

Warning

Incorrect or out of phase engine timing can result in damage to the valves. The Tool Connection cannot be held responsible for any damage caused by using these tools in anyway.

Safety Precautions – Please read

- Disconnect the battery earth leads (check radio code is available)
- Remove spark or glow plugs to make the engine turn easier
- Do not use cleaning fluids on belts, sprockets or rollers
- Always make a note of the route of the auxiliary drive belt before removal
- Turn the engine in the normal direction (clockwise unless stated otherwise)
- Do not turn the camshaft, crankshaft or diesel injection pump once the timing chain has been removed (unless specifically stated)
- Do not use the timing chain to lock the engine when slackening or tightening crankshaft pulley bolts
- Do not turn the crankshaft or camshaft when the timing belt/chain has been removed
- Mark the direction of the chain before removing
- It is always recommended to turn the engine slowly, by hand and to re-check the camshaft and crankshaft timing positions.
- Crankshafts and Camshafts may only be turned with the chain drive mechanism fully installed.
- Do not turn crankshaft via camshaft or other gears
- Check the diesel injection pump timing after replacing the chain
- Observe all tightening torques
- Always refer to the vehicle manufacturer's service manual or a suitable proprietary instruction book
- Incorrect or out of phase engine timing can result in damage to the valves
- It is always recommended to turn the engine slowly, by hand, and to re-check the camshaft and crankshaft timing positions



Guarantee

If this product fails through faulty materials or workmanship, contact our service department direct on: **+44 (0) 1926 818186**. Normal wear and tear are excluded as are consumable items and abuse.

LASER[®]

Cylinder Leakage Tester | 100psi (7 Bar) Instructions

One of the simplest tests for checking the condition of the engine is the cylinder leakage test. Compression leakage can show damaged valves, worn rings, blown head gasket or a cracked cylinder head.

The principle is simple; a cylinder with the piston at top dead centre with both valves closed should be airtight. By injecting a measured amount of air into each cylinder and checking the rate of leakage, the condition of the sealed system can be identified.

Regular compression check is worthwhile preventive maintenance.



Fault Detection

- If the cylinder does not hold, it shows the air is leaking. By simply listening to various parts of the system you should be able to identify the leaking component.
- Worn rings will allow air to seep into the crankcase and out of the oil filler or dipstick tube.
- Burnt exhaust valves will allow air to escape through the exhaust system
- Burnt inlet valve will allow air to exit through the inlet manifold or air filter
- Cracked cylinder head/block or blown head gasket will allow air to escape through the cooling system or under the cylinder head. (This is easier to identify if the coolant level is full to the top of the filler cap. Any leakage from the combustion chamber to cooling system will then cause coolant to overflow).

Contents

1. Dual gauged leak detection unit 0-100psi (0-7bar)
2. Fixed short connector M14 x 40mm
3. Fixed long reach adaptor M14 x 220mm
4. Fixed long reach adaptor M12 x 220mm
5. 10 | 12 | 14 x 25mm adaptors
6. Adaptor hose for diesel injection adaptors 470mm long (300psi)
7. Adaptor hose for spark plug testing on petrol engines 670mm long (300psi)
8. Assortment of O rings | seals



Instructions For Use

1. Run engine until normal operating temperature is achieved (usually 10 mins.)
2. Switch OFF ignition.
3. Remove air cleaner, oil filter cap, **coolant cap!**
4. Remove spark plug and perform the following procedures on each spark plug port hole in sequence. Replacing after each check.
5. Connect air supply to connector (marked IN).
6. Release adjuster lock and adjust air pressure regulator to give a cylinder meter gauge reading of zero.
7. Lock adjuster at zero.
8. Manually turn engine until piston is at TDC (firing stroke) on relevant cylinder.
9. Lock engine in this position by engaging top gear and apply hand brake.
10. Fit flexi hose to cylinder to be tested, then connect to the leakage tester.

Detection Unit

1. Lock engine in this position by engaging top gear and apply hand brake.
2. Record reading and points of air escape.
3. If piston is not exactly at TDC the air pressure may push the piston back down. An inaccurate reading will result and vehicle may move forward if hand brake has not been applied.
4. Repeat procedure for all cylinders.
5. In this region, cylinder bore problems are more critical than valve faults.

Precautions

- Working with air pressure can be dangerous.
- Always adhere to workshop guidelines and wear the appropriate clothing.
- When running the engine, make sure there is enough ventilation and extraction of exhaust gases.
- Always work with the assistance of a manufacturer's recommended workshop manual.

! Hot Coolant Cap