

CITA WG1 Safety Systems & SubWG1 on Brake Testing
webmeeting, 6th – 7th April 2020



Checking (modern) headlight systems

Bc. David Bulava

The Study by RDW in co-operation with TESTEK



CHECKING (MODERN) HEADLIGHT SYSTEMS

Final report

Chris Bosch & David Bulava
RDW in collaboration with TESTEK



4-2-2020



Name Intern	Chris Bosch cbosch@rdw.nl	David Bulava
University	Rotterdam University of Applied Sciences (Hogeschool Rotterdam)	Slovak University of Technology in Bratislava
Study	Automotive Engineering	Mechanical Engineering
Supervisor	Arthur van Lee Piet Schäfer	Juraj Matej
Company	RDW Europaweg 205 2700 AT Zoetermeer Netherlands	TESTEK Vajnorská 1347/137, 831 04 Bratislava Slovakia

Date
4-2-2020

Version:
1.0



RDW



Chris Bosch (RDW)

Checking (Modern) Headlight Systems

David Bulava (TESTEK)

1

Main questions



- Which factors have an influence on the adjustment of the headlight?
- Is it possible to check modern lights with analog test equipment?
- Should we (in the future) check operation of adaptive lighting in the PTI?

Influencing factors on the adjustment of the headlight

Deviation in the floor

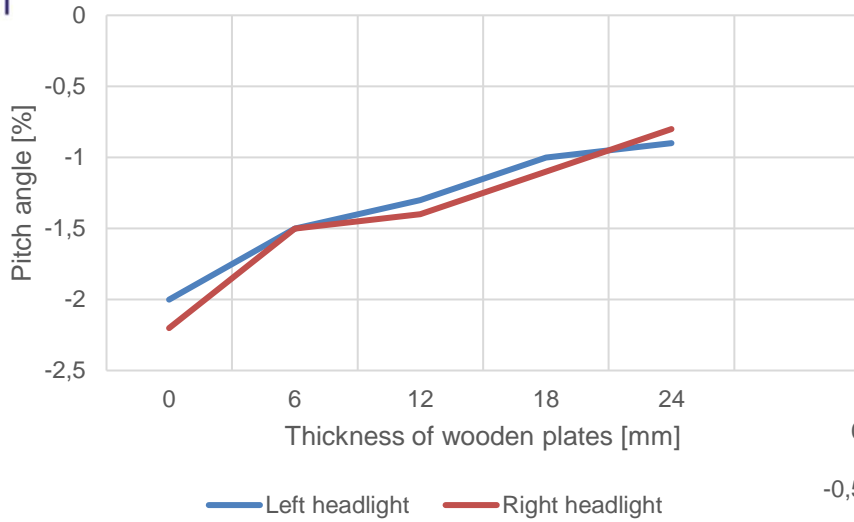
- Levelled jack
- 6mm wooden plates up to 24mm



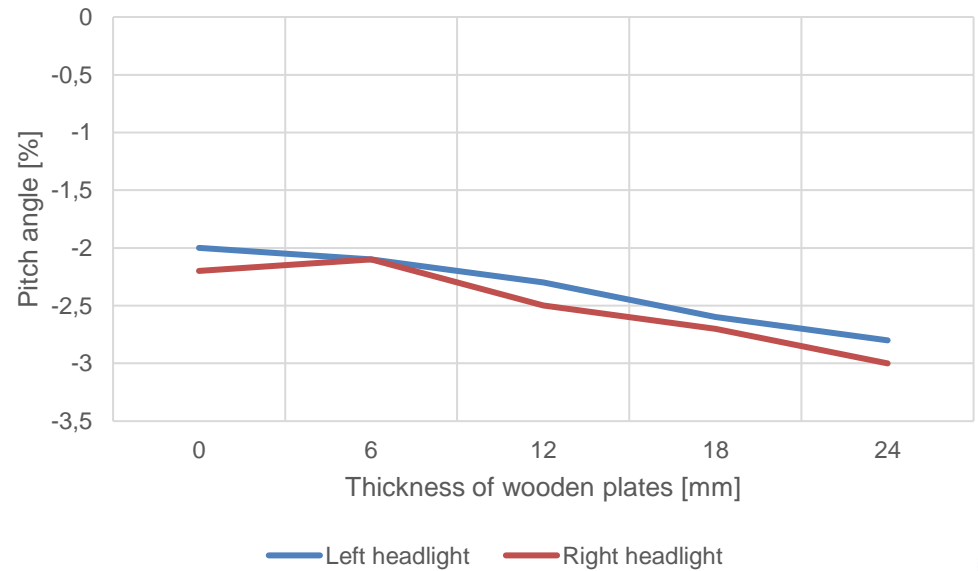
Horizontal width axle



Deviation in the floor - Front Axle



Deviation in the floor - Rear axle



Influencing factors on the adjustment of the headlight

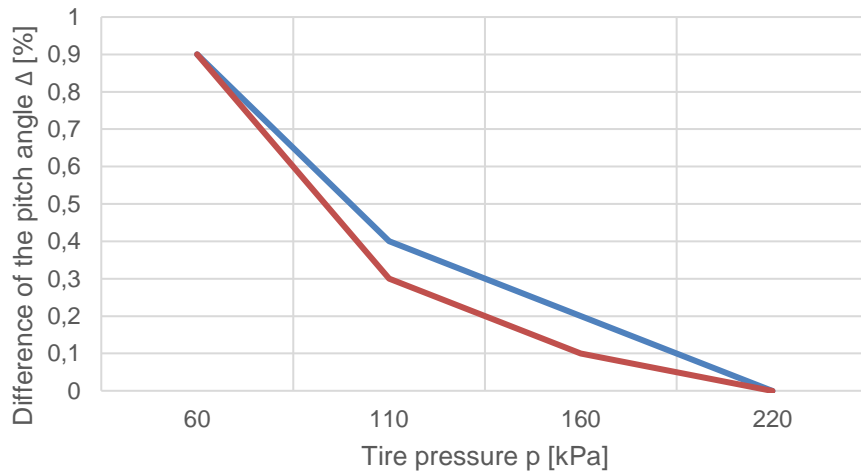
Tire pressure

- 75%, 50%, 25% of the nominal value
- Longitudinal and transverse axes

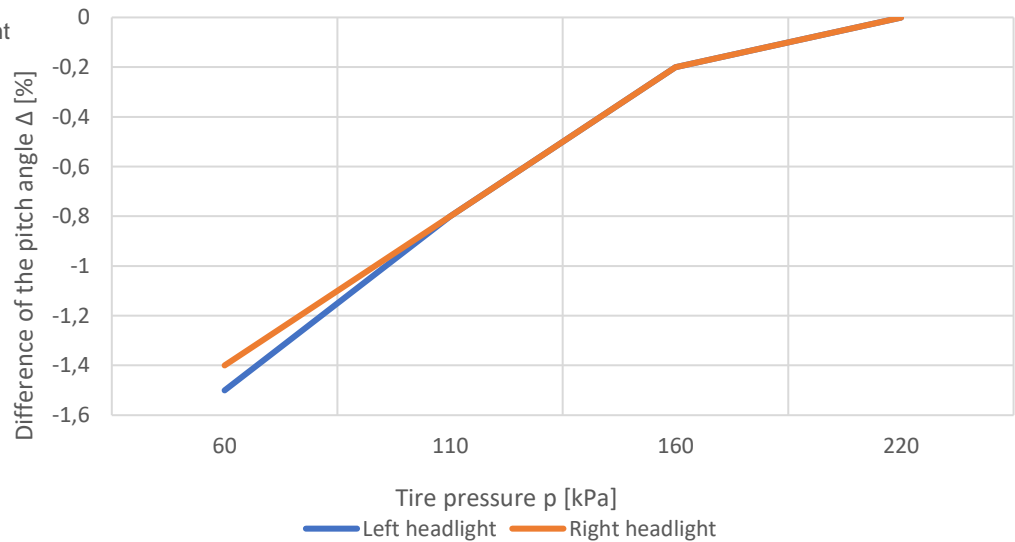


Tire pressure – width axle

Influence of the tire pressure - rear axle

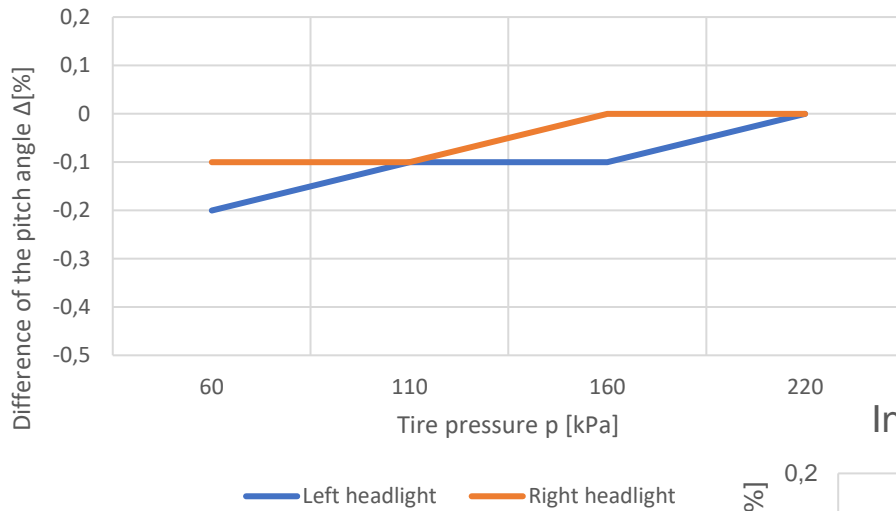


Influence of the tire pressure - front axle

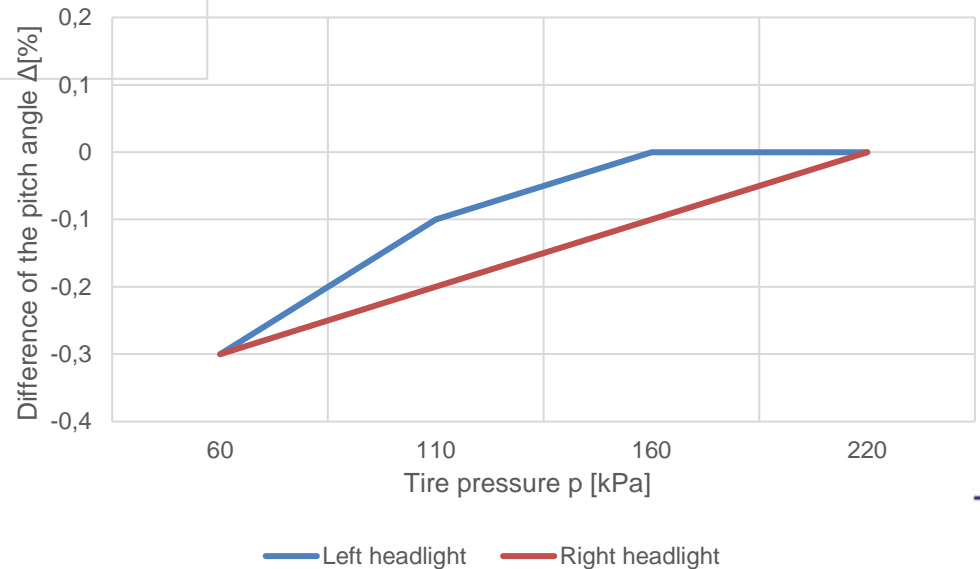


Tire pressure – longitudinal axle

Influence of the tire pressure - right side



Influence of the tire pressure - left side



Is it possible to check modern lights pursuant the Directive 2014/45/EU with an analog tester?

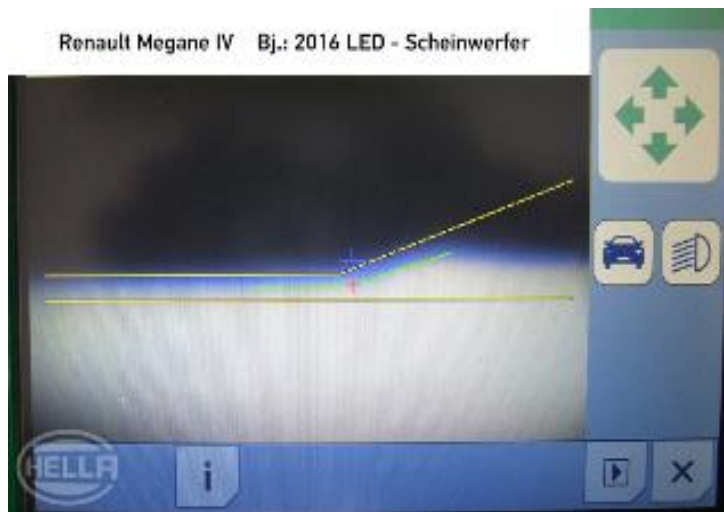
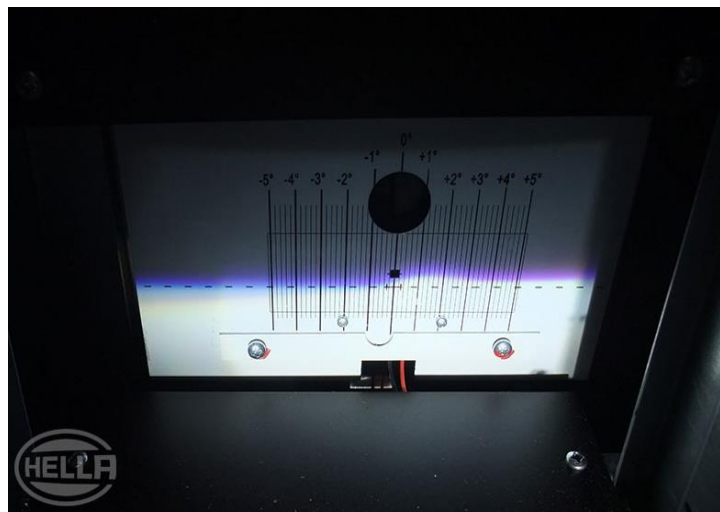


Due to experience, nowadays the cut-off line of the modern LED and adaptive lights is no more a straight line, which can cause a problem to the technicians evaluating the results of the headlight inspection.

Adaptive lights should be able to switch into the test mode during the inspection. The test mode can be approached mainly through the OBD connection.

It is possible with both devices. In the directive, there is nothing mentioned about using analog or digital device. The advantage of the digital tester is that you don't need to read the value from a table on the light screen, so the reading of value is less subjective. It is also more accurate.

Is it possible to check modern lights pursuant the Directive 2014/45/EU with an analog tester?



Should we (in the future) check operation of adaptive lighting in the PTI?



More and more modern cars with adaptive lighting

People are used to rely on the advanced driver assistance systems

Possibility of danger due to incorrect setting or sensor failure

Different cut-off line, not described in the methodology

Due to a many possible modes of the lights, the connection through OBD will be required

Thank you for your attention