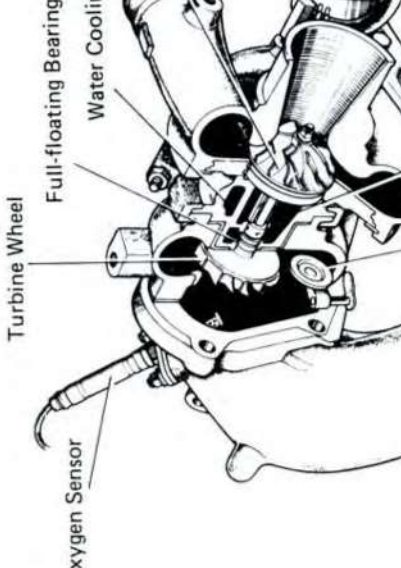
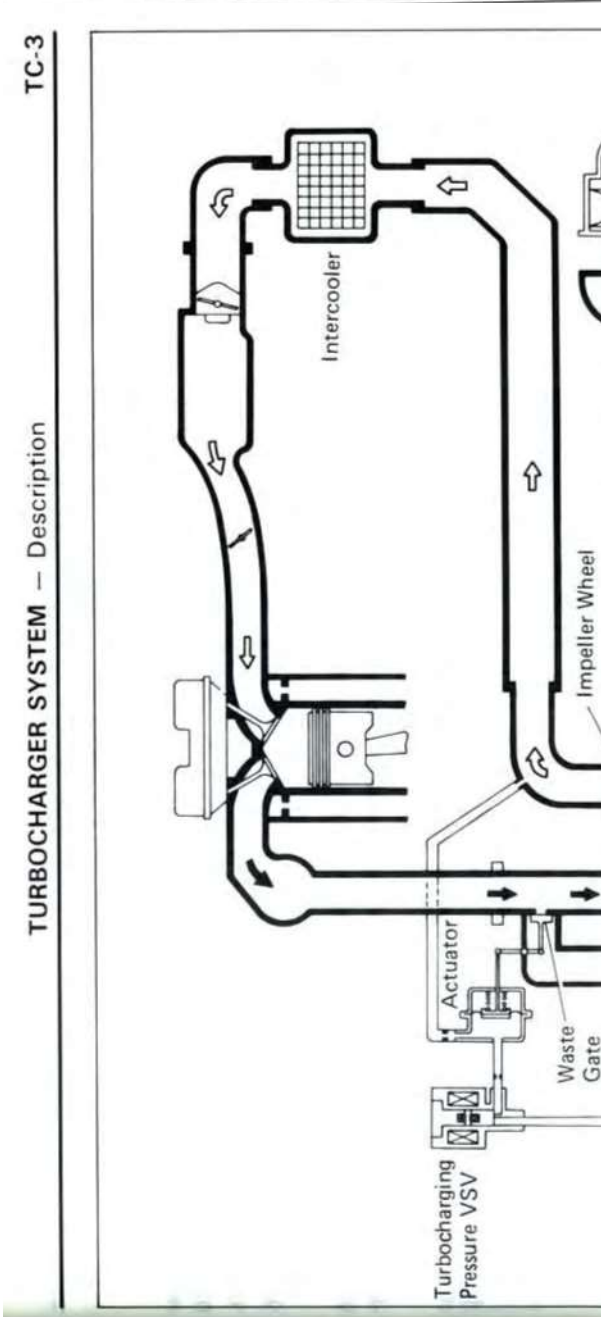


TURBOCHARGER SYSTEM

	Page
DESCRIPTION	TC-2
PRECAUTIONS	TC-4
TROUBLESHOOTING	TC-5
CHECK AND REPLACEMENT OF INTERCOOLER COOLANT	TC-7
TURBOCHARGER	TC-8
INTERCOOLER	TC-15

TC-2	TURBOCHARGER SYSTEM — Description
	DESCRIPTION
	



PRECAUTIONS

1. Do not stop the engine immediately after pulling a trailer or high speed or uphill driving. Idle the engine 20 — 120 seconds, depending on the severity of the driving condition.
2. Avoid sudden racing or acceleration immediately after starting a cold engine.
3. If the engine is run with the air cleaner removed, foreign material entering will damage the wheels which run at extremely high speed.
4. If the turbocharger is defective and must be replaced, first check for the cause of the defect in reference to the following items and replace parts if necessary:
 - Engine oil level and quality
 - Conditions under which the turbocharger was used

TURBOCHARGER SYSTEM — Troubleshooting		TC-5
TROUBLESHOOTING		
NOTE: Before troubleshooting the turbocharger, first check the engine itself. (Valve clearance, engine compression, ignition timing etc.)		
INSUFFICIENT ACCELERATION, LACK OF POWER OR EXCESSIVE FUEL CONSUMPTION		
(Possible Cause)	(Check Procedure and Correction Method)	
1. TURBOCHARGING PRESSURE TOO LOW	Check turbocharging pressure. (See page TC-8) Turbocharging pressure: 0.40 — 0.70 kg/cm ² (5.7 — 10.0 psi, 39 — 69 kPa)	

TC-6		TURBOCHARGER SYSTEM — Troubleshooting	
ABNORMAL NOISE			
(Possible Cause)		(Check Procedure and Correction Method)	
1. TURBOCHARGING HEAT INSULATOR RESONANCE		Check for loose, improperly installed or deformed insulator mount bolts, and repair or replace as necessary.	
2. EXHAUST PIPE LEAKING OR VIBRATING		Check for deformed exhaust pipe, loose mount bolts or damaged gasket, and repair or replace as necessary.	
3. ERRATIC TURBOCHARGER OPERATION		Refer to Item 6 of INSUFFICIENT ACCELER-	

TURBOCHARGER SYSTEM – Check and Replacement of Intercooler Coolant
TC-7

CHECK AND REPLACEMENT OF INTERCOOLER COOLANT

CHECK OF INTERCOOLER COOLANT

1. CHECK INTERCOOLER COOLANT LEVEL

Check whether the intercooler (tank) is filled with coolant.
If not, add coolant.

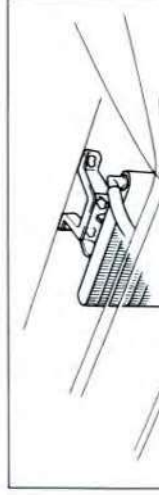
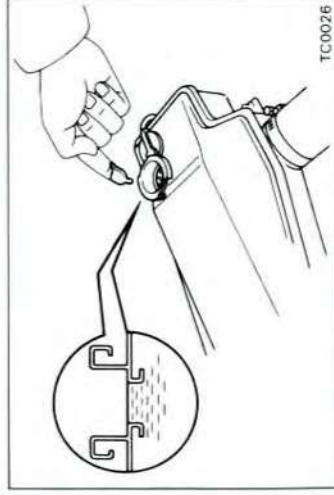
2. CHECK INTERCOOLER COOLANT QUALITY

There should not be any excessive deposits of rust or scales around the intercooler (tank) cap or intercooler filler hole, and the coolant should be free from oil.
If excessively dirty, replace the coolant.

REPLACEMENT OF INTERCOOLER COOLANT

1. DRAIN INTERCOOLER COOLANT

(a) Remove the filler cap.



TURBOCHARGER

ON-VEHICLE INSPECTION OF TURBOCHARGER

1. INSPECT INTAKE AIR SYSTEM

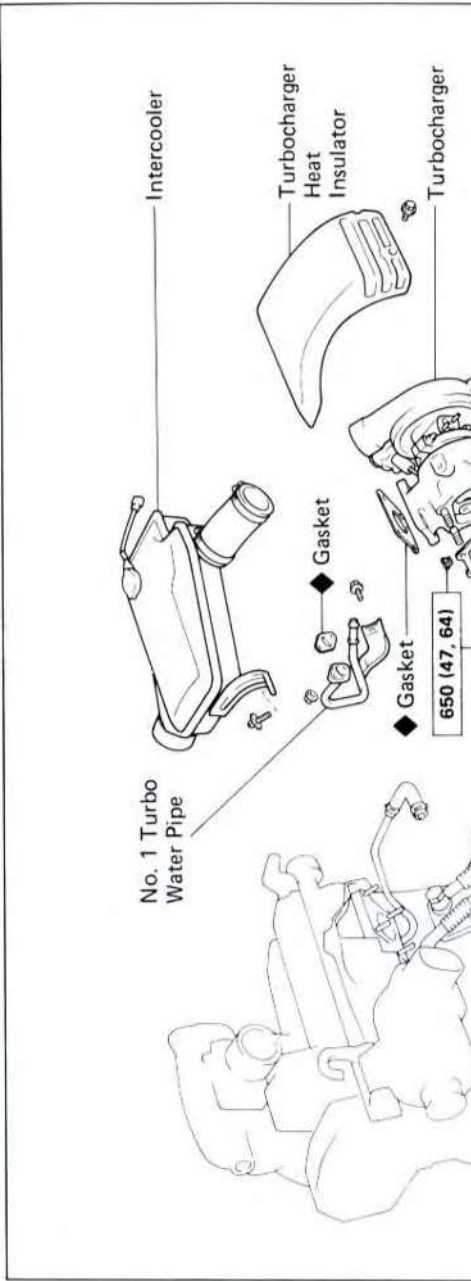
Check for leakage or clogging between the air cleaner and turbocharger inlet and between the turbocharger outlet and cylinder head.

- Clogged air cleaner Clean or replace the element
- Hoses collapsed or deformed Check each connection and repair
- Cracks in components Check and replace

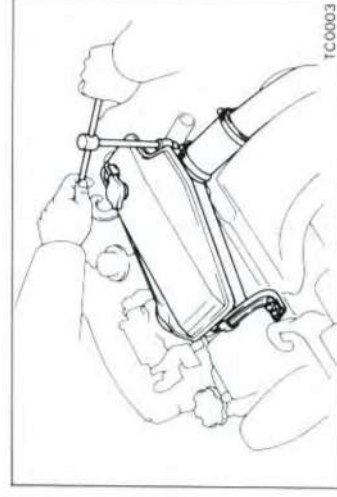
2. INSPECT EXHAUST SYSTEM

Check for leakage or clogging between the cylinder head and turbocharger inlet and between the turbocharger outlet and exhaust pipe.

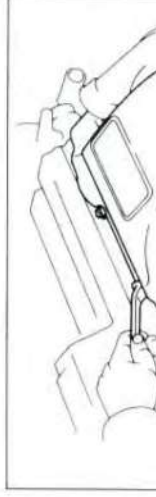
COMPONENTS



TC-10

TURBOCHARGER SYSTEM — Turbocharger**7. REMOVE INTERCOOLER**

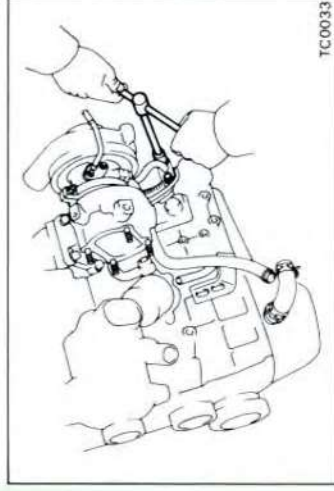
- (a) Disconnect the following hoses and connector:
- (1) Two intercooler radiator water hoses
 - (2) Reservoir tank water hose
 - (3) Intercooler coolant level warning sensor connector
- (b) Loosen the two hose clamps, and remove the three bolts.
- (c) Disconnect the air hoses, and remove the intercooler together with the hose.

**8. REMOVE ALTERNATOR DUCT**

9. **REMOVE NO.2 ALTERNATOR BRACKET**
(See step 15 on page EM-28)

TURBOCHARGER SYSTEM — Turbocharger **TC-11****14. REMOVE TURBOCHARGER**

- (a) Remove the two bolts holding the No.1 turbo oil pipe to the No.2 oil pipe.



- (b) Remove the four nuts, turbocharger and two gaskets.



TC-12

TURBOCHARGER SYSTEM — Turbocharger



INSPECTION OF TURBOCHARGER

1. INSPECT IMPELLER WHEEL ROTATION

Grasp the edge of the turbine wheel and turn it. Check that the impeller wheel turns smoothly.

If the impeller wheel does not turn or if it turns with a drag, replace the turbocharger assembly.



2. INSPECT AXIAL PLAY OF IMPELLER WHEEL

Insert a dial indicator into the intake side hole the turbine wheel edge by and check the axial play.

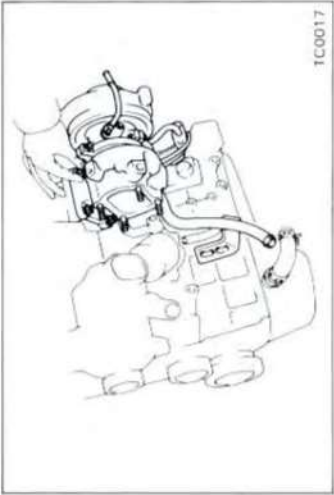
Axial play: 0.13 mm (0.0051 in.) or less

TURBOCHARGER SYSTEM – Turbocharger

TC-13

4. INSTALL TURBOCHARGER

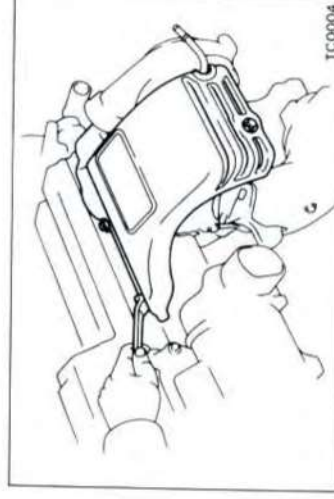
- (a) Install a new gasket and the turbocharger with the four nuts. Do not torque the nuts.



- (b) Install the oil pipe with the two bolts and nuts.
(c) Torque the bolts and nuts.



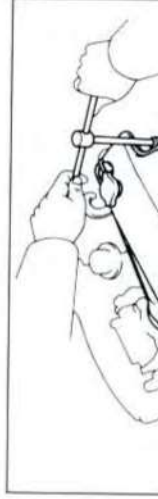
Torque:
Turbocharger to exhaust manifold
65.0 kg-cm (47 ft-lb 64 N.m)

TC-14**TURBOCHARGER SYSTEM — Turbocharger****8. INSTALL TURBOCHARGER HEAT INSULATOR**

Install the heat insulator with the three bolt.

9. INSTALL NO.2 ALTERNATOR BRACKET

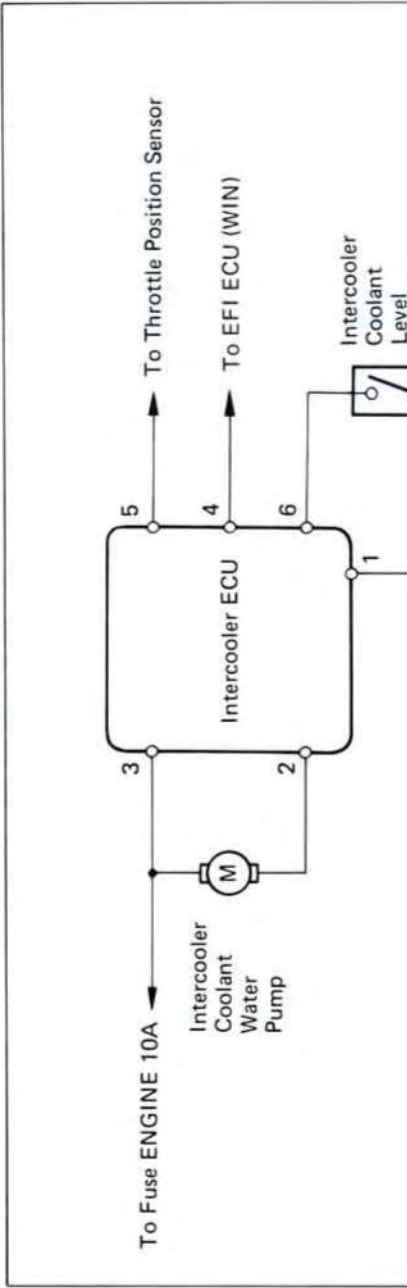
(See step 32 on page EM-40)

10. INSTALL ALTERNATOR DUCT**11. INSTALL INTERCOOLER**

(a) Connect the air hoses, and install the intercooler with the three bolts.

(b) Connect the following hoses and connector:

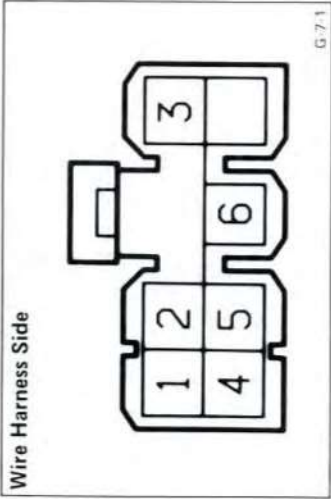
INTERCOOLER
SYSTEM CIRCUIT



TC-16

TURBOCHARGER SYSTEM — Intercooler

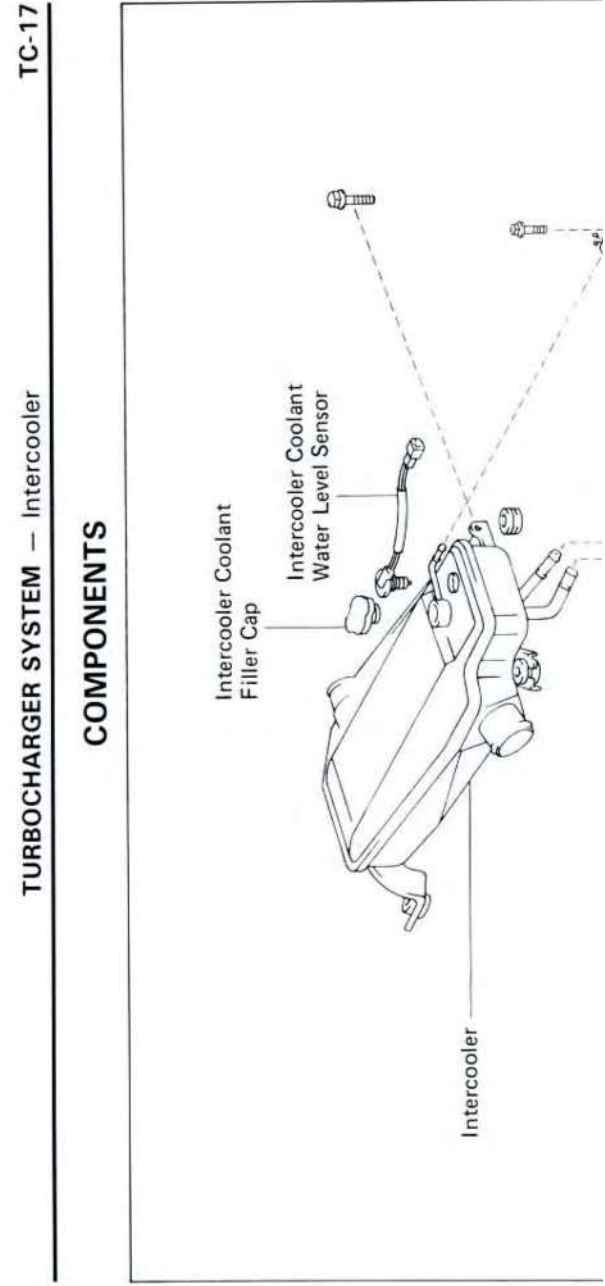
Wire Harness Side



INSPECTION OF INTERCOOLER ECU CIRCUIT
INSPECT INTERCOOLER ECU FOR CIRCUIT

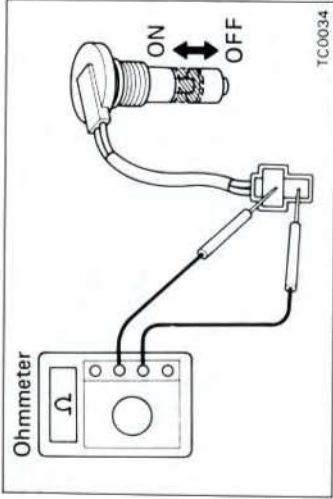
LOCATION (ECU): Under the instrument panel on the passenger side.
Disconnect the connector from the intercooler ECU, and check the connector on the wiring harness side as shown in the chart below.

Check for	Tester connection	Condition	Specified value
Continuity	1 — Ground 2 — Ground	—	Continuity



TC-18

TURBOCHARGER SYSTEM — Intercooler

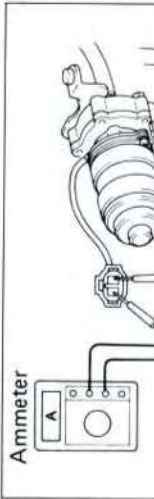


INSPECTION OF INTERCOOLER COMPONENTS

1. INSPECT INTERCOOLER COOLANT LEVEL WARNING SENSOR

- (a) Check that there is continuity between the terminals with the switch ON (float up).
- (b) Check that there is no continuity between the terminals with the switch OFF (float down).

If operation is not as specified, replace the sensor.



2. INSPECT INTERCOOLER WATER PUMP

- (a) Connect the battery and ammeter to the water pump connector.
- (b) Check that the pump rotates smoothly, and check the

