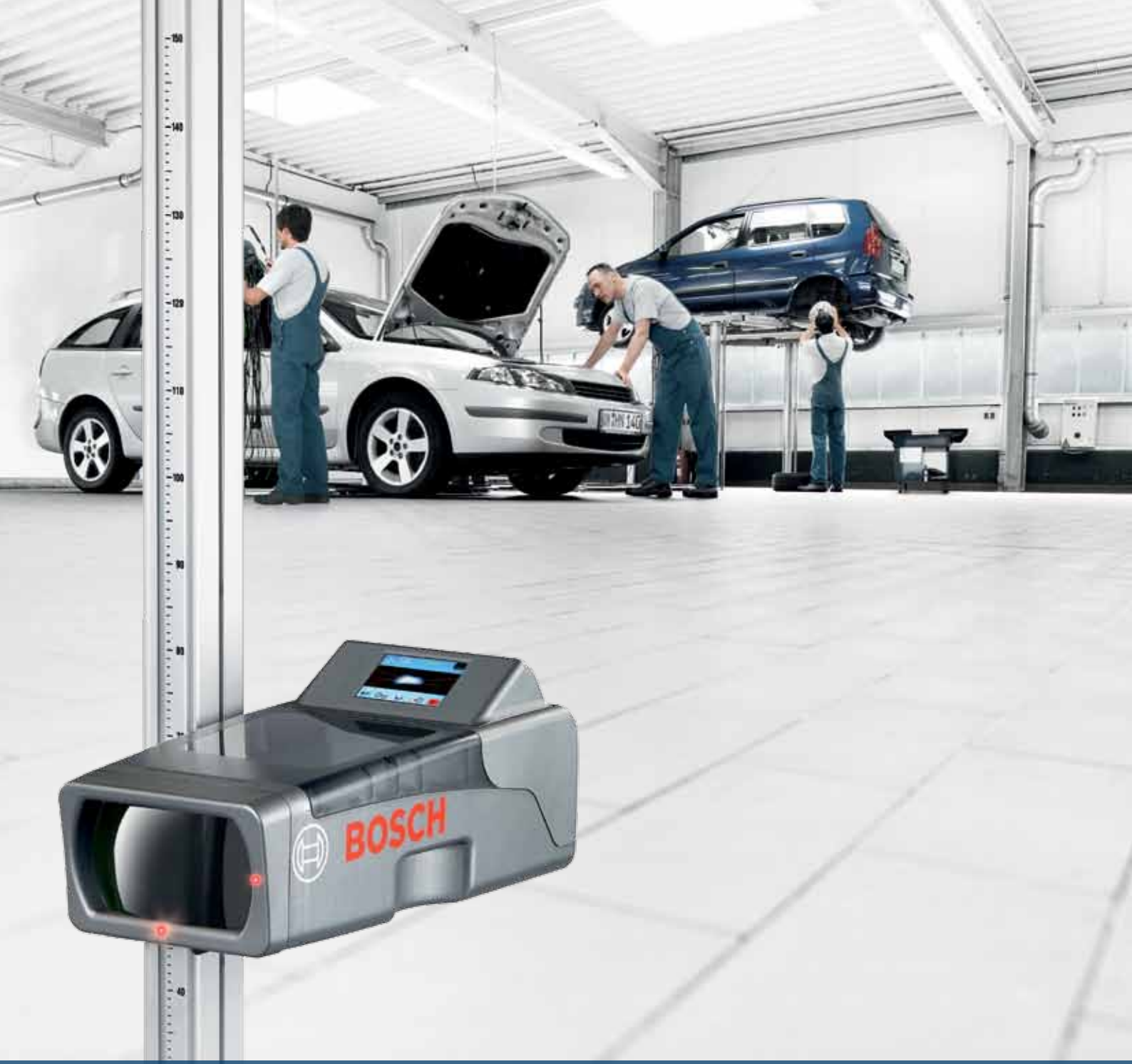


In todays workshops the headlamp test is digital.

Understand why.

BOSCH

Invented for life

Digital headlight tester –
essential for the modern workshop

History of headlamp technology

◂ **1962 Introduction of the first halogen lamp**

1972 Bosch introduces H4 two-filament bulb headlamp

◂ **1992 Xenon headlights in series production**

◂ **1999 First Bi-Xenon-headlamp in series production**

2003 Static and dynamic cornering light

2006 Introduction of AFS functions

◂ **2008 Introduction of the first full-LED headlights**

2009 Adaptive cut-off line

2010 Adaptive vertical cut-off line

2012 Marking lights

◂ **2014 Introduction of the first laser headlight**

Straightforward headlight adjustment with the HTD 815 Series

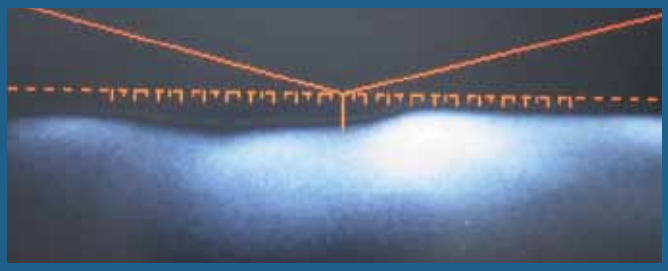
New vehicle lighting technologies are entering the market at a much higher rate than in previous years. Xenon and LED headlights have already been established in the mass segment of medium-sized vehicles, but digital headlight testers have still not found their way into the workshops. Clearly, when these types of headlights are assessed or set incorrectly this can create a high hazard potential on the road!

The visual headlight testers used in workshops no longer match the intelligent light systems used in contemporary vehicles.
After a gap of almost 30 years in the development of headlight technology, the last decade has seen a revolution taking place in this sector. Xenon headlights are already optional for all vehicle classes, full LED headlights are already available for the medium-sized class and a laser light will be introduced in due course. It should be clear to all concerned that the existing visual assessment headlight testers are on their way out.

Why does a workshop need a digital headlight tester?
In the area of the cut-off line, xenon and LED headlight systems create a type of blue fringe, making it impossible for the eye to recognise exactly where the cut-off line lies. If the cut-off line is interpreted incorrectly then the headlights may be adjusted too low, meaning the road is insufficiently illuminated. If incorrect interpretation leads to the headlights being adjusted too high, the oncoming vehicle may be dazzled by the extremely bright LED headlights, increasing the risk of an accident.

In addition, headlights which are adjusted too high are classified as a significant defect in a number of countries' roadworthiness tests, meaning the vehicle will not be awarded a vehicle inspection test certificate.

Xenon headlamps: With the naked eye, you cannot make out the precise point of the cut-off line.
As you can see from the Xenon example, due to the blue fringe of the Xenon light, the eye is not able to make out the precise cut-off line. Consequently the precise assessment and adjustment required for safe road use of the headlights is not possible with a visual



Filtered live image of a Bi-Xenon headlight on the HTD 815 headlight tester with a clear cut-off line

Bi-Xenon headlight image on an analog headlight tester

Precise: the digital technology of the HTD 815

headlight tester. Digital headlight testers with camera technology provide the necessary solution here. These are able to filter out the disruptive blue fringe, thereby defining the precise cut-off line.

Additional complications due to adaptive lighting control
Furthermore, vehicles with adaptive lighting control feature a varying cut-off line, the effect of which differs between manufacturers. Intelligent light systems therefore have a special adjustment mode for assessing the cut-off line. This is specified by the manufacturer together with approximate values for optimum headlight adjustment.

“Reference segments” for dynamic beam control feature
LED segment headlights with dynamic beam control feature a vertical and horizontal cut-off line and will be evaluated via the position of the “reference segment”. At this point, the digital headlight tester enables the coordinates of the “reference segment” to be read out. The coordinates are then transferred to the control unit and the headlight is recalibrated – a mechanical adjustment of the headlights is no longer possible at this point and a digital headlight tester is absolutely essential for this process.

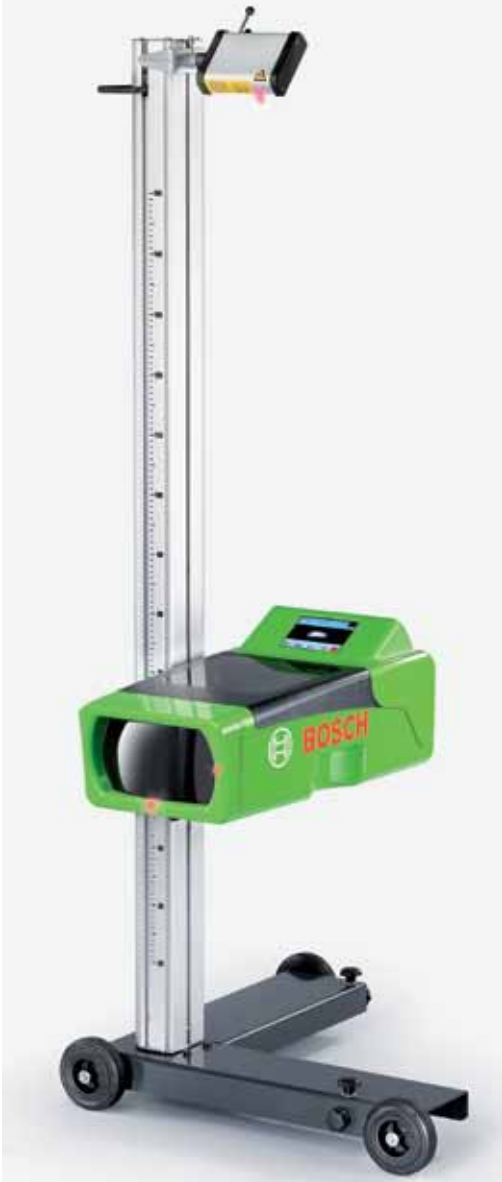
With the HTD 815 Series, intelligent light systems can be assessed reliably and adjusted precisely
The workshop technology sector urgently needs digital headlight testers, to guarantee problem-free assessment of specific manufacturer’s headlight images and to perform correct electronic adjustment of LED headlights. These devices are essential to enable headlight adjustment in the workshop by the technician. The assessment of headlight adjustment is performed in real time and the device leads the operator through the adjustment process using visual arrow signals. When the correct setting is reached, the device signals its status to the user, both visually and with a beep. The adjustable monitor position means the interface is plainly visible for all users.

Intelligent, fast and precise: Digital headlight testing

Digital headlight testing with Bosch HTD 815

The Bosch HTD 815 was developed especially for the assessment and adjustment of modern lightning systems. Real time data processing for fast and precise evaluation is standard. Limit values and results are digitally displayed on the screen.

- ▶ CMOS camera with cross- and visor laser for precise positioning
- ▶ Optimised image processing for fast headlight adjustment
- ▶ All light sources (filaments, halogen, xenon and LED)
- ▶ Lightweight and easy to move on wheels or rails (optional)



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