SEALEY Professional TOOLS
AUTO SERVICE LINE

INSTRUCTIONS for:

DIESEL COMPRESSION GAUGE, HOSE & TDC BASE KIT

MODEL No: **VSE3157**

Thank you for purchasing a Sealey product. Manufactured to a high standard this product will, if used according to these instructions and properly maintained, give you years of trouble free performance.

IMPORTANT: **PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS AND CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. PLEASE KEEP INSTRUCTIONS SAFE FOR FUTURE USE.**

1. SAFETY INSTRUCTIONS

❒ **WARNING!** *Ensure Health and Safety, local authority and general workshop practice regulations are adhered to when using tools.*
✗ **DO NOT** use tools if seals or threads are damaged. Any defective seal **MUST** be changed before use to avoid incorrect readings.
✓ Maintain tools in good and clean condition for best and safest performance.
✓ Ensure that a vehicle which has been jacked up is adequately supported with axle stands.
✓ Wear approved eye protection. A full range of personal safety equipment is available from your Sealey dealer.
✓ Wear suitable clothing to avoid snagging. **DO NOT** wear jewellery and tie back long hair.
✓ Ensure any disconnected fuel pipes are plugged to avoid spillage.
✓ Ensure that the correct connector is used for the engine being tested. Compression tests on diesel engines should be conducted when the engine is cold.
✓ Keep a fire extinguisher to hand.
✓ Use proper ventilation and avoid breathing in exhaust fumes.
✓ Ensure you keep tester at arms length when relieving pressure to avoid personal injury.
✓ Fuel delivery must be prevented by either operating the engine stop lever or disconnecting fuel pump solenoid.
✓ Protect hands from burns, as quick release coupling and adaptors may become very hot during use.
✓ **Always** release the pressure from the gauge before disconnecting the quick release coupling.
✓ Account for all tools and parts being used, **DO NOT** leave them in or near the engine. Return all parts to the case and store this in a safe, dry, childproof location.
▲ ***IMPORTANT:*** *Always refer to the vehicle manufacturer's service instructions, or a proprietary manual, to establish the current procedure and data. These instructions are provided as a guide only.*

2. INTRODUCTION

Diesel engine compression gauge reads up to 600psi. To be used in conjunction with glow plug adaptor kits - VSE3151, VSE3152 and VSE3153. See the Sealeys website for vehicle application lists.
Features TDC indicator for use in conjunction with glow plug adaptors.

VSE3157 KIT

VSE3151 KIT

VSE3152 KIT

VSE3153 KIT

3. INSTRUCTIONS

3.1. Overview of compression testing.

When an engine's performance is down, or if misfiring occurs which cannot be attributed to the ignition or fuel systems, a compression test can provide diagnostic clues as to the engine's condition.

Compression should build up quickly in a healthy engine. A very low compression reading on the first stroke, followed by gradually increasing pressure on successive strokes, indicates worn piston rings. A low compression reading on the first stroke, which does not build up during successive strokes, indicates leaking valves or a faulty head gasket (a cracked head could also be the cause).

Deposits on the undersides of the valve heads can also cause low compression. If the pressure in any cylinder is considerably lower than the others, introduce a small quantity of clean oil into that cylinder through the glow plug hole, and repeat the test. If the addition of oil temporarily improves the compression pressure, this indicates that bore or piston wear is responsible for the pressure loss. If there is no improvement, it suggests that the leakage is around the valves, or a faulty head gasket. A low reading from two adjacent cylinders suggests a faulty head gasket between the two cylinders. The presence of coolant in the engine oil will confirm this.

If the compression is unusually high, the combustion chambers are probably coated with carbon deposits. If this is the case, the cylinder head should be removed and de-carbonised.

As a rough guide, engines having a compression pressure in excess of 100psi (6.9 bar), should not exceed a compression loss of more than 10psi (0.69 bar). On older engines with lower compression pressure, loss should not exceed 0.35 bar (5psi).

3.2. Compression Testing.

3.2.1. Check the engine oil is at the correct level.

3.2.2. Remove all of the glow plugs from the engine.

3.2.3. Select the applicable adaptor from one of the accompanying kits and screw it into the first glow plug port, ensuring there is a good seal with the O-ring (if fitted). Connect the coupling on the pressure gauge hose to the adaptor, ensuring it locks into place.

3.2.4. Turn over the engine using the starter motor and observe the gauge, looking for a steady increase in the reading (see 3.1) and note the maximum reading obtained. Refer to the vehicle/engine manufacturer's workshop manual for compression results data.

3.2.5. Depress the Re-set Valve (situated under the gauge) to release the pressure. The Re-set Valve allows the test to be repeated if required without disconnecting the tester from the glow plug port.

WARNING! Always release pressure via the Re-set Valve BEFORE disconnecting the Tester.

3.2.6. Disconnect the compression tester from the adaptor and remove the adaptor from the glow plug port. Install them into the next cylinder's glow plug port and repeat the tests. Continue the tests for all of the remaining cylinders in turn.

NOTE: A variation in compression readings between cylinders is often a better indication of engine problems than the individual values of compression.

3.3. TDC Indicator Tool.

3.3.1. Remove the glow plug from cylinder number 1. It may also be necessary to remove all glow plugs to facilitate manual turning over of the engine.

3.3.2. Select the applicable adaptor from one of the accompanying kits and screw it into the glow plug port of cylinder number 1. Ensure that there is a good seal with the O-ring (if fitted). Connect the coupling on the TDC finder to the adaptor, ensuring it locks into place.

3.3.3. Position the indicator in a vertical position, in a suitable viewable location, using the magnetic hook if needed.

3.3.4. Turn the engine over manually, using a spanner or socket on the crankshaft pulley, in the direction of engine rotation and watch for the float to rise in the tube. As the piston rises on the compression stroke, the float will rise to the top of the tube and stay there, when the piston goes past TDC and compression is lost, the float will suddenly sink. Note position and temporarily make suitable marks to indicate TDC, or compare with existing timing marks.

3.3.5. Turn the engine over a further 1¾ turns and the float should start to rise again as the piston rises on the compression stroke. Continue to slowly turn the crankshaft towards TDC (watching the timing marks) - note the exact point when the float drops. Alter the timing mark if required.

3.3.6. Repeat the procedure, turning the engine over a further 2 turns to re-check for accuracy.

3.3.7. Disconnect the TDC tool from the adaptor and remove the adaptor from the glow plug port.

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Sole UK Distributor, Sealey Group,
Kempson Way, Suffolk Business Park,
Bury St. Edmunds, Suffolk,
IP32 7AR

01284 757500
01284 703534
www.sealey.co.uk
sales@sealey.co.uk