P# 120310.94

OPERATING INSTRUCTIONS:

20300 VACUUM AND PRESSURE TESTER

I. MANIFOLD VACUUM TEST:

This instrument can be a valuable tool in determining the internal condition of the engine being tested. It should be understood that although the numbers on the dial provide a good reference, the action of the needle is more important.

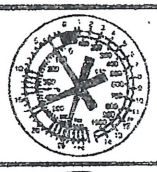
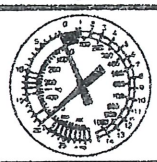
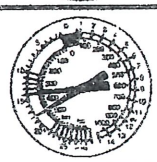
In this operating instruction sheet, examples are shown of the most common tests performed in determining engine operating condition.

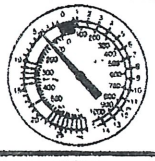
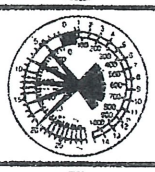
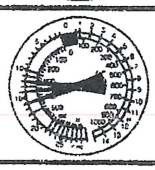
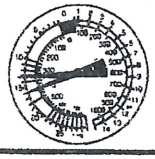
On an engine in good mechanical condition, properly adjusted at sea level, the manifold vacuum will be in the neighborhood of 17-21 inches of Hg. Also as a rule of thumb, for every 1000' above sea level the gage reading will be lowered by approximately 1 division. Generally speaking an 8 cyl. engine will normally carry more vacuum than a 6 cyl. or a 4 cyl. engine.

CONNECTING THE VACUUM GAGE:

Step 1 - The engine should be at operating temperature and idling 100-200 RPM higher than normal.

Step 2 - The source for the vacuum should be a direct hook up to the intake manifold if possible. This will isolate any vacuum leaks on the outside of the engine from affecting the gage reading.

	READING:	MEANING:
	Needle holds steady at 17 to 21 (compensate for altitude & engine design). As you hit & release the throttle suddenly, the needle drops below 5 and bounces up to about 25.	**Everything is normal.**
	Needle holds steady at 12 to 16 — drops to 0 and bounces back to about 21 as you hit and release the throttle.	**Leaking piston rings** (verify with a compression test using Lisle 20250 Compression Tester).
	Needle drops intermittently 3 to 4 points.	**Sticking valves.**
	Needle drops to zero as engine rpm is increased.	**Restricted exhaust system.**
	Needle drops back to a low reading, returns to normal, drops back, etc., at a regular interval.	**Burned or leaking valve.**

	Needle vibrates rapidly at idle — steadies as rpm is increased.	**Worn valve guides.**
	Needle holds steady at an extremely low reading.	**Air leak at the carburetor or intake manifold; or incorrect valve timing.**
	Needle fluctuates regularly between a high and low reading.	**Blown head gasket between two adjacent cylinders** (verify with a compression test using Lisle 20250 Compression Tester).
	Needle fluctuates very slowly over a range of 4 or 5 points.	**Carburetor needs adjustment.**
	Needle fluctuates over a range of about 2 points.	**Spark plug gap is too narrow.**

II. FUEL PUMP VACUUM TEST:

Note: The specifications for the fuel pump to be tested should be obtained before these tests.

The procedure for doing this test is as follows. Disconnect the inlet line from the fuel pump and attach the vacuum gage line to the inlet side of the fuel pump and start engine. Let the vacuum build up to its maximum and note the reading. The reading should be within the specs.

III. GASOLINE LINE TEST:

Disconnect the gasoline line from the tank and connect the vacuum gage to the gasoline line. Start the engine and observe the reading. The reading should be the same as the FUEL PUMP VACUUM TEST. If less than, it's an indication of a gasoline line leak. If no vacuum reading is obtainable, the gasoline line is restricted.

IV. FUEL PUMP PRESSURE TEST:

Disconnect the gasoline line from the carburetor and connect the gage to the gasoline line and start engine. Note the pressure reading and compare it to the specifications for the pump.

CAUTION: Included with this gage are hoses and a conical fitting that will fit the majority of fuel lines and vacuum lines now being used by the automotive industry. However, there may be some applications this unit will not fit. If a situation of this nature is encountered, the type of connection that is used should be tight and secure to avoid any possible danger to the user.

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