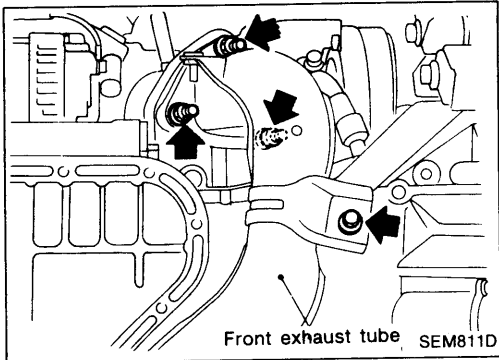
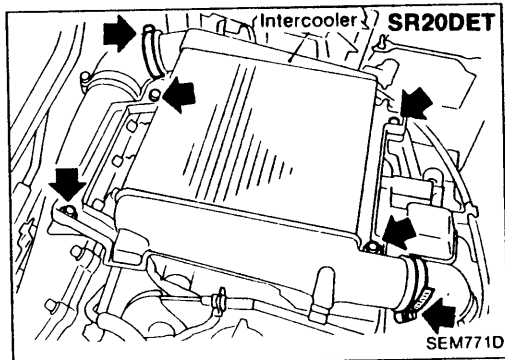


## Removal

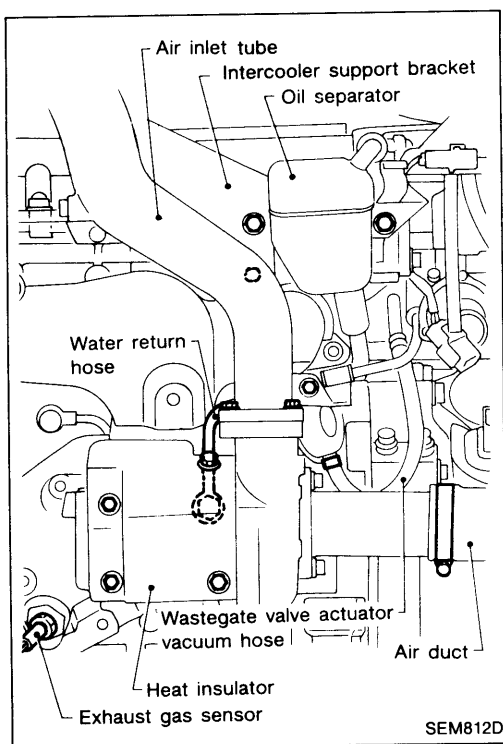
1. Drain coolant from radiator and cylinder block.
2. Remove engine under cover.



3. Remove front exhaust tube.



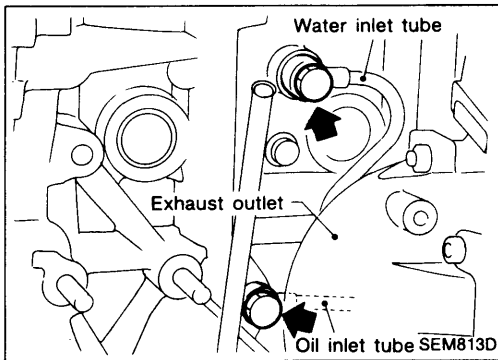
4. Remove intercooler cover and intercooler.
5. Remove radiator with fans.



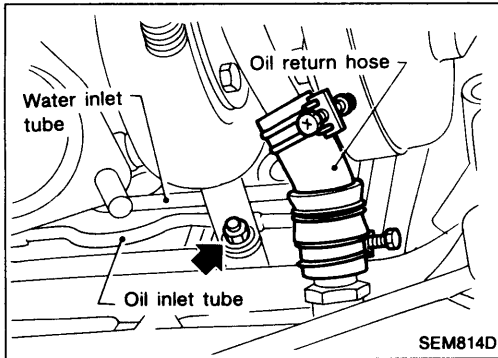
6. Remove heat insulator.
7. Remove water return tube.
8. Remove air inlet tube.
9. Remove oil separator and intercooler support bracket.
10. Remove wastegate valve actuator vacuum hose.
11. Remove air duct for turbocharger unit.
12. Remove exhaust gas sensor.

**Removal (Cont'd)**

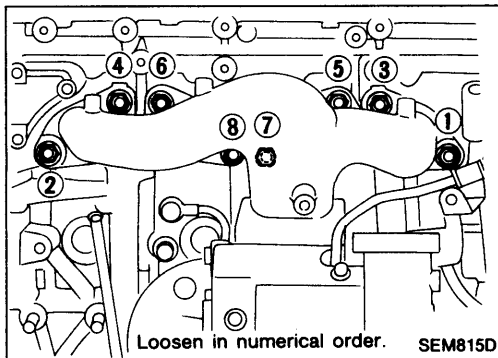
13. Remove exhaust outlet cover.
14. Remove water inlet tube and oil inlet tube.



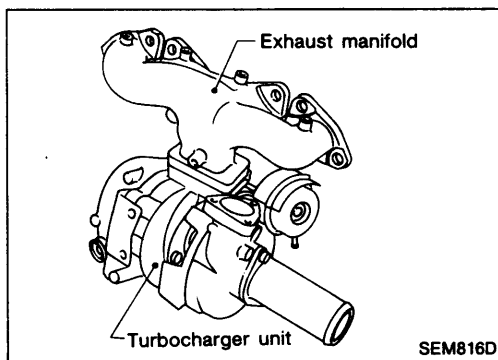
15. Remove oil return hose.
16. Remove nut fixing both water inlet tube and oil inlet tube.



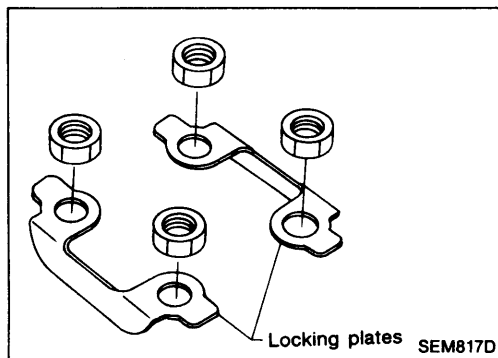
17. Remove exhaust manifold cover.
18. Remove exhaust manifold fixing nuts.



19. Remove exhaust manifold with turbocharger unit.

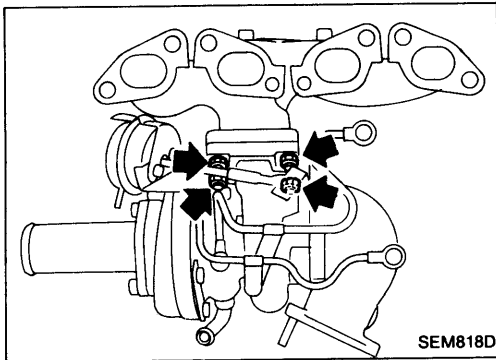
**Disassembly**

1. Unbend locking plates for turbocharger unit fastening nuts.

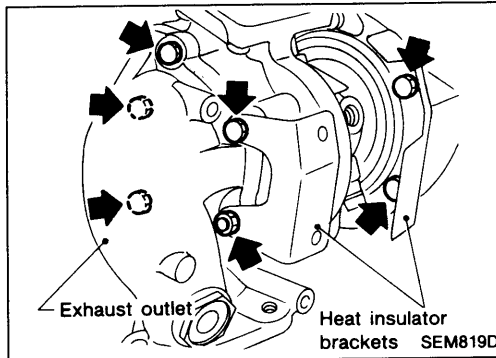


**TURBOCHARGER****Disassembly (Cont'd)**

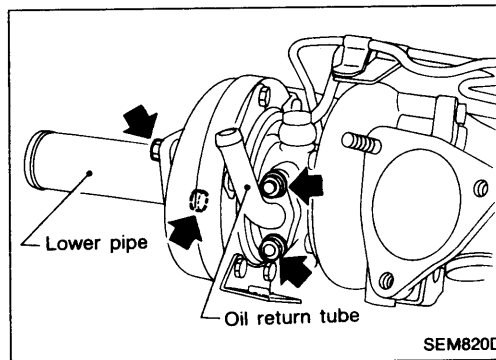
2. Remove exhaust manifold.



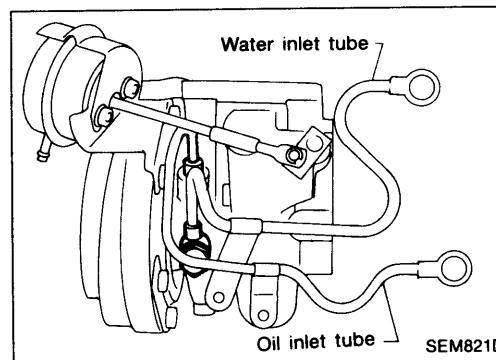
- 3.. Remove exhaust outlet and heat insulator brackets.



4. Remove oil return tube.
5. Remove lower pipe.



6. Remove oil inlet tube and water inlet tube.

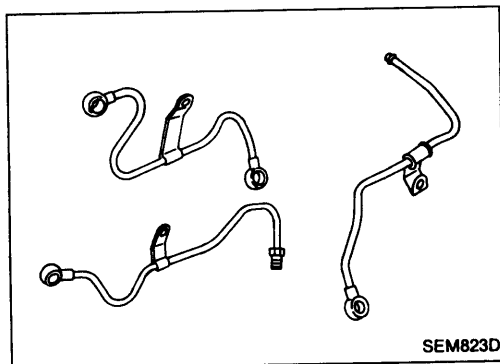
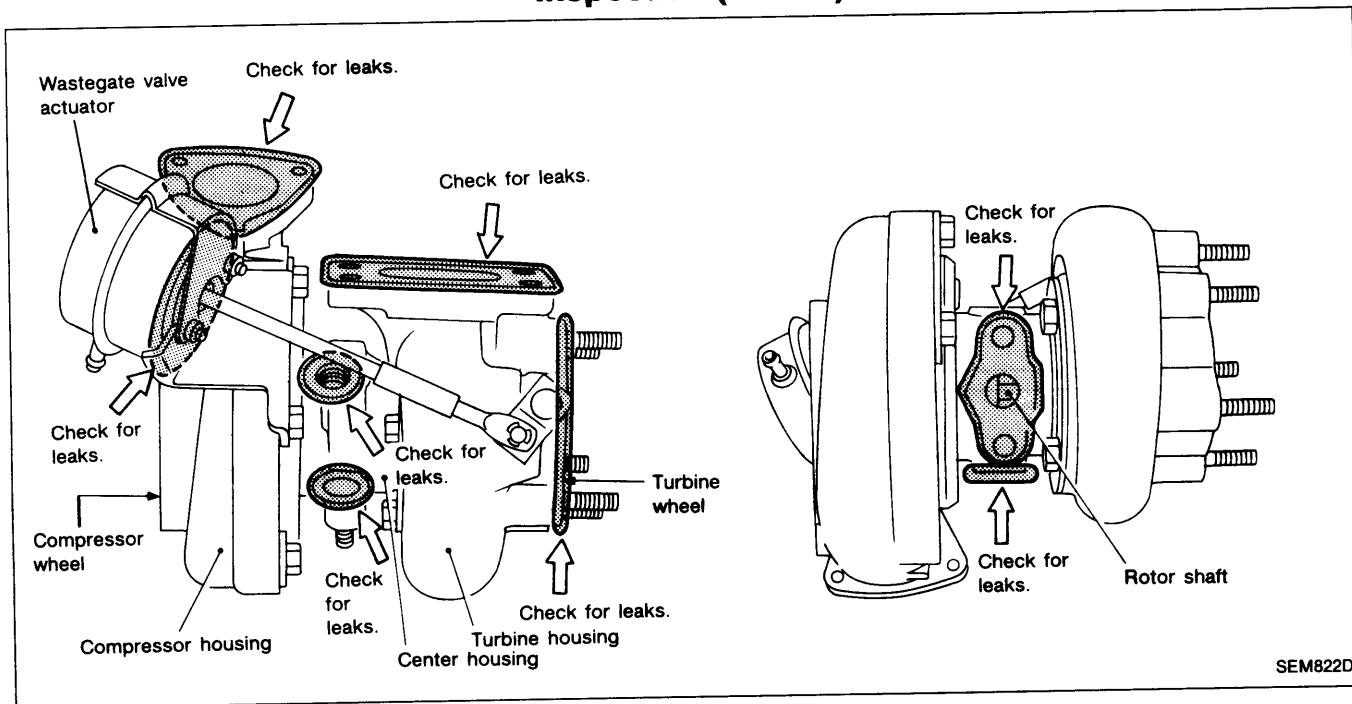
**Inspection**

Perform the following checks. If N.G., replace turbocharger unit.

# TURBOCHARGER

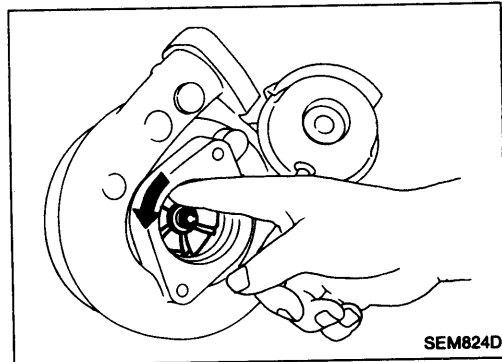
## Inspection (Cont'd)

SR



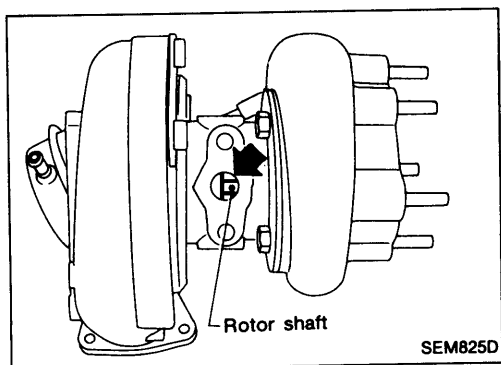
### OIL AND WATER TUBES

Check tubes for clogging.

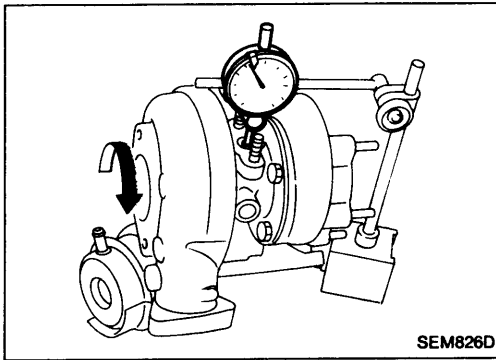


### ROTOR SHAFT

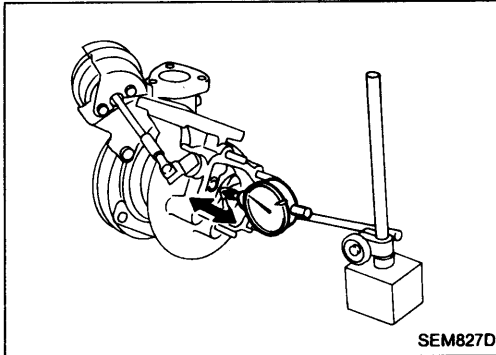
1. Check rotor shaft for smooth rotation.



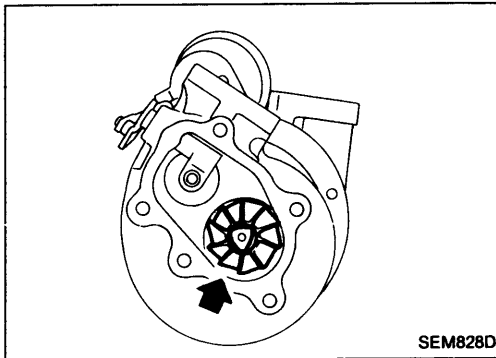
2. Check rotor shaft for carbon deposits.

**TURBOCHARGER****Inspection (Cont'd)**

3. Measure rotor shaft runout.  
**Runout (Total indicator reading):**  
 0.056 - 0.127 mm (0.0022 - 0.0050 in)

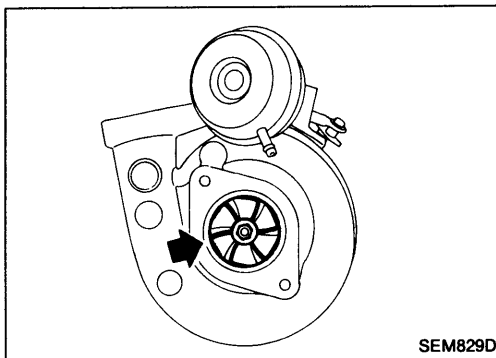


4. Measure rotor shaft end play.  
**End play:**  
 0.013 - 0.097 mm (0.0005 - 0.0038 in)
- Do not allow wheels to turn when axial play is being measured.

**TURBINE WHEEL**

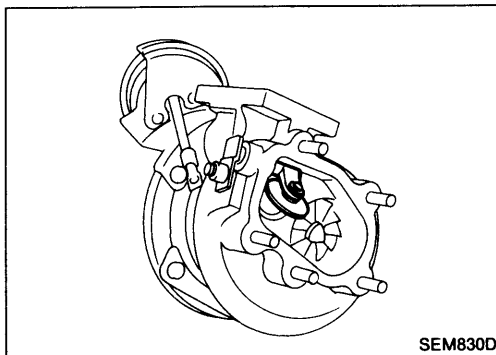
Check turbine wheel for the following.

- Oil
- Carbon deposits
- Deformed fins
- Contact with turbine housing

**COMPRESSOR WHEEL**

Check compressor wheel for the following.

- Oil
- Deformed fins
- Contact with compressor housing

**WASTEGATE VALVE**

Remove rod pin and check wastegate valve for cracks, deformation and smooth movement. Check valve seat surface for smoothness.

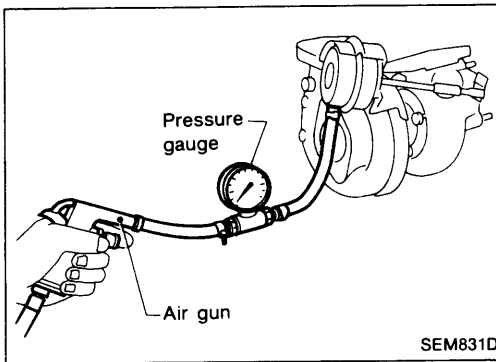
# TURBOCHARGER

## Inspection (Cont'd)

### WASTEGATE VALVE ACTUATOR

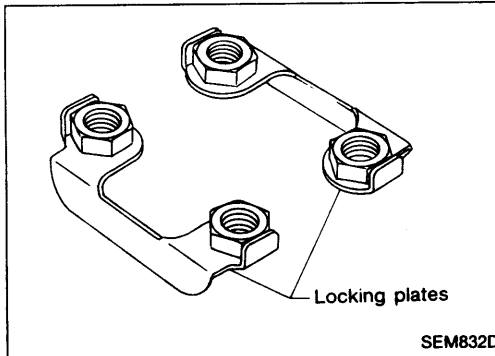
Apply compressed air to wastegate valve actuator and check it for smooth movement.

- Do not applying compressed air to the actuator continuously.
- The air pressure should be in the range of 59 to 69 kPa (0.59 to 0.69 bar, 0.6 to 0.7 kg/cm<sup>2</sup>, 9 to 10 psi).



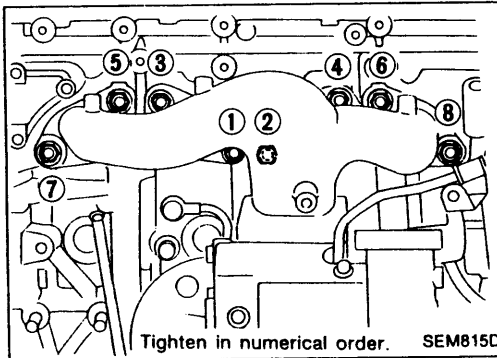
## Assembly

Assembly is the reverse order of disassembly. Bend locking plates along the side of turbocharger fastening nuts.



## Installation

1. Install exhaust manifold fixing nuts.



2. Installation is the reverse order of removal. When installing the water return tube, tighten in the following way.

### Tightening procedure:

- (1) Tighten bolt **A** temporarily.
- (2) Tighten bolt **B** to 20 to 31 N·m (2.0 to 3.2 kg-m, 14 to 23 ft-lb).
- (3) Tighten bolt **A** to 3.7 to 5.0 N·m (0.38 to 0.51 kg-m, 2.7 to 3.7 ft-lb).

