



Diagnose Engine Noise

by [Larry Carley](#) copyright 2019 AA1Car.com

Engine noise is usually a symptom that something may be wrong with your motor. All engines make some operating noise, but when you hear an unusual noise or excessive noise coming from under the hood, it usually means trouble. Here are some common engine noises and their possible causes:

ENGINE CLICKING NOISES

A clicking or tapping noise that gets louder when you rev the engine is probably "tappet" or upper valvetrain noise caused by one of several things: low oil pressure, excessive valve lash, or worn or damaged parts.

First, check the engine dipstick to see if the oil level is low. If low, add oil to bring it back up to the full mark. Is the engine still noisy? Check your oil pressure. A low gauge reading (or oil warning light) would indicate a serious internal engine problem that is preventing normal oil pressure from reaching the upper valvetrain components. The cause might be a worn or damaged oil pump, a clogged oil pump pickup screen or a plugged up oil filter. Using too thick a viscosity of motor oil during cold weather can also slow down the flow of oil to the upper valvetrain, causing noise and wear.

COLLAPSED LIFTER NOISE

Worn, leaky or dirty lifters can also cause valvetrain noise. If oil delivery is restricted to the lifters (plugged oil galley or low oil pressure), the lifters won't "pump up" to take up the normal slack in the valvetrain. A "collapsed" lifter will then allow excessive valve lash and noise.

ENGINE VALVE NOISE

If you can rule out lubrication-related problems as a cause, the next step would be to remove the valve cover(s) and check valve lash. On older import engines, mechanical lifters require periodic valve lash adjustments (typically every 30,000 miles). Too much space between the tips of the rocker arms and valve stems can make the valvetrain noisy -- and possibly cause accelerated wear of both parts.

To measure (and adjust) valve lash, you need a feeler gauge. The gauge is slid between the tip of the valve stem and rocker arm (or the cam follower or the cam itself on overhead cam engines) when the piston is at top dead center (valve fully closed). Refer to a manual for the specified lash and adjustment procedure. Also, note whether the lash spec is for a hot or cold engine (this makes a big difference!).

On engines with hydraulic lifters, oil pressure pumps up the lifters when the engine is running to maintain zero lash in the valvetrain. This results in quiet operation. So if the rocker arms are clattering, it tells you something is amiss (bad lifter or worn or damaged parts) or the rocker arms need adjusting.

Inspect the valvetrain components. Excessive wear on the ends of the rocker arms, cam followers (overhead cam engines) and/or valve stems can open up the valve lash and cause noise. So too can a bent pushrod or a broken valve spring.

ENGINE BEARING NOISE

A deep rapping noise from the engine is usually "rod knock," a condition brought on by extreme bearing wear or damage. If the rod bearings are worn or loose enough to make a dull, hammering noise, you're driving on borrowed time. Sooner or later one of the bearings will fail, and when it does one of two things will happen: the bearing will seize and lock up the engine, or it will attempt to seize and break a rod. Either way your engine will suffer major damage and have to be rebuilt or replaced.

Bearing noise is not unusual in high mileage engines as well as those that have been neglected and have not had the oil and filter changed regularly. It can also be caused by

low oil pressure, using too light a viscosity oil, oil breakdown, dirty oil or dirt in the crankcase, excessive blowby from worn rings and/or cylinders (gasoline dilutes and thins the oil), incorrect engine assembly (bearings too loose), loose or broken connecting rod bolts, or abusive driving.

Bearing wear can be checked by dropping the oil pan and inspecting the rod and main bearings. If the bearings are badly worn, damaged or loose, replacing the bearings may buy you some time. But if the bearings are badly worn or damaged, the crankshaft will probably have to be resurfaced -- which means a complete engine overhaul or replacing the engine if the vehicle is worth the expense.

ENGINE PINGS OR KNOCKS WHEN ACCELERATING

The cause here may be [Spark Knock \(Detonation\)](#) caused by an inoperative EGR valve, overadvanced ignition timing, engine overheating, carbon buildup in the combustion chambers, or low octane fuel.

Spark Knock is a knocking, rattling or pinging noise that may be heard when the engine is accelerating or is working hard under load (driving up a hill, towing a trailer, passing on the highway, etc.). Spark knock means the fuel is detonating.

[Detonation](#) is when the fuel explodes erratically instead of burning smoothly. It occurs when there is too much heat and compression in the combustion chamber. It is similar to preignition, but preignition is when the fuel ignites before the spark occurs because of a hot spot inside the combustion chamber. Preignition can burn a hole right through the top of a piston (see photo below).



Detonation damage to a piston

Detonation is very bad for your engine because over a long period of time it may cause the head gasket to fail, the rings to break, piston lands to crack and/or rod bearing damage.

Engine Noise Under Load

A cold piston knock for up to a minute and a half after starting a cold engine may be normal. This may be due to increased clearance between the pistons and cylinders. But once the engine warms up, the knocking noise should disappear.

If you hear a low rumble or knocking noise when the engine is warm, the most likely cause may be a bad rod bearing on the crankshaft (which may lead to bearing failure and/or rod breakage or crankshaft damage).

SYMPTOM	POSSIBLE CAUSE
Low oil pressure	Check oil pressure at the oil pressure sending unit port on the engine with a gauge. If oil pressure is okay, replace sending unit.
Detonation or spark knock	May be due to low octane fuel, carbon buildup in combustion chambers, overadvanced ignition timing, inoperative EGR, or engine overheating.
Loose torque converter bolts	Inspect the torque converter bolts and flywheel.
Cracked flywheel - automatic transmission	Inspect the flywheel bolts and flywheel.
Excessive connecting rod or main bearing clearance	Inspect connecting rod bearings , connecting rods and crankshaft. Use Plastigage or a feeler gauge to measure assembled bearing clearances.
Excessive Piston clearance	Piston slap may be due to worn cylinders, worn pistons or excessive piston-to-cylinder clearance



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