

DIFFERENTIAL CYLINDER PRESSURE TESTER W/MASTER ORIFICE MODEL E2M

INSTRUCTIONS

Warning: *This device is for use with aircraft by qualified A.P. Technicians only. All aircraft tests should be performed by two technicians. Air pressure can cause the propeller to rotate suddenly and without warning. It is not possible for one individual to safely perform these tests on aircraft.*

SETUP

If you are testing a certified aircraft engine, perform Master Orifice Test. See Master Orifice manufacturer's documentation for procedure.

- Run engine until it reaches normal operating temperature.
- Remove the most accessible spark plug from each cylinder.
- Set the **Master Orifice Valve** to the **Off** position; handle horizontal and over the **Off** Label.
- After making sure the **Slow Fill Valve** is **Off**, connect an air source to the tester, via the male quick connect fitting. Air source must be at least 90 PSI.
- Pull Pressure Regulator knob to unlock, and adjust so the left hand gauge reads 80 PSI.

Operation

- Hand tighten Test Adapter, with O Ring and hose, into cylinder under test.
- Place a thumb over the end of the hose fitting and rotate the prop until the piston's compression blows thumb hose end. This will place the piston in the compression stroke, near TDC.
- Connect the hose from the cylinder under test to the tester via the female quick connect fitting.
- Slowly open the **Slow Fill Valve** approximately 1/8 Turn (3 or 4 tick marks), until moderate resistance is felt at the prop. Carefully rotate the prop back and forth through TDC until a positive detent is felt, and the air pressure holds the prop at TDC.

Warning: Cylinder pressure will slowly rise to 80 PSI, and prop may rotate. Exercise caution.

- Open the **Slow Fill Valve** completely; handle horizontal, parallel to the **Pressurize** Label.
- If necessary, readjust the regulator to 80 PSI at the left hand gauge.
- Read the relative pressure in the cylinder under test, at the right hand gauge.

To Test Another Cylinder

- Set the **Slow Fill Valve** to the **Off** position, and allow the cylinder pressure to bleed off. The right hand gauge will slowly return to zero. There is no need to turn down the regulator pressure.
- When the right hand gauge reads to zero, with the **Slow Fill Valve** still closed, remove the test hose from the female quick connector.

- Remove the Test Adapter from the cylinder just tested, and hand tighten it into the next cylinder.
- Repeat the **OPERATION** procedure, listed above.

IMPORTANT

Ambient barometric pressure can significantly alter differential pressure readings. Good practice indicates that a Master Orifice Test be run every day, and preferably prior to every engine test. Always run a Master Orifice Test if an engine shows marginal readings, if noticeable weather changes occur, or if ground level altimeter settings change. Refer to the instructions and specifications provided with your Master Orifice, for proper procedure.

All cylinders will exhibit a certain amount of leakage due to standard engine clearance and normal wear; no cylinder is expected to maintain a perfect 80 PSI. It is important that all cylinders show relatively consistent readings. Good judgement should be used as to the allowable tolerance between cylinders. Always consult the manufacturers' engine specifications.

TIPS

By listening for escaping air at key engine locations, you can generally determine the source of low pressure readings:

Air Escaping From:	Indicates:
Carburetor Intake	Leaking Intake Valve
Exhaust System	Leaking Exhaust Valve
Crankcase Breather	Defective Rings
Radiator	Defective Head Gasket or Cracked Head/Block

Master Orifice Test

This test is run with no connections to the female quick connector.

- Set the **Master Orifice Valve** to the **Off** position; handle horizontal and directly over the **Off** Label.
- Set the **Slow Fill Valve** (next to the Pressure Regulator) to the **Off** position; handle vertical and pointing down.
- After making sure the **Slow Fill Valve** is **Off**, connect an air source to the tester, via the male quick connect fitting. Air source must be at least 90 PSI.
- Adjust Pressure Regulator so left hand gauge reads 80 PSI.
- Set the **Master Orifice Valve** to the **Test** position; handle vertical and pointing down.
- Open the **Slow Fill Valve** completely; handle horizontal and over the **Pressurize** Label.
- If necessary, readjust the regulator to 80 PSI at the left hand gauge.
- Read the relative pressure at the right hand gauge.

Warranty

Eastern Technology Corporation agrees to repair or replace any of its products (parts and labor) if there is a defect in materials or workmanship within one year of the date of purchase. Eastern Corporation limits its obligation to repair or replacement, the choice of which is at its sole discretion, and will not be responsible for subsequent or consequential damages. This warranty does not apply to equipment that has been damaged by accident, negligence, or misuse, or altered or modified in any way.

For repairs return equipment to:

Eastern Technology Corporation

1800 Roberts Street
East Hartford, CT 06108
Phone: (860) 528-9821
Fax: (860) 289-7639