

No. 55 and No. 56 Intake Tester Use Instructions



- ♣ These Intake Testers were designed to be used primarily with vacuum as the inspection source.
- ♣ **Only if your motor fails** the vacuum test, positive air pressure can then be used to find out where any leaks may be hiding. For most testing purposes it is not necessary to use more than 15psi of positive air pressure.
- ♣ Perform test on a cool engine.
- ♣ Slacken or remove both intake pushrods prior to start of the test.
- ♣ Use a hand-held vacuum pump (like a Mity-Vac™) equipped with a reference gage. Fit a short length of tubing (less than 2 inches) to the vac and fit a small tapered adapter nipple that will allow you to connect the vacuum pump to the industrial air fitting on the Fast Eddy Co test plate. Plug the end of the nipple with your finger and draw the pump down to 20-25 inches of mercury. Inspect reference gage needle for stability. You should have very little decay. A small amount of decay is acceptable as long as you consider this later when assessing your test results.
- ♣ To make sure there's no leaks in the test plate and vacuum hoses (the parts before reaching the motor), place the intake tester on a smooth surface and squeeze the handle of the vacuum pump a few times to make sure you can easily draw it up to 20-25 inHG or more.
- ♣ With both intake valves closed and the machines' intake manifold installed, mount the Intake Tester.
- ♣ Snug the Tester mounting bolts. Bolts don't need to be very tight. Do not torque past 15 ft-lbs for 5/16-18 screws on the No. 55, or past 110 in-lbs on the ¼-20 screws on the No. 56.
- ♣ With a known-good vacuum pump and reference gage, attempt to draw a vacuum of **10 inHG** into the intake system as the first test. The little tapered fittings from the vac fit nicely into the air QD fitting on the Tester.
 - A. In a machine fitted with quality intake valve seals, good guides, a quality valve job, and a quality intake installation; it is not uncommon to see the intake system hold 15+ inHg of vacuum for several minutes.
 - B. If the machine has "unsealed" valves, some vacuum decay is to be expected. This is from the clearance between the valve guide and the valve stem. An integral intake system will draw down to at least 10 inHg. A 10 second rate of decay from 10 inches vacuum to zero (atmospheric pressure) is acceptable. Obviously, any longer period of time for the decay is also acceptable.

If you achieve results similar to either A or B, then your intake system is integral and the pushrods can be reinstalled and readjusted.

If the system draws down but has a rapid decay, or cannot attain 10 inHg of vacuum, or if the system does not draw down at all; there is a leak somewhere and positive pressure is needed to test further.

- C. Proceed to apply positive, regulated air pressure of about **15psig** to the test plate. You don't need much more pressure than that to test the intake system.
 - D. If no evidence of an external leak is present while charged with positive pressure, remove pressure and reference the "Additional Inspections" section to inspect for worn valves, seats, and guides.
- ♣ If you don't own a vacuum pump, just test with positive pressure following steps C and D. It just takes longer to inspect the system using only positive pressure.
 - ♣ In some instances, just listening and feeling for the leak will pinpoint it in lieu of a bubble test. Pull the spark plugs and listen for any air escaping past the intake valves into the combustion chamber.
 - ♣ If desired, perform bubble test using soapy water or alternative non-caustic solution.

- ♣ Check all areas for possible leakage if the joints prove integral. Castings can leak, pan d-ring screws above the intake port can actually break into it if someone has repaired that hole, supports can loosen, valves lose the seal against the seat, nipple rivets are notorious, etc.
- ♣ Use the correct spacers to take up the O-ring gland void and to space the manifold on installations where the large rubber band seals are being used with spigots that are cut for O-rings. If the gland “gap” is not filled in, no matter what clamp (and clamping pressure) you apply, the rubber band seal is gonna leak something terrible.
- ♣ Rubber band seals seem to be a more robust, durable seal vs. O-rings *in the long run*. O-rings seal just as well as rubber bands when done right, though.
- ♣ O-rings are easier to install, especially on pans and converted knucks. If you are just plain stubborn and like winning, rubber bands can be installed on those engines with both heads on.
- ♣ Split clamps work ok; marine grade T-bolt clamps are better. Be patient with both during install. Split clamps sometimes need to be lightly filed on the parting surfaces to get the correct clamp-up.
- ♣ **Always** have a carburetor support, installed in such a manner that the support does not cause distortion upon your nice, tight intake system.
- ♣ Linkert mounting flanges tend to distort from people over-tightening them over the years
- ♣ The rubber band or O-ring should be installed dry, or with a minimal amount of o-ring lubricant like Super Lube. Other lubricants may cause them to swell, causing an eventual leak.

Additional Inspections

- ♣ With all pushrods adjusted, and the engine rotated so that one cylinder has the intake valve open and its exhaust valve closed, up to **50psig** positive pressure can then be applied to the Tester. (Depending on piston position, you may need to have an assistant hold the engine in this position.) You can then check that cylinder for:
 - ✓ Spark plug and boss for leakage (spark plug installed- bubble test for integrity or cracks)
 - ✓ Exhaust valve and seat for integrity (listen thru exhaust pipe- no air escaping is good)
 - ✓ Piston ring condition (listen thru breather – *some* air escaping is normal)
 - ✓ Cylinder integrity (a big whooshing sound from the breather and oil tank vent probably indicate your little leaky manifold got critically lean and there is damage to that cylinder / piston/ rings)
 - ✓ Opposite cylinder- intake valve and seat integrity (that cylinder spark plug removed, listen at plug boss – no air escaping is good)

Rotate to opposite cylinder, same valve configuration as above, and repeat tests.

Thank you for your support!