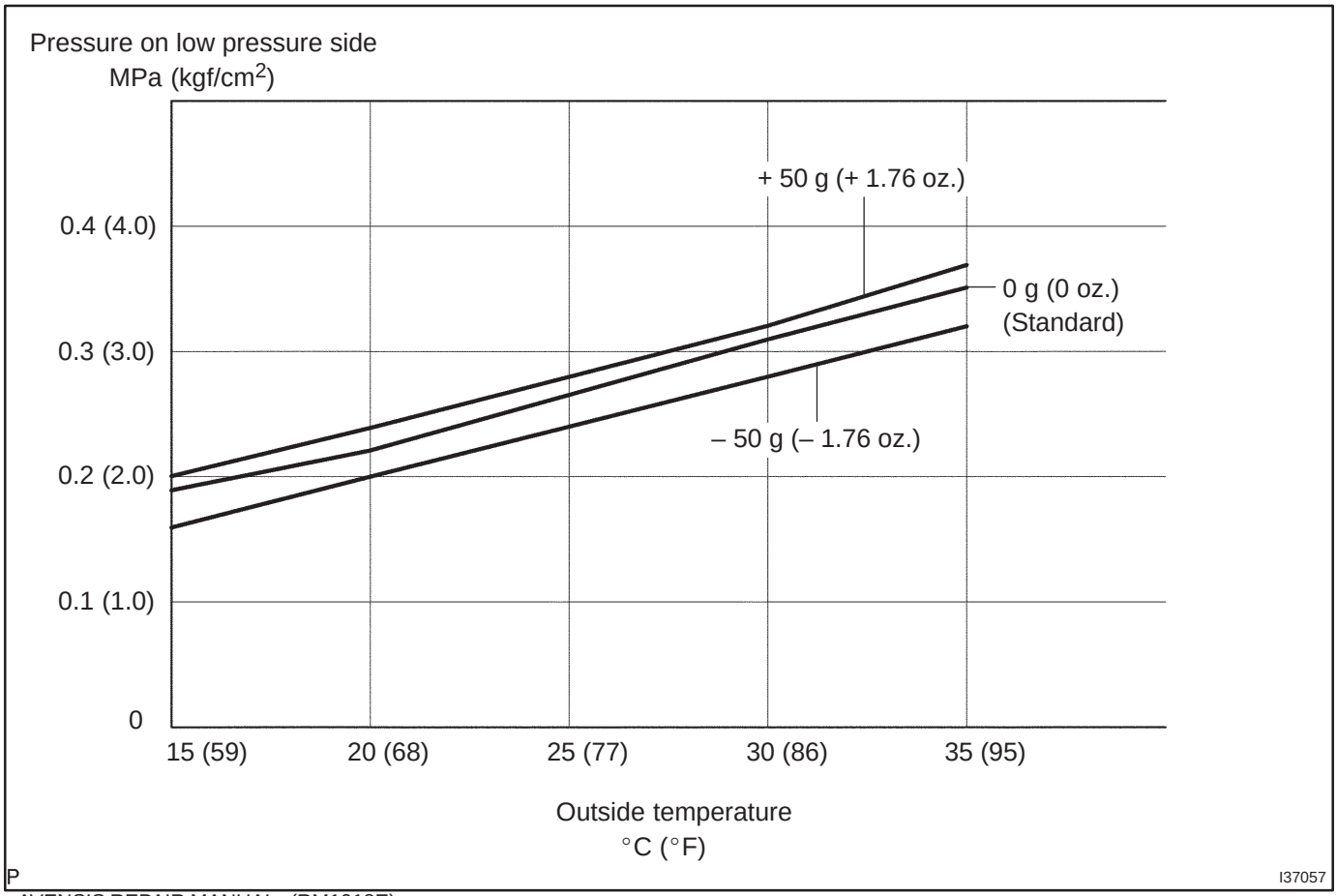
Symptom	Probable cause	Diagnosis	Corrective Actions
• Pressure is extreamly high on both low and high pressure sides • Pressure is extreamly low on high pressure side	Internal leak from compressor	• Compression failure • Leakage from damaged valve or broken sliding parts	Repair or replace compressor

3. w/ Hot gas heater:
INSPECT REFRIGERANT VOLUME

(a) This is a method to specify the trouble area by using a manifold gauge set. Read the the manifold gauge pressure when these conditions are established.
Test conditions:
- Engine is at idle.
- Blower speed control switch is at ”HI”.
- Temperature control dial is at ”MAX. COOL”.
- Engine has been warmed up.
- All doors are fully open.
- Hood is fully open.
- Air inlet mode selector damper is at RECIRE.
- Air outlet damper is at FACE.
- Outside temperature is 15 – 35 ˚C (59– 95 ˚F).

(b) Check refrigerant volume according to the graph below.

Range	Amount of refrigerant	Corrective actions
Except range below	Insufficient or excessive	Supply refrigerant until low pressure become within the standard ±50 g (±1.76 oz.), or remove refrigerant and then supply proper amount of refrigerant
Standard ±50 g (±1.76 oz.)	Proper	–

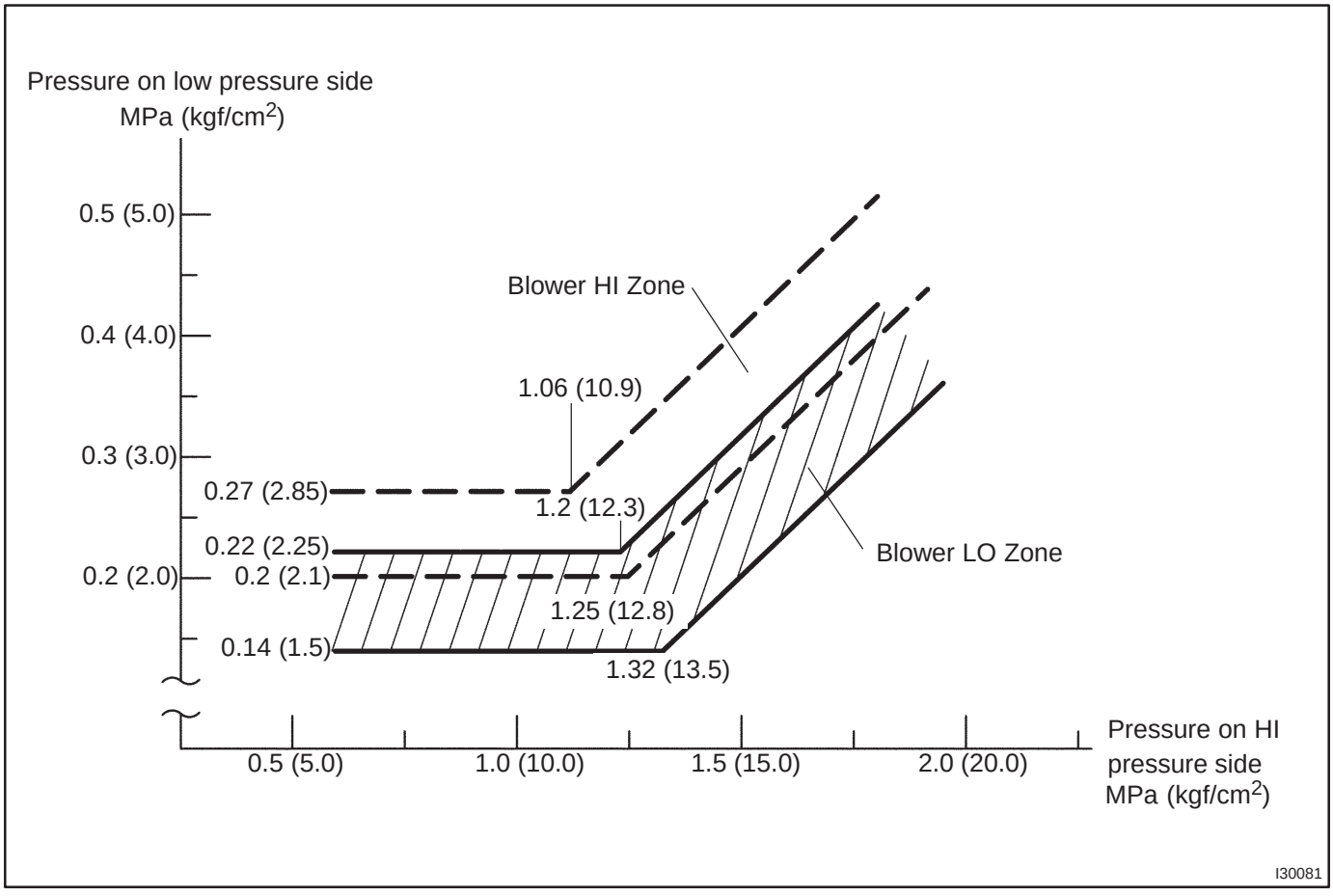


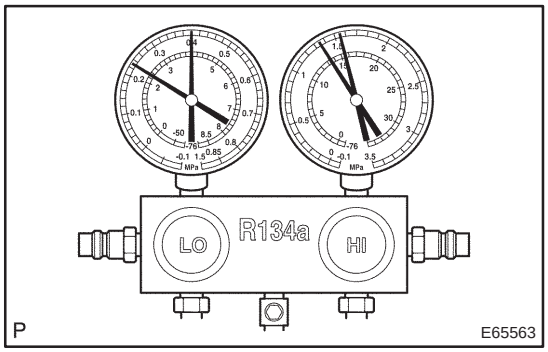
4. w/ Hot gas heater:
INSPECT REFRIGERANT PRESSURE WITH MANIFOLD GAUGE SET

(a) This is a method to specify the trouble area by using a manifold gauge set. Read the manifold gauge pressure when the following conditions are fullfilled.
Test conditions:

- Engine has been warmed up.
- All doors are fully open.
- A/C switch is ON.
- Engine is at idle.
- Air inlet mode selector damper is at RECIRE.
- Temperature control dial is at ”MAX. COOL”.
- Blower speed control switch is at ”HI”.
- Air outlet damper is at FACE.
- Temperature at the air inlet is 30 – 35 ˚C (86 – 95 ˚F).
- Sunshine is shut off.

Gauge readings (Reference)

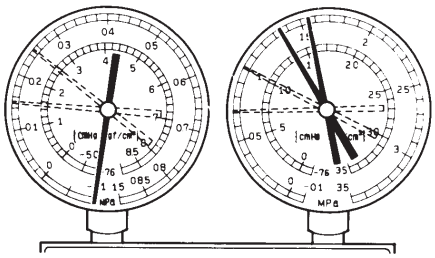




(1) When the refrigerant volume is proper:
Gauge reading:
Low pressure side:
0.28 – 0.4 MPa (2.8 – 4.0 kgf/cm^2)
High pressure side:
1.3 – 1.6 MPa (13 – 16 kgf/cm$^{2)}$

(2) When there is moisture in the refrigeration system:

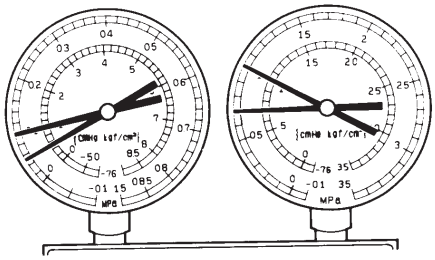
Condition : Air conditioning system periodically repeats proper and improper function.



Symptom	Probable cause	Diagnosis	Remedy
During operation, pressure on low pressure side cycles between normal and vacuum	Moisture in refrigeration system freezes at refrigerant filter orifice, causing a temporary stop of cycle. However, when it melts, normal state is restored	• Drier is overly saturated • Moisture in refrigeration system freezes at refrigerant filter orifice and blocks circulation of refrigerant	(1) Replace cooler drier (2) Remove moisture in cycle by repeatedly vacuuming (3) Supply proper amount of new refrigerant

(3) When cooling is insufficient:

Condition : Air conditioning system does not function effectively.

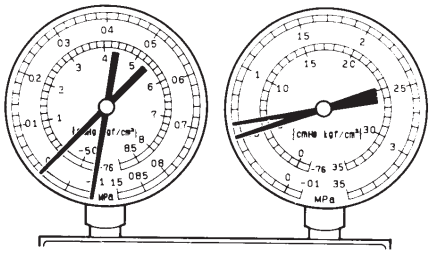


I22118

Symptom	Probable cause	Diagnosis	Corrective Actions
• Pressure is low on both low and high pressure sides • Cooling performance is insufficient	Gas leakage in refrigeration system	• Insufficient refrigerant • Refrigerant leakage	(1) Check for gas leakage and repair if necessary (2) Supply proper amount of new refrigerant (3) If indicated pressure value is close to 0 when connected to the gauge, vacuum after inspecting and repairing the location of leakage.

(4) When the circulation of the refrigerant is poor:

Condition : Air conditioning system does not function effectively.

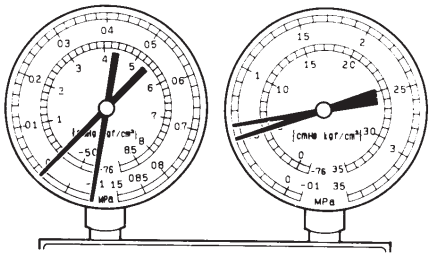


I22119

Symptom	Probable cause	Diagnosis	Corrective Action
• Pressure is low on both low and high pressure sides • Frost exists on piping from condenser to unit	Refrigerant flow is obstructed by dirt in condenser	Condenser is clogged	Replace condenser

(5) When the refrigerant does not circulate:

Condition : Air conditioning system does not function. (Sometimes it may function)

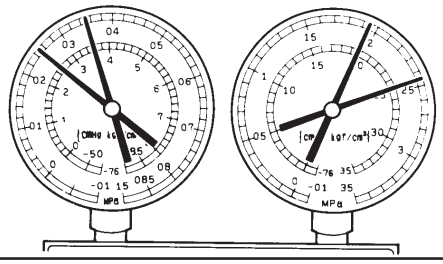


I22120

Symptom	Probable cause	Diagnosis	Corrective Actions
• Vacuum is indicated on low pressure side, and extreamly low pressure is indicated on high pressure side • Frost or dew is seen on piping on both sides of condenser or refrigerant filter	• Refrigerant flow is obstructed by moisture or dirt in refrigeration system • Refrigerant filter is clogged	Refrigerant does not circulate	(1) Check the refrigerant filter (2) Clean out dirt on refrigerant filter by blowing air (3) Replace condenser (4) Vacuum air and supply proper amount of new refrigerant (5) If refrigerant filter is damaged, replace it

(6) When the refrigerant is overcharged or cooling of condenser is insufficient:

Condition : Air conditioning system does not function effectively.

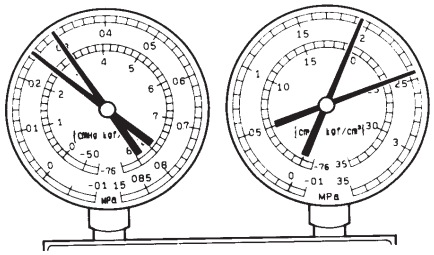


I22121

Symptom	Probable cause	Diagnosis	Remedy
• Pressure is extreamly high on both low and high pressure sides	• Excessive refrigerant • Cooling performance of condenser is insufficient	• Excessive refrigerant • Cooling performance of condenser is insufficient • Magnet valve assy is defective	(1) Clean condenser fins (2) Check condenser fan motor operation (3) If (1) and (2) are in normal state, vacuum and supply proper amount of refrigerant (4) If pressure is still high even after supplying refrigerant, replace the magnet valve assy

(7) When there is air in the refrigeration system:

Condition : Air conditioning system does not function.



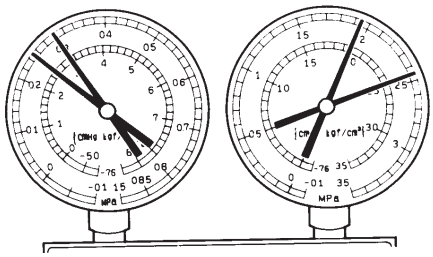
NOTE : These gauge indications occur when the refrigeration system opens and the refrigerant is charged without vacuuming.

I22122

Symptom	Probable cause	Diagnosis	Corrective Actions
Pressure is extreamly high on both low and the high pressure sides	Air in refrigeration system	• There is air in refrigeration system • Vacuuming is insufficient	(1) Check if compressor oil is dirty or insufficient (2) Vacuum air and supply new refrigerant

(8) When the refrigerant filter is defective:

Condition : Air conditioning system does not function effectively.

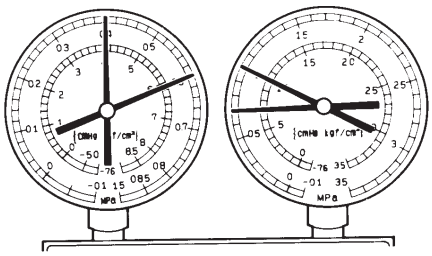


I22123

Symptom	Probable cause	Diagnosis	Corrective Actions
• Pressure is extreamly high on low pressure side • Pressure is extreamly high on high pressure side	Trouble with refrigerant filter	Excessive refrigerant	Replace refrigerant filter

(9) When the compressor is defective:

Condition : Air conditioning system does not function.

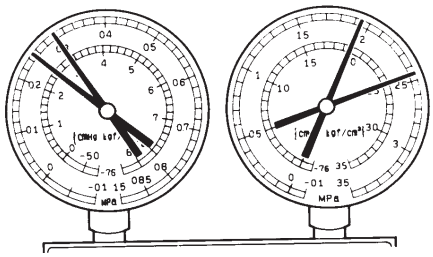


I22124

Symptom	Probable cause	Diagnosis	Corrective Actions
• Pressure is extreamly high on low pressure side • Pressure is extreamly low on high pressure side	Internal leak from compressor	• Compression failure • Leakage from damaged valve or broken sliding parts	Replace or replace compressor

(10) When the magnet valve assy is defective:

Condition : Air conditioning system does not function effectively.



I22123

Symptom	Probable cause	Diagnosis	Corrective Actions
• Pressure is extreamly high on low pressure side	Internal leak from magnet valve assy	Magnet valve assy failure	Replace magnet valve assy

550Z8–01

REPLACEMENT

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

(a) Turn the A/C switch ON.

(b) Operate the cooler compressor at the engine rpm of approx. 1,000 for 5 to 6 minuites to circulate the refrigerant and collect the compressor oil remaining in each component into the cooler compressor as much as possible.

(c) Shut off the engine.

(d) Let the refrigerant gas out.

SST 07110–58060 (07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)

2. CHARGE REFRIGERANT

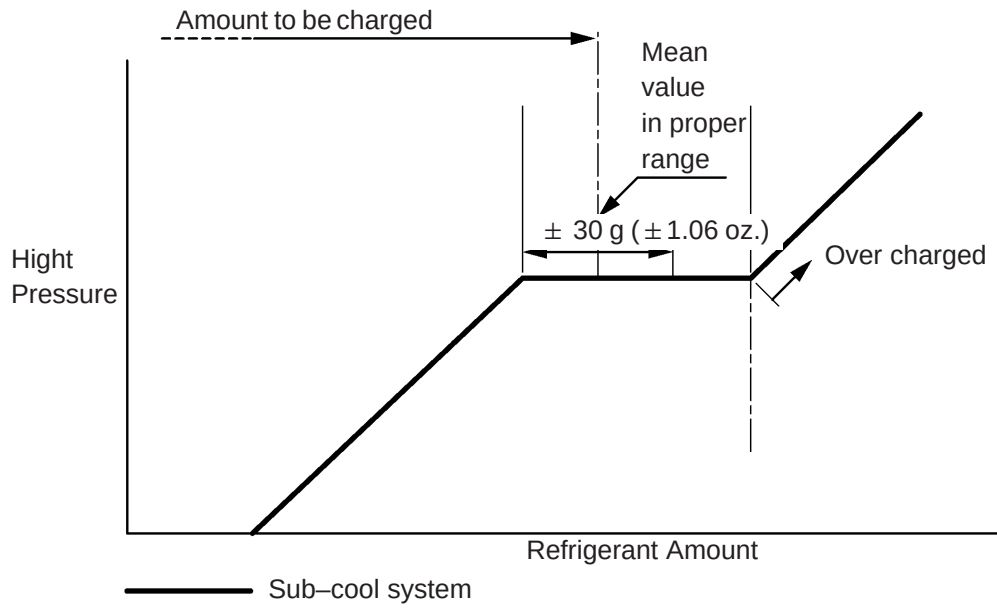
(a) Using a vacuum pump, perform vacuuming.

(b) Charge refrigerant, HFC–134a (R134a).

Standard: 440 ± 30 g (15.51 ± 1.06 oz.)

SST 07110–58060 (07117–58060, 07117–58070, 07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)

RHD AZ Engine series:



P I30082 I37091

3. WARM UP ENGINE

4. INSPECT LEAKAGE OF REFRIGERANT

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

NOTICE:

1CD–FTV Hot gas heater:

Since the system uses a refrigerant filter (fixed valve), sound of the refrigerant circulation (hissing sound) can be heard for approx. 30 seconds after turning the A/C off. This is merely a sound of balancing the low pressure with the high pressure, not a sound of abnormality.

REFRIGERANT LINE

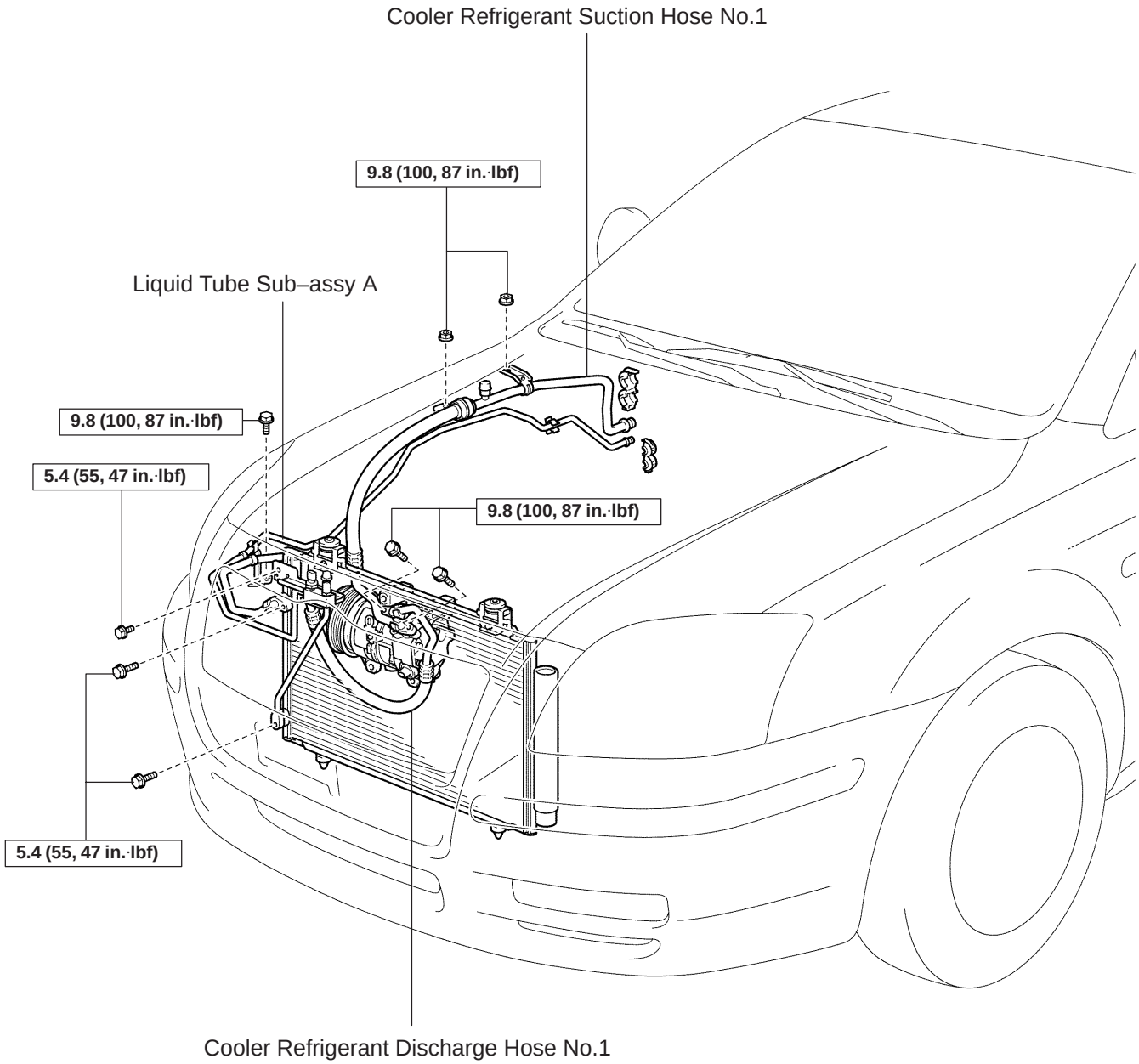
COMPONENTS

550YO–01

LHD:

3ZZ–FE:

1ZZ–FE:



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

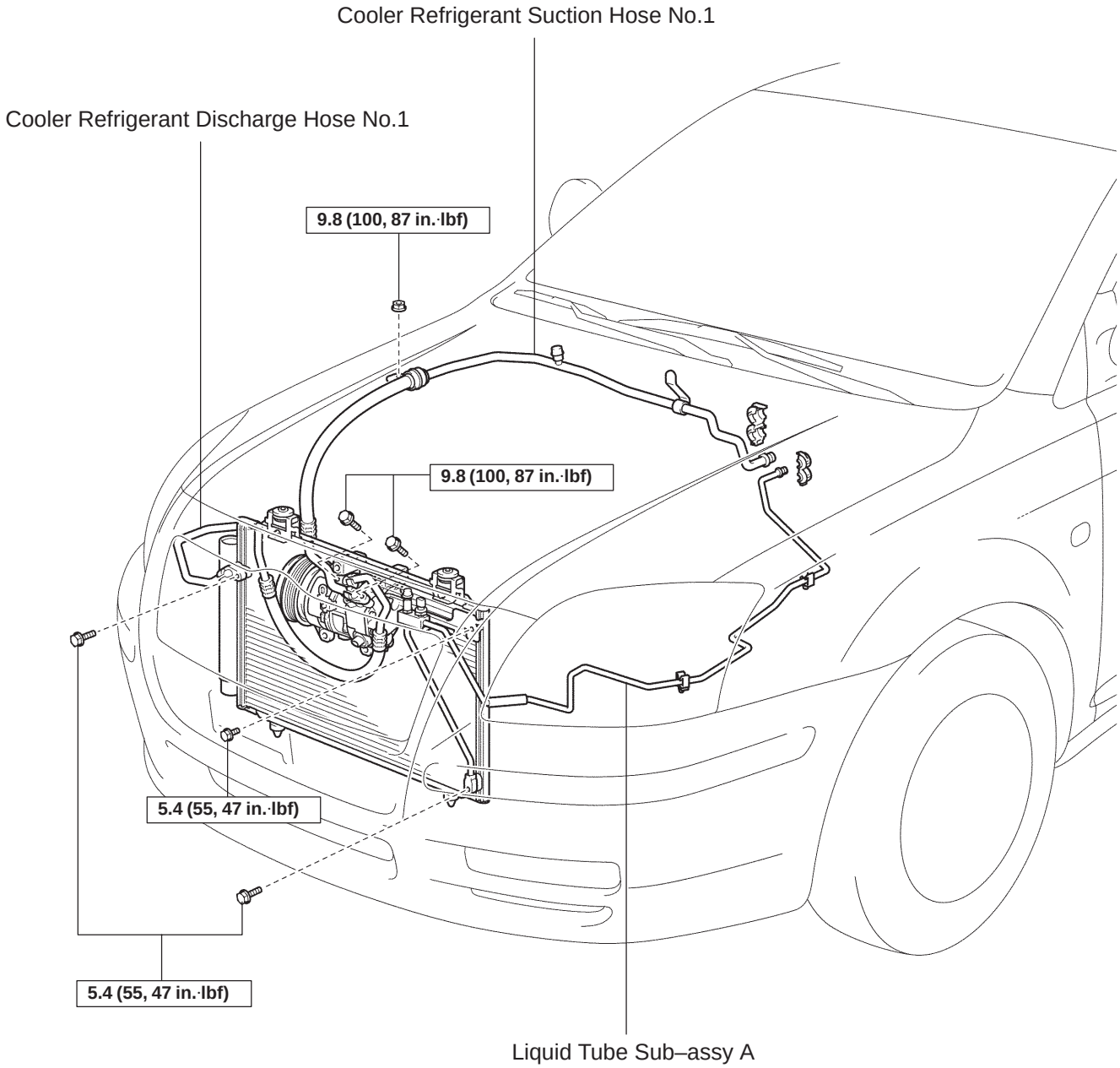
P

I34975

RHD:

3ZZ–FE:

1ZZ–FE:



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

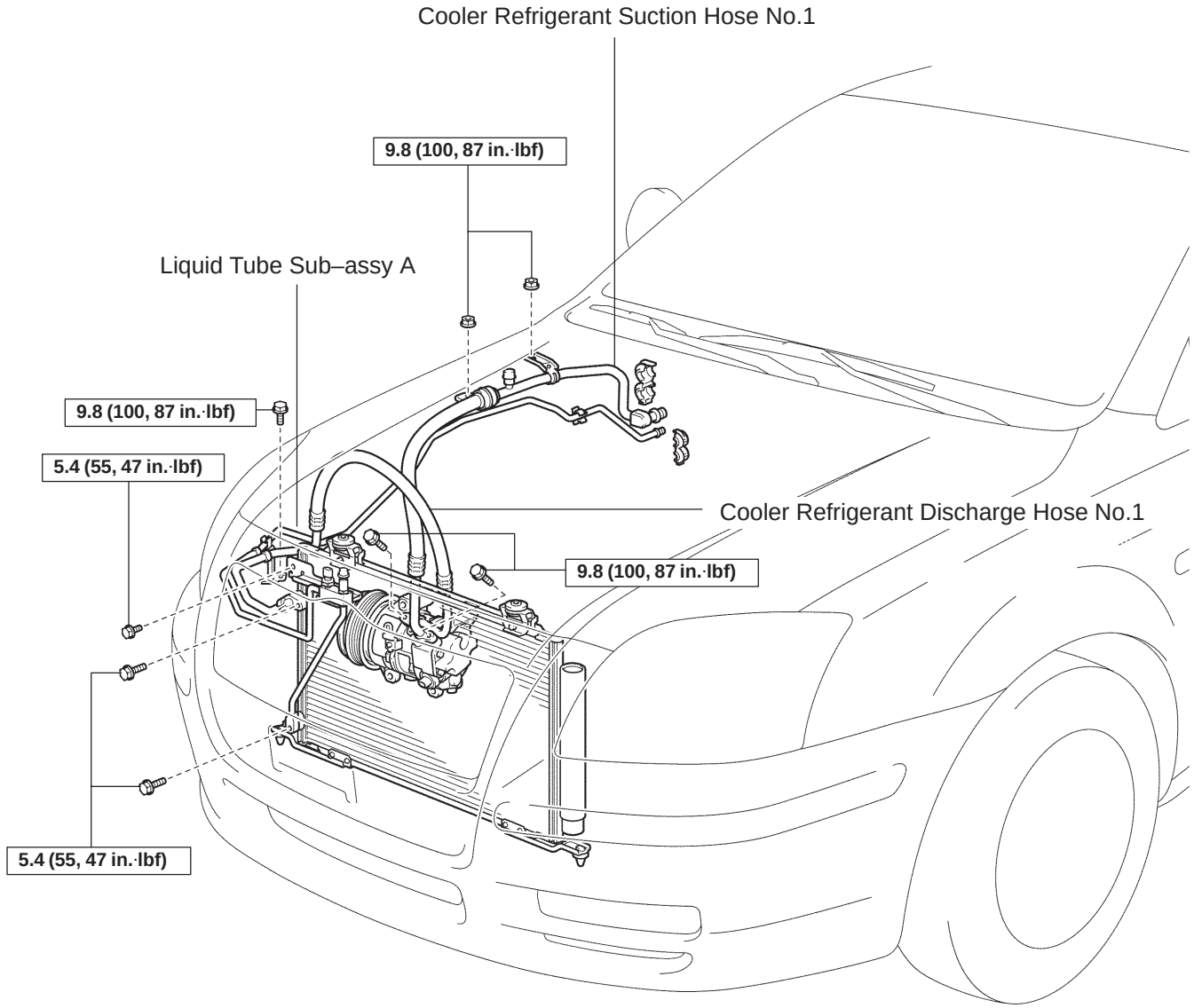
P

I34976

LHD:

1AZ–FSE:

1AZ–FE:



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

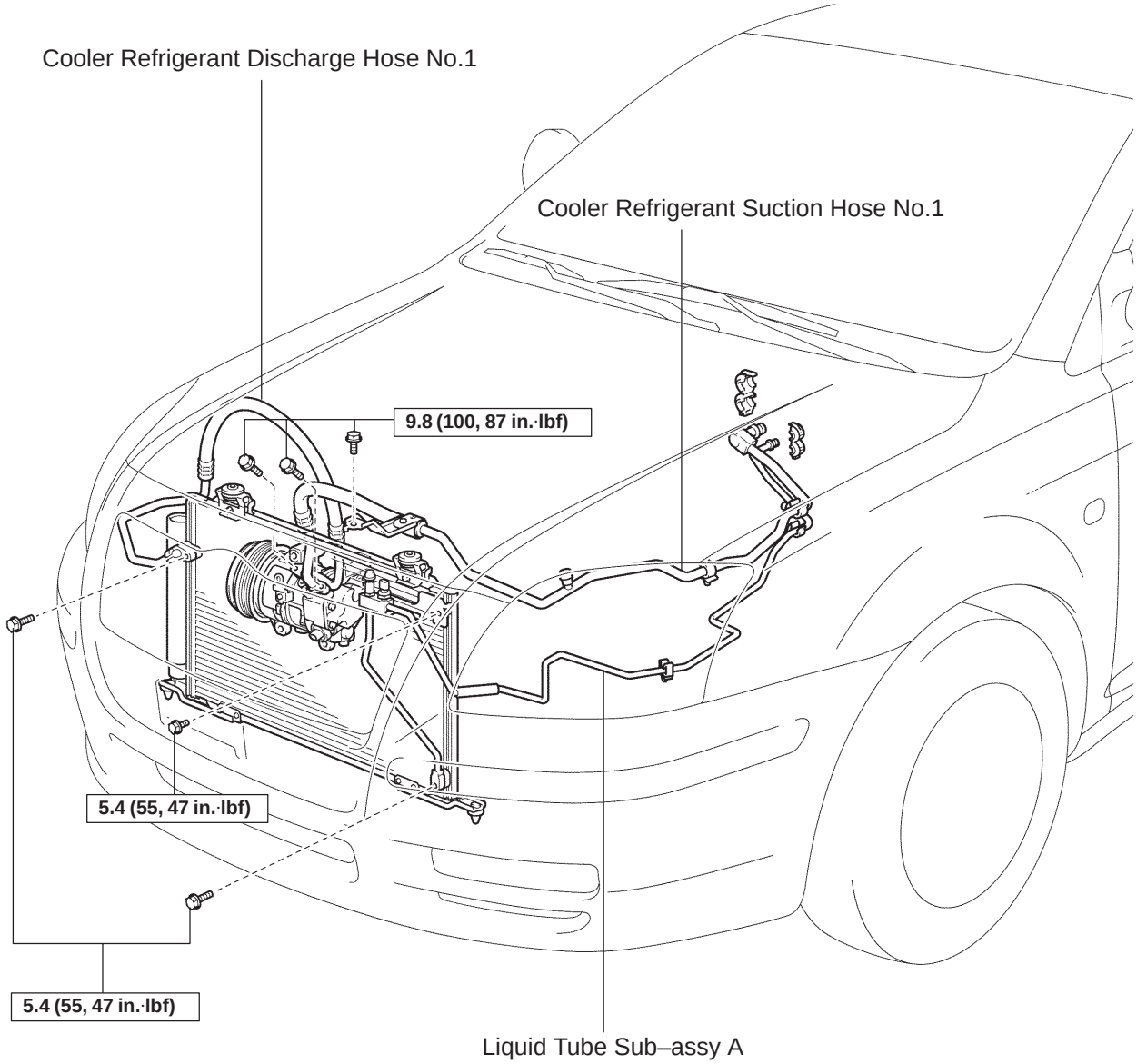
P

I34977

RHD:

1AZ–FSE:

1AZ–FE:



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

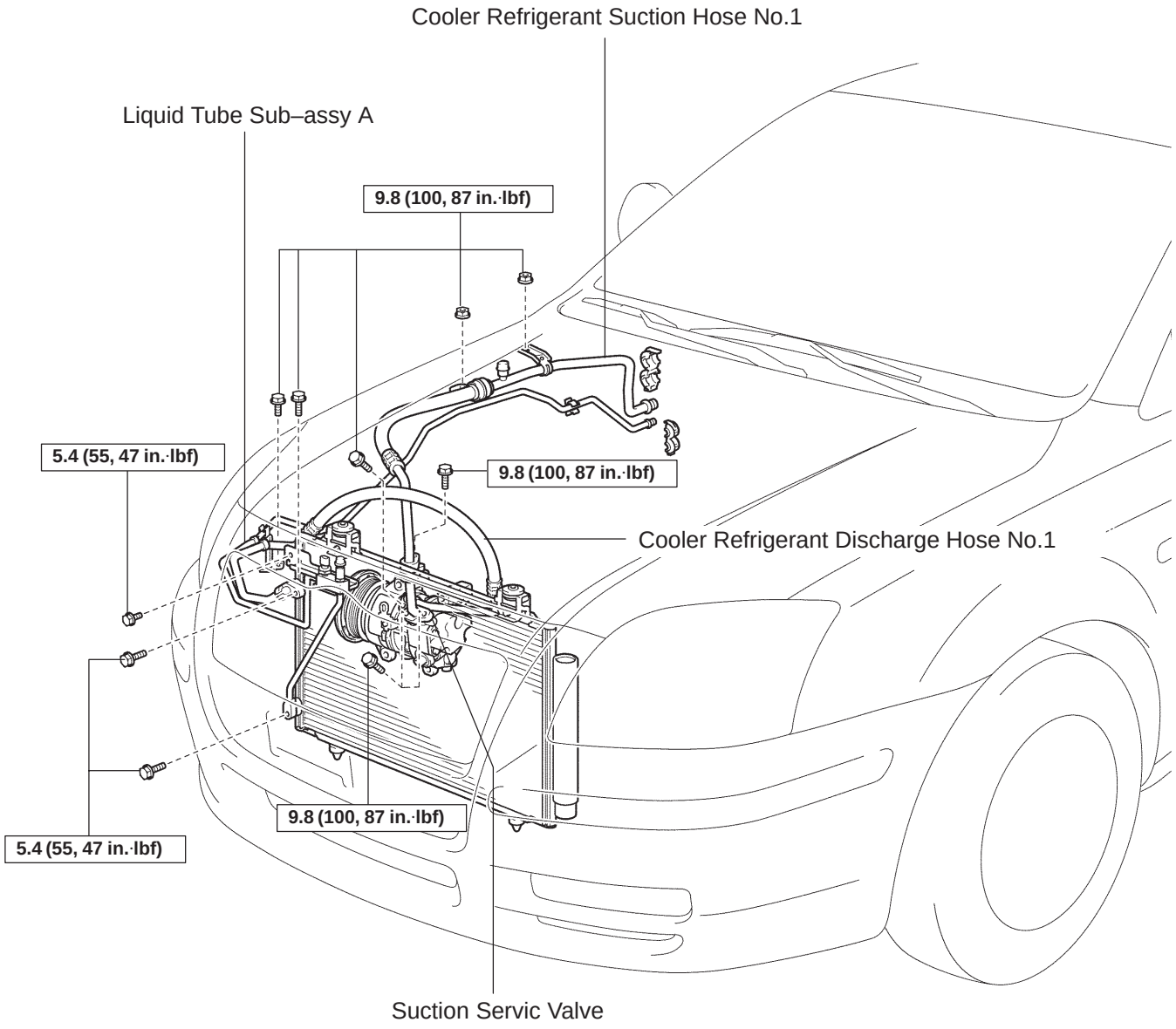
P

I34978

LHD:

1CD–FTV:

w/o Hot Gas Heater:



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

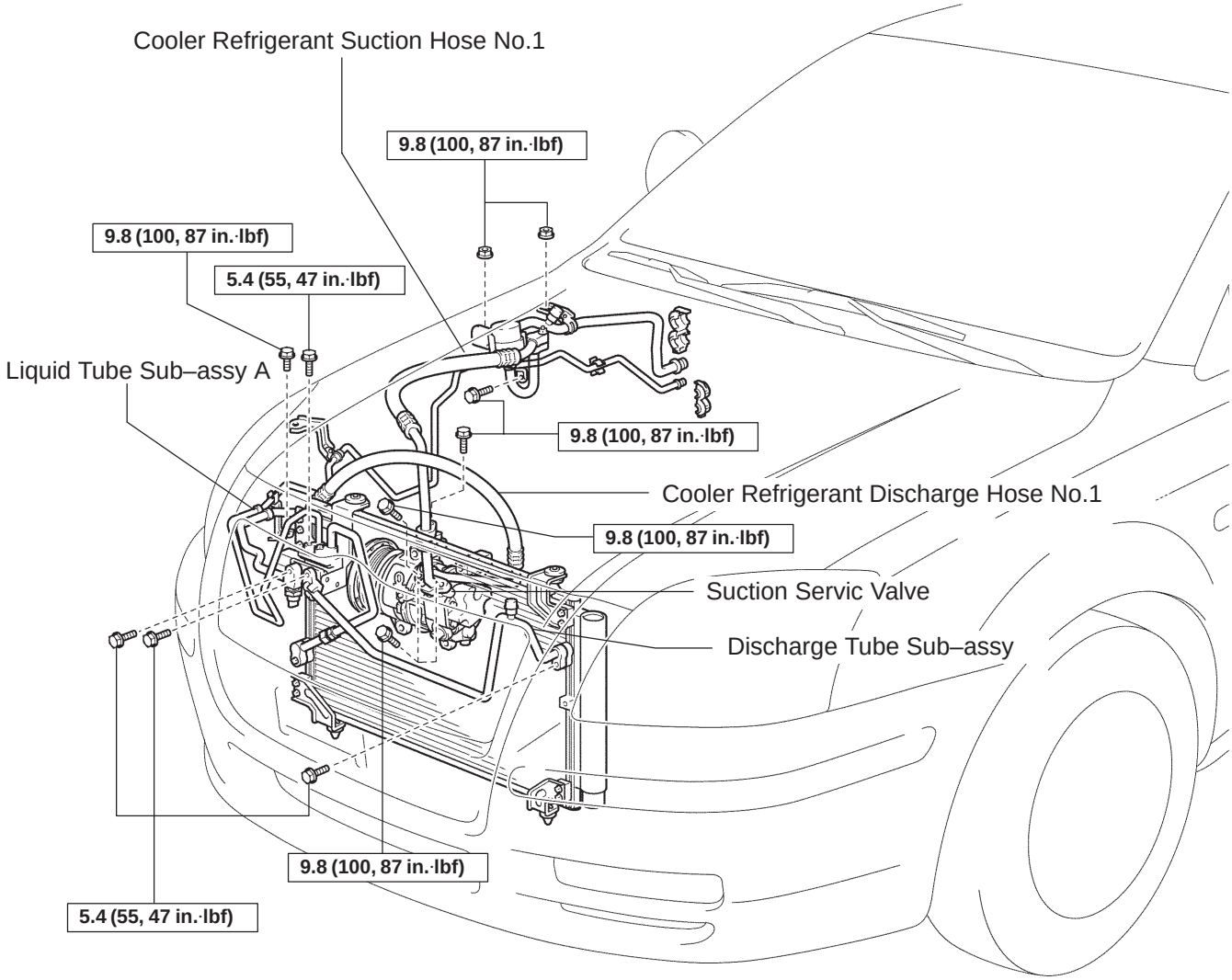
P

I34979

LHD:

1CD–FTV:

w/ Hot Gas Heater:



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

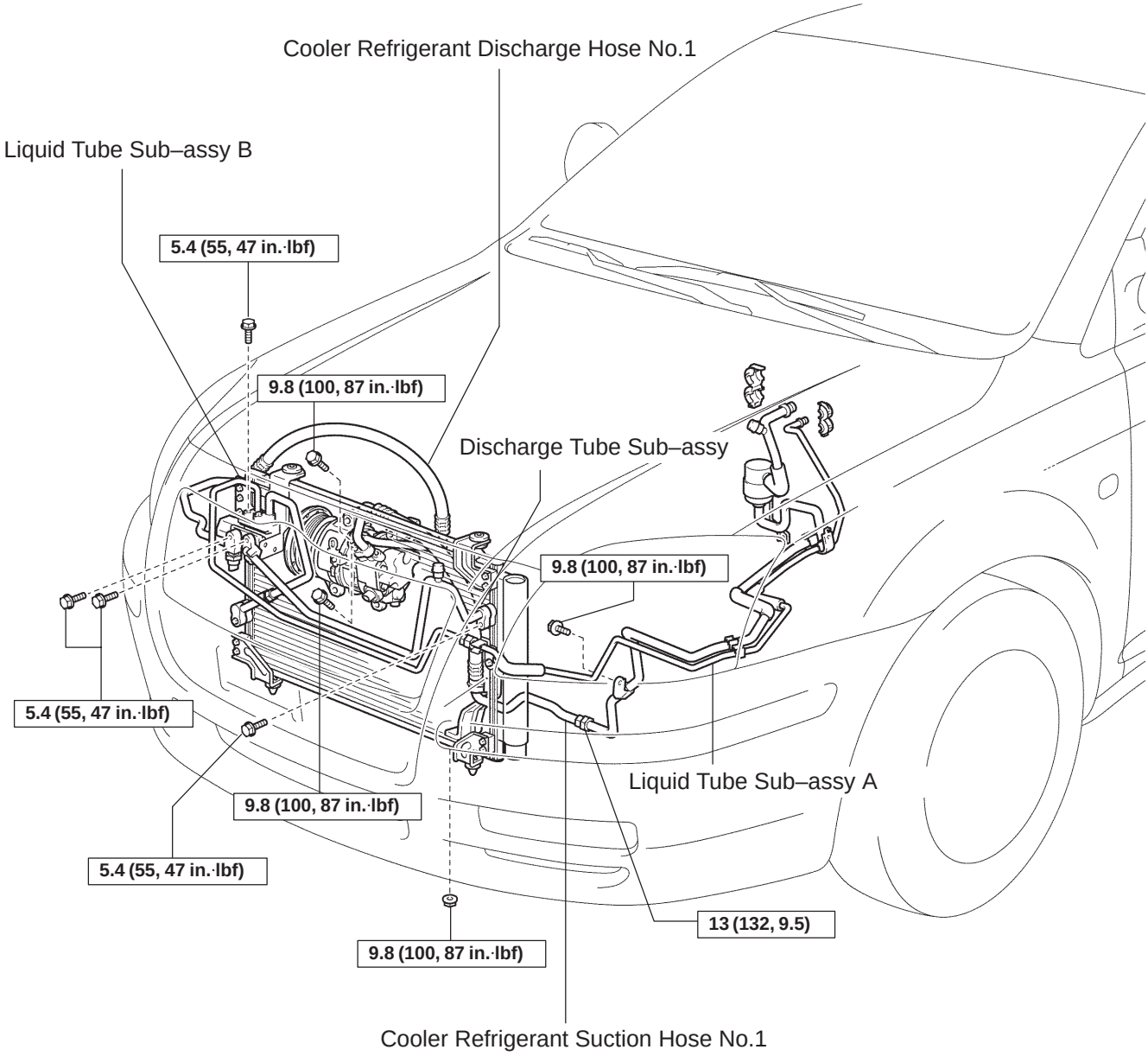
P

I34980

RHD:

1CD–FTV:

w/ Hot Gas Heater:



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

P

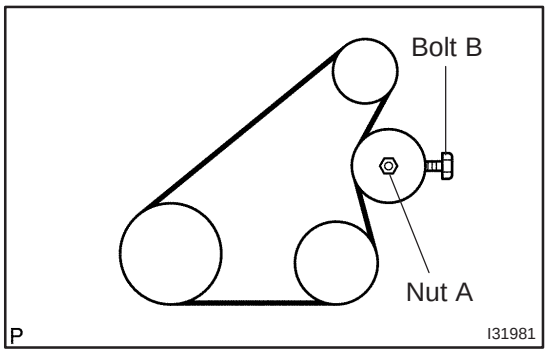
I34981

V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1

550YP–01

REPLACEMENT

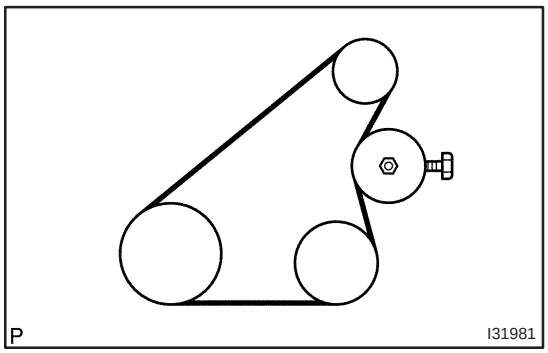
1. **REMOVE RADIATOR SUPPORT OPENING COVER**
2. **REMOVE ENGINE ROOM COVER SIDE**
3. **REMOVE ENGINE UNDER COVER RH**



4. REMOVE V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1

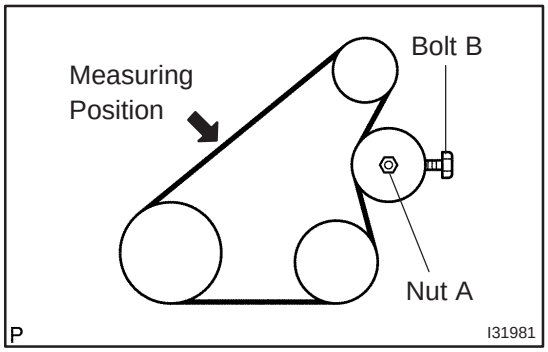
(a) Loosen the nut A.

(b) Loosen the bolt B and remove the V (cooler compressor to crankshaft pulley) belt No. 1.



5. INSTALL V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1

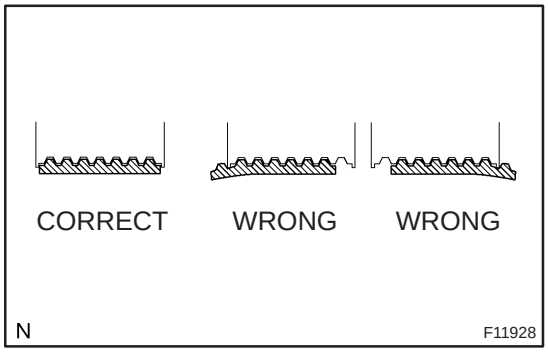
(a) Temporarily install a new V (cooler compressor to crankshaft pulley) belt No. 1 as shown in the illustration.



6. ADJUST V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1

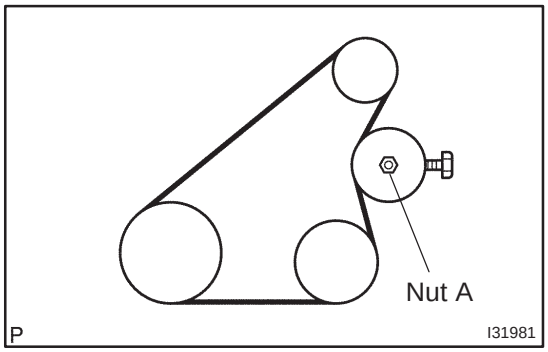
(a) Tighten the nut A.
Torque: 2.5 N·m (25 kgf·cm, 22 ft·lbf)

(b) Apply drive belt tension by turning bolt B.
Belt deflection:
New belt: 11 – 13 mm (0.43 – 0.51 in.)
Used belt: 13.5 – 16.5 mm (0.53 – 0.64 in.)



HINT:

- The new belt refers to a belt which is used for less than 5 minutes on the running engine.
- The used belt refers to a belt which is used for 5 minutes, or more on the running engine.
- After installing the drive belt, check that the belt fits properly in the ribbed grooves.
- Check that the drive belt does not slip off the groove at the end of the pulley by hand.



7. FULLY TIGHTEN V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1

(a) Tighten the nut A.

Torque: 39 N·m (390 kgf·cm, 29 ft·lbf)

W/PULLEY COMPRESSOR ASSY (1AZ–FE)

550Z3–01

ON–VEHICLE INSPECTION

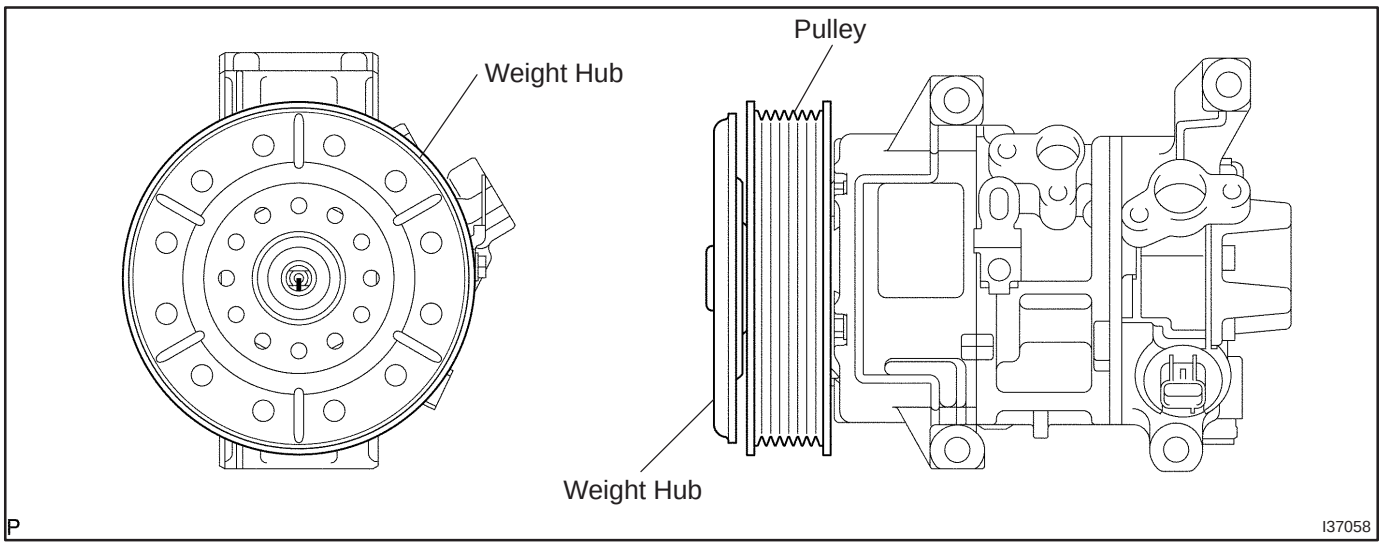
1. INSPECT W/PULLEY COMPRESSOR ASSY

(a) Check the operation.

(1) Start the engine.

(2) Inspect the weight hub.

Standard: The weight hub rotates along with the pulley

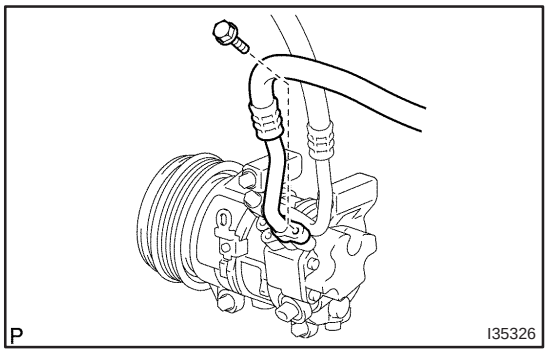


550Z4–01

REPLACEMENT

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM (See page 55–38)

SST 07110–58060 (07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)



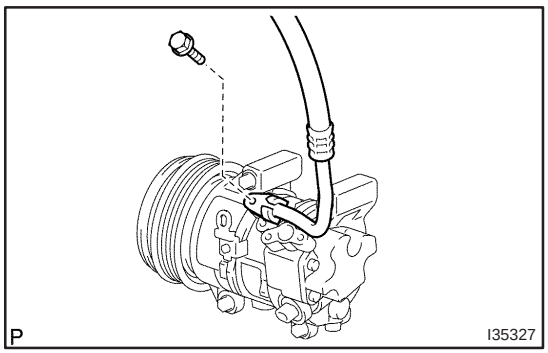
2. DISCONNECT COOLER REFRIGERANT SUCTION HOSE NO.1

(a) Remove the bolt and disconnect the cooler refrigerant suction hose No.1 from the w/pulley compressor assy.

(b) Remove the O–ring from the cooler refrigerant suction hose No.1.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



3. DISCONNECT COOLER REFRIGERANT DISCHARGE HOSE NO.1

(a) Remove the bolt and disconnect the cooler refrigerant discharge hose No.1 from the w/pulley compressor assy.

(b) Remove the O–ring from the cooler refrigerant discharge hose No.1.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.

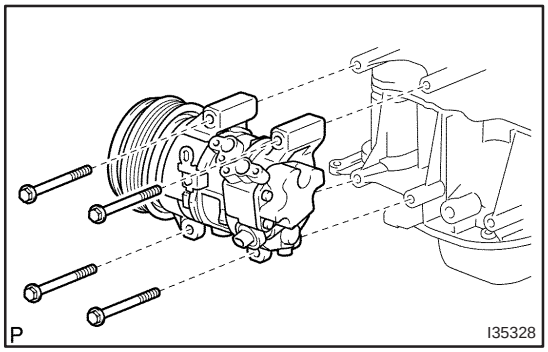
4. REMOVE RADIATOR SUPPORT OPENING COVER (See page 14–105)

5. REMOVE ENGINE ROOM COVER SIDE (See page 14–105)

6. REMOVE ENGINE UNDER COVER RH (See page 14–105)

7. REMOVE FAN AND GENERATOR V BELT (See page 14–105)

SST 09249–63010



8. REMOVE W/PULLEY COMPRESSOR ASSY

(a) Disconnect the connector.

(b) Remove the 4 bolts and the w/pulley compressor assy.

9. INSPECT COMPRESSOR OIL

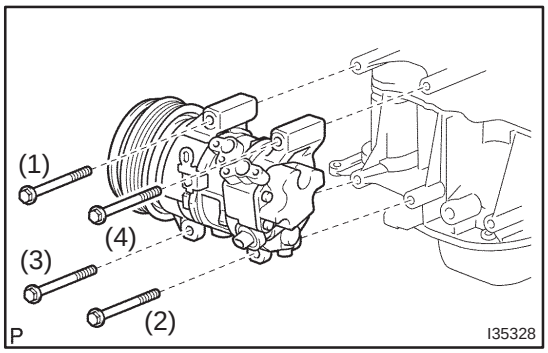
(a) When replacing the w/pulley compressor assy with a new one, after gradually removing the refrigerant gas from the service valve, drain the following amount of oil from the new w/pulley compressor assy before installation.

Standard:

(Oil capacity inside new w/pulley compressor assy: 90 + 15 cc (3.0 + 0.5 fl. oz.)) – (Remaining oil amount in the removed w/pulley compressor assy) = (Oil amount to be removed when replacing)

NOTICE:

- **When checking the compressor oil level, observe the precautions on the cooler removal/installation.**
- **Since compressor oil remains in the pipes of the vehicle, if a new w/pulley compressor assy is installed without removing some oil inside, the oil amount becomes excessive, preventing heat exchange in the refrigerant cycle and causing refrigerant failure.**
- **If the remaining oil in the removed w/pulley compressor assy is too small in volume, check for oil leakage.**
- **Be sure to use ND–OIL 8 for compressor oil.**



10. INSTALL W/PULLEY COMPRESSOR ASSY

(a) Install the w/pulley compressor assy with the 4 bolts.
Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)

NOTICE:

Tighten the bolts in the order shown in the illustration to install the w/pulley compressor assy.

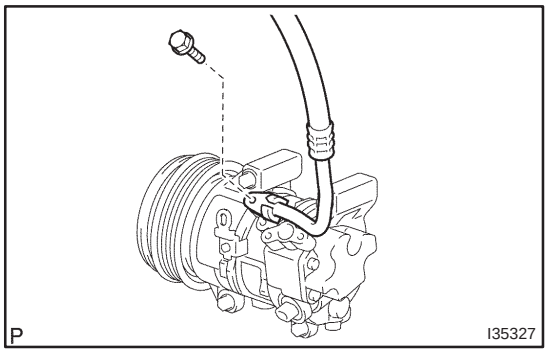
(b) Connect the connector.

11. INSTALL FAN AND GENERATOR V BELT (See page 14–105)

SST 09249–63010

12. INSTALL COOLER REFRIGERANT DISCHARGE HOSE NO.1

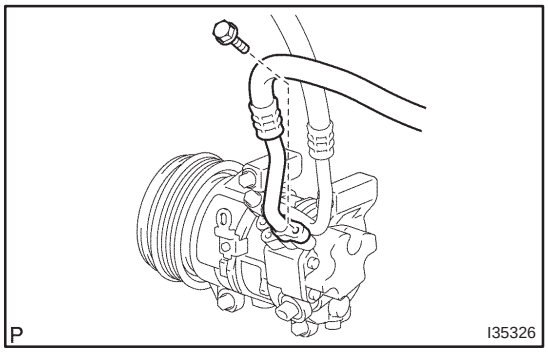
(a) Remove the attached vinyl tape from the hose.
(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the cooler refrigerant discharge hose No.1.



(d) Install the cooler refrigerant discharge hose No.1 on the w/pulley compressor assy with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

13. INSTALL COOLER REFRIGERANT SUCTION HOSE NO.1

(a) Remove the attached vinyl tape from the hose.
(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the cooler refrigerant suction hose No.1.



(d) Install the cooler refrigerant suction hose No.1 on the w/ pulley compressor assy with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

14. CHARGE REFRIGERANT (See page 55–38)
SST 07110–58060 (07117–58060, 07117–58070, 07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)

15. WARM UP ENGINE (See page 55–38)

16. INSPECT LEAKAGE OF REFRIGERANT (See page 55–38)

W/PULLEY COMPRESSOR ASSY (1AZ–FSE)

550Z1–01

ON–VEHICLE INSPECTION

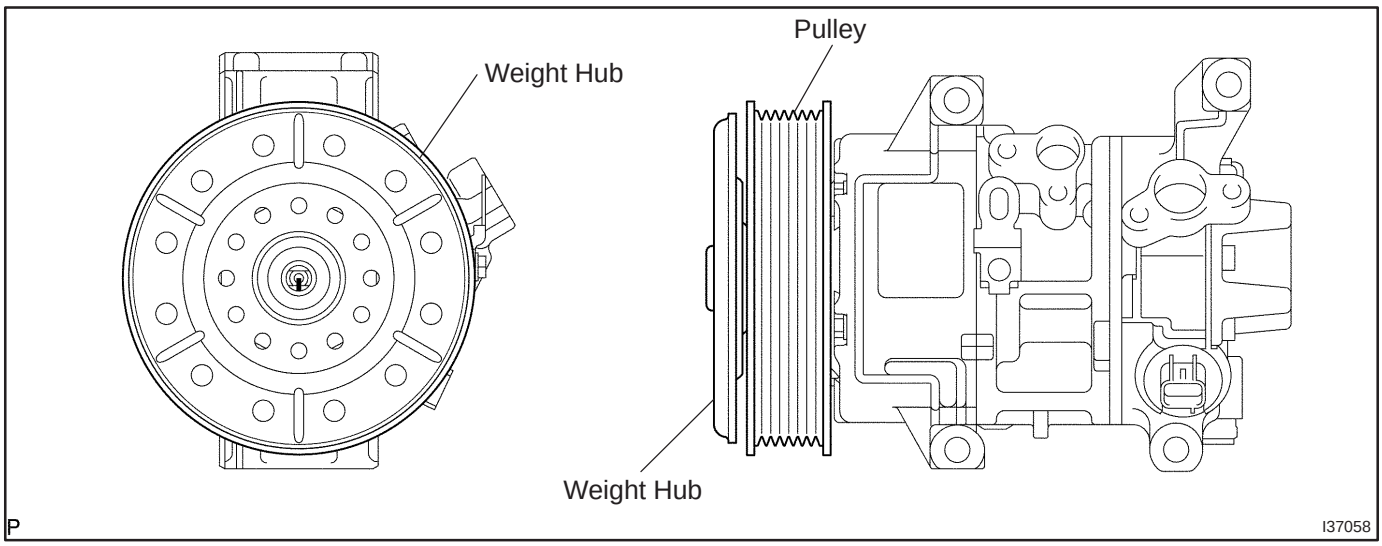
1. INSPECT W/PULLEY COMPRESSOR ASSY

(a) Check the operation.

(1) Start the engine.

(2) Inspect the weight hub.

Standard: The weight hub rotates along with the pulley

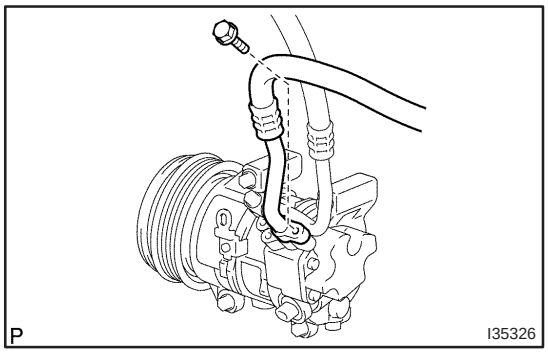


550Z2–01

REPLACEMENT

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM (See page 55–38)

SST 07110–58060 (07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)



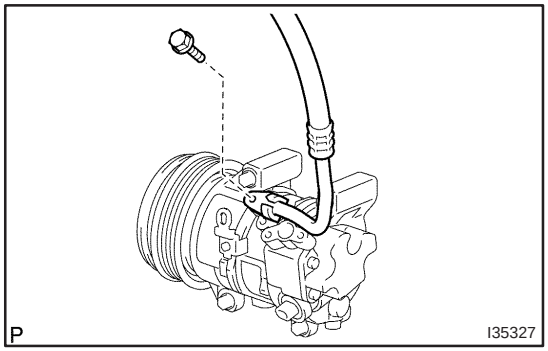
2. DISCONNECT COOLER REFRIGERANT SUCTION HOSE NO.1

(a) Remove the bolt and disconnect the cooler refrigerant suction hose No.1 from the w/pulley compressor assy.

(b) Remove the O–ring from the cooler refrigerant suction hose No.1.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



3. DISCONNECT COOLER REFRIGERANT DISCHARGE HOSE NO.1

(a) Remove the bolt and disconnect the cooler refrigerant discharge hose No.1 from the w/pulley compressor assy.

(b) Remove the O–ring from the cooler refrigerant discharge hose No.1.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.

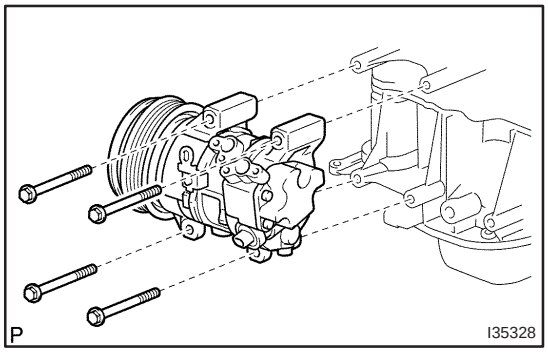
4. REMOVE RADIATOR SUPPORT OPENING COVER (See page 14–185)

5. REMOVE ENGINE ROOM COVER SIDE (See page 14–185)

6. REMOVE ENGINE UNDER COVER RH (See page 14–185)

7. REMOVE FAN AND GENERATOR V BELT (See page 14–185)

SST 09249–63010



8. REMOVE W/PULLEY COMPRESSOR ASSY

(a) Disconnect the connector.

(b) Remove the 4 bolts and the w/pulley compressor assy.

9. INSPECT COMPRESSOR OIL

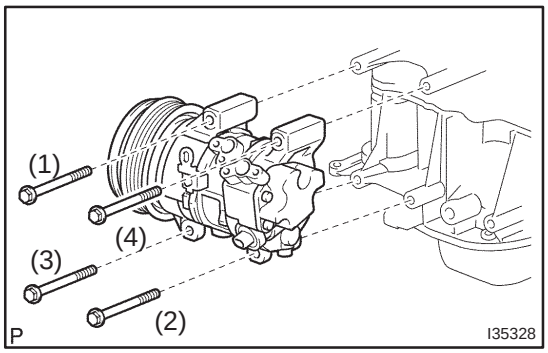
(a) When replacing the w/pulley compressor assy with a new one, after gradually removing the refrigerant gas from the service valve, drain the following amount of oil from the new w/pulley compressor assy before installation.

Standard:

(Oil capacity inside new w/pulley compressor assy: 90 + 15 cc (3.0 + 0.5 fl. oz.)) – (Remaining oil amount in the removed w/pulley compressor assy) = (Oil amount to be removed when replacing)

NOTICE:

- **When checking the compressor oil level, observe the precautions on the cooler removal/installation.**
- **Since compressor oil remains in the pipes of the vehicle, if a new w/pulley compressor assy is installed without removing some oil inside, the oil amount becomes excessive, preventing heat exchange in the refrigerant cycle and causing refrigerant failure.**
- **If the remaining oil in the removed w/pulley compressor assy is too small in volume, check for oil leakage.**
- **Be sure to use ND–OIL 8 for compressor oil.**



10. INSTALL W/PULLEY COMPRESSOR ASSY

(a) Install the w/pulley compressor assy with the 4 bolts.
Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)

NOTICE:

Tighten the bolts in the order shown in the illustration to install the w/pulley compressor assy.

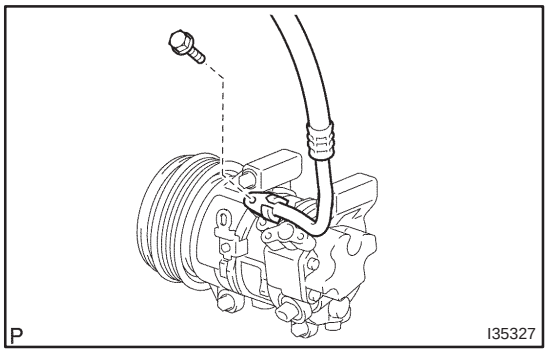
(b) Connect the connector.

11. INSTALL FAN AND GENERATOR V BELT (See page 14–185)

SST 09249–63010

12. INSTALL COOLER REFRIGERANT DISCHARGE HOSE NO.1

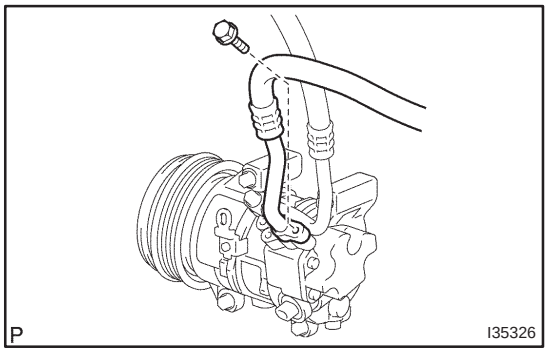
(a) Remove the attached vinyl tape from the hose.
(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the cooler refrigerant discharge hose No.1.



(d) Install the cooler refrigerant discharge hose No.1 on the w/pulley compressor assy with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

13. INSTALL COOLER REFRIGERANT SUCTION HOSE NO.1

(a) Remove the attached vinyl tape from the hose.
(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the cooler refrigerant suction hose No.1.



(d) Install the cooler refrigerant suction hose No.1 on the w/ pulley compressor assy with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

14. CHARGE REFRIGERANT (See page 55–38)
SST 07110–58060 (07117–58060, 07117–58070, 07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)
Specified amount: 440 ± 30 g (15.51 ± 1.06 oz.)

15. WARM UP ENGINE (See page 55–38)

16. INSPECT LEAKAGE OF REFRIGERANT (See page 55–38)

W/PULLEY COMPRESSOR ASSY (1CD–FTV)

550Z5–01

ON–VEHICLE INSPECTION

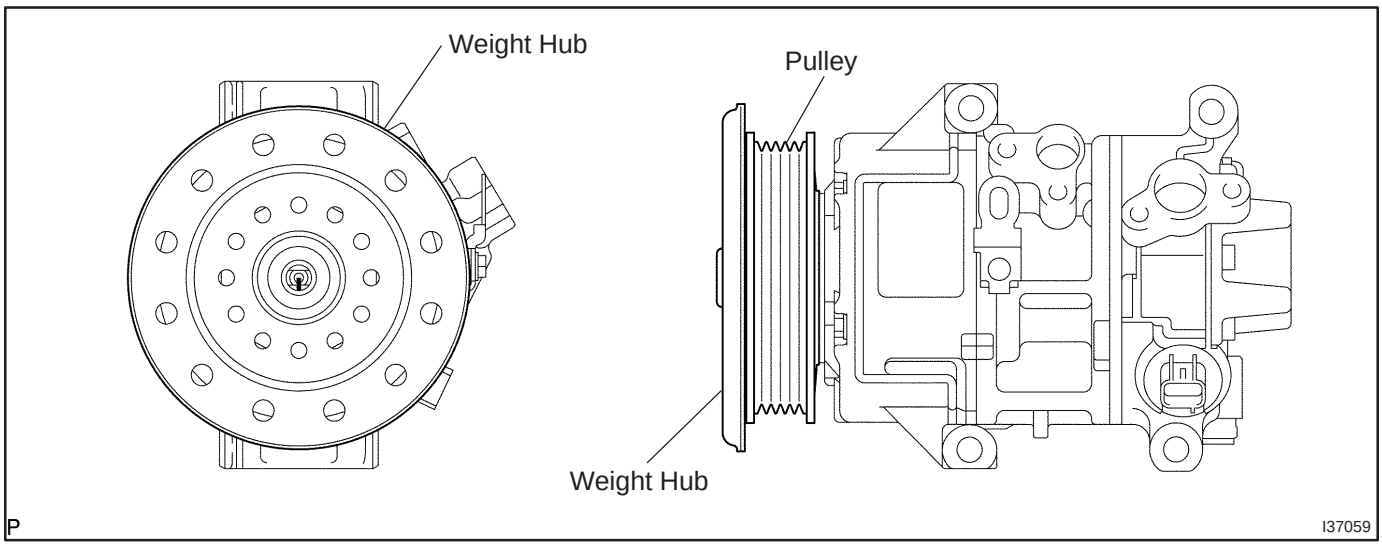
1. INSPECT W/PULLEY COMPRESSOR ASSY

(a) Check the operation.

(1) Start the engine.

(2) Inspect the weight hub.

Standard: The weight hub rotates along with the pulley

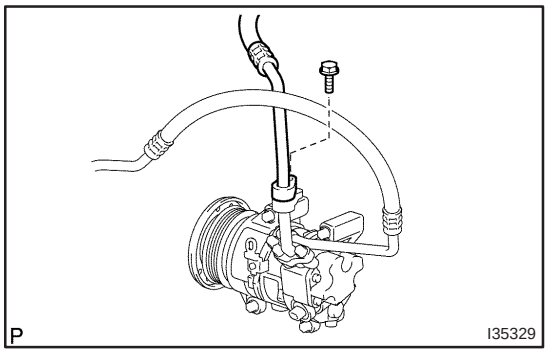


550Z6–01

REPLACEMENT

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM (See page 55–38)

SST 07110–58060 (07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)



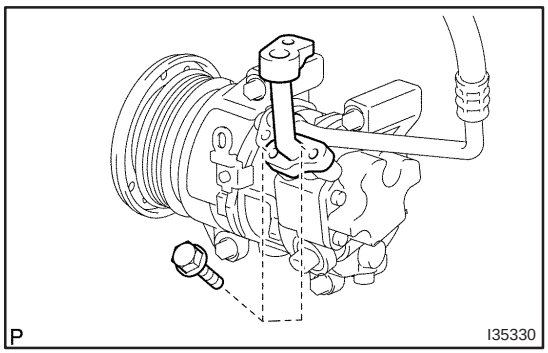
2. DISCONNECT COOLER REFRIGERANT SUCTION HOSE NO.1 (LHD STEERING POSITION TYPE)

(a) Remove the bolt and disconnect the cooler refrigerant suction hose No.1 from the suction servic valve.

(b) Remove the O–ring from the cooler refrigerant suction hose No.1.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



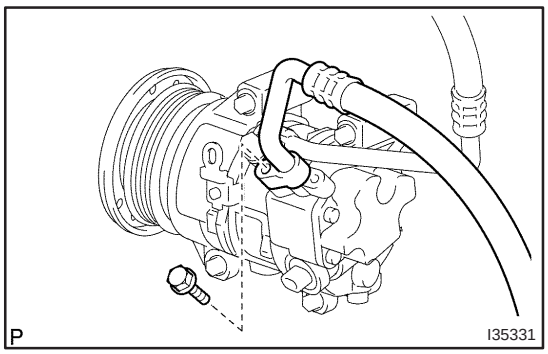
3. REMOVE SUCTION SERVIC VALVE (LHD STEERING POSITION TYPE)

(a) Remove the 2 bolts and disconnect the suction service valve from the w/pulley compressor assy.

(b) Remove the O–ring from the suction service valve.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



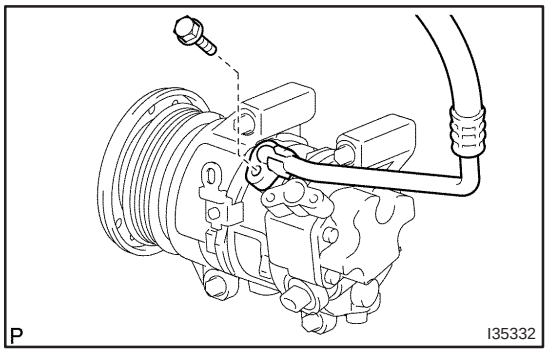
4. DISCONNECT COOLER REFRIGERANT SUCTION HOSE NO.1 (RHD STEERING POSITION TYPE)

(a) Remove the bolt and disconnect the cooler refrigerant suction hose No.1 from the w/pulley compressor assy.

(b) Remove the O–ring from the cooler refrigerant suction hose No.1.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



5. DISCONNECT COOLER REFRIGERANT DISCHARGE HOSE NO.1

(a) Remove the bolt and disconnect the cooler refrigerant discharge hose No.1 from the w/pulley compressor assy.

(b) Remove the O–ring from the cooler refrigerant discharge hose No.1.

NOTICE:

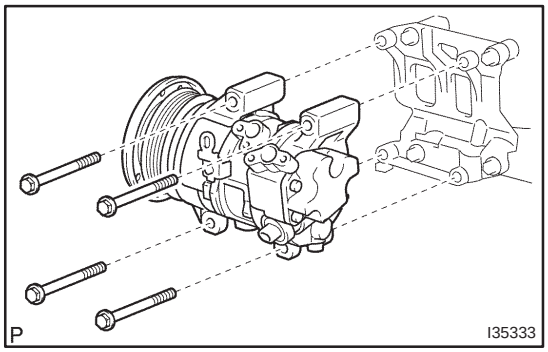
Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.

6. REMOVE RADIATOR SUPPORT OPENING COVER

7. REMOVE ENGINE ROOM COVER SIDE

8. REMOVE ENGINE UNDER COVER RH

9. REMOVE V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1 (See page 55–46)



10. REMOVE W/PULLEY COMPRESSOR ASSY

(a) Disconnect the connector.

(b) Remove the 4 bolts and the w/pulley compressor assy.

11. INSPECT COMPRESSOR OIL

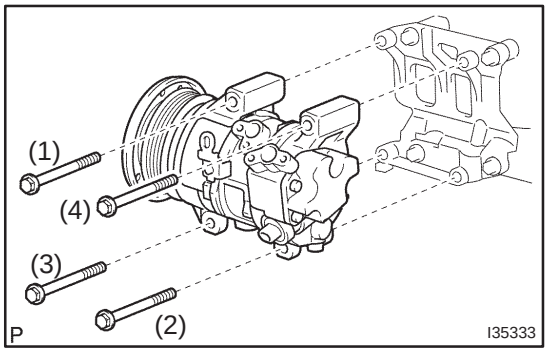
(a) When replacing the w/pulley compressor assy with a new one, after gradually removing the refrigerant gas from the service valve, drain the following amount of oil from the new w/pulley compressor assy before installation.

Standard:

(Oil capacity inside new w/pulley compressor assy: 90 + 15 cc (3.0 + 0.5 fl. oz.)) – (Remaining oil amount in the removed w/pulley compressor assy) = (Oil amount to be removed when replacing)

NOTICE:

- **When checking the compressor oil level, observe the precautions on the cooler removal/installation.**
- **Since compressor oil remains in the pipes of the vehicle, if a new w/pulley compressor assy is installed without removing some oil inside, the oil amount becomes excessive, preventing heat exchange in the refrigerant cycle and causing refrigerant failure.**
- **If the remaining oil in the removed w/pulley compressor assy is too small in volume, check for oil leakage.**
- **Be sure to use ND–OIL 8 for compressor oil.**



12. INSTALL W/PULLEY COMPRESSOR ASSY

(a) Install the w/pulley compressor assy with the 4 bolts.

Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)

NOTICE:

Tighten the bolts in the order shown in the illustration to install the w/pulley compressor assy.

(b) Connect the connector.

13. INSTALL V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1
(See page 55–46)

14. ADJUST V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1
(See page 55–46)

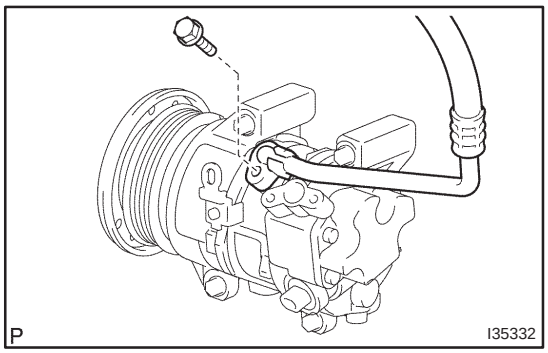
15. FULLY TIGHTEN V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1
(See page 55–46)

16. INSTALL COOLER REFRIGERANT DISCHARGE HOSE NO.1

(a) Remove the attached vinyl tape from the hose.

(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent

(c) Install the O–ring on the cooler refrigerant discharge hose No.1.



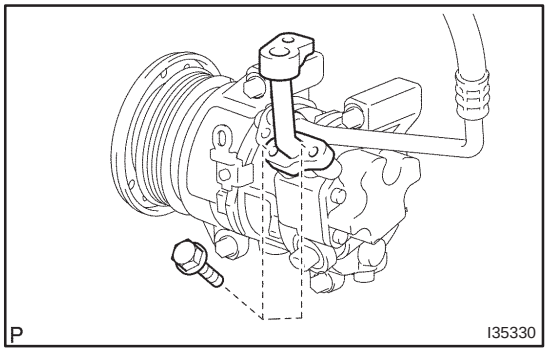
(d) Install the cooler refrigerant discharge hose No.1 on the w/pulley compressor assy with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

17. INSTALL COOLER REFRIGERANT SUCTION HOSE NO.1 (RHD STEERING POSITION TYPE)

(a) Remove the attached vinyl tape from the hose.

(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent

(c) Install the O–ring on the cooler refrigerant suction hose No.1.



(d) Install the cooler refrigerant suction hose No.1 on the w/pulley compressor assy with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

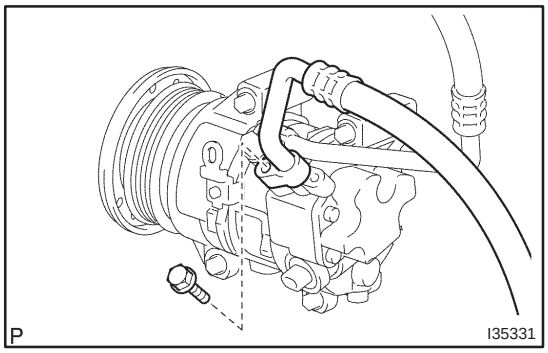
18. INSTALL SUCTION SERVIC VALVE (LHD STEERING POSITION TYPE)

(a) Remove the attached vinyl tape from the hose.

(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent

(c) Install the O–ring on the suction service valve.

(d) Install the suction servic valve on the w/pulley compressor assy with the 2 bolts.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

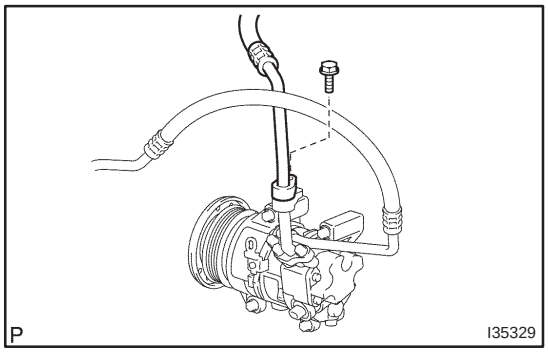


19. INSTALL COOLER REFRIGERANT SUCTION HOSE NO.1 (LHD STEERING POSITION TYPE)

(a) Remove the attached vinyl tape from the hose.

(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent

(c) Install the O–ring on the cooler refrigerant suction hose No.1.



(d) Install the cooler refrigerant suction hose No.1 on the suction servic valve with the 2 bolts.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

20. CHARGE REFRIGERANT (See page 55–38)
SST 07110–58060 (07117–58060, 07117–58070, 07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)
Specified amount: 440 ± 30 g (15.51 ± 1.06 oz.)
21. WARM UP ENGINE (See page 55–38)
22. INSPECT LEAKAGE OF REFRIGERANT (See page 55–38)

W/PULLEY COMPRESSOR ASSY (1ZZ–FE)

550YZ–01

ON–VEHICLE INSPECTION

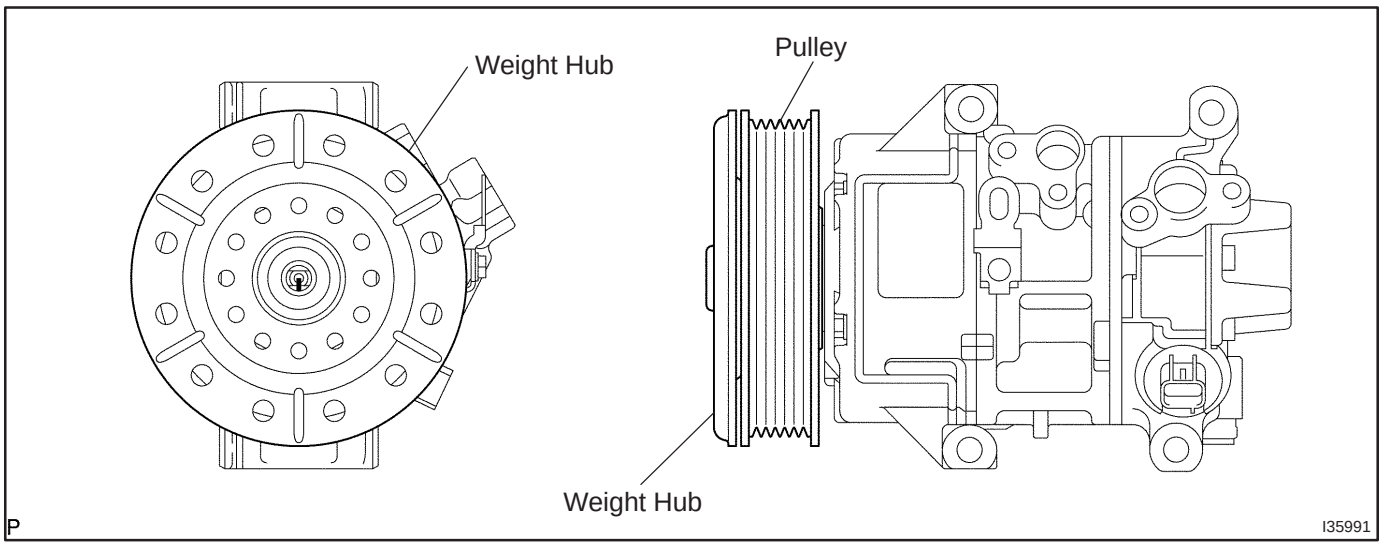
1. INSPECT W/PULLEY COMPRESSOR ASSY

(a) Check the operation.

(1) Start the engine.

(2) Inspect the weight hub.

Standard: The weight hub rotates along with the pulley

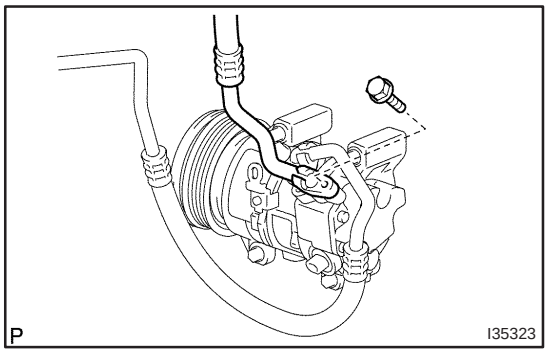


550Z0–01

REPLACEMENT

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM (See page 55–38)

SST 07110–58060 (07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)



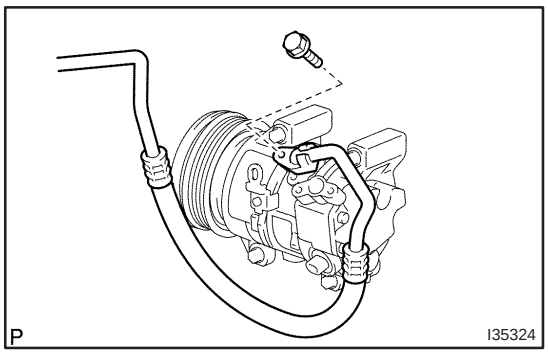
2. DISCONNECT COOLER REFRIGERANT SUCTION HOSE NO.1

(a) Remove the bolt and disconnect the cooler refrigerant suction hose No.1 from the w/pulley compressor assy.

(b) Remove the O–ring from the cooler refrigerant suction hose No.1.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



3. DISCONNECT COOLER REFRIGERANT DISCHARGE HOSE NO.1

(a) Remove the bolt and disconnect the cooler refrigerant discharge hose No.1 from the w/pulley compressor assy.

(b) Remove the O–ring from the cooler refrigerant discharge hose No.1.

NOTICE:

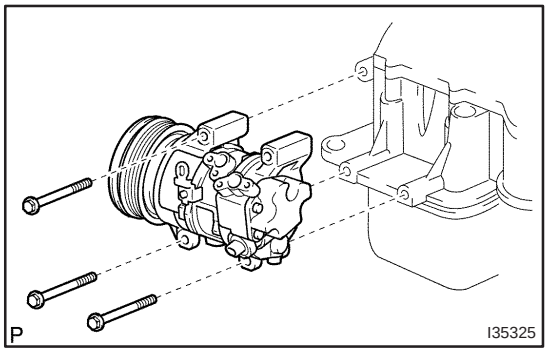
Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.

4. REMOVE RADIATOR SUPPORT OPENING COVER (See page 14–5)

5. REMOVE ENGINE ROOM COVER SIDE (See page 14–5)

6. REMOVE ENGINE UNDER COVER SUB–ASSY NO.1 (See page 14–5)

7. REMOVE FAN AND GENERATOR V BELT (See page 14–5)



8. REMOVE W/PULLEY COMPRESSOR ASSY

(a) Disconnect the connector.

(b) Remove the 3 bolts and the w/pulley compressor assy.

9. INSPECT COMPRESSOR OIL

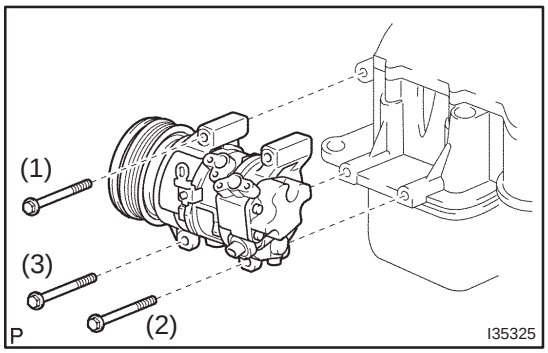
(a) When replacing the w/pulley compressor assy with a new one, after gradually removing the refrigerant gas from the service valve, drain the following amount of oil from the new w/pulley compressor assy before installation.

Standard:

(Oil capacity inside new w/pulley compressor assy: 90 + 15 cc (3.0 + 0.5 fl. oz.)) – (Remaining oil amount in the removed w/pulley compressor assy) = (Oil amount to be removed when replacing)

NOTICE:

- **When checking the compressor oil level, observe the precautions on the cooler removal/installation.**
- **Since compressor oil remains in the pipes of the vehicle, if a new w/pulley compressor assy is installed without removing some oil inside, the oil amount becomes excessive, preventing heat exchange in the refrigerant cycle and causing refrigerant failure.**
- **If the remaining oil in the removed w/pulley compressor assy is too small in volume, check for oil leakage.**
- **Be sure to use ND–OIL 8 for compressor oil.**



10. INSTALL W/PULLEY COMPRESSOR ASSY

(a) Install the w/pulley compressor assy with the 3 bolts.
Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)

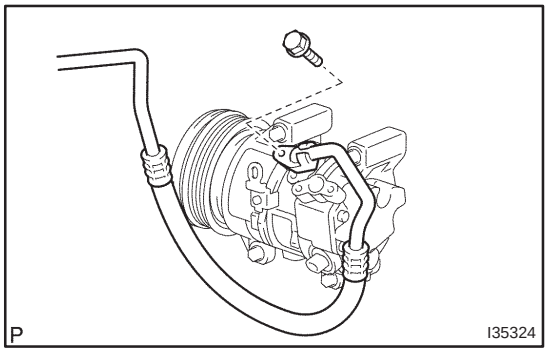
NOTICE:

Tighten the bolts in the order shown in the illustration to install the w/pulley compressor assy.

(b) Connect the connector.

11. INSTALL COOLER REFRIGERANT DISCHARGE HOSE NO.1

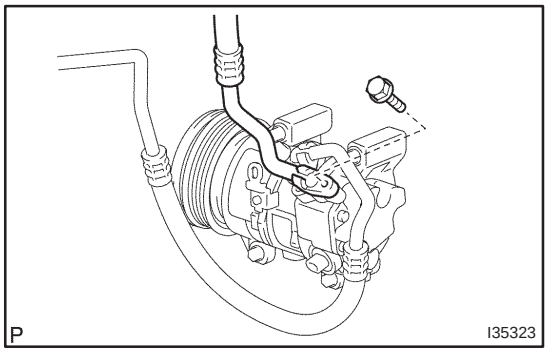
(a) Remove the attached vinyl tape from the hose.
(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the cooler refrigerant discharge hose No.1.



(d) Install the cooler refrigerant discharge hose No.1 on the w/pulley compressor assy with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

12. INSTALL COOLER REFRIGERANT SUCTION HOSE NO.1

(a) Remove the attached vinyl tape from the hose.
(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the cooler refrigerant suction hose No.1.



(d) Install the cooler refrigerant suction hose No.1 on the w/ pulley compressor assy with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

13. CHARGE REFRIGERANT (See page 55–38)
SST 07110–58060 (07117–58060, 07117–58070, 07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)
Specified amount: 440 ± 30 g (15.51 ± 1.06 oz.)

14. WARM UP ENGINE (See page 55–38)

15. INSPECT LEAKAGE OF REFRIGERANT (See page 55–38)

W/PULLEY COMPRESSOR ASSY (3ZZ–FE)

550YX–01

ON–VEHICLE INSPECTION

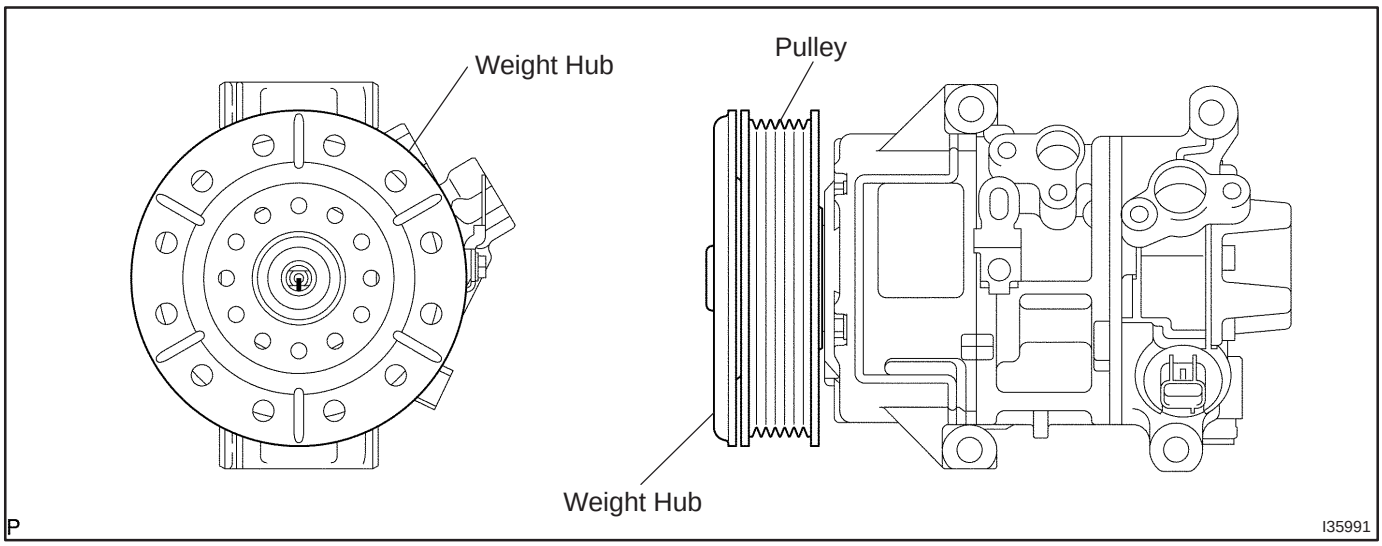
1. INSPECT W/PULLEY COMPRESSOR ASSY

(a) Check the operation.

(1) Start the engine.

(2) Inspect the weight hub.

Standard: The weight hub rotates along with the pulley

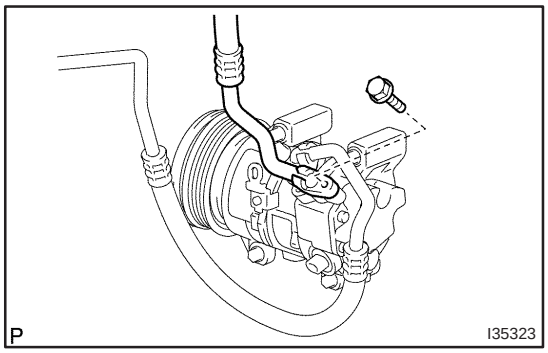


550YY–01

REPLACEMENT

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM (See page 55–38)

SST 07110–58060 (07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)



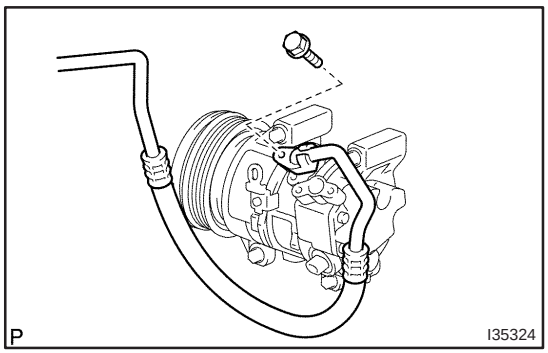
2. DISCONNECT COOLER REFRIGERANT SUCTION HOSE NO.1

(a) Remove the bolt and disconnect the cooler refrigerant suction hose No.1 from the w/pulley compressor assy.

(b) Remove the O–ring from the cooler refrigerant suction hose No.1.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



3. DISCONNECT COOLER REFRIGERANT DISCHARGE HOSE NO.1

(a) Remove the bolt and disconnect the cooler refrigerant discharge hose No.1 from the w/pulley compressor assy.

(b) Remove the O–ring from the cooler refrigerant discharge hose No.1.

NOTICE:

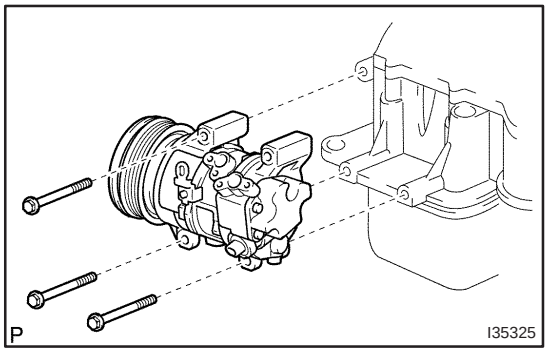
Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.

4. REMOVE RADIATOR SUPPORT OPENING COVER (See page 14–5)

5. REMOVE ENGINE ROOM COVER SIDE (See page 14–5)

6. REMOVE ENGINE UNDER COVER SUB–ASSY NO.1 (See page 14–5)

7. REMOVE FAN AND GENERATOR V BELT (See page 14–5)



8. REMOVE W/PULLEY COMPRESSOR ASSY

(a) Disconnect the connector.

(b) Remove the 3 bolts and the w/pulley compressor assy.

9. INSPECT COMPRESSOR OIL

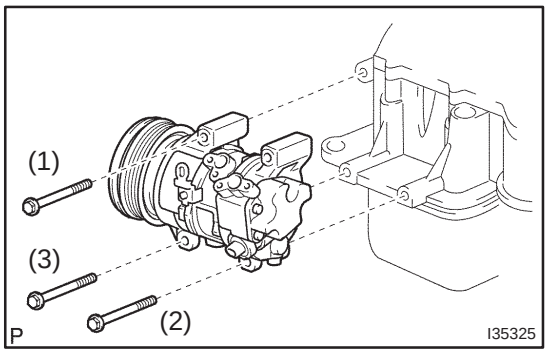
(a) When replacing the w/pulley compressor assy with a new one, after gradually removing the refrigerant gas from the service valve, drain the following amount of oil from the new w/pulley compressor assy before installation.

Standard:

(Oil capacity inside new w/pulley compressor assy: 90 + 15 cc (3.0 + 0.5 fl. oz.)) – (Remaining oil amount in the removed w/pulley compressor assy) = (Oil amount to be removed when replacing)

NOTICE:

- **When checking the compressor oil level, observe the precautions on the cooler removal/installation.**
- **Since compressor oil remains in the pipes of the vehicle, if a new w/pulley compressor assy is installed without removing some oil inside, the oil amount becomes excessive, preventing heat exchange in the refrigerant cycle and causing refrigerant failure.**
- **If the remaining oil in the removed w/pulley compressor assy is too small in volume, check for oil leakage.**
- **Be sure to use ND–OIL 8 for compressor oil.**



10. INSTALL W/PULLEY COMPRESSOR ASSY

(a) Install the w/pulley compressor assy with the 3 bolts.
Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)

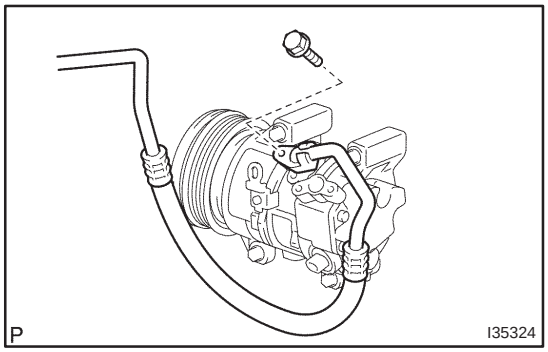
NOTICE:

Tighten the bolts in the order shown in the illustration to install the w/pulley compressor assy.

(b) Connect the connector.

11. INSTALL COOLER REFRIGERANT DISCHARGE HOSE NO.1

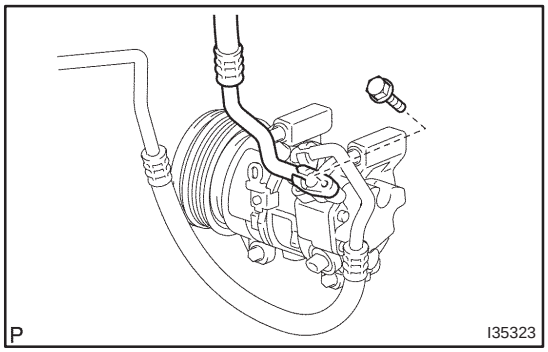
(a) Remove the attached vinyl tape from the hose.
(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the cooler refrigerant discharge hose No.1.



(d) Install the cooler refrigerant discharge hose No.1 on the w/pulley compressor assy with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

12. INSTALL COOLER REFRIGERANT SUCTION HOSE NO.1

(a) Remove the attached vinyl tape from the hose.
(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the w/pulley compressor assy.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the cooler refrigerant suction hose No.1.



(d) Install the cooler refrigerant suction hose No.1 on the w/ pulley compressor assy with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

13. CHARGE REFRIGERANT (See page 55–38)
SST 07110–58060 (07117–58060, 07117–58070, 07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)
Specified amount: 440 ± 30 g (15.51 ± 1.06 oz.)

14. WARM UP ENGINE (See page 55–38)

15. INSPECT LEAKAGE OF REFRIGERANT (See page 55–38)

W/RECEIVER CONDENSER ASSY

550Z9–01

ON–VEHICLE INSPECTION

1. INSPECT W/RECEIVER CONDENSER ASSY

(a) If the fin of the w/receiver condenser assy is dirty, clean it with water and dry it with compressed air.

NOTICE:

Do not damage the fin of the condenser assy.

(b) If the fin of the w/receiver condenser assy is bent, straighten it using a screwdriver or pliers.

2. INSPECT CONDENSER FOR LEAKAGE OF REFRIGERANT

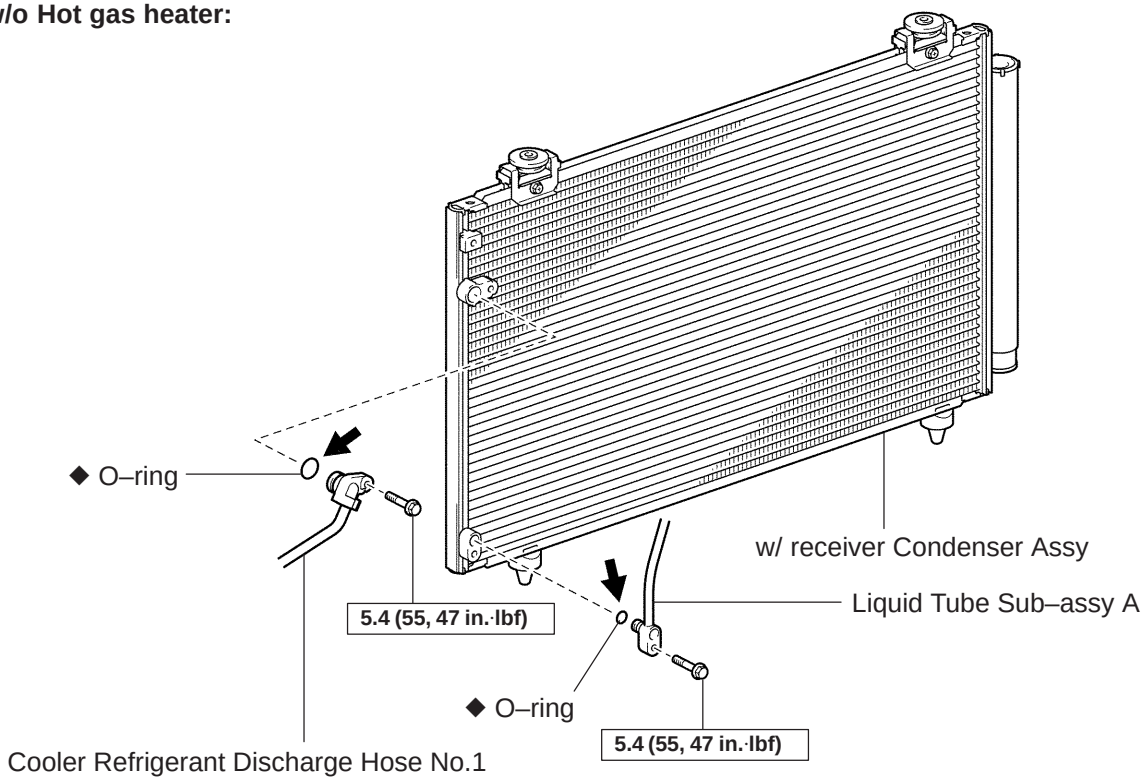
(a) Using a halogen leak detector, check pipe joints for gas leakage.

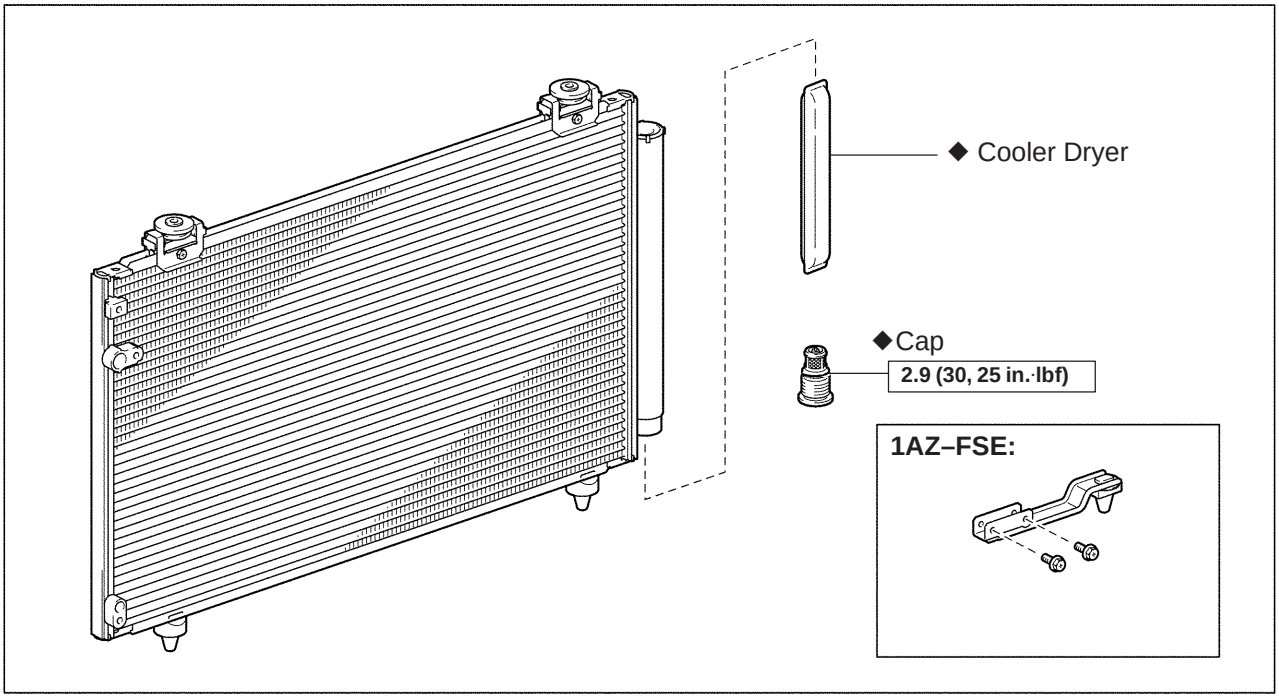
(b) If gas leakage is detected in a joint, check the torque of the joint.

550ZA–01

COMPONENTS

w/o Hot gas heater:



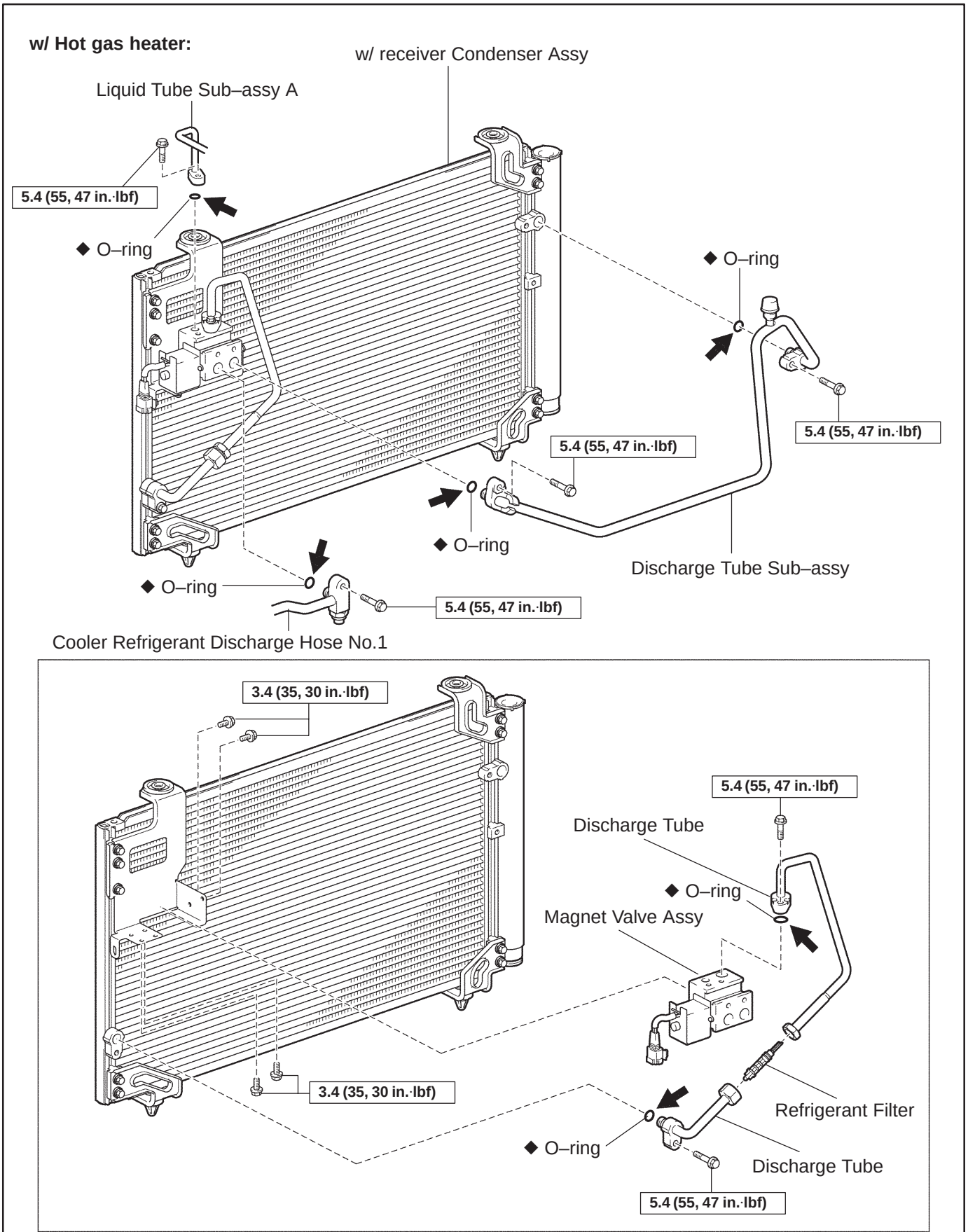


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non–reusable part

P ⬅ Compressor oil ND–OIL 8 or equivalent

I35278



N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non–reusable part
⬅ Compressor oil ND–OIL 8 or equivalent

P

I35279

550ZB–01

OVERHAUL

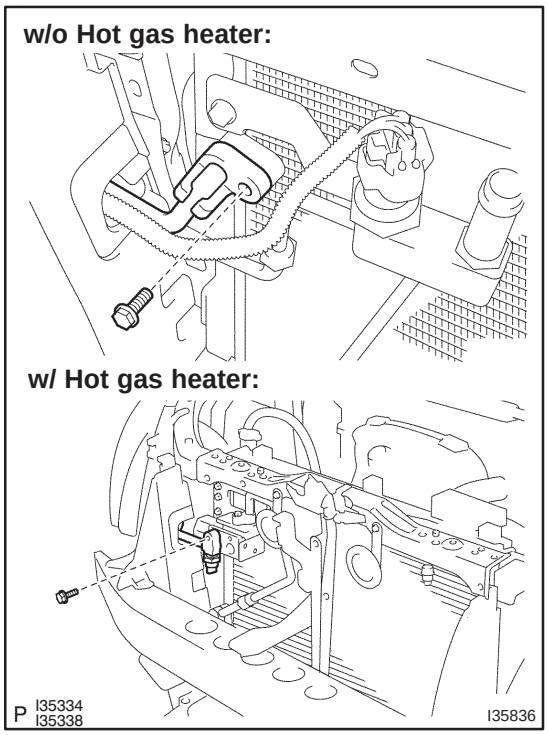
HINT:

COMPONENTS: See page 55–91

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM (See page 55–38)

SST 07110–58060 (07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)

2. REMOVE FRONT BUMPER COVER (See page 76–3)



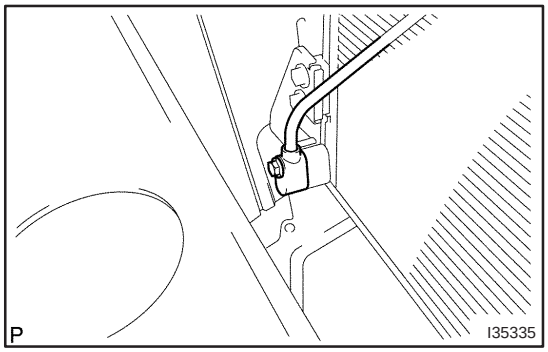
3. DISCONNECT COOLER REFRIGERANT DISCHARGE HOSE NO.1

(a) Remove the bolt and disconnect the cooler refrigerant discharge hose No.1 from the w/ receiver condenser assy.

(b) Remove the O–ring from the cooler refrigerant discharge hose No.1.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



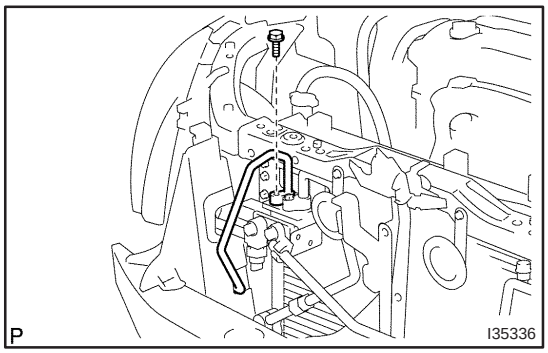
4. DISCONNECT LIQUID TUBE SUB–ASSY A

(a) w/o Hot gas heater:
Remove the bolt and disconnect the liquid tube sub–assy A from the w/ receiver condenser assy.

(b) w/o Hot gas heater:
Remove the O–ring from the liquid tube sub–assy A.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.

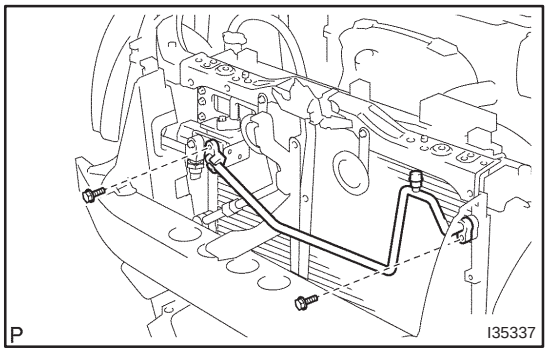


(c) w/ LHD Hot gas heater:
Disconnect the liquid tube sub–assy A assy from the liquid tube sub–assy B.

(d) w/ LHD Hot gas heater:
Remove the O–ring from the liquid tube sub–assy A.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



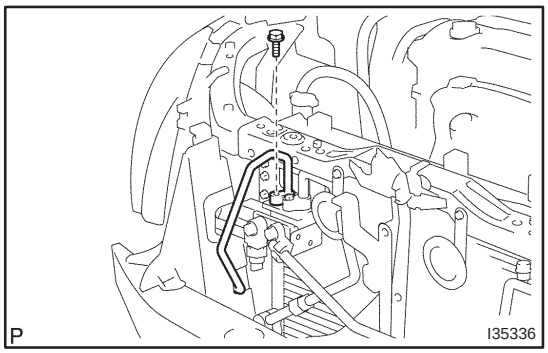
5. REMOVE DISCHARGE TUBE SUB–ASSY (W/ HOT GAS HEATER)

(a) Remove the 2 bolts and disconnect the discharge tube sub–assy from the w/ receiver condenser assy.

(b) Remove 2 O–rings from the discharge tube sub–assy.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



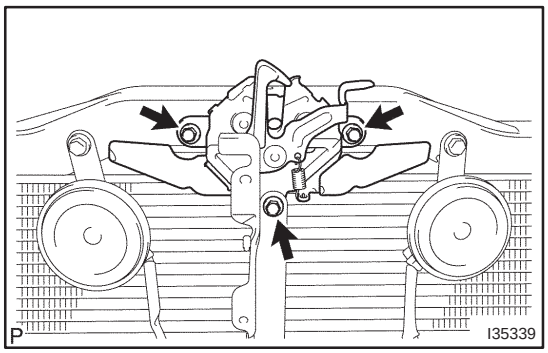
6. REMOVE LIQUID TUBE SUB–ASSY B (RHD(1CD–FTV) STEERING POSITION TYPE)

(a) Remove the bolt and disconnect the liquid tube sub–assy B from w/ receiver condenser assy.

(b) Remove the O–ring from the liquid tube sub–assy B.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.

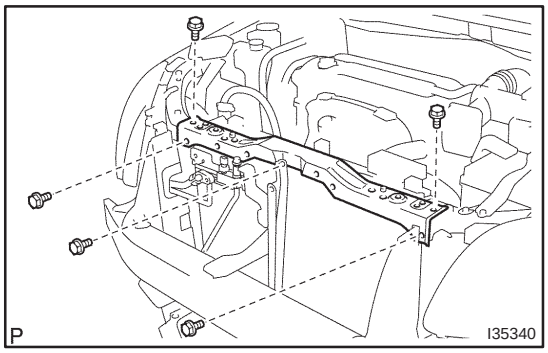


7. REMOVE HOOD LOCK ASSY

(a) Remove the 3 bolts and the hood lock assy.

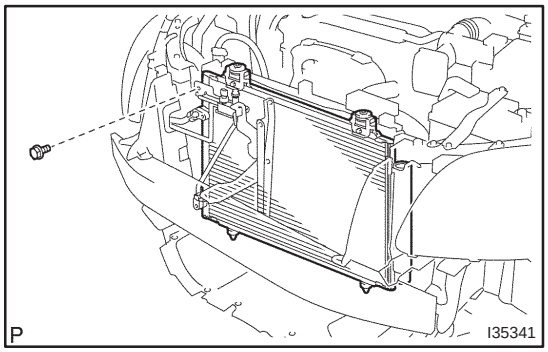
8. REMOVE HIGH PITCHED HORN ASSY (See page 69–5)

9. REMOVE LOW PITCHED HORN ASSY (See page 69–4)



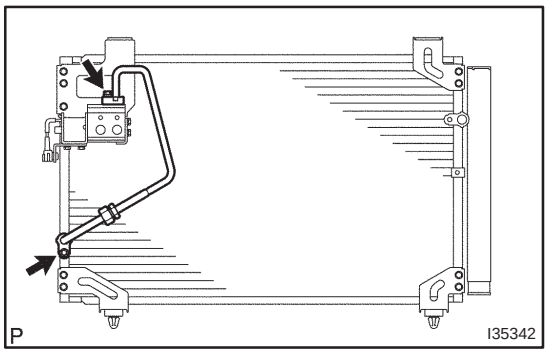
10. REMOVE HOOD LOCK SUPPORT BRACE

(a) Remove the 5 bolts and the hood lock support brace.



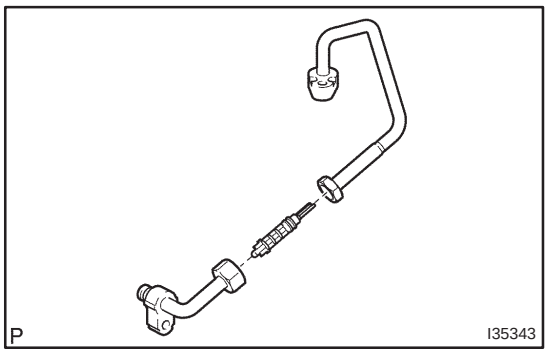
11. REMOVE W/RECEIVER CONDENSER ASSY

(a) Remove the bolt and the w/ receiver condenser assy.



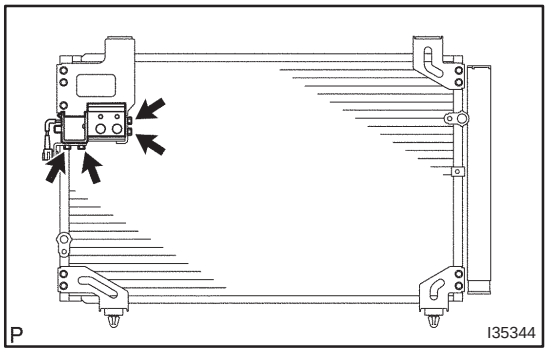
12. REMOVE DISCHARGE TUBE (W/ HOT GAS HEATER)

(a) Remove the 2 bolts and the discharge tube.



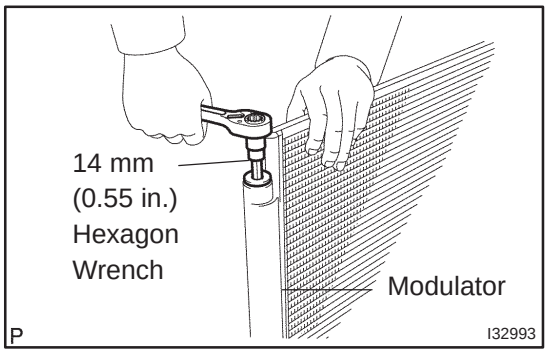
13. REMOVE REFRIGERANT FILTER (W/ HOT GAS HEATER)

(a) Disconnect the discharge tube and remove the refrigerant filter.



14. REMOVE MAGNET VALVE ASSY (W/ HOT GAS HEATER)

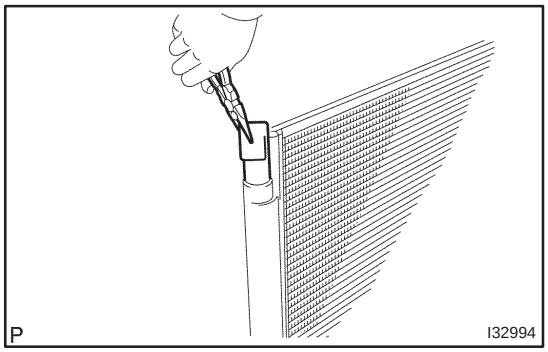
(a) Remove the 4 bolts and the magnet valve assy.



15. REMOVE COOLER DRYER (W/O HOT GAS HEATER)

(a) 1AZ–FSE:
Remove the 2 bolts and bracket.

(b) Using a hexagon wrench 14 mm (0.55 in.), remove the cap from the modulator.

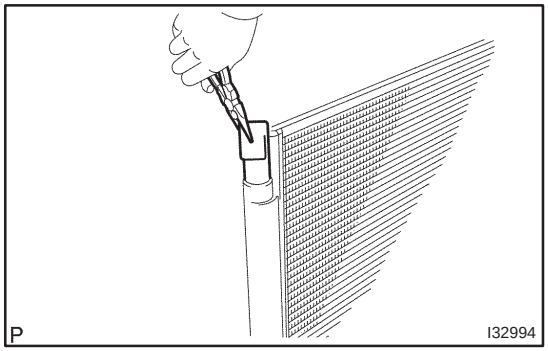


(c) Using needle nose pliers, remove the cooler dryer.

16. REMOVE COOLER CONDENSER CUSHION NO.1

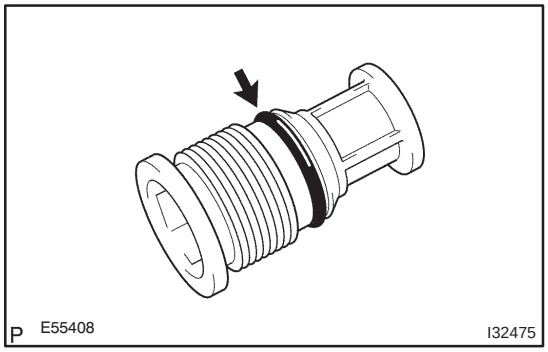
17. REMOVE COOLER CONDENSER CUSHION NO.2

18. REMOVE CONDENSER BRACKET COLLAR NO.1

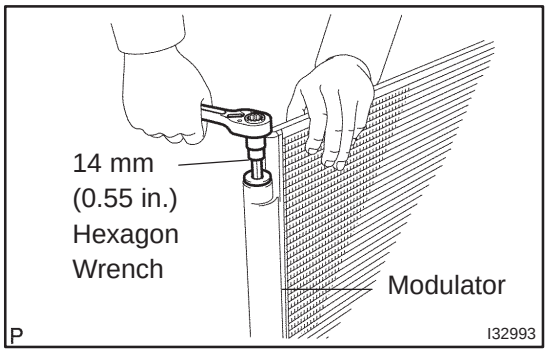


19. INSTALL COOLER DRYER (W/O HOT GAS HEATER)

(a) Using needle nose pliers, install the new cooler dryer.

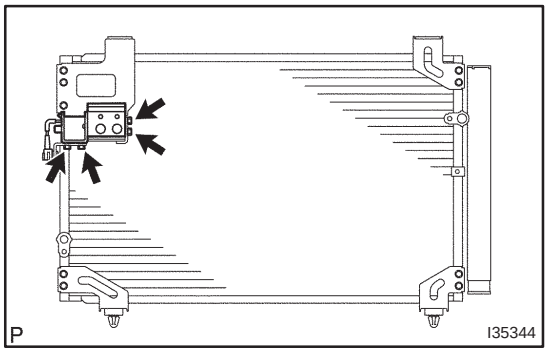


(b) Sufficiently apply compressor oil to the fitting surfaces of the O–ring.
Compressor oil: ND–OIL 8 or equivalent



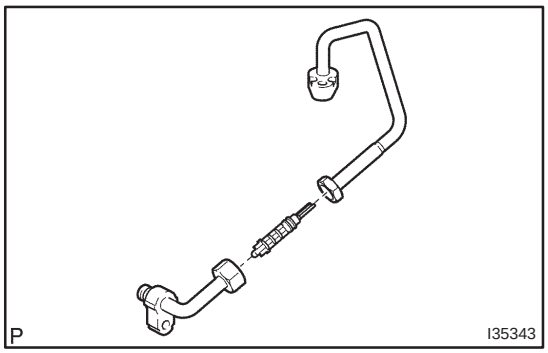
(c) Using a hexagon wrench 14 mm (0.55 in.), install the new cap on the modulator.
Torque: 2.9 N·m (30 kgf·cm, 25 in.·lbf)

(d) 1AZ–FSE:
Install the bracket with the 2 bolts.



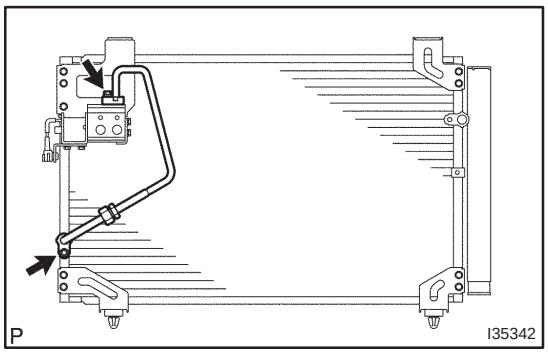
20. INSTALL MAGNET VALVE ASSY (W/ HOT GAS HEATER)

(a) Install the magnet valve assy with the 4 bolts.
Torque: 3.4 N·m (35 kgf·cm, 30 in.·lbf)



21. INSTALL REFRIGERANT FILTER (W/ HOT GAS HEATER)

(a) Install the refrigerant filter to the discharge tube.

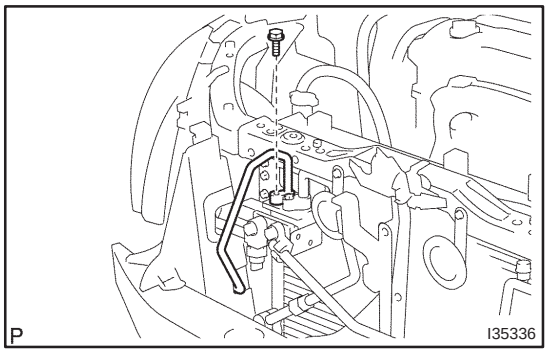


22. INSTALL DISCHARGE TUBE (W/ HOT GAS HEATER)

(a) Install the discharge tube with the 2 bolts.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)

23. INSTALL LIQUID TUBE SUB–ASSY B (RHD(1CD–FTV) STEERING POSITION TYPE)

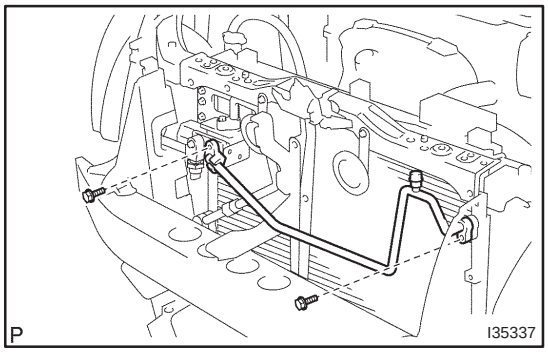
(a) Remove the attached vinyl tape from the tube and the connecting part of the w/ receiver condenser assy.
(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the pipe joint.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the liquid tube sub–assy B.



(d) Install the liquid tube sub–assy B on the w/ receiver condenser assy with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)

24. INSTALL DISCHARGE TUBE SUB–ASSY (W/ HOT GAS HEATER)

(a) Remove the attached vinyl tape from the tube and the connecting part of the w/ receiver condenser assy.
(b) Sufficiently apply compressor oil to a new 2 O–rings and the fitting surface of the pipe joint.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the discharge tube sub–assy.



(d) Install the discharge tube sub–assy on the w/ receiver condenser assy with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)

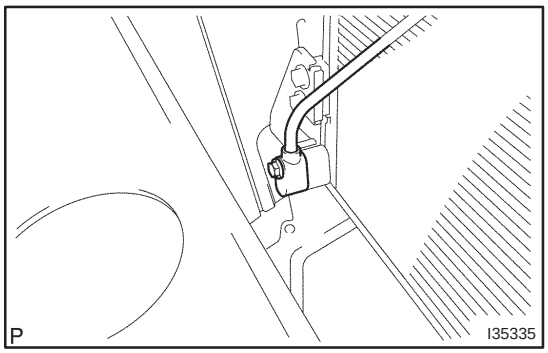
25. INSTALL LIQUID TUBE SUB–ASSY A

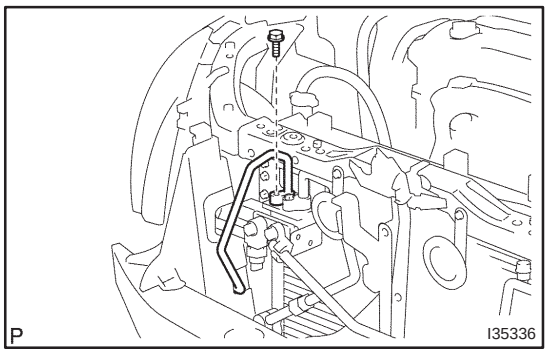
(a) Remove the attached vinyl tape from the tube and the connecting part of the w/ receiver condenser assy.

(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the pipe joint.
Compressor oil: ND–OIL 8 or equivalent

(c) Install the O–ring on the liquid tube sub–assy A.

(d) w/o Hot gas heater:
Install the liquid tube sub–assy A on the w/ receiver condenser assy core with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)





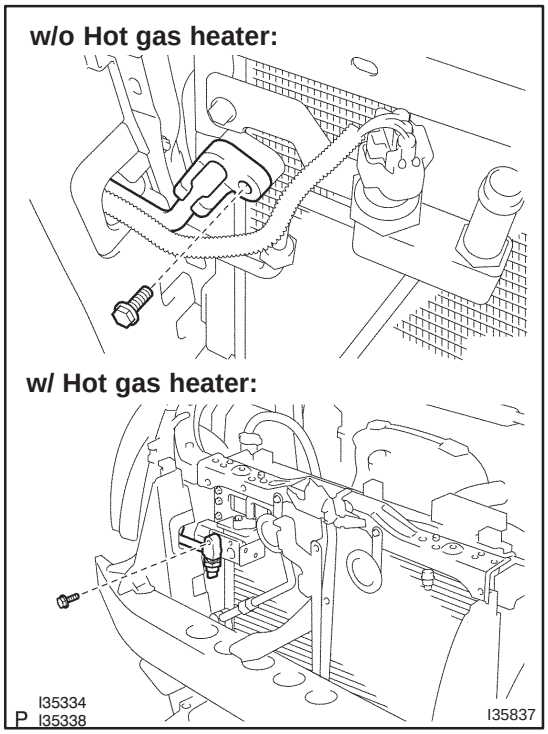
(e) w/ LHD Hot gas heater:
Install the liquid tube sub–assy A on the w/ receiver condenser assy with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)

26. INSTALL COOLER REFRIGERANT DISCHARGE HOSE NO.1

(a) Remove the attached vinyl tape from the tube and the connecting part of the w/ receiver condenser assy.

(b) Sufficiently apply compressor oil to the O–ring and the fitting surface of the hose joint.
Compressor oil: ND–OIL 8 or equivalent

(c) Install the O–ring on the cooler refrigerant discharge hose No.1.



(d) Install the cooler refrigerant discharge hose No.1 on the w/ receiver condenser assy with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)

27. INSTALL FRONT BUMPER COVER (See page 76–3)

28. CHARGE REFRIGERANT (See page 55–38)

SST 07110–58060 (07117–58060, 07117–58070, 07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080), 07117–48130, 07117–48140

Specified amount: 440 ± 30 g (15.51 ± 1.06 oz.)

29. WARM UP ENGINE (See page 55–38)

30. INSPECT LEAKAGE OF REFRIGERANT (See page 55–38)

W/RECEIVER CONDENSER ASSY

550Z9–01

ON–VEHICLE INSPECTION

1. INSPECT W/RECEIVER CONDENSER ASSY

(a) If the fin of the w/receiver condenser assy is dirty, clean it with water and dry it with compressed air.

NOTICE:

Do not damage the fin of the condenser assy.

(b) If the fin of the w/receiver condenser assy is bent, straighten it using a screwdriver or pliers.

2. INSPECT CONDENSER FOR LEAKAGE OF REFRIGERANT

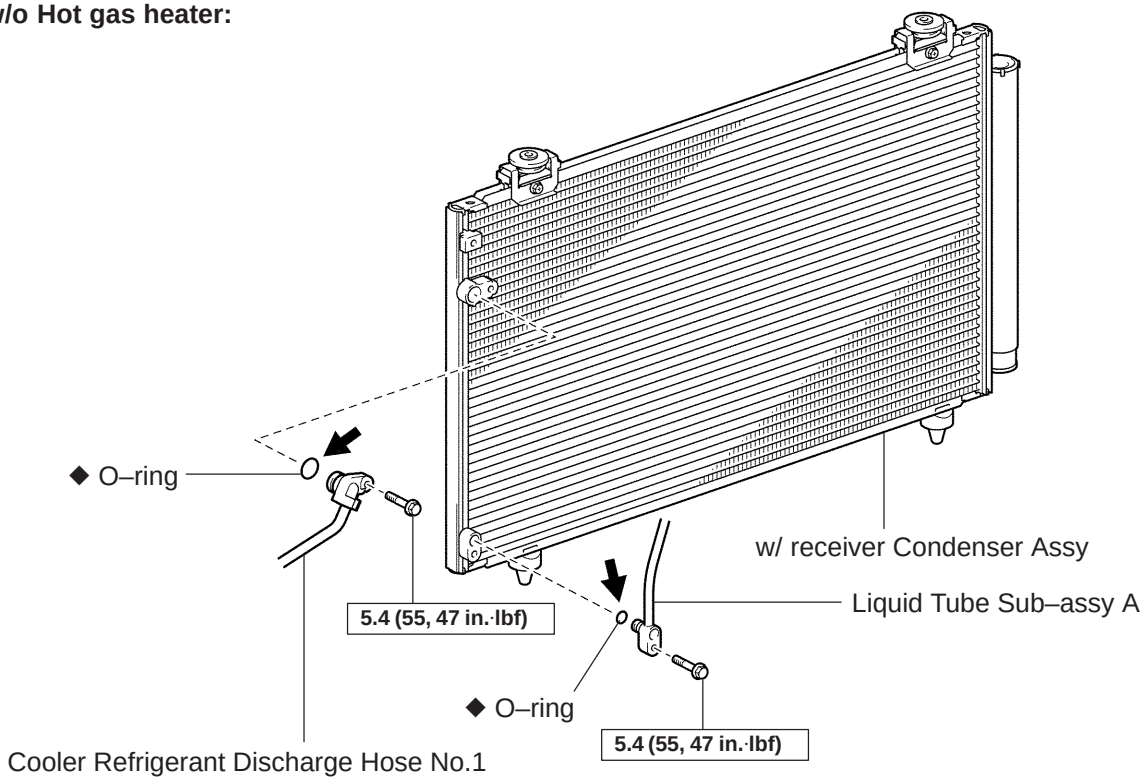
(a) Using a halogen leak detector, check pipe joints for gas leakage.

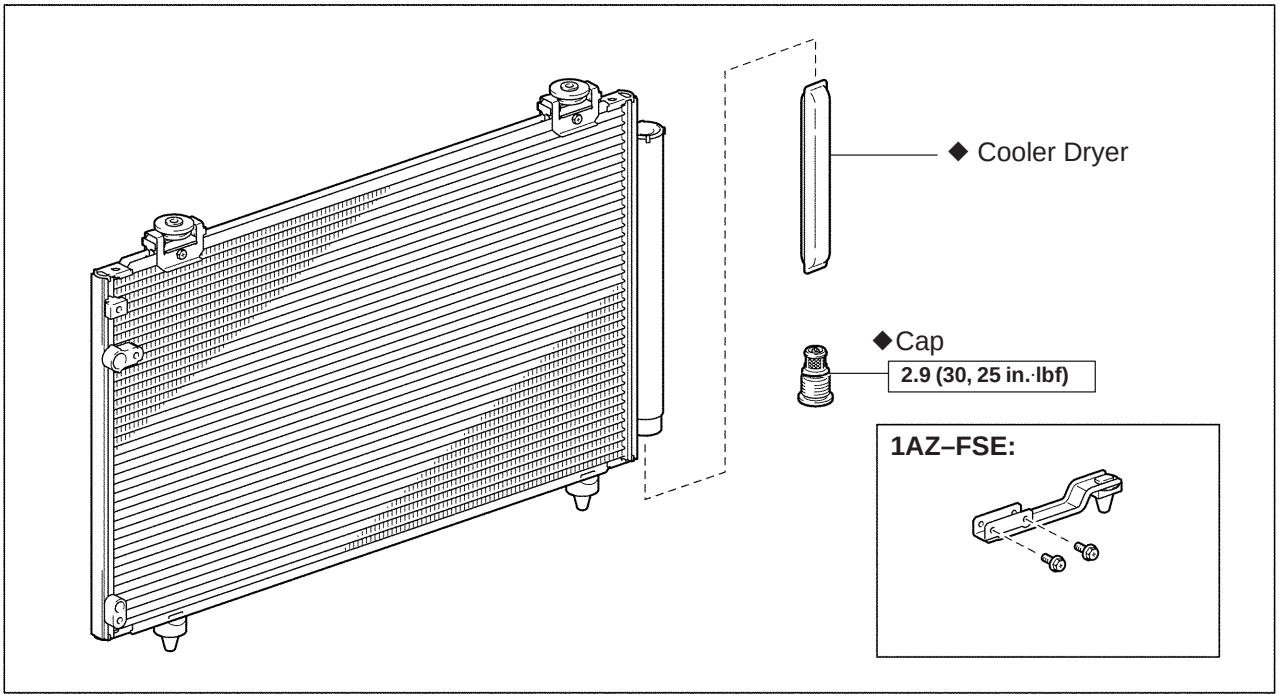
(b) If gas leakage is detected in a joint, check the torque of the joint.

550ZA–01

COMPONENTS

w/o Hot gas heater:



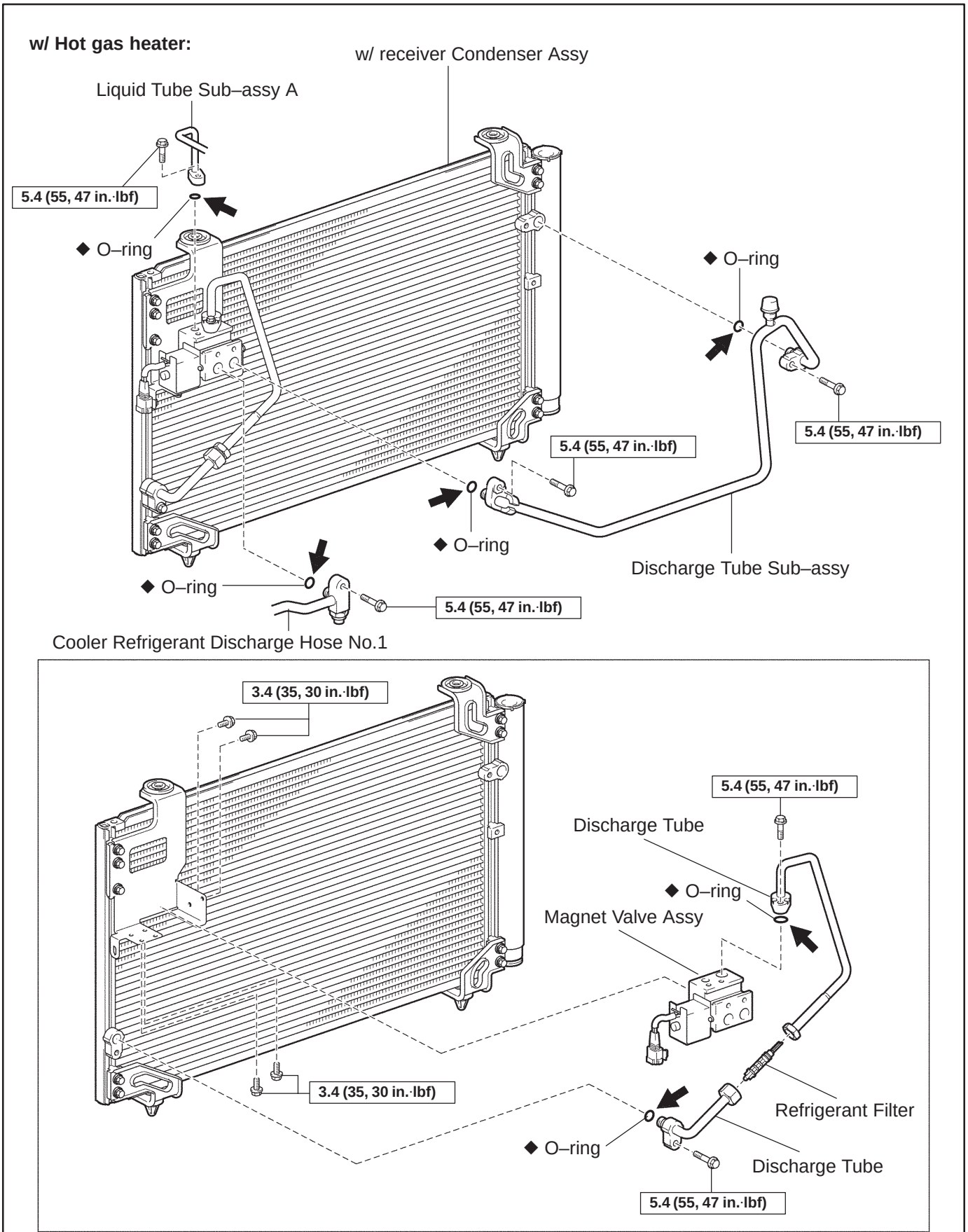


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non–reusable part

P ⬅ Compressor oil ND–OIL 8 or equivalent

I35278



N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non–reusable part
⬅ Compressor oil ND–OIL 8 or equivalent

P

I35279

550ZB–01

OVERHAUL

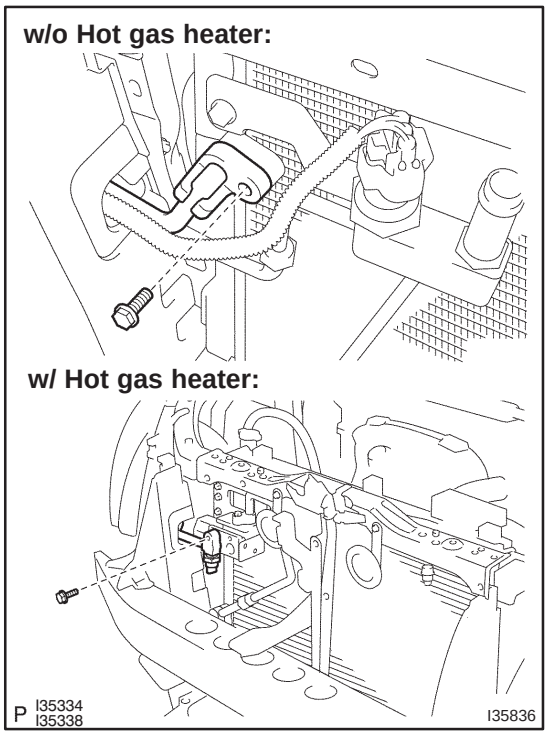
HINT:

COMPONENTS: See page 55–91

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM (See page 55–38)

SST 07110–58060 (07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080)

2. REMOVE FRONT BUMPER COVER (See page 76–3)



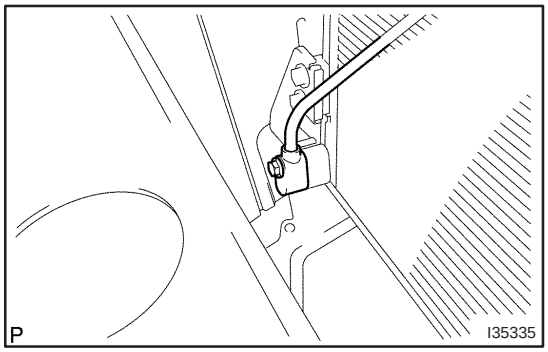
3. DISCONNECT COOLER REFRIGERANT DISCHARGE HOSE NO.1

(a) Remove the bolt and disconnect the cooler refrigerant discharge hose No.1 from the w/ receiver condenser assy.

(b) Remove the O–ring from the cooler refrigerant discharge hose No.1.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



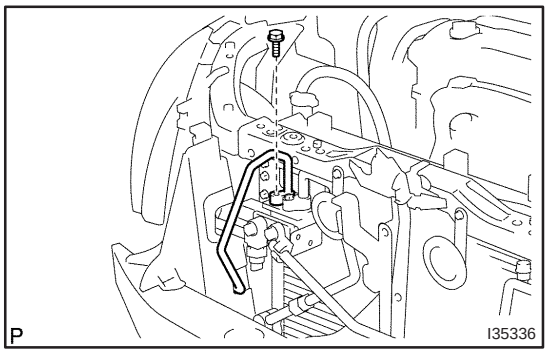
4. DISCONNECT LIQUID TUBE SUB–ASSY A

(a) w/o Hot gas heater:
Remove the bolt and disconnect the liquid tube sub–assy A from the w/ receiver condenser assy.

(b) w/o Hot gas heater:
Remove the O–ring from the liquid tube sub–assy A.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.

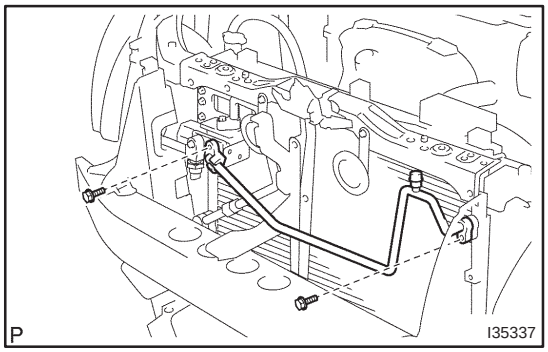


(c) w/ LHD Hot gas heater:
Disconnect the liquid tube sub–assy A assy from the liquid tube sub–assy B.

(d) w/ LHD Hot gas heater:
Remove the O–ring from the liquid tube sub–assy A.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



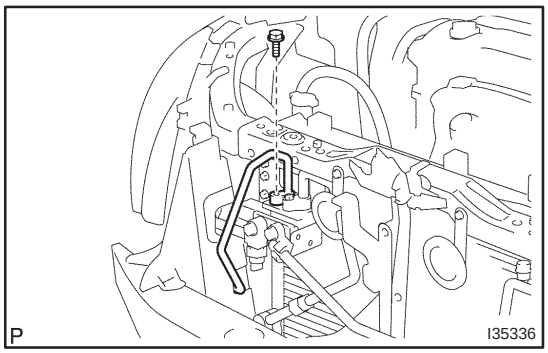
5. REMOVE DISCHARGE TUBE SUB–ASSY (W/ HOT GAS HEATER)

(a) Remove the 2 bolts and disconnect the discharge tube sub–assy from the w/ receiver condenser assy.

(b) Remove 2 O–rings from the discharge tube sub–assy.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.



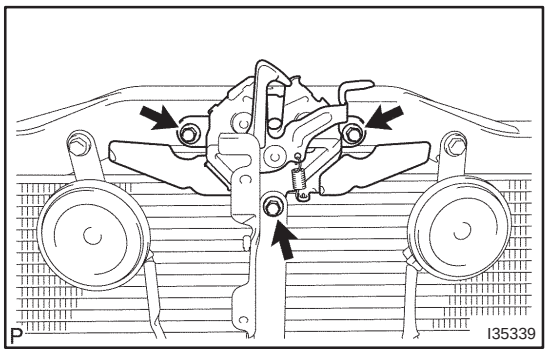
6. REMOVE LIQUID TUBE SUB–ASSY B (RHD(1CD–FTV) STEERING POSITION TYPE)

(a) Remove the bolt and disconnect the liquid tube sub–assy B from w/ receiver condenser assy.

(b) Remove the O–ring from the liquid tube sub–assy B.

NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matters from entering.

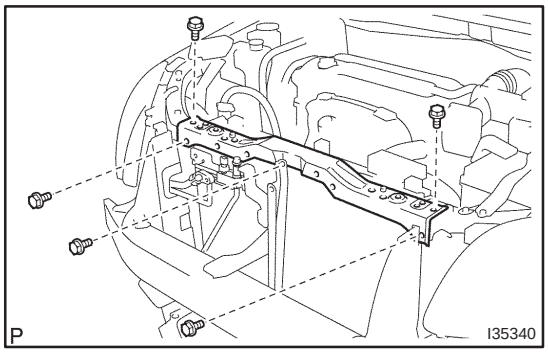


7. REMOVE HOOD LOCK ASSY

(a) Remove the 3 bolts and the hood lock assy.

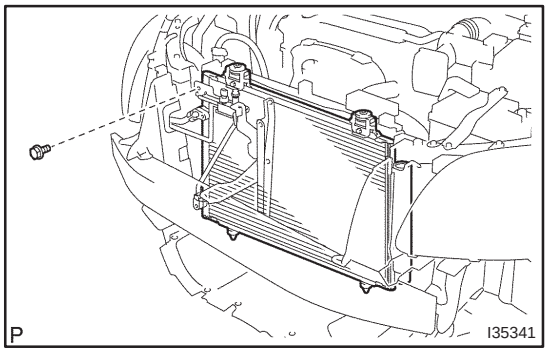
8. REMOVE HIGH PITCHED HORN ASSY (See page 69–5)

9. REMOVE LOW PITCHED HORN ASSY (See page 69–4)



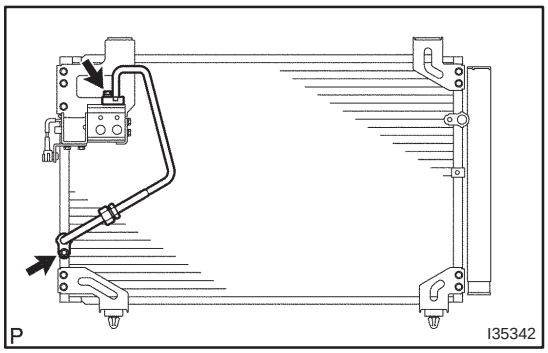
10. REMOVE HOOD LOCK SUPPORT BRACE

(a) Remove the 5 bolts and the hood lock support brace.



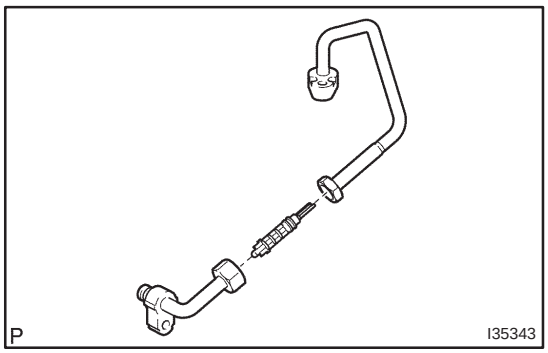
11. REMOVE W/RECEIVER CONDENSER ASSY

(a) Remove the bolt and the w/ receiver condenser assy.



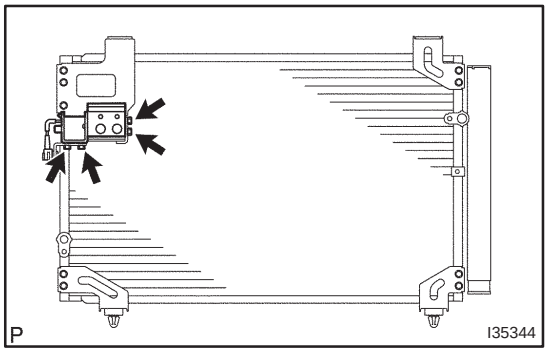
12. REMOVE DISCHARGE TUBE (W/ HOT GAS HEATER)

(a) Remove the 2 bolts and the discharge tube.



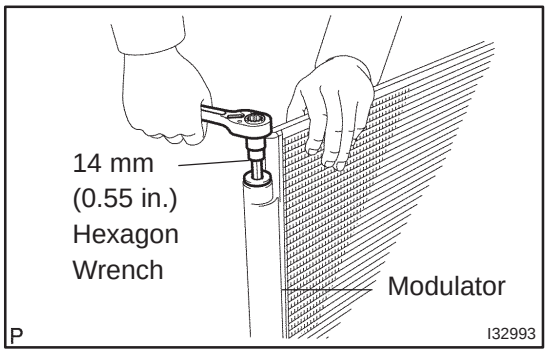
13. REMOVE REFRIGERANT FILTER (W/ HOT GAS HEATER)

(a) Disconnect the discharge tube and remove the refrigerant filter.



14. REMOVE MAGNET VALVE ASSY (W/ HOT GAS HEATER)

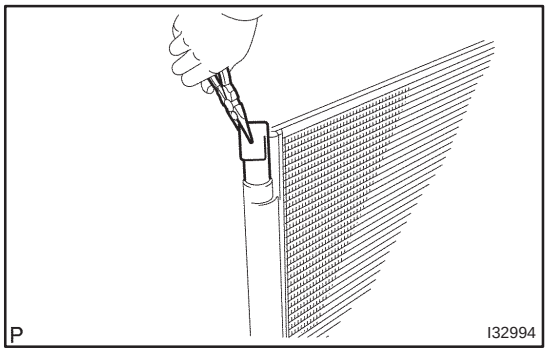
(a) Remove the 4 bolts and the magnet valve assy.



15. REMOVE COOLER DRYER (W/O HOT GAS HEATER)

(a) 1AZ–FSE:
Remove the 2 bolts and bracket.

(b) Using a hexagon wrench 14 mm (0.55 in.), remove the cap from the modulator.

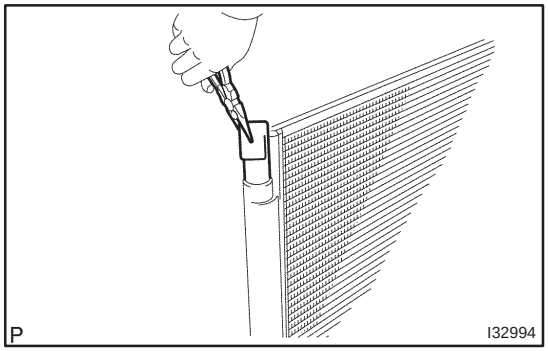


(c) Using needle nose pliers, remove the cooler dryer.

16. REMOVE COOLER CONDENSER CUSHION NO.1

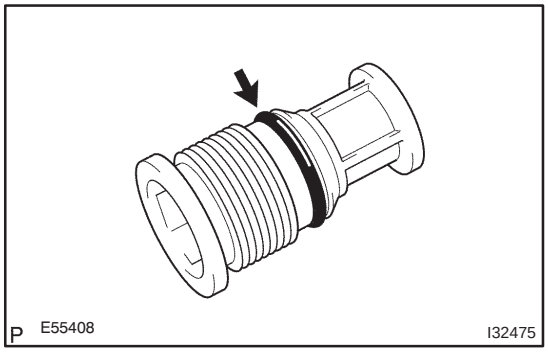
17. REMOVE COOLER CONDENSER CUSHION NO.2

18. REMOVE CONDENSER BRACKET COLLAR NO.1

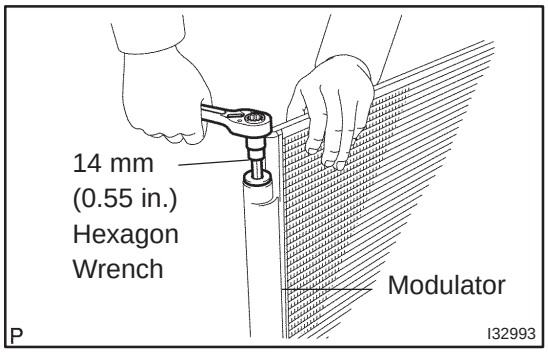


19. INSTALL COOLER DRYER (W/O HOT GAS HEATER)

(a) Using needle nose pliers, install the new cooler dryer.

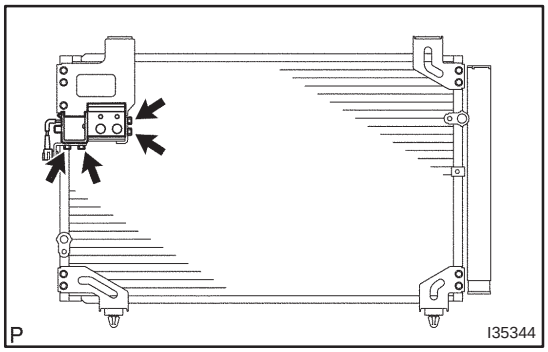


(b) Sufficiently apply compressor oil to the fitting surfaces of the O–ring.
Compressor oil: ND–OIL 8 or equivalent



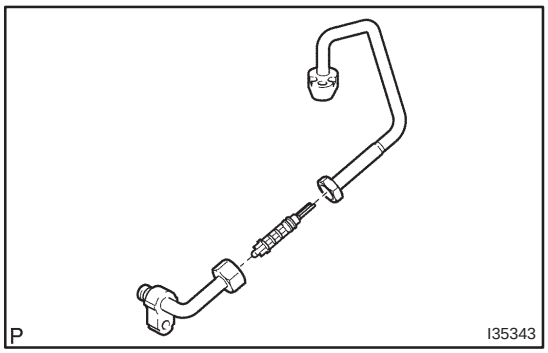
(c) Using a hexagon wrench 14 mm (0.55 in.), install the new cap on the modulator.
Torque: 2.9 N·m (30 kgf·cm, 25 in.·lbf)

(d) 1AZ–FSE:
Install the bracket with the 2 bolts.



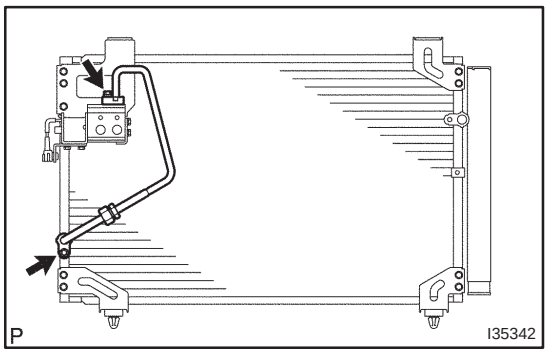
20. INSTALL MAGNET VALVE ASSY (W/ HOT GAS HEATER)

(a) Install the magnet valve assy with the 4 bolts.
Torque: 3.4 N·m (35 kgf·cm, 30 in.·lbf)



21. INSTALL REFRIGERANT FILTER (W/ HOT GAS HEATER)

(a) Install the refrigerant filter to the discharge tube.

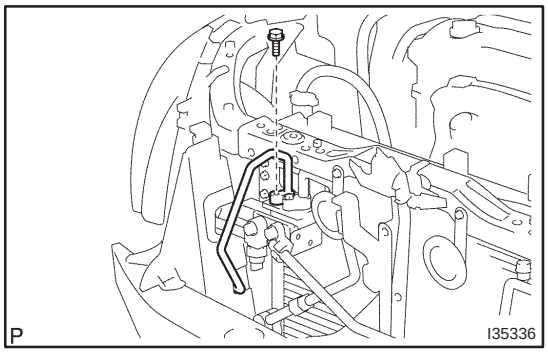


22. INSTALL DISCHARGE TUBE (W/ HOT GAS HEATER)

(a) Install the discharge tube with the 2 bolts.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)

23. INSTALL LIQUID TUBE SUB–ASSY B (RHD(1CD–FTV) STEERING POSITION TYPE)

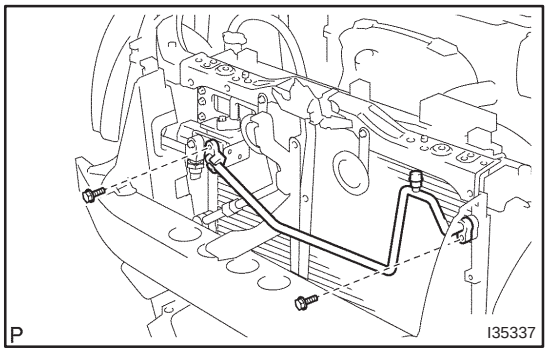
(a) Remove the attached vinyl tape from the tube and the connecting part of the w/ receiver condenser assy.
(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the pipe joint.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the liquid tube sub–assy B.



(d) Install the liquid tube sub–assy B on the w/ receiver condenser assy with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)

24. INSTALL DISCHARGE TUBE SUB–ASSY (W/ HOT GAS HEATER)

(a) Remove the attached vinyl tape from the tube and the connecting part of the w/ receiver condenser assy.
(b) Sufficiently apply compressor oil to a new 2 O–rings and the fitting surface of the pipe joint.
Compressor oil: ND–OIL 8 or equivalent
(c) Install the O–ring on the discharge tube sub–assy.



(d) Install the discharge tube sub–assy on the w/ receiver condenser assy with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)

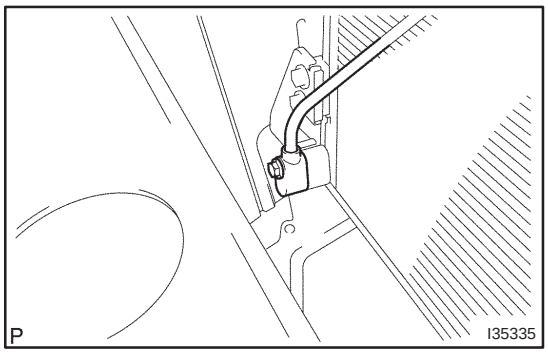
25. INSTALL LIQUID TUBE SUB–ASSY A

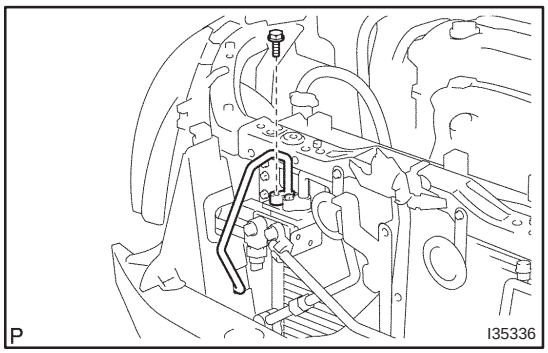
(a) Remove the attached vinyl tape from the tube and the connecting part of the w/ receiver condenser assy.

(b) Sufficiently apply compressor oil to a new O–ring and the fitting surface of the pipe joint.
Compressor oil: ND–OIL 8 or equivalent

(c) Install the O–ring on the liquid tube sub–assy A.

(d) w/o Hot gas heater:
Install the liquid tube sub–assy A on the w/ receiver condenser assy core with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)





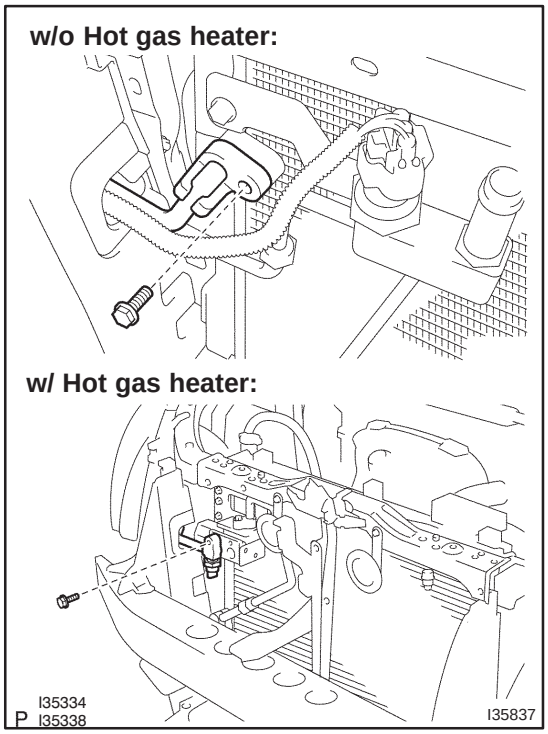
(e) w/ LHD Hot gas heater:
Install the liquid tube sub–assy A on the w/ receiver condenser assy with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)

26. INSTALL COOLER REFRIGERANT DISCHARGE HOSE NO.1

(a) Remove the attached vinyl tape from the tube and the connecting part of the w/ receiver condenser assy.

(b) Sufficiently apply compressor oil to the O–ring and the fitting surface of the hose joint.
Compressor oil: ND–OIL 8 or equivalent

(c) Install the O–ring on the cooler refrigerant discharge hose No.1.



(d) Install the cooler refrigerant discharge hose No.1 on the w/ receiver condenser assy with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 47 in.·lbf)

27. INSTALL FRONT BUMPER COVER (See page 76–3)

28. CHARGE REFRIGERANT (See page 55–38)

SST 07110–58060 (07117–58060, 07117–58070, 07117–58080, 07117–58090, 07117–78050, 07117–88060, 07117–88070, 07117–88080), 07117–48130, 07117–48140

Specified amount: 440 ± 30 g (15.51 ± 1.06 oz.)

29. WARM UP ENGINE (See page 55–38)

30. INSPECT LEAKAGE OF REFRIGERANT (See page 55–38)