TECHNICAL MANUAL
No. 9–879

WAR DEPARTMENT
Washington, 18 October 1943

MOTORCYCLE, SOLO
(HARLEY-DAVIDSON MODEL WLA)

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[excerpt from Section X: Troubleshooting]

B. ENGINE CONDITION

We've had to remove many motorcycles from service or change their engines due to neglected tune-ups or component adjustments. The following tests will help you check your engine for possible issues.

1. LISTENING FOR ENGINE NOISE

Do the following steps and listen for the noises outlined below.

1. Turn on the engine.
2. Put the vehicle in park.
3. Idle the engine for one minute.

Sound Description	**Cause**
Rough and noisy engine at low speeds	Loose front and rear drive chains or loose transmission *
Pounding	Loose engine sprocket
Grinding	Tight front drive chain or badly worn engine sprocket and chain
Metallic noise in gear train and engine crankcase	Loose valve tappets

Knocking and pounding	Spark plug fires too early †
Pounding and noisy operation	Loose mounting bolts
Howl in gear case	Poor gear tooth clearance in generator

* Idling the engine with a loose front drive chain may mimic issues with the engine bearings and pistons.

† The spark plugs firing too early can cause rough engine performance at low speeds and overheating.

2. Testing Compression

Before you do this test, do the following checks:

- Does the tank have oil?
- Are the spark plugs tight?
- Are there oil deposits around the cylinder heads?

Warm up the engine before doing the following steps.

1. Switch off the ignition.
2. Crank the engine slowly.
    a. Place your whole weight on the starter crank.

> **Note** | You should feel resistance from the engine compression for several seconds before the crank completes its rotation.

If the engine doesn't fully resist the starter crank in testing either or both cylinders, you have poor compression in one or both cylinders. Poor compression can be caused by:

- Poor or no valve tappet clearance
- Stuck valves
- Poor valve seating
- Leaking cylinder heads
- Loose spark plugs
- Worn and/or broken piston rings
- Worn cylinder and pistons
- Lack of lubrication

> **Note** | In freezing weather, resistance to the starter crank is increased by "stiff" oil in engine and transmission. This doesn't mean actual engine compression.