

## 4793/3

### Cylinder Head Tightness Tester (CO<sub>2</sub> leak detector)

Dear Customer,

You have made a good choice. With a HAZET Cylinder Head Tightness Tester, you have a quality tool in your hands.

First, some general information: –

Testing can be carried out at any time, whether the engine is hot or cold. As a rule, no preparation of the vehicle for a routine test is required. Nevertheless, if the engine has cooled over a prolonged period of time, fresh air will have been drawn into the cooling system, diluting any combustion gas which may be present in the air cushion.

The HAZET CO<sub>2</sub> Leakage Tester permits the early, rapid and reliable detection of **leaks between the cooling system and the combustion chambers of all coolant cooled petrol, diesel and LPG engines.**

Any combustion gas which leaks into the cooling system through a defect in the cylinder head gasket, sealing faces, hairline cracks, cylinder liners or even porous parts of the cylinder head, collects in the air cushion in the radiator or header tank.

The HAZET Leakage Tester enables the air cushion to be tested for combustion gas (increased CO<sub>2</sub> content). Leaks **can also be detected subsequently.**

The blue detecting fluid indicates whether the in-drawn air contains an increased level of carbon dioxide by **changing colour from blue**, first to **green**, then to **yellow**. An increased CO<sub>2</sub> content in the cooling system indicates a leak between the combustion chamber and the cooling system, i.e. the presence of **combustion gas in the cooling system.**

The proven "**HAZET dual chamber system**" prevents erroneous diagnoses, as follows. In the lower chamber, alkaline particles are absorbed while, in the upper, a leak resulting in an **increased content of CO<sub>2</sub> gas** (combustion gas) will give rise to a **change in the colour of the fluid from blue to yellow.**

#### Suggested uses:

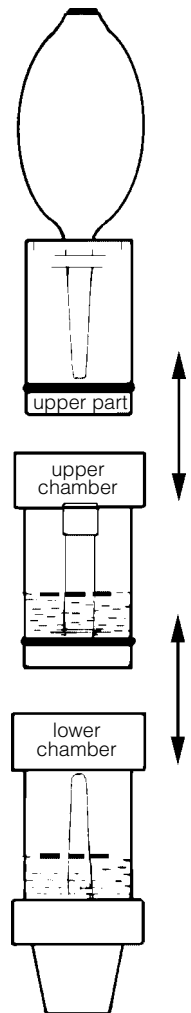
As a routine test at every service and before replenishing antifreeze. To check repairs, e.g. after pronounced overheating of the engine as a result of a leak or defect in the water pump, V-belt, radiator hose, etc. In combination with a pressure test for externally escaping leaks (max. possible test pressure, 1 bar); this **also reveals leaks which would otherwise only occur at a very high combustion pressure or when the vehicle is being driven.**

#### Preparation of the Tester, filling and initiation

There are two chambers in the HAZET metal box:

- blue fluid            – Reaction fluid    HAZET 4793-2
- light blue fluid    – Flushing fluid    HAZET 4793-3

Remove the two chambers from the Tester by pulling and turning. Pour the blue reaction fluid into the lower chamber up to the marking line (12 mm). Put the upper chamber on the lower one and fill it up with the blue reaction fluid up to the line as well. Now put on the upper part with the suction ball. The Tester is now ready for use.



## Sensitivity Check

Squeeze the suction ball 2 or 3 times, hold the Tester at your mouth and exhale several times. Stop breathing once you notice that the reaction fluid turns green. The carbon dioxide in the breathing air ought to give the fluid in both chambers a yellow colouration within a few seconds.

## Regeneration

By squeezing the suction ball again, fresh air will be sucked into the Tester. The Tester will again be ready for use as soon as the reaction fluid has taken a green colour.

This test should be repeated every time before usage and before refilling the chambers. The fluid must be renewed if a reduction in sensitivity can be noticed.

After usage, the Tester has to be stored in horizontal position.

## Directions for use

- 1.) With the engine at operating temperature, open the lid of the radiator and insert the Tester into the radiator inlet.
- 2.) The rubber plug should avoid an escape of trapped gas. It should not sit tight to prevent vacuum.  
**Avoid the intake of cooling water:** Do not dip the rubber plug into the cooling liquid. Put the Tester on the slant if necessary.
- 3.) Squeezing the suction ball up to five times will be enough to show the presence of combustion gas in the air cushion on top of the cooling water level. **Any discolouration** from bluish green to yellow indicates the presence of combustion air in the air cushion. – Even a yellowish-green colour **indicates a content of carbon dioxide.**
- 4.) If no discolouration of the reaction fluid in the upper chamber can be noticed or if the fluid turns blue: **There is no leakage between the combustion and cooling systems.**

## Note

Only the discolouration in the upper chamber is significant: A bluish discolouration of the fluid in the lower chamber indicates a saturation of the fluid with alkaline particles. The fluid therefore has to be renewed before the next leakage test (see sensitivity check and regeneration).

In case of doubt the test can be repeated, the testing condition being improved as follows:

- A.) Check the cooling water level and refill it if necessary so that the air cushion diminishes.
- B.) Make a test ride with your car, accelerating several times (very important for diesel engines).
- C.) Repeat the test after a short cool down (in order to prevent the super pressure in the cooling system).

## Notes on environmental protection

The fluid is ecologically harmless, acid-free and non-inflammable. The fluid can be disposed without taking any precautions. When spilled on clothes rinse immediately with water in order to prevent stains.

Prevent pollution of the tester through cooling water. In case of pollution rinse the chambers with fresh tap water only. Do not use detergents such as soap or powder.