

## **LASH ADJUSTER CHECK**

If an abnormal noise (chattering noise) is heard by malfunction of the lash adjuster immediately after starting the engine and does not disappear, it might be the lash adjusters. Perform the following check.

*NOTE: An abnormal noise due to malfunction of the lash adjuster is produced immediately after starting the engine and changes with the engine speed, irrespective of the engine load. If, the abnormal noise is not produced immediately after starting the engine or does not change with the engine speed, or it changes with the engine load, the lash adjuster is not the cause for the abnormal noise.*

*NOTE: When the lash adjuster is malfunctioning, the abnormal noise is rarely eliminated by running the engine at idle speed. However, the abnormal noise may disappear only when seizure is caused by oil sludge in the engine whose oil is not maintained properly.*

1. Start the engine.
2. Check if the abnormal noise produced immediately after starting the engine changes with the change in the engine speed.  
If the abnormal noise is not produced immediately after starting the engine or it does not change with the engine speed, the lash adjuster is not the cause for the noise. Therefore, investigate other causes. The abnormal noise is probably caused by some other parts than the engine proper if it does not change with the engine speed. (In this case, the lash adjuster is in good condition.)
3. With the engine idling, change the engine load (shift from N to D range, for example) to make sure that there is no change in the level of abnormal noise.  
If there is a change in the level of abnormal noise, suspect a tapping noise due to worn crankshaft bearing or connecting rod bearing. (In this case, the lash adjuster is in good condition.)
4. After completion of warm-up, run the engine at idle to check for abnormal noise.  
If the noise is reduced or disappears, clean the lash adjuster. It is suspected that the noise is due to collapse of the lash adjuster. If there is no change in the level of the abnormal noise, proceed to step 5.
5. Run the engine to bleed the lash adjuster system.
6. If the abnormal noise does not disappear after air bleeding operation, clean the lash adjuster.

### **Bleeding lash adjuster system**

*NOTE: Parking the vehicle on a grade for a long time may drain oil from the lash adjuster, causing air to enter the high pressure chamber when starting the engine.*

*NOTE: After parking for many hours, oil may drain from the oil passage and take time before oil is supplied to the lash adjuster, causing air to enter the high pressure chamber.*

*NOTE: In the above cases, abnormal noise can be eliminated by bleeding the lash adjuster system.*

1. Check engine oil. Add or change oil as required.

*NOTE: If the engine oil level is low, air is sucked from the oil screen, causing air to enter the oil passage.*

*NOTE: If the engine oil level is higher than specification, oil may be stirred by the crankshaft, causing oil to be mixed with air creating aerated (foaming) oil.*

*NOTE: If oil is deteriorated, air is not easily separated from oil, increasing the quantity of air contained in oil.*

*NOTE: If air mixed with oil enters the high pressure chamber inside the lash adjuster from the above causes, air in the high pressure chamber is compressed excessively while the valve is being opened, resulting in an abnormal noise when the valve closes. This is the same phenomenon as that observed when the valve clearance has become excessive. The lash adjuster can resume normal function when air entered the lash adjuster is removed.*

2. Idle the engine for one to three minutes to warm it up.
3. Repeat the operation pattern, shown in left figure, at no load to check for abnormal noise. (Usually the abnormal noise is eliminated after repetition of the operation 10 to 30 times. If, however, no change is observed in the level of abnormal noise after repeating the operation more than 30 times, suspect that the abnormal noise is due to some other factors.)
4. After elimination of abnormal noise, repeat the operation shown in left figure five more times.
5. Run the engine at idle for one to three minutes to make sure that the abnormal noise has been eliminated.