
AIR CONDITIONING

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REFER TO FOLLOWING REPAIR MANUALS:

Manual Name	Pub. No.
AVENSIS/CORONA Chassis and Body Repair Manual	RM599E
AVENSIS/CORONA Chassis and Body Repair Manual Supplement (Aug., 1999)	RM698E

NOTE: The above pages contain only the points which differ from the above listed manuals.



AIR CONDITIONING SYSTEM

ON-VEHICLE INSPECTION

AC39E-01

INSPECT IDLE-UP SPEED

- (a) Warm up engine.
- (b) Inspect idle-up speed when the these conditions are established.
 - Warm up engine
 - Blower speed control switch at "HI" position
 - A/C switch ON
 - Temperature control dial at "COOL" position

1ZZ-FE, 3ZZ-FE engine models (M/T):

Magnetic clutch not engaged: 650 ± 50 rpm

Magnetic clutch engaged: 800 ± 50 rpm

1ZZ-FE, 3ZZ-FE engine models (A/T):

Magnetic clutch not engaged: 700 ± 50 rpm

Magnetic clutch engaged: 800 ± 50 rpm

1AZ-FSE engine models (M/T):

Magnetic clutch not engaged: 675 ± 50 rpm

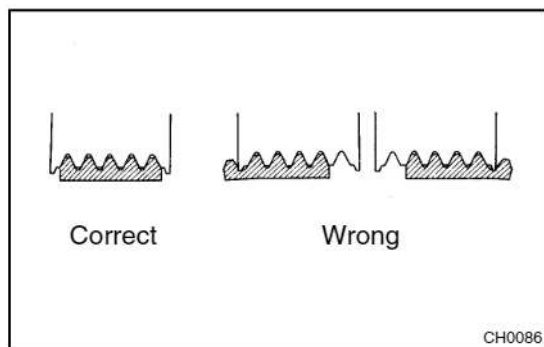
Magnetic clutch engaged: 800 ± 50 rpm

1AZ-FSE engine models (A/T):

Magnetic clutch not engaged: 675 ± 50 rpm

Magnetic clutch engaged: 750 ± 50 rpm

If idle speed is not as specified, check Idle control system.

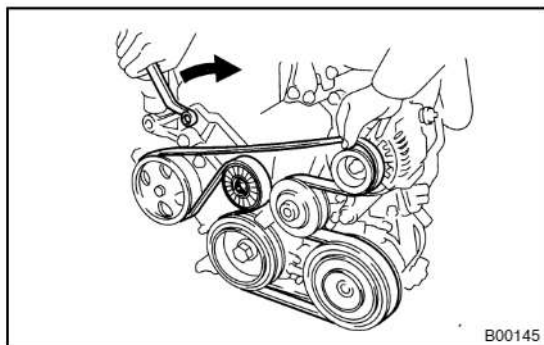


DRIVE BELT ON-VEHICLE INSPECTION

AC216-02

INSPECT DRIVE BELT'S INSTALLATION CONDITION

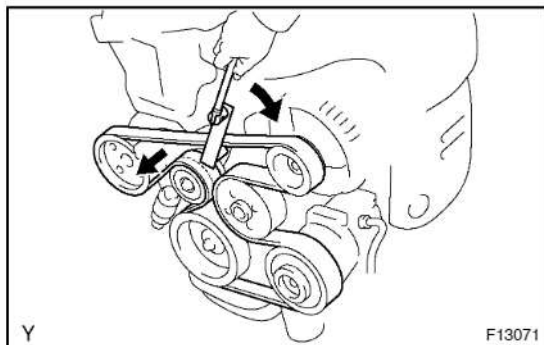
Check that the drive belt fits properly in the ribbed grooves.



REMOVAL

1. 1ZZ-FE, 3ZZ-FE Engines: REMOVE DRIVE BELT

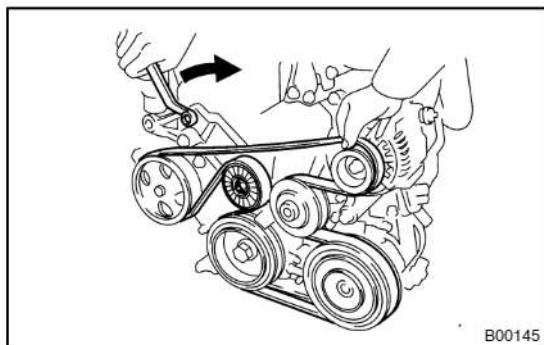
Loosen the drive belt tension by turning the drive belt tensioner arm clockwise, and remove the drive belt.



2. 1AZ-FSE Engine: REMOVE DRIVE BELT

Using the SST, loosen the drive belt tension by turning the drive belt tensioner arm clockwise, and remove the drive belt.

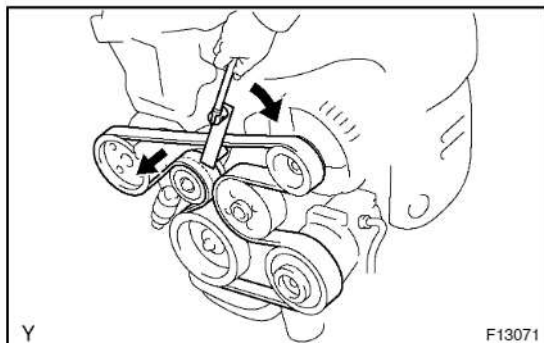
SST 09249-63010



INSTALLATION

1. 1ZZ-FE, 3ZZ-FE Engines: INSTALL DRIVE BELT

Turning the drive belt tensioner arm clockwise, and install the drive belt.



2. 1AZ-FSE Engine: REMOVE DRIVE BELT

Using the SST, turning the drive belt tensioner arm clockwise, and install the drive belt.

SST 09249-63010

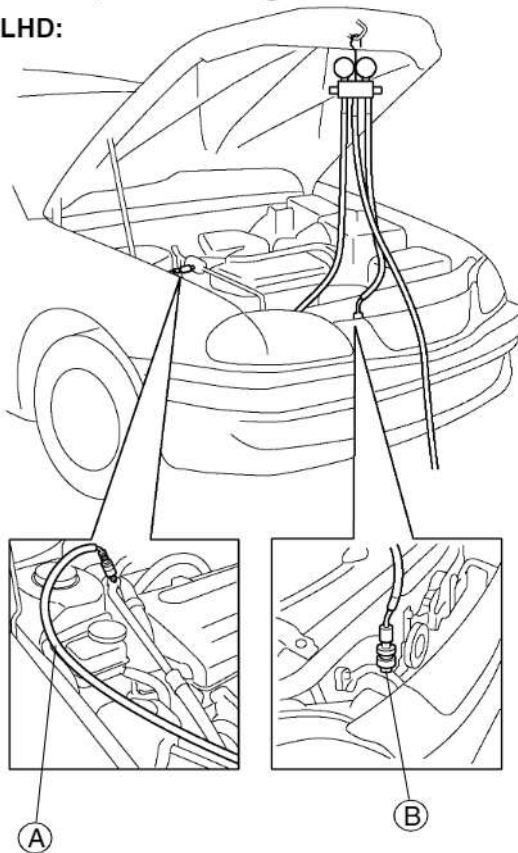
3. CHECK DRIVE BELT INSTALLING CONDITION

MANIFOLD GAUGE SET SET ON

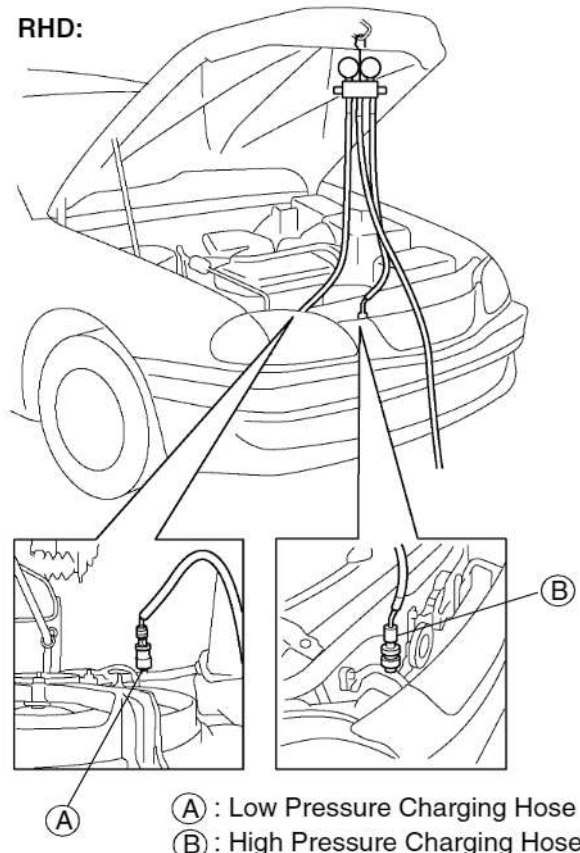
AC2A7-03

1ZZ-FE, 3ZZ-FE, 1AZ-FSE Engines

LHD:



RHD:



(A) : Low Pressure Charging Hose
(B) : High Pressure Charging Hose

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1. CONNECT CHARGE HOSE TO MANIFOLD GAUGE SET

Tighten the nuts by hand.

CAUTION:

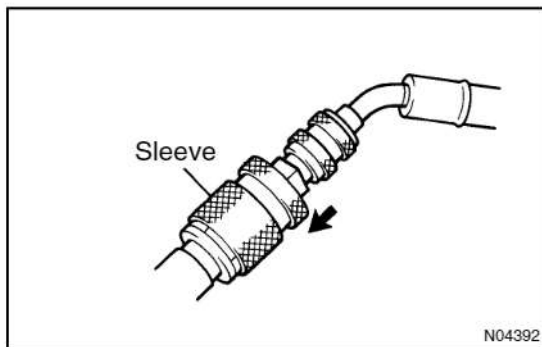
Do not connect the wrong hoses.

2. CONNECT QUICK DISCONNECT ADAPTERS TO CHARGING HOSES

Tighten the nuts by hand.

3. CLOSE BOTH HAND VALVES OF MANIFOLD GAUGE SET

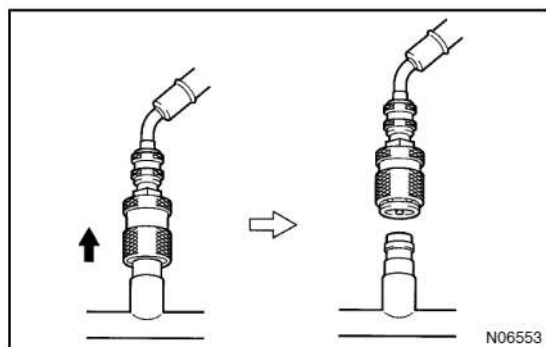
4. REMOVE CAPS FROM SERVICE VALVE ON REFRIG- ERANT LINE



5. CONNECT QUICK DISCONNECT ADAPTER TO SERVICE VALVES

HINT:

Push the quick disconnect adapter onto the service valve, slide, then slide the sleeve of the quick disconnect adapter downward to lock it.



SET OFF

1. CLOSE BOTH HAND VALVES OF MANIFOLD GAUGE SET
2. DISCONNECT QUICK DISCONNECT ADAPTERS FROM SERVICE VALVES ON REFRIGERANT LINE

HINT:

Slide the sleeve of the quick disconnect adapter upward to unlock the adapter and remove it from the service valve.

3. INSTALL CAPS TO SERVICE VALVES ON REFRIGERANT LINE

REFRIGERANT LINE

ON-VEHICLE INSPECTION

AC2IB-01

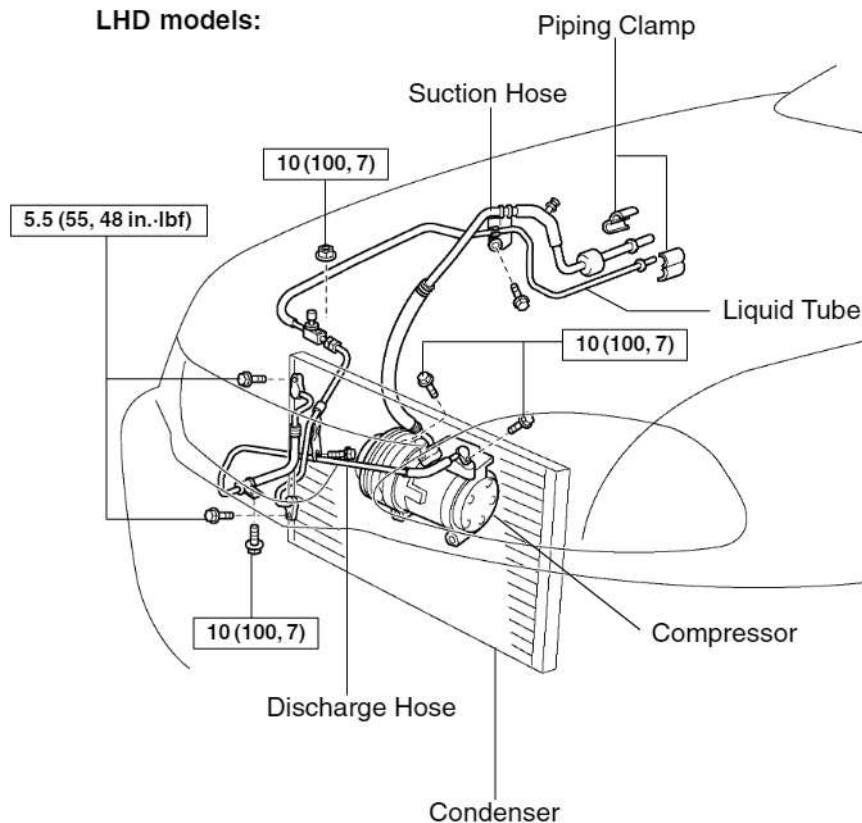
1. INSPECTION HOSE AND TUBE CONNECTIONS FOR LOOSENESS
2. INSPECT HOSES AND TUBES FOR LEAKAGE

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

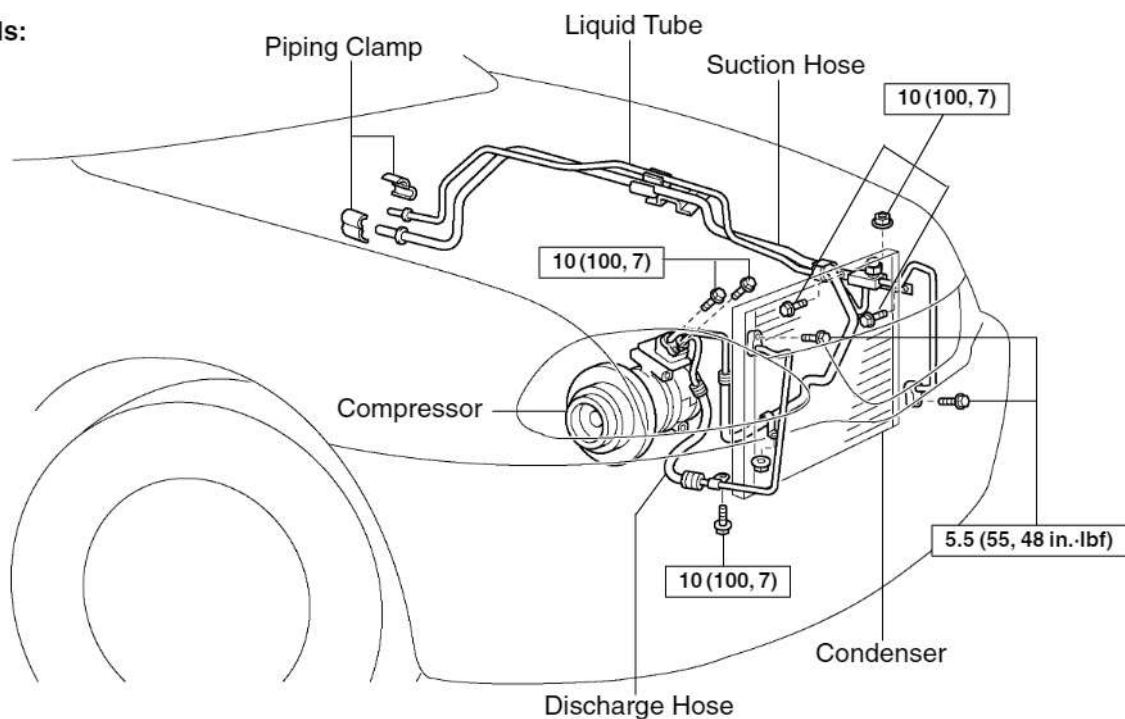
LOCATION

1ZZ-FE, 3ZZ-FE, 1AZ-FSE Engines

LHD models:



RHD models:



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

I18809

REPLACEMENT

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM
2. REPLACE FAULTY TUBE OR HOSE

NOTICE:

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

3. TORQUE CONNECTIONS TO SPECIFIED TORQUE

NOTICE:

Connections should not be torqued tighter than the specified torqued.

Parttightened	N·m	kgf·cm	ft·lbf
Condenser x Discharge tube	5.5	55	48 in.·lbf
Condenser x Liquid tube	5.5	55	48 in.·lbf
Compressor x Discharge tube	10	100	7
Compressor x Suction tube	10	100	7

4. EVACUATE AIR IN REFRIGERATION SYSTEM AND CHARGE WITH REFRIGERANT

Specified amount: 460 ± 20 g (16.23 ± 0.71 oz.)

5. INSPECT FOR LEAKAGE OF REFRIGERANT

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

6. INSPECT AIR CONDITIONING OPERATION

COMPRESSOR AND MAGNETIC CLUTCH

ON-VEHICLE INSPECTION

AC1GA-05

1. INSPECT COMPRESSOR FOR METALLIC SOUND

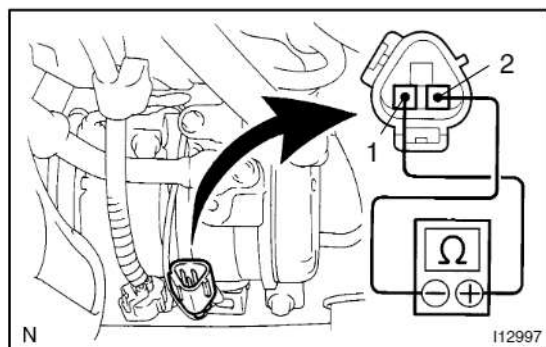
Check there is abnormal metallic sound from the compressor when the A/C switch is ON.

If abnormal metallic sound is heard, replace the compressor assembly.

2. INSPECT REFRIGERANT PRESSURE (See page AC-1)

3. INSPECT VISUALLY FOR LEAKAGE OF REFRIGERANT

Using a gas leak detector, check for leakage of refrigerant. If there is any leakage, replace the compressor assembly.



4. INSPECT COMPRESSOR LOCK SENSOR RESISTANCE

- Disconnect the connector.
- Measure resistance between terminals 1 and 2.

Standard resistance:

165 – 205 Ω at 20 °C (68 °F)

If resistance is not as specified, replace the sensor.

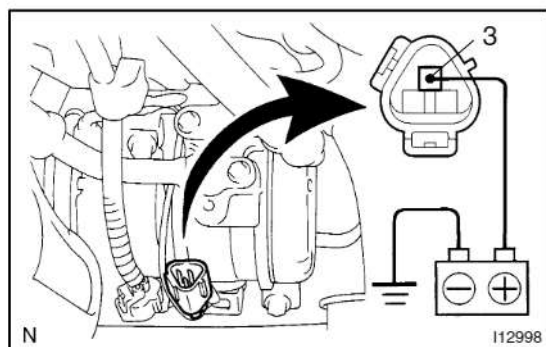
5. CHECK FOR LEAKAGE OF GREASE FROM CLUTCH BEARING

6. CHECK FOR SIGNS OF OIL ON PRESSURE PLATE OR ROTOR

7. INSPECT MAGNETIC CLUTCH BEARING FOR NOISE

- Start engine.
- Check for abnormal noise from the compressor when the A/C switch is OFF.

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



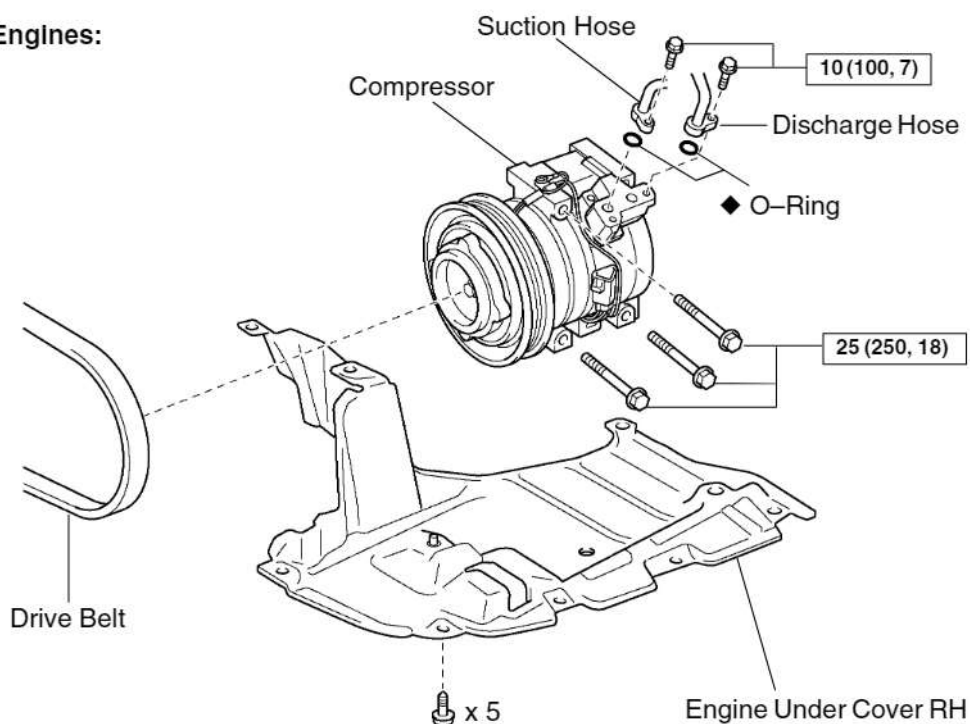
8. INSPECT MAGNETIC CLUTCH OPERATION

- Disconnect the connector.
- Connect the positive (+) lead from the battery to terminal 3 and the negative (-) lead to the body ground.
- Check that the magnetic clutch energized.

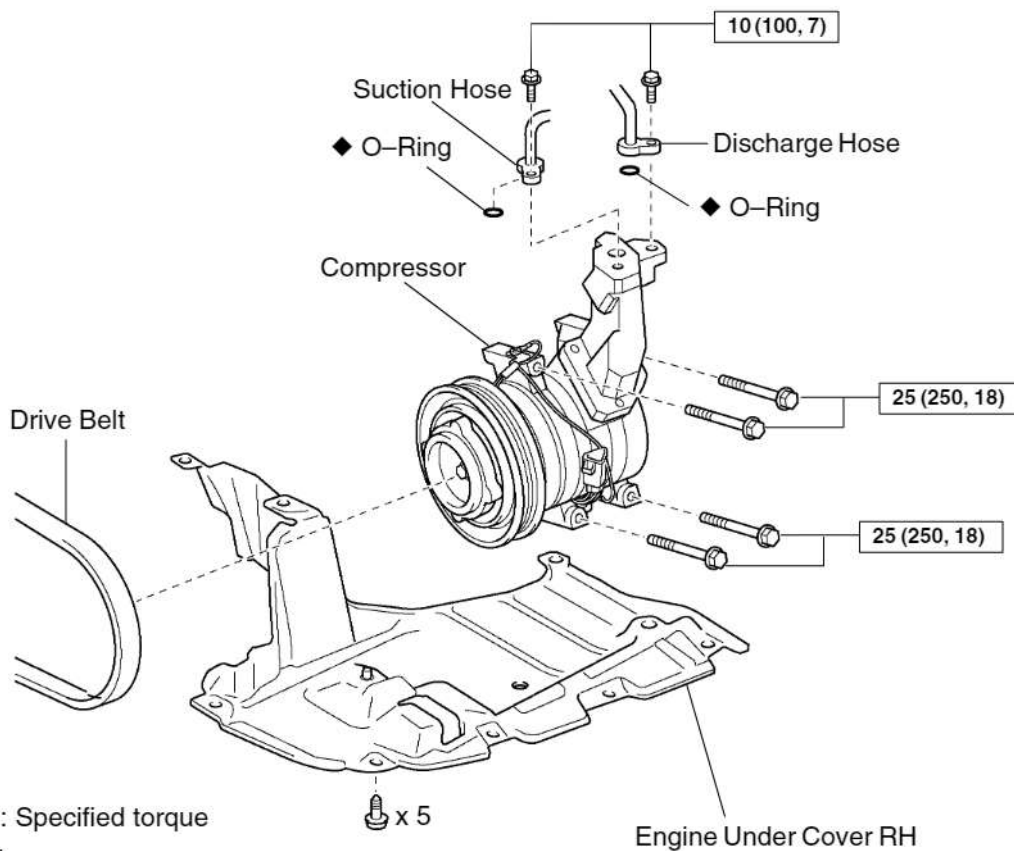
If operation is not as specified, replace the magnetic clutch.

COMPONENTS

1ZZ-FE, 3ZZ-FE Engines:



1AZ-FSE Engine:



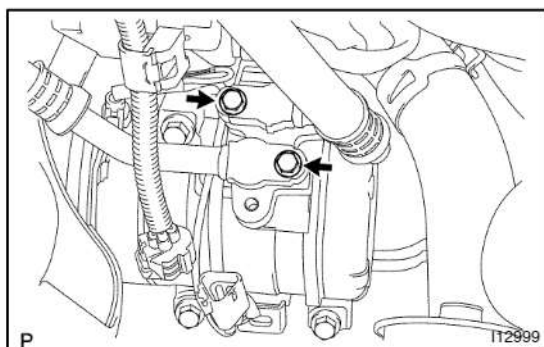
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

I18811

REMOVAL

1. RUN ENGINE AT IDLE SPEED WITH A/C ON FOR APPROX. 10 MINUTES
2. STOP ENGINE
3. DISCONNECT NEGATIVE (–) TERMINAL CABLE FROM BATTERY
4. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM
5. REMOVE ENGINE UNDER COVER RH
6. REMOVE DRIVE BELT (See page AC-3)

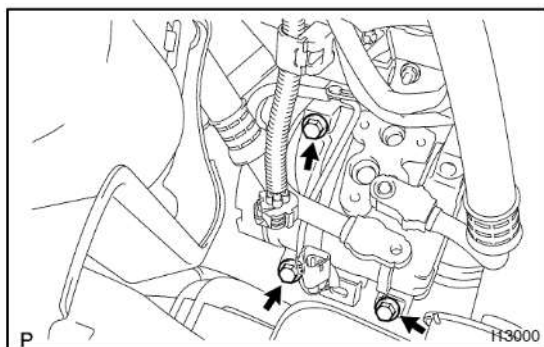


7. DISCONNECT DISCHARGE AND SUCTION HOSES

Remove the 2 bolts and disconnect the both hoses.

NOTICE:

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

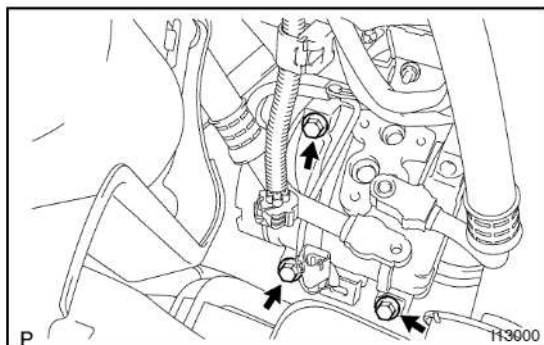


8. 1ZZ-FE, 3ZZ-FE Engines: REMOVE COMPRESSOR

- (a) Disconnect the connector.
- (b) Disconnect the wire harness clamp.
- (c) Remove the 3 bolts and compressor.

9. 1AZ-FSE Engine: REMOVE COMPRESSOR

- (a) Disconnect the connector.
- (b) Disconnect the wire harness clamp.
- (c) Remove the 4 bolts and compressor.



INSTALLATION

1. 1ZZ-FE, 3ZZ-FE Engines:

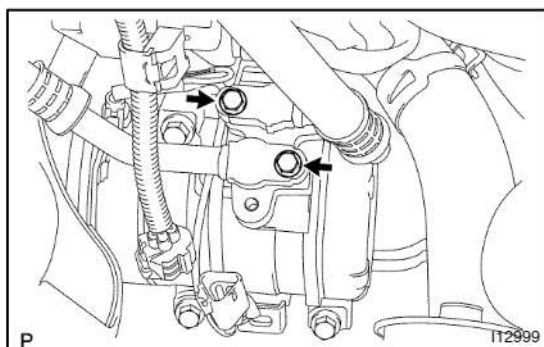
INSTALL COMPRESSOR

- (a) Install the compressor with 3 bolts.
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)
- (b) Connect the connector.

2. 1AZ-FSE Engine:

INSTALL COMPRESSOR

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



3. CONNECT DISCHARGE AND SUCTION HOSES

- (a) Lubricate 2 new O-rings with compressor oil and install them to the hoses.
- (b) Connect the both hoses with 2 bolts.
Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

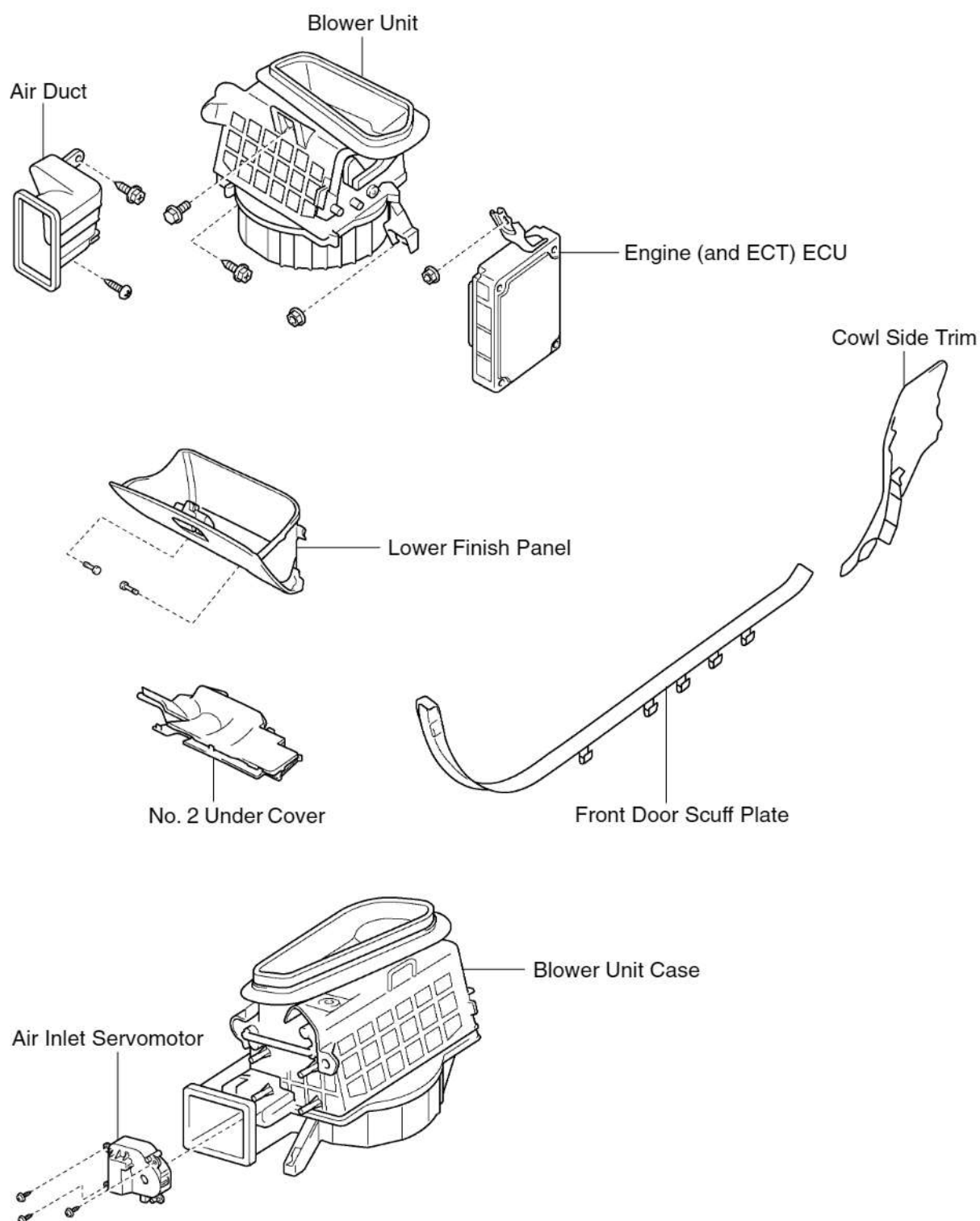
NOTICE:

Hose should be connected immediately after the caps have been removed.

4. INSTALL AND CHECK DRIVE BELT (See page AC-2, AC-4)
5. CONNECT NEGATIVE (–) TERMINAL CABLE TO BATTERY
6. EVACUATE AIR FROM REFRIGERATION SYSTEM
CHARGE SYSTEM WITH REFRIGERANT
Specified amount: 460 ± 20 g (16.23 ± 0.71 oz.)
7. INSPECT FOR LEAKAGE OF REFRIGERANT
Using a gas leak detector, check for leakage of refrigerant.
If there is leakage, check the tightening torque at the joints.
8. INSPECT A/C OPERATION

AIR INLET SERVOMOTOR COMPONENTS

AC39I-01

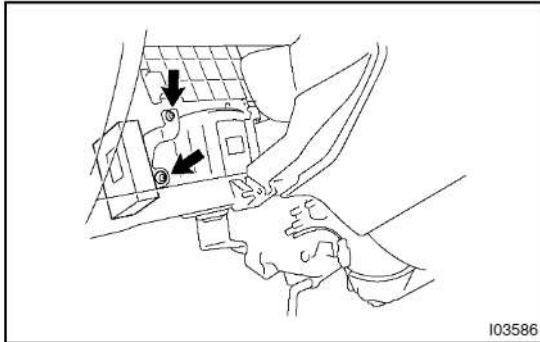


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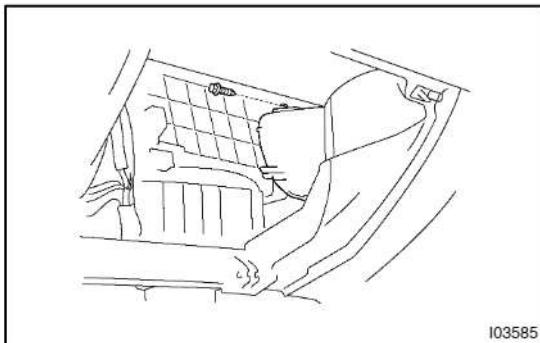
REMOVAL

1. REMOVE FRONT DOOR SCUFF PLATE ON PASSENGER SIDE
2. REMOVE COWL SIDE TRIM ON PASSENGER SIDE
3. REMOVE NO. 2 UNDER COVER
4. REMOVE LOWER FINISH PANEL (See page BO-8)
5. REMOVE ENGINE (and ECT) ECU



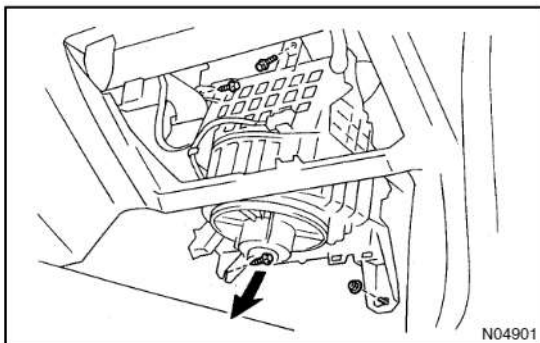
6. **RHD Models Only:**
REMOVE THEFT DETERRENT ECU

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



7. **REMOVE AIR DUCT**

Remove the 2 screws and duct.

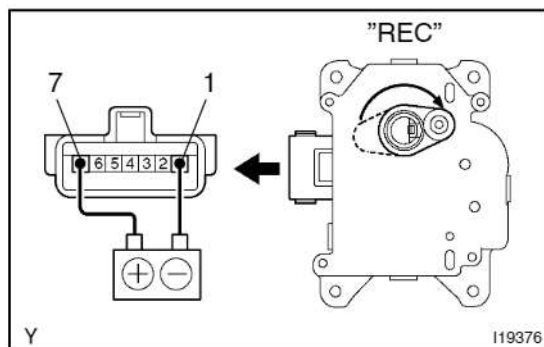


8. **REMOVE BLOWER UNIT**

- (a) Disconnect the connectors.
- (b) Remove the bolt, screw and nut.
- (c) Remove the blower unit.

9. **REMOVE AIR INLET SERVOMOTOR**

Remove the 3 screws and air inlet servomotor.



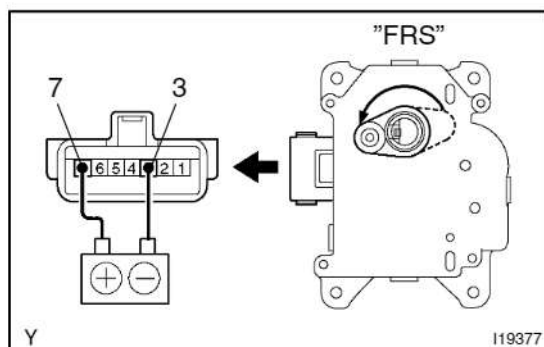
INSPECTION

1. LHD:

INSPECT AIR INLET SERVOMOTOR OPERATION

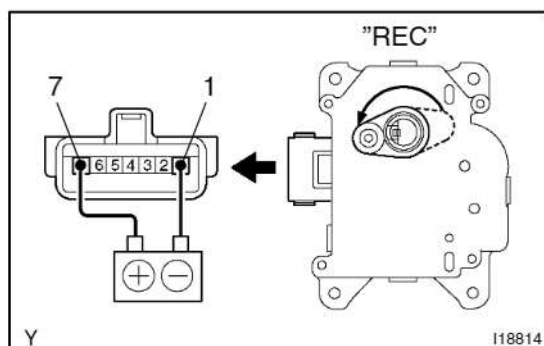
- (a) Connect the positive (+) lead from the battery to terminal 7 and negative (-) lead to terminal 1 and check that arm turns to "REC" side smoothly.

If operation is not as specified, replace the servomotor.



- (b) Connect the positive (+) lead from the battery to terminal 7 and the negative (-) lead to terminal 3 and check that the arm turns to "FRS" side smoothly.

If operation is not as specified, replace the servomotor.

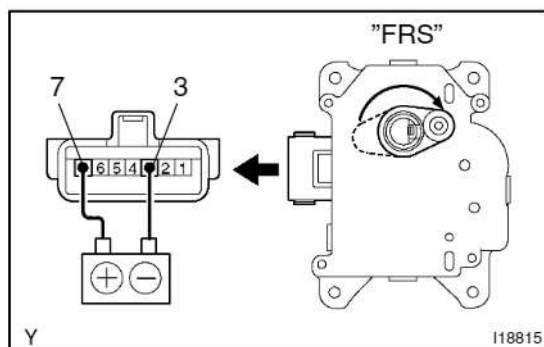


2. RHD:

INSPECT AIR INLET SERVOMOTOR OPERATION

- (a) Connect the positive (+) lead from the battery to terminal 7 and negative (-) lead to terminal 1 and check that arm turns to "REC" side smoothly.

If operation is not as specified, replace the servomotor.



- (b) Connect the positive (+) lead from the battery to terminal 7 and the negative (-) lead to terminal 3 and check that the arm turns to "FRS" side smoothly.

If operation is not as specified, replace the servomotor.

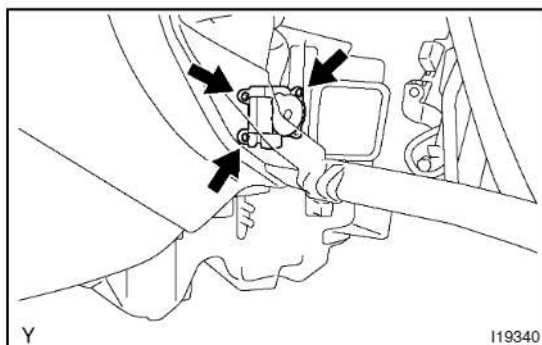
INSTALLATION

Installation is in the reverse order of removal (See page AC-16).

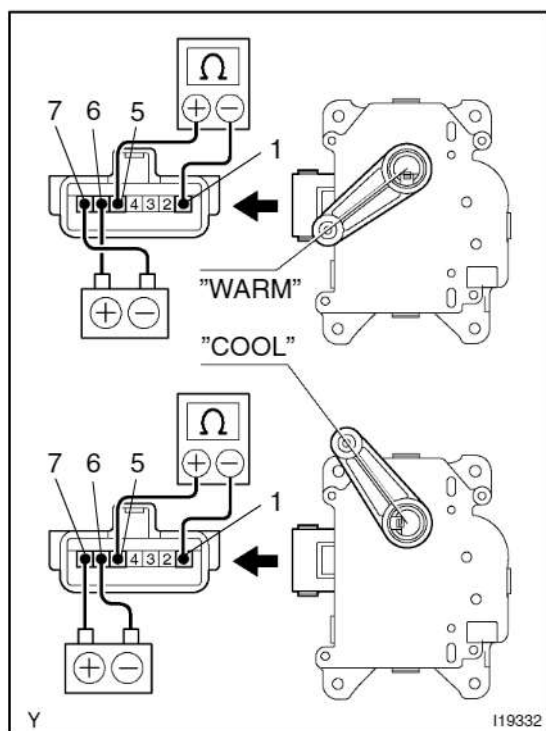
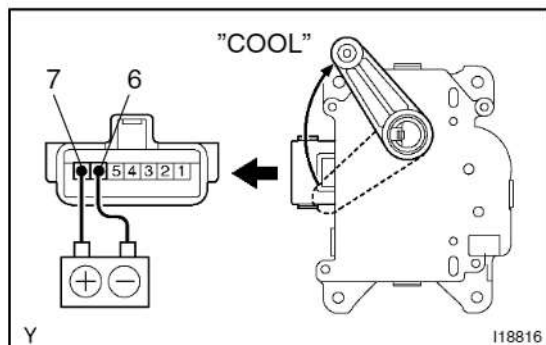
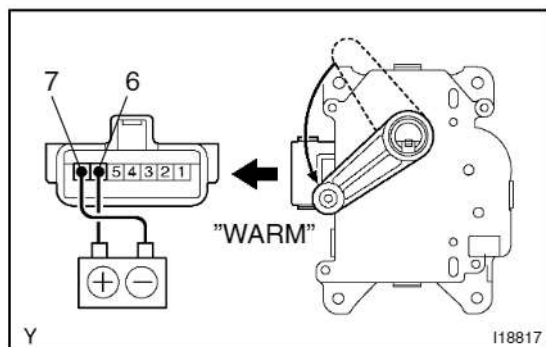
AIR MIX SERVOMOTOR REMOVAL

AC39M-01

1. REMOVE BLOWER UNIT (See page AC-16)



2. REMOVE AIR MIX SERVOMOTOR
 - (a) Disconnect the connector.
 - (b) Remove the 3 screws and air mix servomotor.



INSPECTION

1. LHD:

INSPECT AIR MIX SERVOMOTOR OPERATION

- (a) Connect the positive (+) lead from the battery to terminal 6 and the negative (-) lead to terminal 7 and check that the arm turns to "WARM" side smoothly.

If operation is not as specified, replace the servomotor.

- (b) Connect the positive (+) lead from the battery to terminal 7 and negative (-) lead to terminal 6 and check that arm turns to "COOL" side smoothly.

If operation is not as specified, replace the servomotor.

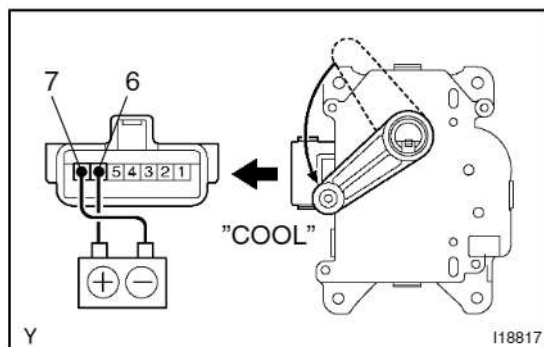
2. LHD:

INSPECT AIR MIX POSITION SENSOR RESISTANCE

Measure resistance between terminals at servomotor arm each position as shown in the chart.

Testerconnection	Condition	Specifiedcondition
3 – 1	Constant	4.2 – 7.8 k Ω
5 – 1	Arm position at "WARM"	0.84 – 1.56 k Ω
5 – 1	Arm position at "COOL"	3.36 – 6.24 k Ω

If resistance is not as specified, replace the servomotor.

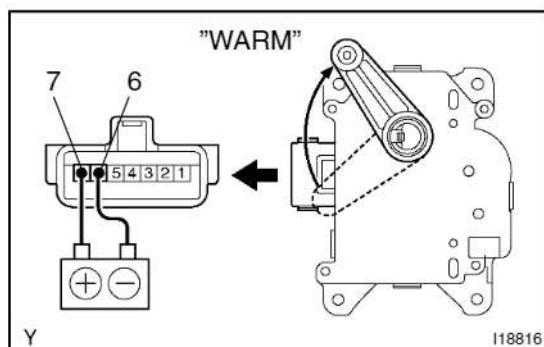


3. RHD:

INSPECT AIR MIX SERVOMOTOR OPERATION

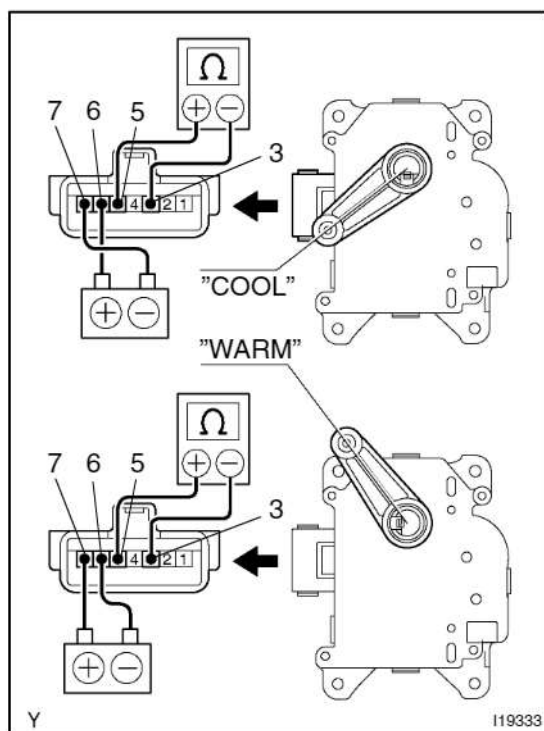
- (a) Connect the positive (+) lead from the battery to terminal 6 and the negative (-) lead to terminal 7 and check that the arm turns to "COOL" side smoothly.

If operation is not as specified, replace the servomotor.



- (b) Connect the positive (+) lead from the battery to terminal 7 and negative (-) lead to terminal 6 and check that arm turns to "WARM" side smoothly.

If operation is not as specified, replace the servomotor.



4. RHD:

INSPECT AIR MIX POSITION SENSOR RESISTANCE

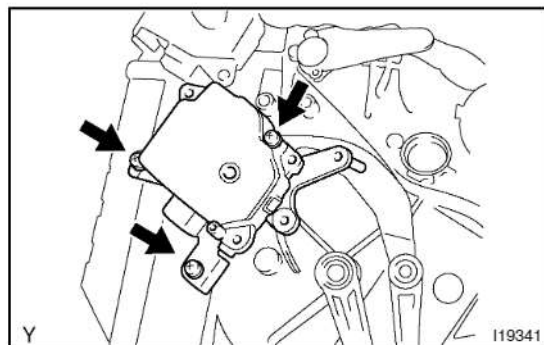
Measure resistance between terminals at servomotor arm each position as shown in the chart.

Testerconnection	Condition	Specifiedcondition
3 – 1	Constant	4.2 – 7.8 kΩ
5 – 3	Arm position at "COOL"	3.36 – 6.24 kΩ
5 – 3	Arm position at "WARM"	0.84 – 1.56 kΩ

If resistance is not as specified, replace the servomotor.

INSTALLATION

Installation is in the reverse order of removal (See page AC-19).

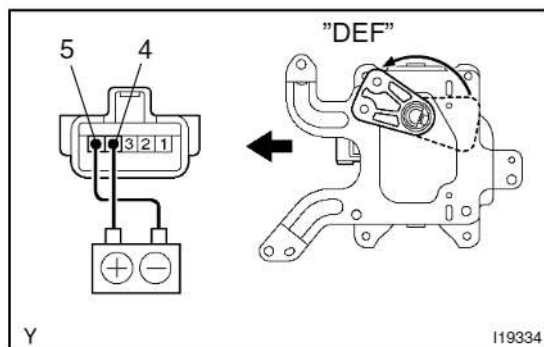


AIR OUTLET SERVOMOTOR REMOVAL

AC39P-01

REMOVE AIR OUTLET SERVOMOTOR

- (a) Disconnect the connector.
- (b) Remove the 3 screws and air outlet servomotor.



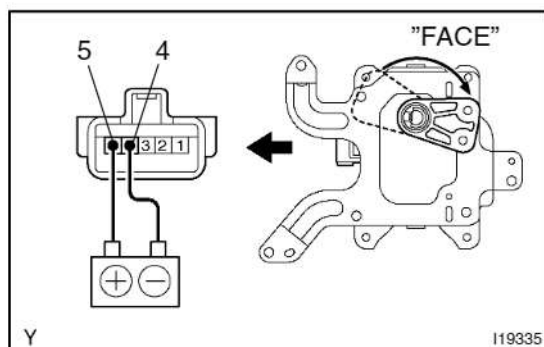
INSPECTION

1. LHD:

INSPECT AIR OUTLET SERVOMOTOR OPERATION

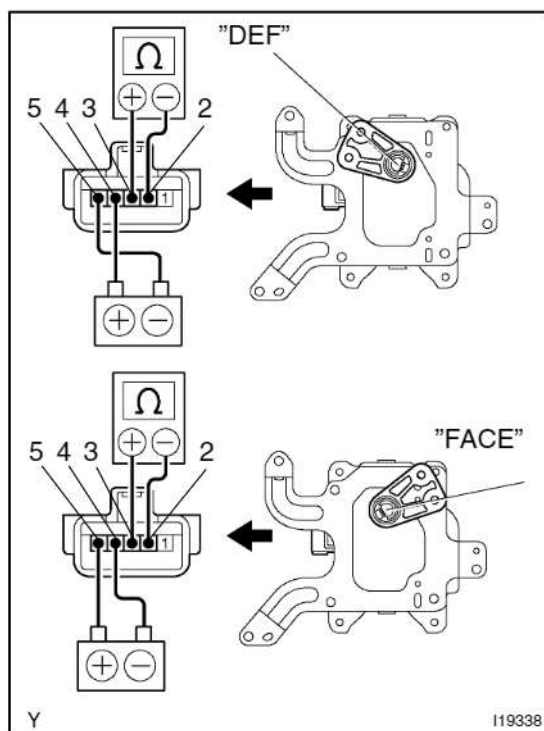
- (a) Connect the positive (+) lead from the battery to terminal 4 and negative (-) lead to terminal 5 and check that arm turns to "DEF" side smoothly.

If operation is not as specified, replace the servomotor.



- (b) Connect the positive (+) lead from the battery to terminal 5 and the negative (-) lead to terminal 4 and check that the arm turns to "FACE" side smoothly.

If operation is not as specified, replace the servomotor.



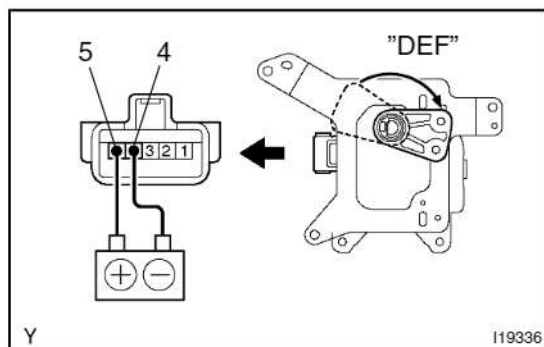
2. LHD:

INSPECT AIR OUTLET POSITION SENSOR RESISTANCE

Measure resistance between terminals at servomotor arm each position as shown in the chart.

Tester connection	Condition	Specified condition
2 - 1	Constant	4.2 - 7.8 k Ω
3 - 2	Arm position at "DEF"	3.49 - 6.47 k Ω
3 - 2	Arm position at "FACE"	0.71 - 1.33 k Ω

If resistance is not as specified, replace the servomotor.

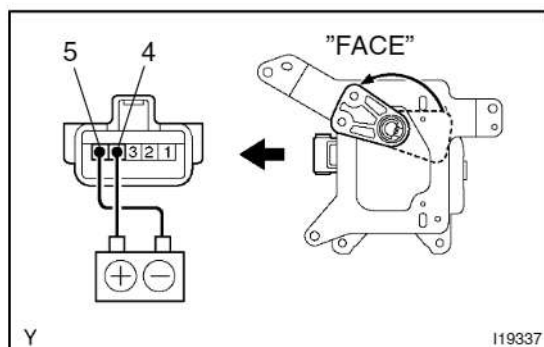


3. RHD:

INSPECT AIR OUTLET SERVOMOTOR OPERATION

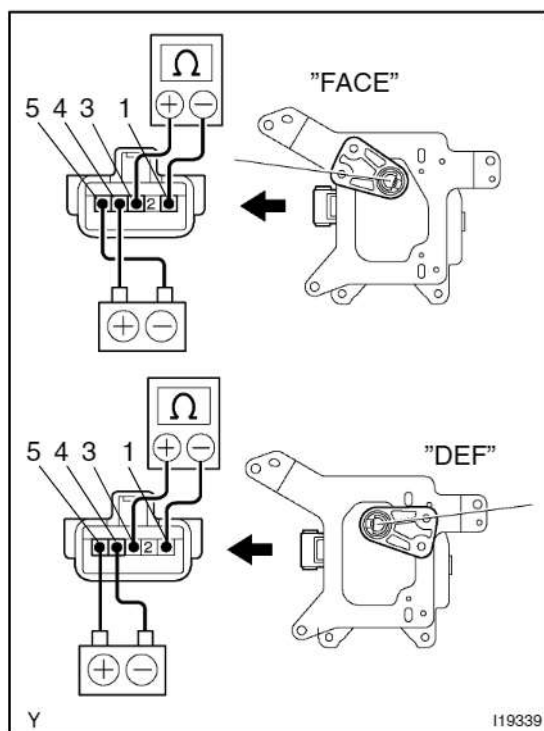
- (a) Connect the positive (+) lead from the battery to terminal 5 and negative (–) lead to terminal 4 and check that arm turns to "DEF" side smoothly.

If operation is not as specified, replace the servomotor.



- (b) Connect the positive (+) lead from the battery to terminal 4 and the negative (–) lead to terminal 5 and check that the arm turns to "FACE" side smoothly.

If operation is not as specified, replace the servomotor.



4. RHD:

INSPECT AIR OUTLET POSITION SENSOR RESISTANCE

Measure resistance between terminals at servomotor arm each position as shown in the chart.

Tester connection	Condition	Specified condition
2 – 1	Constant	4.2 – 7.8 kΩ
3 – 1	Arm position at "DEF"	3.49 – 6.47 kΩ
3 – 1	Arm position at "FACE"	0.71 – 1.33 kΩ

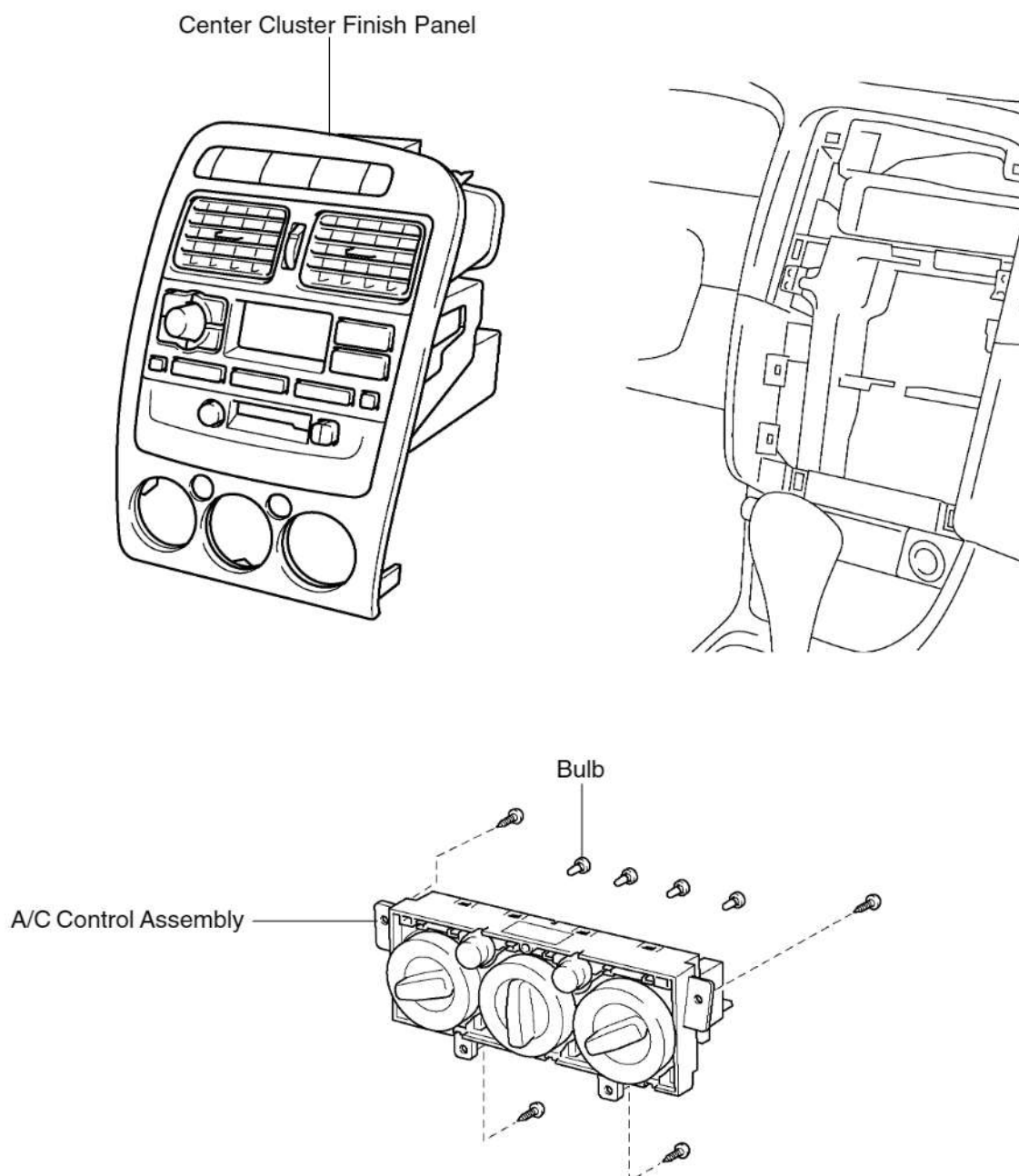
If resistance is not as specified, replace the servomotor.

INSTALLATION

Installation is in the reverse order of removal (See page AC-23).

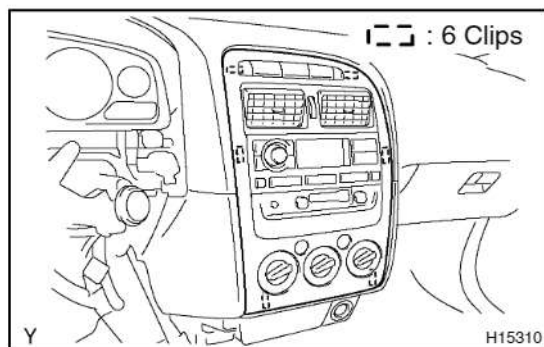
AIR CONDITIONER CONTROL ASSEMBLY COMPONENTS

AC39S-01



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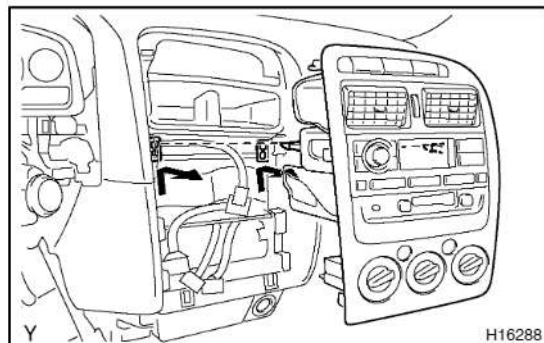
I18087



REMOVAL

1. REMOVE CENTER CLUSTER FINISH PANEL

- (a) Using a screwdriver, remove the cluster finish panel.



- (b) Remove the cluster finish panel shown in the illustration.
(c) Disconnect the connectors.

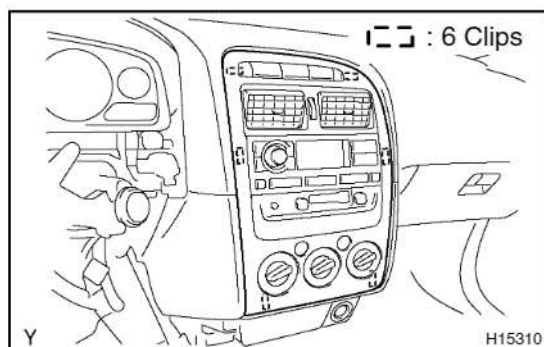
2. REMOVE A/C CONTROL ASSEMBLY

Remove the 4 screws and A/C control panel assembly.

INSTALLATION

1. INSTALL A/C CONTROL ASSEMBLY

Install the A/C control panel assembly to the cluster finish panel with the 4 screws.



2. INSTALL CENTER CLUSTER FINISH PANEL

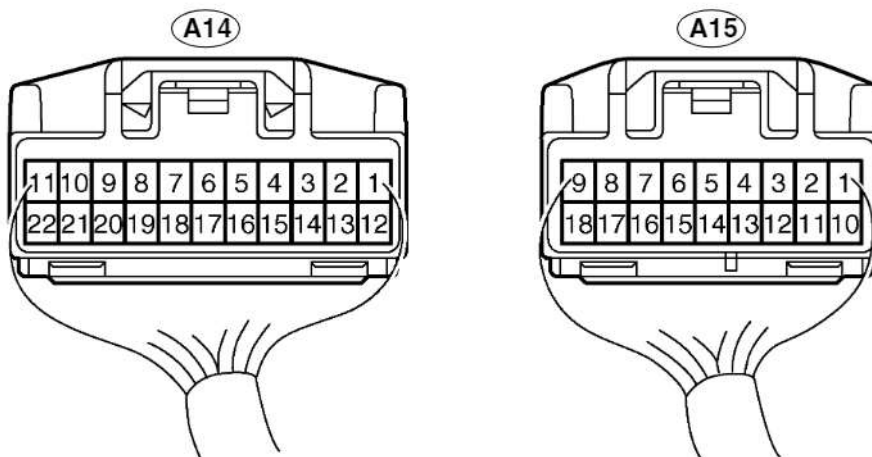
- (a) Connect the connectors.
- (b) Install the cluster finish panel.

AIR CONDITIONER AMPLIFIER ON-VEHICLE INSPECTION

AC39V-01

1. REMOVE A/C CONTROL ASSEMBRY (See page AC-28)
2. INSPECT A/C AMPLIFIER CIRCUIT

From back side:



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Tester connection	Condition	Specified condition
TAM ↔ TAM-SG (A14-18 ↔ A14-14)	IG ON. Ambient temp.: 25 °C (77 °F)	1.35 – 1.75 V
	IG ON. Ambient temp.: 40 °C (104 °F)	0.85 – 1.25 V
TR ↔ TR-SG (A14-7 ↔ A14-3)	IG ON. Room temp.: 25 °C (77 °F)	1.8 – 2.2 V
	IG ON. Room temp.: 40 °C (104 °F)	0.85 – 1.25 V
TS ↔ TS-S5 (A14-19 ↔ A14-3)	IG ON. Solar sensor subject to electric light	1.0 V or more
	IG ON. Solar sensor covered by cloth	Below 1.0 V
TE ↔ TE-SG (A14-8 ↔ A14-15)	IG ON. Evaporator temp.: 0 °C (32 °F)	2.0 – 2.4 V
	IG ON. Evaporator temp.: 15 °C (59 °F)	1.4 – 1.8 V
LOCK ↔ LOCK-SG (A15-9 ↔ A15-18)	Start engine. Compressor: Operate	4.5 – 5.5 V
TW ↔ GND (A15-7 ↔ A14-12)	IG ON	Pulse generation
MGC ↔ GND (A15-4 ↔ A14-12)	Start engine (idling). Magnetic clutch: ON	10 – 14 V
	Start engine (idling). Magnetic clutch: OFF	Below 1.5 V
TPM ↔ TPM-SG (A14-20 ↔ A14-17)	IG ON. Mode selector: FACE	3.5 – 4.5 V
	IG ON. Mode selector: DEF	0.5 – 1.5 V
TPM-S5 ↔ TPM-SG (A14-1 ↔ A14-17)	IG ON. Set temp.: MAX. COOL	3.5 – 4.5 V
	IG ON. Set temp.: MAX. HOT	0.5 – 1.5 V
TPM-SG ↔ Body ground (A14-17 ↔ Body ground)	Always	1 Ω or less
AOF ↔ GND (A15-1 ↔ A14-12)	IG ON. Mode selector: Except FACE	Below 1.0 V
	IG ON. Mode selector: FACE	10 – 14 V
AOD ↔ GND (15-2 ↔ A14-12)	IG ON. Mode selector: Except DEF	Below 1.0 V
	IG ON. Mode selector: DEF	10 – 14 V

AIR CONDITIONING – AIR CONDITIONER AMPLIFIER

AMC ↔ GND (A15-10 ↔ A14-12)	IG ON. Set temp.: Except MAX. COOL	Below 1.0 V
	IG ON. Set temp.: COOL	10 – 14 V
AMH ↔ GND (A15-11 ↔ A14-12)	IG ON. set temp.: Except MAX. HOT	Below 1.0 V
	IG ON. Set temp.: HOT	10 – 14 V
HR ↔ GND (A14-4 ↔ A14-12)	IG ON. Blower motor: Operate	Below 1.0 V
	IG ON. Blower motor: Not operate	10 – 14 V
ILL+ ↔ GND (A14-22 ↔ A14-12)	Light control switch: TAIL	10 – 14 V
	Light control switch: OFF	0 V
BLW ↔ GND (A14-5 ↔ A14-12)	IG ON. Blower motor: Operate	Pulse generation
	IG ON. Blower motor: Not operate	10 – 14 V
GND ↔ Body ground (A14-12 ↔ Body ground)	Always	1 Ω or less
REC ↔ GND (A15-17 ↔ A14-12)	IG ON. Air inlet selector: RECIRCULATE	Below 0.7 V
	IG ON. Air inlet selector: FRESH	10 – 14 V
FRS ↔ GND (A15-16 ↔ A14-12)	IG ON. Air inlet selector: FRESH	Below 0.7 V
	IG ON. Air inlet selector: RECIRCULATE	10 – 14 V
IG ↔ GND (A14-11 ↔ A14-12)	IG ON.	10 – 14 V
	IG OFF.	0 V

