Cylinder Compression Test Kit

Instruction Manual

Read Carefully Before Use
Keep for Future Reference

Orion Motor Tech

UM-MFK-0007-V2

Disclaimer

Read this disclaimer completely and carefully before proceeding with the rest of the manual content.

1. Product Modifications

   Any modifications or alterations to Orion Motor Tech (OMT) products void any warranties and may result in damage or injury. OMT shall not be liable for any damages resulting from such modifications or alterations.

2. Compliance with Laws

   Customers shall be liable for ensuring that the use of OMT products complies with all applicable laws and regulations in their respective jurisdictions. OMT shall not be responsible for any violations of laws or regulations resulting from the use of OMT products.

3. Correct Use

   Always use OMT products only as directed in the accompanying manuals. Failure to follow instructions may result in injury or damage.

   Always ensure the assembly, installation, operation, maintenance, or repair of OMT products is carried out by a competent person.

   Regular maintenance should be performed throughout the lifecycle of OMT products. You are responsible for ensuring the products operate as intended.

   Always wear appropriate protective gear.

4. Third-Party Products

   OMT shall not be liable for any damages or losses resulting from the use of third-party products in conjunction with OMT products. Customers shall refer to the third-party's guidelines and/or warranties (if any) for any third-party products used.

5. Limitation of Liability

   OMT shall not be liable for any direct, indirect, punitive, incidental, special, or consequential damages to property or life, whatsoever arising out of or connected with the use or misuse of OMT products. In no event shall OMT's liability exceed the value of the products sold.

6. Warranty

   Refer to the sales page for warranty information.

This disclaimer states the entire obligation of OMT with respect to OMT products. If any part of this disclaimer is determined to be void, invalid, unenforceable, or illegal, including but not limited to the warranty disclaimers, liability disclaimers, and liability limitations set forth above, the invalid or unenforceable provision will be deemed superseded by a valid and enforceable provision that most closely matches the intent of the original provision and the remainder of the agreement shall remain in full force and effect.

Contact Us

Thank you for choosing our products! If you have any questions or comments, contact us and we'll address your issues ASAP!

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Safety Information

Danger

- The instructions provided herein are only for general information. **ALWAYS** perform all repairs in full compliance with your vehicle's service manual. After any repair, test your engine and vehicle in your workshop and at low speed before returning to normal use. Failure to do so may result in serious property damage and severe personal injury.
- **ONLY** use this product for its intended purpose, testing the vehicular cylinder compression.
- **DO NOT** allow use by children, by persons whose mental or physical condition precludes safe use, or by persons unfamiliar with this product and its compatible vehicle systems.
- **DO NOT** use while under the influence of alcohol, drugs, or any medication that negatively affects your judgment or reflexes. Keep children and bystanders away during use.
- Excessive pressure and/or unclean air will damage the tester and may cause property damage and/or personal injury.
- Keep hoses away from heat, oil, and sharp edges. **ALWAYS** check for secure hose connections during use.
- **ALWAYS** make sure there are no open flames and other fire hazards nearby before working on fuel systems. **DO NOT** smoke during use. Only use explosion-proof drop lighting for any additional illumination during testing. Have a dry chemical fire extinguisher available and familiarize yourself with its correct range before use. Take care not to use the extinguisher too close to the flame, as its high pressure can produce blowback.
- Keep your work site clean and well-lit. Cluttered and dark work areas invite accidents. For best results, keep the kit clean and dry. Remove any fluid, oil, or grease before and after work.
- **ALWAYS** use personal protective equipment (PPE) suitable to your task. Always wear ANSI and OSHA-approved eye, breathing, and hand protection while using this product. Normal use of this product typically produces microscopic particles known to the state of California to cause cancer, birth defects, or other reproductive harm. Nonslip footwear is also highly recommended.
- Other equipment such as ear, head, and body protection may also be necessary depending on your work, work environment, and other equipment.
- Dress properly for automotive servicing. **DO NOT** wear loose clothing or jewelry and keep hair, clothing, gloves, hoses, and tools away from any moving parts during use.
- **ALWAYS** know and understand the specific safety warnings and instructions for your vehicle before using this kit. Use the correct fluids, pressures, adapters, etc. for your vehicle. Make sure the vehicle is fully supported and parked before beginning any work. Take care to never touch any heated surface with exposed skin.
- **ALWAYS** ensure that your vehicle has been jacked up and is adequately supported with axle stands.
- **DO NOT** perform compression testing on diesel engines. The higher compression in a diesel engine may cause engine damage.
- **DO NOT** overreach. Keep proper footing and balance at all times.
- **NEVER** scrape the hose or drop the pressure gauge on hard or rough surfaces.
- In case of an accident or injury, have a first aid kit and a communication device (e.g., a phone) readily available. Know the location of emergency medical facilities.
- Maintain this product. Check for misalignment, binding, wear, or other damage before use. If any damage is detected, repair or replace the problematic components before further use. In a large shop, mark such tools "**DO NOT USE**" until they have been repaired. **ONLY** replace components with identical parts.
- Automotive repair is an inherently dangerous activity. This manual and the separate vehicle service manual cannot cover all possible situations that may arise. **ALWAYS** exercise discretion and good judgment. Seek training if needed.

Specifications

Gauge Diameter		2.5 in.	63 mm
Pressure Scale		50–300 psi	3–21 kg/cm²
			3–20 Bar
Hose Fittings		0.4, 0.5, 0.6, & 0.7 in.	10, 12, 14, 16, & 18 mm
Air Release Type		Push Button	
Extension Rod	**Length**	7.5 in.	19 cm
	Thread	M14 × 1.25	
Hose Length	**Length**	16.9 in.	43 cm
	Threads	M14 × 1.25 & M18 × 1.5	

Parts List

No.	Item	Qty.
A	Hose	1
B	Pressure Gauge	1
C	Extension Rod	1
D	Push-On Connectors	2
E	Spark Plug Tester	1
F	10 mm Adapter	1
G	12 mm Adapter	1
H	14 mm Adapter	1
I	16 mm Adapter	1
J	18 mm Adapter	1
K	Valve Cores	2
L	Spare O-Rings	5

Operation

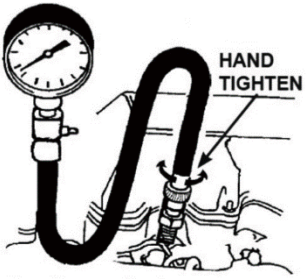
⚠Warning

- Park your machinery in a level place safely and engage the parking brake. If necessary, chock the wheels/tracks.
- Use correct tools and personal protective equipment (PPE) before performing any operation. Be extremely careful with possible pinching points, moving parts, or parts that may suddenly spring out.
- Performing a pressure test requires the work of two individuals; one person to operate the machinery's ignition switch and the other person to read the gauge.
- For an abundance of safety, we recommend you take training before using these tools. Serious injury could happen due to a lack of training.
- If the dial pointer is not at zero, use a flathead screwdriver to turn the zero-adjustment knob counterclockwise until the pointer returns to zero.

Cylinder Compression Test

1. Run your vehicle's engine in a well-ventilated location until it reaches its normal operating temperature.
2. Stop the engine, wear protective work gloves, and disconnect all spark plug wires. Keep them in order, numbering them according to the cylinder from which they were removed.
3. Loosen all spark plugs by about half a turn, but do not remove them.
4. Remove all the dirt and debris from the spark plug wells using an air hose or wire brush.
5. Remove the spark plugs and arrange them on a clean, flat surface, numbering them according to the cylinder from which they were removed.
6. Remove the air filter and set the throttle plates to their wide-open position. Make sure not to damage the linkage or throttle components.
7. Disconnect the ignition system according to your vehicle's manual instructions.
8. Either connect one of the push-on connectors straight to the gauge coupling for quick installation or select the spark plug adapter that fits your vehicle. Screw the adapter into the provided hose and screw the spark plug adapter and hose assembly into a spark plug well by hand.

   For hard-to-reach spark plugs, screw the provided extension rod into the hose and screw the adapter onto the other end of the rod.



⚠Warning

DO NOT use a wrench, which can easily cause damage from overtightening.

9. Connect the coupling on the gauge to the hose. Make sure it's fully engaged.

10. Use a remote starter or a second person to crank the engine for at least five compression strokes or until the pressure reading on the gauge stops rising.

    The gauge needle should travel up the scale on each compression stroke until it reaches a peak value.

    If the gauge needle does not travel up the scale or remains at the same value for several strokes and then starts to climb, a valve may be sticking. Clean any sticky valves as needed.

    If the compression reading exceeds the vehicle manufacturer's specification and the piston and cylinder have not been modified, access the cylinder head to check it for carbon build-up. Remove any such build-up and rerun the test.

11. Record the stabilized compression reading, stop the engine, and then push the release valve on the side of the gauge's connection to relieve the pressure.

12. Repeat the test and record the new reading as well. Relieve the pressure again and remove the hose and adapter from the spark plug well.

13. Repeat the process for the other cylinders. All cylinders should indicate pressure within the vehicle manufacturer's specifications, and the readings should not vary by more than 10% from test to test or cylinder to cylinder.

    If a reading on two adjacent cylinders is at least 20 psi lower than the others, check for any oil or coolant in the cylinder head, indicating a blown head gasket or cracked cylinder head. If so, replace the broken part and rerun the tests.

    If the readings are all low or vary widely between cylinders, pour a teaspoon of SAE 30 oil into each cylinder and retest them. If the readings increase considerably, the problem may be poorly seated or worn piston rings. If the readings remain the same, the valves and/or associated components, such as a burned or damaged piston, maybe the problem. Check and repair or replace any problematic parts.

14. After correcting any problems, clean, recap, and reinstall the spark plugs in the same order they were removed or install new ones.

15. Reconnect each spark plug wire.

16. Return the throttle plates to the closed position and replace the air filter.

17. Reconnect the ignition system wiring.

Spark Plug Test

1. Disconnect the negative terminal from your vehicle's battery.
2. Disconnect the spark plug wire from one of your vehicle's spark plugs.
3. Mount the spark plug tester's prong to the wire.
4. Connect the other end of the tester to the spark plug.
5. Reconnect the negative terminal on the battery.
6. Use a remote starter or have a second person start the engine while you observe the tester.
7. If the cylinder is not in issue, the tester's light will begin flashing. If it doesn't come on, disconnect the negative terminal on the battery again and replace the ignition wire before continuing.
8. Once the tester's light is flashing properly, observe the tester while the engine idles for a few minutes. If the tester goes dim or its rate of flashing changes, the engine might be misfiring due to a faulty spark plug or coil. Check your coil with an ignition coil tester (not incl.) to see whether the coil or the spark plug is the problem. Replace whichever part is broken.
9. Reconnect the spark plug wire to the spark plug.
10. Repeat the steps above with the other spark plugs.

Maintenance

- Check the condition of these tools before and after each use. Before further use, repair or replace any worn or damaged components.
- The exterior of these tools can be cleaned with a soft, damp cloth. Do not use abrasive cleaners or caustic chemicals. Allow time for the tools to air dry before replacing them in the case.
- Store this product in a cool, dry place away from direct sunlight and inaccessible to children.

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User Manual

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