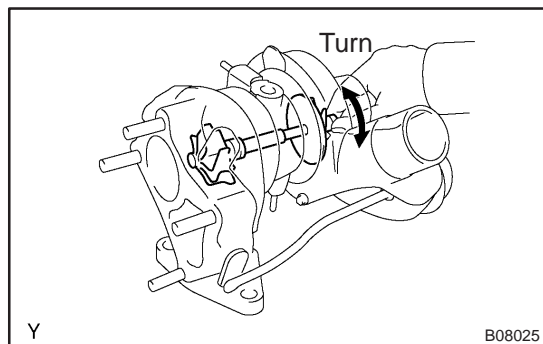


OVERHAUL

1. REMOVE COMPRESSOR INLET ELBOW

- (a) Remove 2 bolts and the compressor inlet elbow.

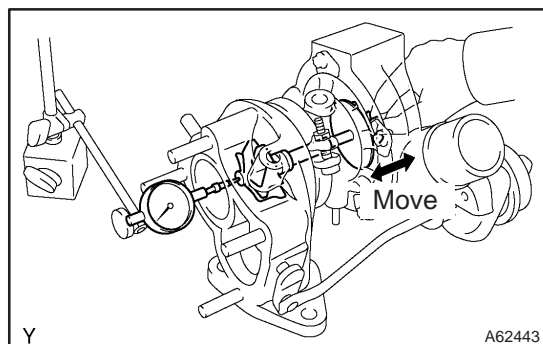


2. INSPECT TURBOCHARGER SUB-ASSY

- (a) Inspect turbine shaft rotation

- (1) Grasp the edge of the turbine shaft, and turn it.
- (2) Check that the turbine shaft turns smoothly.

If the turbine shaft turns remarkably heavily or stuck, replace the bearing housing. At that time, check also the interference with the turbine housing and compressor housing.

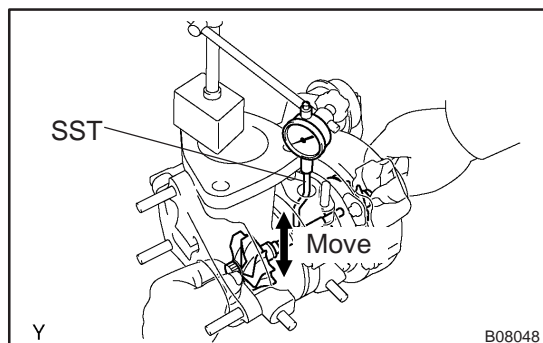


- (b) Inspect axial play of turbine shaft

- (1) Using a dial indicator, insert the needle of the dial indicator into the exhaust side.
- (2) Move the turbine shaft in an axial direction, measure the axial play of the turbine shaft.

Maximum oil clearance: 0.09 mm (0.0035 in.) or less

If the axial play is greater than maximum, replace the bearing housing. At that time, check also the interference with the turbine housing and compressor housing.



- (c) Inspect radial play of turbine shaft

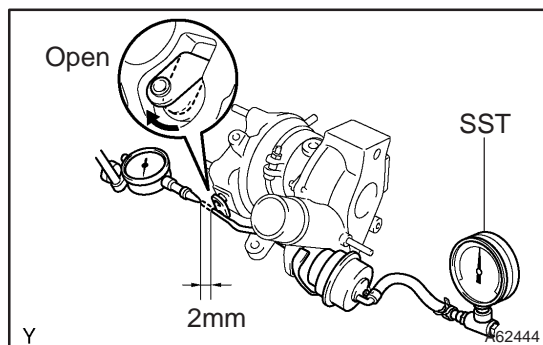
- (1) Using SST and a dial indicator, insert the needle of the dial indicator into the oil outlet hole, and set it in the center of the turbine shaft.

SST 09992-00600

- (2) Move the turbine shaft in a radial direction, measure the radial play of the turbine shaft.

Maximum oil clearance: 0.16 mm (0.0063 in.) or less

If the radial play is greater than maximum, replace the bearing housing. At that time, check also the interference with the turbine housing and compressor housing.



- (d) Inspect actuator and waste gate valve operation.

- (1) Disconnect the actuator hose from the compressor housing.
- (2) Using SST and a dial indicator, read the graduation of SST when the actuator push rod moved 2 mm (0.079 in.).

SST 09992-00242

Standard pressure:

129 – 140 kPa (1.32 – 1.43 kgf/cm², 18.7 – 20.3 psi)

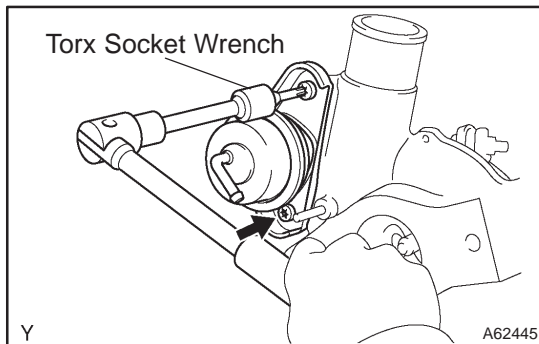
- (e) Move the actuator push rod, and check that the waste gate valve is open.

If operation is not as specified, replace the actuator and/or turbine housing.

NOTICE:

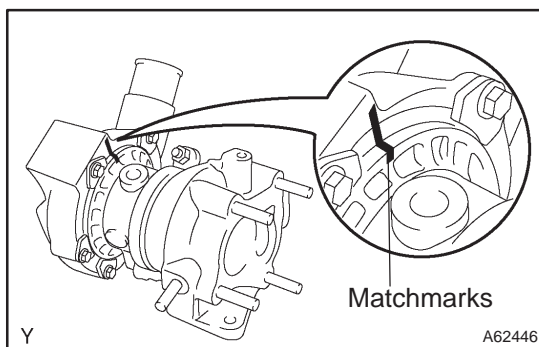
Never apply more than 161 kPa (1.64 kgf/cm², 28.5 psi) of pressure on the actuator.

- (f) Reconnect the actuator hose to the compressor housing.



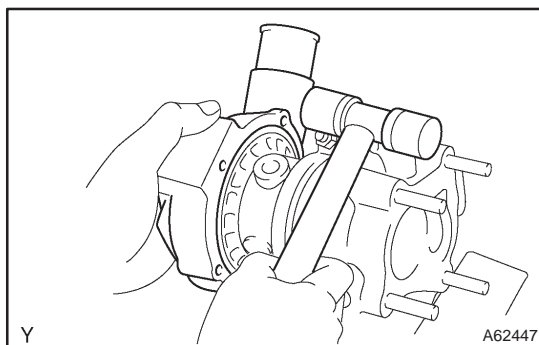
3. REMOVE W/BRACKET ACTUATOR ASSY

- (a) Remove the actuator hose.
- (b) Using a torx socket wrench (T30), remove the 2 screws holding the actuator to the compressor housing.
- (c) Remove the E-ring holding the actuator push rod to the waste gate valve link, and remove the actuator w/ bracket.



4. REMOVE COMPRESSOR HOUSING SUB-ASSY

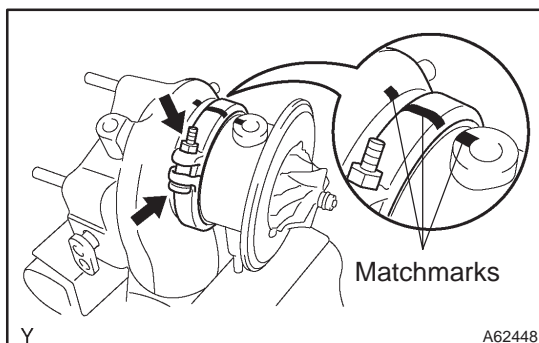
- (a) Place the matchmarks on the compressor housing and the bearing housing.
- (b) Remove the 5 bolts and 5 clamp plates.



- (c) Using a plastic-faced hammer, tap out the compressor housing.

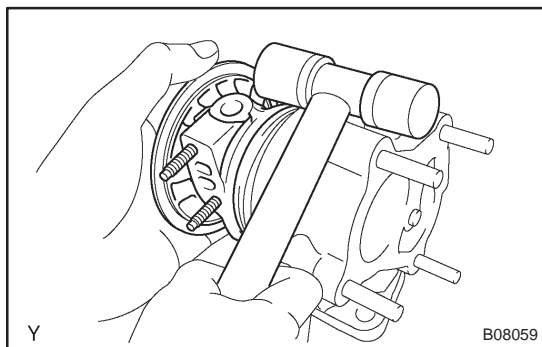
NOTICE:

Remove the compressor housing as straight as possible and do not make the impeller wheel interfere with the compressor housing.



5. REMOVE BEARING HOUSING SUB-ASSY

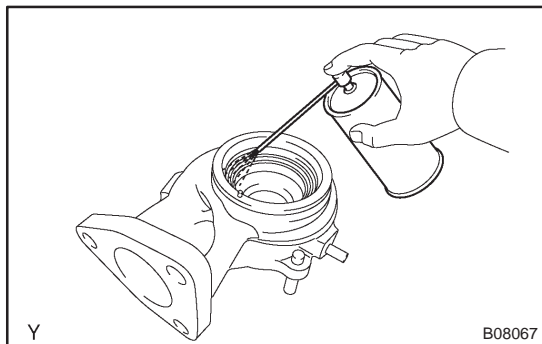
- (a) Place the matchmarks on the V band, turbine housing and bearing housing.
- (b) Remove the flat head square neck bolt, nut and V band.



- (c) Using a plastic-faced hammer, tap out the bearing housing.

NOTICE:

Remove the bearing housing as straight as possible and do not make the turbine wheel interfere with the turbine housing.

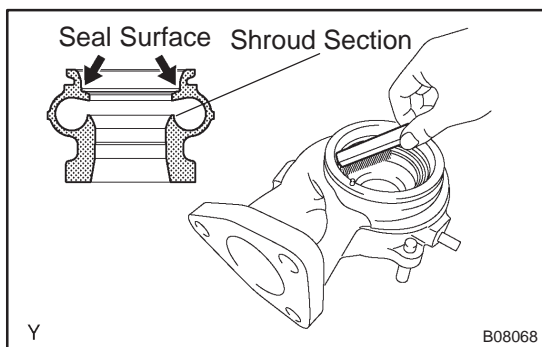


6. CLEAN TURBINE HOUSING

- (a) Spray the engine conditioner to the section where the carbon dirt is adhered.

NOTICE:

Be careful not to erase the matchmark of the turbine housing.



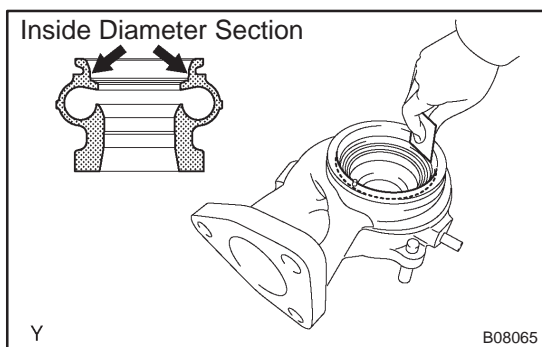
- (b) Using a wire brush, remove all the carbon dirt inside the turbine housing.

NOTICE:

Clean the seal surface and shroud section shown in the illustration sufficiently. And clean the waste gate valve seat sufficiently, too.

HINT:

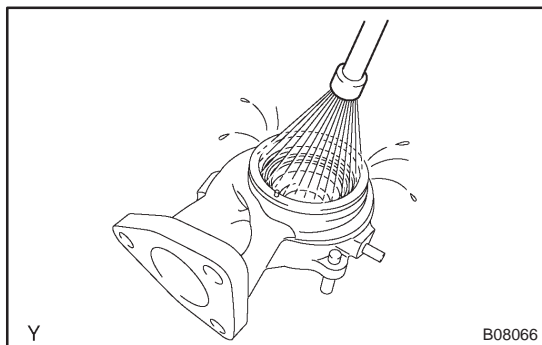
When the carbon dirt is heavily adhered, remove it using the screwdriver and the like.



- (c) Clean the inside diameter section with a sandpaper (No. 100) until the metal surface can be seen.

NOTICE:

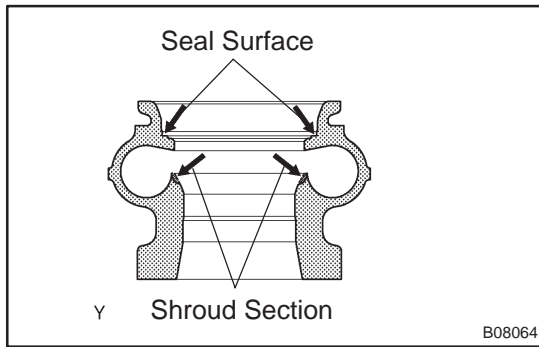
If the cleaning is not enough, installation of the bearing housing becomes harder, so clean it sufficiently.



- (d) Wash with compressed air or a steam cleaner.

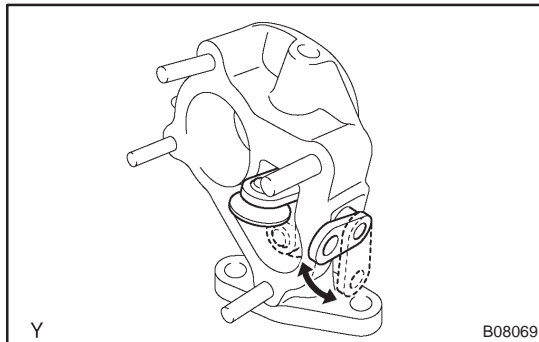
NOTICE:

Wash sufficiently without leaving any irregular objects.



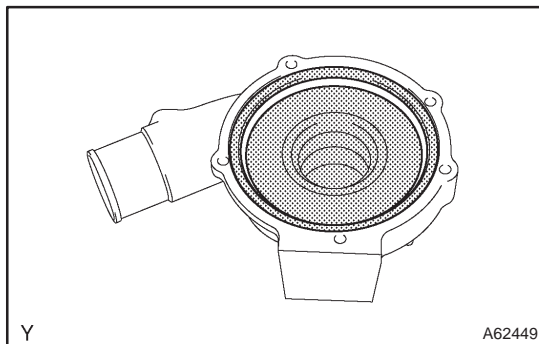
- (e) Check that there is no severe damage on the seal surface with the bearing housing.
- (f) Check that there is no bore made by the interference with the turbine wheel in the shroud section.

If the turbine housing is having remarkable damage or bore, replace the turbine housing and bearing housing.



- (g) Move the waste gate valve link and check that it runs smoothly without sticking.

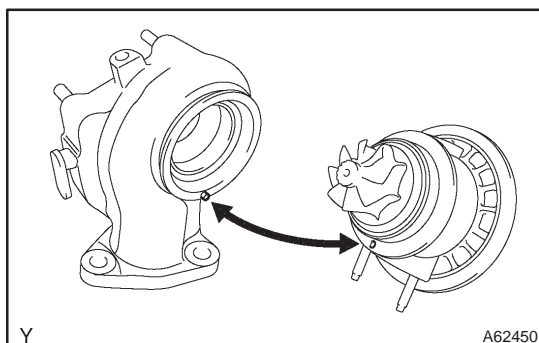
If the link is bad running, clean again. If it is bad running, even after cleaning, replace the turbine housing.



7. CLEAN COMPRESSOR HOUSING SUB-ASSY

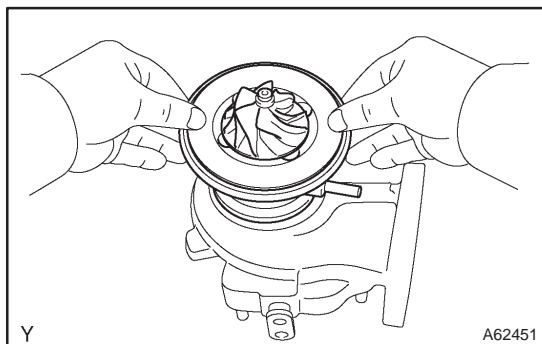
- (a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the compressor housing and bearing housing.
 - (1) Using a razor blade and gasket scraper, remove all the old packing (FIPG) material from the gasket surfaces.
 - (2) Thoroughly clean all components to remove all the loose material.
 - (3) Using a non-residue solvent, clean both sealing surfaces.
- (b) Wipe off the dirt from the inside of the housing with a shop rag.
- (c) Check that there is no severe interference with the impeller wheel.

If it is having bur made by a slight interference damage, remove it with a sandpaper (No. 400) and blow with compressed air.



8. INSTALL BEARING HOUSING SUB-ASSY

- (a) Align the pin of the turbine housing with the pin hole of the bearing housing.



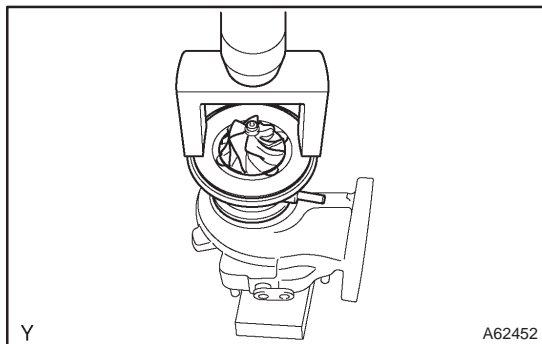
(b) Install the bearing housing to the turbine housing.

NOTICE:

- Install the bearing housing straight, and be careful not to damage the turbine wheel.
- In case of having difficulty of pressing in the bearing housing to install with a hand due to hard engagement, apply the procedure (c).

HINT:

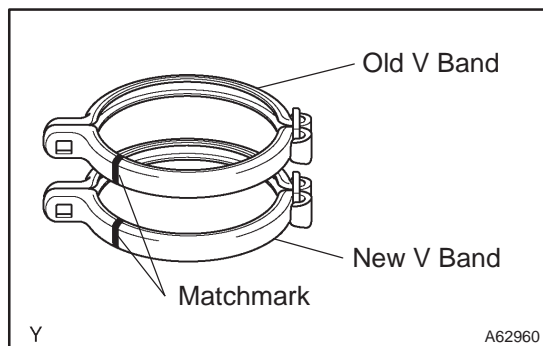
Apply a little penetrate rust prevention lubricant onto the engagement section to make installation easier.



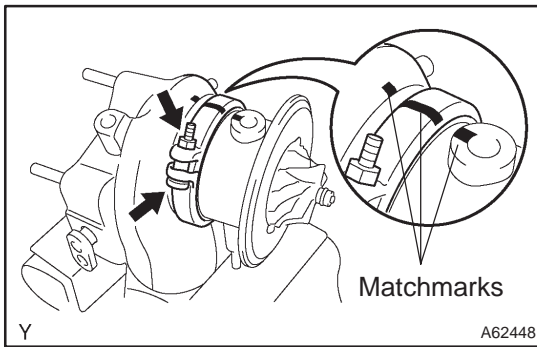
(c) In case that the engagement of the bearing housing is hard, using SST and a press, install the bearing housing while checking the smooth rotation of the impeller wheel.
SST 09350-32014 (09351-32070)

NOTICE:

- Do not hold the turbine housing with the stud bolts.
- Be sure to install the bearing housing straight without tilting as the shaft may bent and cause the irregular noise.
- Press in the bearing housing slowly. When the rotation of the impeller wheel becomes heavy, return the press immediately and do the operation again.
- After installation, check that the turbine shaft turns smoothly.



(d) Place a new and old (used) V bands in line, then reprint the matchmark position on the old V band to the new one.

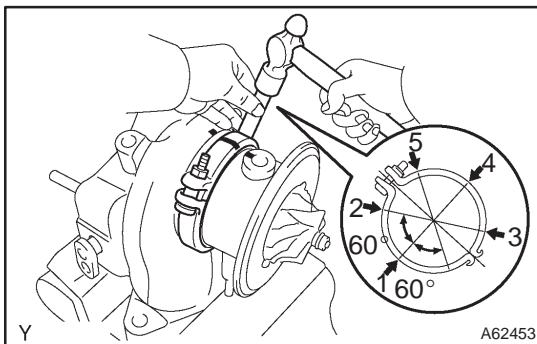
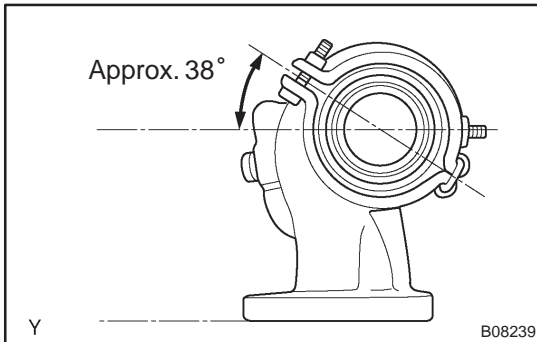


- (e) Align the matchmarks on the new V band, turbine housing and bearing housing, and temporarily torque with a new bolt and nut.

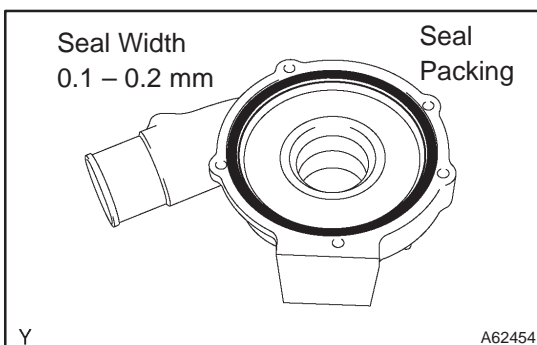
Torque: 8.3 N·m (85 kgf·cm, 74 in·lbf)

HINT:

When the marks are erased, make the matching openings meet at the position shown in the illustration.



- (f) Using a brass bar and hammer, hit 2 or 3 times lightly at each place in order of 1 through 5.
- (g) Torque the bolt and nut more.
- Torque: 8.3 N·m (85 kgf·cm, 74 in·lbf)**
- (h) Using a brass bar and hammer, hit 2 or 3 times lightly at each place of 1 and 4.
- (i) Torque the bolt and nut completely.
- Torque: 8.3 N·m (85 kgf·cm, 74 in·lbf)**



9. INSTALL COMPRESSOR HOUSING SUB-ASSY

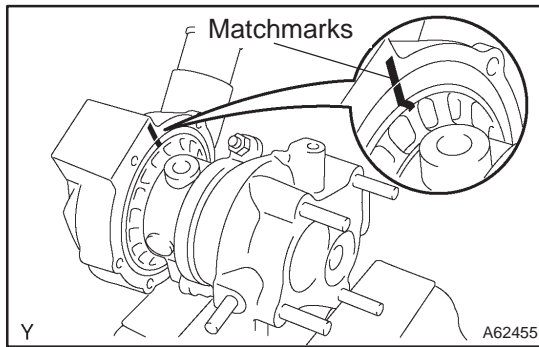
- (a) In case of reusing the compressor housing and bearing housing:
- (1) Apply seal packing to the compressor housing as shown in the illustration.

Seal packing: Part No. 08826-00080 or equivalent

NOTICE:

Avoid applying an excessive amount to the surface.

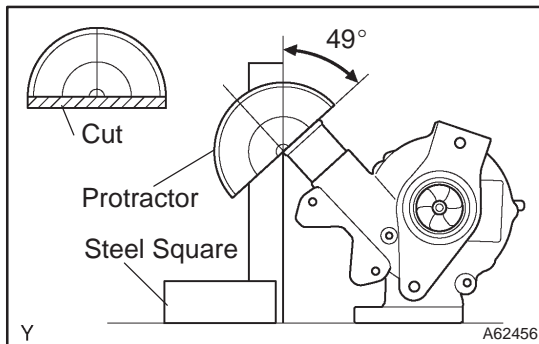
- Install a nozzle that has been cut to a 0.1 – 0.2 mm (0.004 – 0.008 in.) opening.
- Parts must be assembled within 7 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall the cap.



- (2) Align the matchmarks on the compressor housing and bearing housing, and install them.

NOTICE:

- **Do not make the impeller wheel interfere with the compressor housing.**
- **Check that the turbine shaft turns smoothly.**



- (3) Using a steel square and protractor, check the installation angle of the outlet port of the compressor housing shown in the illustration.

- (4) Install the 5 clamp plates and bolts.

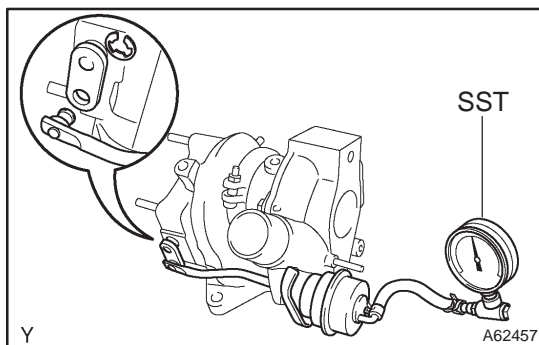
Torque: 4.7 N·m (48 kgf·cm, 42 in·lbf)

- (b) In case of using a new compressor housing and/or bearing housing :

- (1) Temporarily install the compressor housing on the bearing housing, make the installation angle of the outlet port of the compressor housing meet at the position shown in the illustration, and place the matchmarks.

- (2) Remove the compressor housing.

- (3) The following procedure is the same as that of reusing the compressor housing and/or bearing housing.

**10. INSTALL W/BACKET ACTUATOR ASSY**

- (a) Using a torx wrench (T30), install the actuator w/ bracket to the compressor housing with the 2 screws.

Torque: 7.8 N·m (80 kgf·cm, 69 in·lbf)

- (b) Using SST, move the actuator push rod.

SST 09992-00242

NOTICE:

Never apply more than 197 kPa (2.01 kgf/cm², 28.5 psi) of pressure on the actuator.

- (c) Connect the actuator push rod to the waste gate valve link with a new E-ring.

NOTICE:

Do not use a hammer, etc. to force the actuator push rod onto the waste gate valve link.

- (d) Remove the SST.

- (e) Connect the actuator hose.

11. INSTALL COMPRESSOR INLET ELBOW

Torque: 23 N·m (235 kgf·cm, 17 ft·lbf)