

Some engines have timing drive components at the rear of the engine and may be the source of noise (ticking, knocking or rattle). Use the EngineEAR/ChassisEAR or stethoscope on the rear of the engine if the noise is suspected to be internal to the engine. Some disassembly of the engine may be required to inspect for damage or wear.

Turbocharger noise (Gasoline Turbocharged Direct Injection (GTDI) engine)

A common source of noise is the turbocharger. Some whine or air rush noise is an acceptable condition.

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After the noise is localized, note the characteristics of the noise, including type of noise, frequency and conditions when the noise occurs and GO to Symptom Chart - NVH .

DIAGNOSIS AND TESTING > ENGINE > SYMPTOM CHART - ENGINE PERFORMANCE

Symptom	Possible Sources	Action
Difficult starting	Inoperative or damaged ignition system Air or vacuum leak Inoperative or damaged fuel system Inoperative or damaged starting system	Refer to the appropriate article for the procedure. Refer to ENGINE CONTROLS - INTRODUCTION (EXCEPT DIESEL & HYBRID) .
Damaged charging system/battery		REFER to: Charging System - 2.3L EcoBoost (201kW/273PS) or REFER to: Charging System - 3.7L Duratec (227kW/301PS) or REFER to: Charging System - 5.0L 32V Ti-VCT .
Burnt valve		INSTALL a new cylinder head. TEST the system for normal operation after the repair.
Worn piston		INSTALL a new piston. TEST the system for normal operation after the repair.
Worn piston rings		INSTALL new piston rings. TEST the system for normal operation after the repair.
Worn cylinder		INSTALL a new cylinder block. TEST the system for normal operation after the repair.
Damaged head gasket		INSTALL a new cylinder head gasket. TEST the system for normal operation after the repair.

Inoperative or damaged cooling system		Refer to the appropriate article for the procedure.
Fail-safe cooling invoked (if equipped)		Refer to ENGINE CONTROLS - INTRODUCTION (EXCEPT DIESEL & HYBRID) .
Poor idling	Vacuum leaks Inoperative or damaged EGR system	Refer to the appropriate article for the procedure. Refer to ENGINE CONTROLS - INTRODUCTION (EXCEPT DIESEL & HYBRID) .
Inoperative or damaged ignition system		Refer to the appropriate article for the procedure.
Inoperative or damaged cooling system Inoperative or damaged fuel system		Refer to the appropriate article for the procedure.
Fail-safe cooling invoked (if equipped)		Refer to ENGINE CONTROLS - INTRODUCTION (EXCEPT DIESEL & HYBRID) .
Incorrect valve clearance		ADJUST valve clearance. Refer to the appropriate article for the procedure. TEST the system for normal operation after the repair.
Incorrect valve-to-valve seat contact		INSTALL a new cylinder head. TEST the system for normal operation after the repair.
Damaged head gasket		INSTALL a new cylinder head gasket. TEST the system for normal operation after the repair.
Engine runs rough	Inoperative or damaged fuel system Air or vacuum leaks EGR system fault Inoperative or damaged cooling system Inoperative or damaged ignition system	Refer to the appropriate article for the procedure.
Fail-safe cooling invoked (if equipped)		Refer to ENGINE CONTROLS - INTRODUCTION (EXCEPT DIESEL & HYBRID) .
Burnt or sticking valve		INSTALL a new valve. TEST the system for normal operation after the repair.
Weak or broken valve spring		INSTALL a new valve spring. TEST the system for normal operation after the repair.

Carbon accumulation in combustion chamber		ELIMINATE carbon buildup. TEST the system for normal operation after the repair.
Excessive oil consumption	Leaking oil	REPAIR oil leakage. TEST the system for normal operation after the repair.
Blocked or restricted turbocharger oil drain pipe		INSPECT the turbocharger drain pipe. REPAIR as necessary. TEST the system for normal operation after the repair.
Damaged or collapsed air intake hoses and tubes		Tighten hoses clamps. INSPECT for damage and REPAIR as necessary. TEST the system for normal operation after the repair.
Damaged exhaust or exhaust leaks at turbocharger housing or exhaust manifold.		INSPECT for leaks. Leaks can be detected audibly or visually, by a discoloration caused by escaping hot exhaust gases. REPAIR as necessary. TEST the system for normal operation after the repair.
Turbocharger oil seals leaking		REFER to Turbocharger Internal Oil Leak Test. REFER to: Turbocharger . TEST the system for normal operation after the repair.
Inoperative PCV system		REPAIR or INSTALL new components as necessary. TEST the system for normal operation after the repair.
Incorrect oil		CHANGE oil to correct specification. TEST the system for normal operation after the repair.
Worn valve stem seal		INSTALL a new valve stem seal. TEST the system for normal operation after the repair.
Worn valve stem or valve guide		INSTALL a new cylinder head. TEST the system for normal operation after the repair.
Sticking piston rings		INSTALL new piston rings. TEST the system for normal operation after the repair.
Worn piston ring groove		INSTALL a new piston and piston pin. TEST the system for normal operation after the repair.

Worn piston or cylinder		INSTALL a new piston or cylinder block. TEST the system for normal operation after the repair.
Oil in coolant	Leaking head gasket Damaged cylinder block Damaged cylinder head	INSPECT the engine components. INSTALL new engine components as necessary. Refer to the appropriate article for the procedure. TEST the system for normal operation after the repair.
Leaking oil cooler		INSPECT the oil cooler and seal for damage. INSTALL new components as necessary. Refer to the appropriate article for the procedure.
Coolant in oil	Leaking head gasket Damaged cylinder block Damaged cylinder head	INSPECT the engine components. INSTALL new engine components as necessary. Refer to the appropriate article for the procedure. TEST the system for normal operation after the repair.
Insufficient power	Inoperative or damaged ignition system Air intake system blockage Lubrication system blockage Inoperative or damaged fuel system	Refer to the appropriate article for the procedure. Refer to ENGINE CONTROLS - INTRODUCTION (EXCEPT DIESEL & HYBRID) .
Turbocharger turbine or compressor wheel damage		INSPECT the turbocharger. REFER to the Check for Free Rotation- Off Vehicle. REFER to: Turbocharger . TEST the system for normal operation after the repair.
Damaged exhaust or exhaust leaks at turbocharger housing or exhaust manifold		INSPECT for leaks. Leaks can be detected audibility or visually, by a discoloration caused by escaping hot exhaust gases. REPAIR as necessary. TEST the system for normal operation after the repair.
Malfunctioning turbocharger bypass valve		Refer to ENGINE CONTROLS - INTRODUCTION (EXCEPT DIESEL & HYBRID) .
Oil level too high		DRAIN oil to correct level.
Incorrect engine oil		INSTALL correct specification engine oil. TEST the system for normal operation after the repair.

Excessive accessory drive belt loading Inoperative or damaged cooling system	Refer to the appropriate article for the procedure.
Fail-safe cooling invoked (if equipped)	Refer to ENGINE CONTROLS - INTRODUCTION (EXCEPT DIESEL & HYBRID) .
Damaged or plugged exhaust system	INSPECT exhaust system. TEST the system for normal operation after the repair.
Incorrect tire size	REFER to: Suspension System .
Dragging brakes	REFER to: Brake System .
Slipping transmission	Refer to the appropriate article for the procedure.
Slipping clutch	Refer to the appropriate article for the procedure.
Incorrect valve clearance	ADJUST valve clearance. Refer to the appropriate article for the procedure. TEST the system for normal operation after the repair.
Worn or damaged valve tappet	INSTALL a new valve tappet. TEST the system for normal operation after the repair.
Damaged valve guide Compression leakage at valve seat Seized valve stem	INSTALL a new cylinder head assembly. TEST the system for normal operation after the repair.
Weak or broken valve spring	INSTALL a new valve spring. TEST the system for normal operation after the repair.
Worn or damaged cam	INSTALL a new camshaft. TEST the system for normal operation after the repair.
Damaged head gasket	INSTALL a new head gasket. TEST the system for normal operation after the repair.
Cracked or distorted cylinder head	INSTALL a new cylinder head assembly. TEST the system for normal operation after the repair.
Damaged, worn or sticking piston ring(s)	INSTALL a new piston ring(s). TEST the system for normal operation after the repair.
Worn or damaged piston	INSTALL a new piston and piston pin. TEST the system for normal operation after the repair.