



# PERFORMANCE ASSEMBLY SOLUTIONS

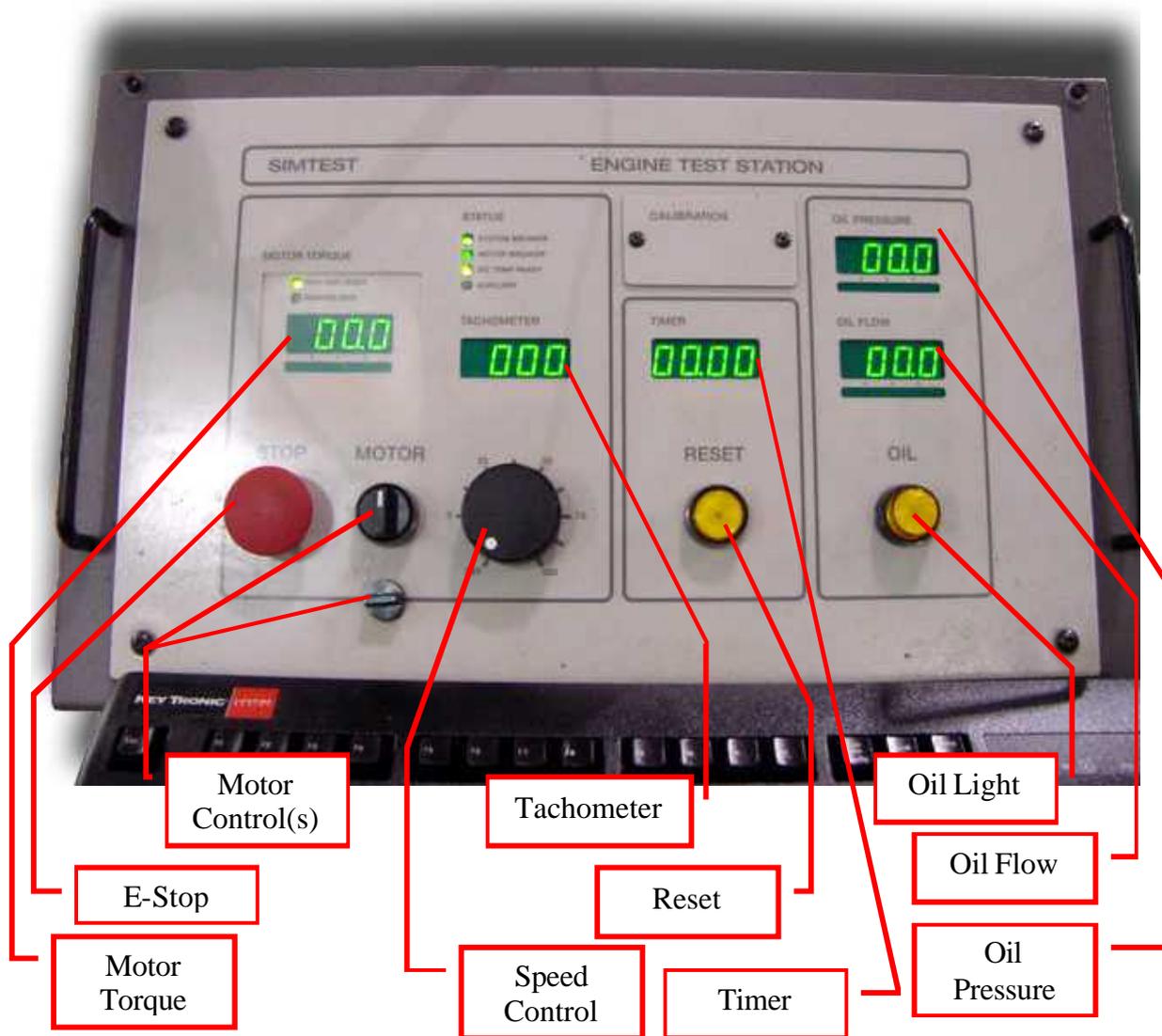
OBSOLETE

Work Instruction

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<b>Operation:</b> 80 <b>Description:</b> Cold Test	<b>Prepared By:</b> Quality <b>Approved by:</b> Manufacturing
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<b>Title:</b> Cold Test	

## COLD TESTING AND PACKAGING





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1. Turn the Sim-Test Cold Test Unit Power to the “ON” position and allow the oil to warm up.
2.  Verify that the Assembly Router is complete to this point. If it is not, stop the test and contact person responsible for the missing information. Complete the appropriate portions of the assembly router as you perform the test.
3. ***Before removing the assembly from the Red Engine Stand;***
  - 3a. Apply a thin coating of red thread lock to one (1) oil filter adaptor (PN01-089), and thread into the Oil Filter adaptor hole on the engine. Torque to 18 ft lbs with Tool # I-18.
4. Attach the lifting fixture Lift Plate to the engine and secure all fasteners.
5. Attach the hoist hook to the lifting fixture and slowly take up the chain slack.
6. Remove the two (2) mounting studs on the engine stand.
7. Lift the engine from the cradle and move it over to the Sim Cold Test Unit.
8. Bolt the engine onto the rails of the Sim Cold Test Unit.
9. Replace mounting studs on the engine stand.
10. Install the Oil Pressure Tube into the hole located near the tappet screen plug and hand tighten.
11. Connect to the feed hose.
12. Attach the oil pump pick-up hose to the 45 degree fitting located on the oil pump.



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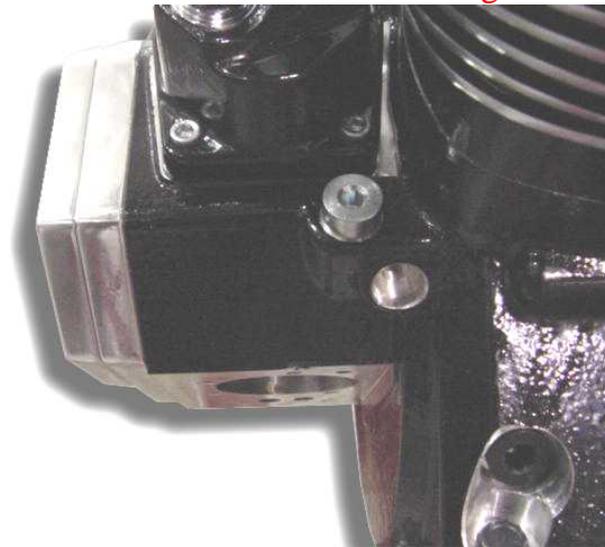


Figure 1.1

13. Make certain that the oil filter adapter has a red dunnage cap.
14. Initiate OIL FLOW.
15. Turn the OIL FLOW VALVE (orange handle) clockwise until the OIL PRESSURE LCD reads 15.0 units.
16. Lubricate the valve springs and rockers with 20w50 motor oil.
17. Tighten the adaptor nut with  $\frac{1}{4}$  handled dowel, to the sprocket shaft.
18. Couple the drive shaft to the sprocket shaft adaptor.
19. After making certain that there is oil flow from the rocker oil holes, turn the MOTOR switch to the left. (Counter clockwise.) This will begin the rotation of the motor. The preset RPM switch will turn green when the motor switch is turned left. There are three settings on the Motor Switch; MANUAL (Right), 60RPM (12:00) and 300RPM (Left).
20. With the Preset Knob in the Manual position, set the tachometer to 100 RPM.
21. Turn the Orange Oil Flow Valve to the off position.
22. Carefully open the Oil Pump Nut and bleed the oil pump. The pump is completely bled out when the air bubbles stop. NOTE: There is a spring that holds the ball in place; MAKE CERTAIN THAT THIS SPRING AND BALL DO NOT FALL OUT!

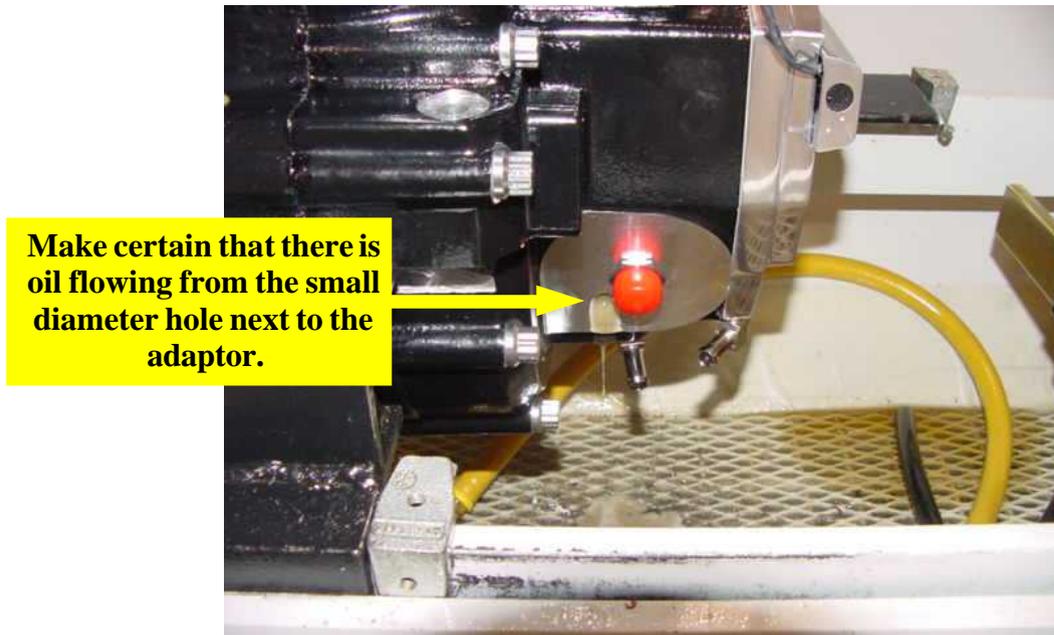


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23.  When the air bubbles stop, stop engine rotation and replace the Oil Pump Nut. Torque to 15 ft lbs (Supplier Recommended Torque Value.) Check the Torque of the Poppet Valve side of the Oil Pump to ensure Nut is Tight. Begin engine rotation once the cap nuts are in place.
24. **Make certain that there is oil flow registering from the oil filter feed hole next to the adaptor bung hole.**



25. Turn the preset switch back to 60 RPM (12:00) position and leave the engine run for 1 Minute. Verify the lifters are pumped by placing thumb over the ball end of the rocker and listening for a ticking. Ticking denotes lifter that is not charged. Call Supervisor immediately. After one minute, press the time reset button.
26. Attach the “Trigger Plate Field Test Module” and turn the switch to the “ON” position. Verify integrity of the module by the blinking red light. If the red lamp does not blink, stop the test and contact Supervisor for direction. Once integrity has been verified, turn the device off and remove. Check to ensure that the orange, triangle-shaped seal is present.
27. Turn the preset switch to 300 RPM (Left) position and leave the engine for 1 minute.
28. Check the engine for visible oil leaks. Include all sealing joints and mating components where there is a possibility of a leak.



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29. Record Oil Pressure and Rolling Motor Torque on the results check sheet. at 300 RPM.
30. Compression Check: Attach the Quick Connect hose with the Schroeder Valve into the spark plug hole.
31. Run the engine at 300 RPM.
32. Using the Compression Gauge, check the engine compression of each cylinder—record this on the Test Result Check Sheet. Front and rear cylinder compression should be between 170 and 210 psi, within 20psi of each cylinder. Example; if the front cylinder is @ **180** psi and the rear is @ **205**, compression ratio is **unacceptable**.
33. Shut the oil off.
34. Leak down Test: Rotate the crankshaft to bring one piston to TDC. If necessary, rotate the drive shaft to the vertical position in order to insert the dead-stop (Crow Bar) device into the yoke of the drive shaft. This will prevent the crank shaft from rotating during the Leak down Test. Repeat this procedure for the remaining cylinder(s).
35. Insert the Quick Connect hose without the Schroeder Valve into the Spark Plug hole of the same cylinder that is positioned TDC.

## WARNING!

36.  Carefully install the leak down tester onto the Quick Connect hose by partially engaging the two hoses intermittently, to rotate the drive shaft, bringing the anti-rotation device to a horizontal position, braced against the two mounting rails inside the Sim Cold Test Unit.
37. The PSI Gauge should read 100PSI, with less than 6% percent leakage for both cylinders. Record data on the assembly traveler.
38. Install both the large (PN01-259) and the small (PN01-260) O-Rings in the rocker boxes. **Ensure that they are installed correctly or they may be pinched.**
39. Select eight (8) (PN750019) 1/4-20 x 3/4 inch socket head cap screw fasteners. Apply one (1) fiber washer, and one (1) chrome washer with rounded side up. Apply a small drop of blue thread lock to the fasteners.



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40. Install the Rocker Cover(s) (PN01-201) with the barbed breather fittings facing each other.
41. Thread the eight fasteners into the holes and torque at 8-12 ft lbs.   
Use a crossing ("X") pattern when torquing.
42. With the oil hoses detached apply the six black rubber shipping caps to the various barbed fittings.
43. Turn the engine over at 60 rpm until the oil stops flowing from the small diameter hole next to the adapter.
44. Remove excess oil from the Oil Pressure Sensor hole. Apply pipe sealant to the bottom threads, install the Oil Pressure Sensor into the hole located below the tappet screen plug. Torque Oil Pressure Sensor at 8-12 ft lbs using Tool #I-20.
45. Stop Motor once the oil has stopped draining.
46. Insert 1 red rubber plug into the oil drain hole next to the filter adaptor.
47. Gap two (2) spark plugs at .040 +/- .002 inches and install. Torque plugs at 18 ft lbs using Tool# I-21. 
48. Insert three dunnage plugs into the ports, two small diameter plugs into the exhaust ports, and the larger into the intake opening.
49. Attach hoist hook.
50. Remove drive shaft coupler.
51. Clean any residual oil from the lower portion of the engine.
52. Remove rotor to ensure that there was no damage done to the wires and re-install.
53. Conduct final audit of appearance items and notify the Floor Auditor to perform final inspection and audit verification, before placing the assembly in the shipping arrangement.
54. Ensure all paperwork is complete