

# GRE Task Force LED Retrofits / Substitutes (TF SR)

## Status report for GRE79

2018-04-19

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# Meetings

- 1<sup>st</sup> meeting: 2017-12-14, Aachen (report: TFSR-01-11)
- 2<sup>nd</sup> meeting: 2018-02-06, Bonn (report: TFSR-02-05)
- 3<sup>rd</sup> meeting: 2018-03-27, Brussels (report: TFSR-03-09)

Planned:

- 4<sup>th</sup> meeting: 2018-06-06 Brussels

Two-step approach:

- Step 1: LED substitutes
- Step 2: LED retrofits (no detailed discussion started yet)

# LED substitutes and LED retrofits

Both are intended as replacement parts for filament light sources (R37), fulfilling photometric equivalence

## LED Substitute

- Application: Original Manufacturer installation on vehicles approved according R48/R53/R74/R86 for use of these light sources:
  - Either initial approval or after approval extension for device and/or for vehicle
- With standardised interlock-feature to prevent mis-use as “retrofit”
- Interlock can be realized mechanically, electrically etc; defined per category in the R.E.5 sheet by reference to the relevant cap/holder sheets IEC 60061

## LED retrofits

- Intended to be installed on “existing” vehicles (i.e. installation on vehicles not type-approved according R48/R53/R74/R86 for the use of substitutes)
- Using the same cap as existing filament light sources

# Step 1: LED substitutes

- Light sources approved according to R128 (initially proposed by GTB)
- Categories defined in R.E.5, starting with PY21W/LED in new Group 4 (initially proposed by GTB)
- A keying was requested by some delegations in GRE to prevent mis-use in existing vehicles (e.g. for PY21W/LED with an additional pin), defined in IEC 60061
- Different possible solutions were discussed in the TF S/R (for details see next slide)
- Devices approved according R-LSD for both filament and LED substitute (initially proposed by GTB) and having a “substitute holder”
- Vehicle approved according to R48, R53, R74 or R86 for use of both filament and LED substitute, (initially proposed by GTB)

# Step 1: LED substitutes possible solutions for keying- Details

- Colour keying
    - simple solution
    - do not physically prevent mis-use
    - no sufficient support by GRE experts;
  - Physical keying as demonstrated in GRE 78
    - safe solution to avoid mis-use
    - not simple to carry out by finding useful technical solutions
    - not applicable to all existing cap-holder systems (especially small light sources)
    - industry has provided further investigations on several different cap-holder systems
- the discussion results in the solution “standardized Interlock “.
- Mechanical
  - Electrical
  - etc

# Changes to R128 (see TFSR-03-02)

## Additional requirements for LED substitutes

- User information on the package
- User instruction in the package and at the point-of-sales
- Website with approved application
- Warning message for intended use
- Information symbol on the product and on the package
- Specification of minimum and maximum electrical current
- Compliance with technical requirements of R10 (ESA)
- No light in first 2ms
- Testing at elevated temperature (80°C, see R.E.5)
- White light <3000K



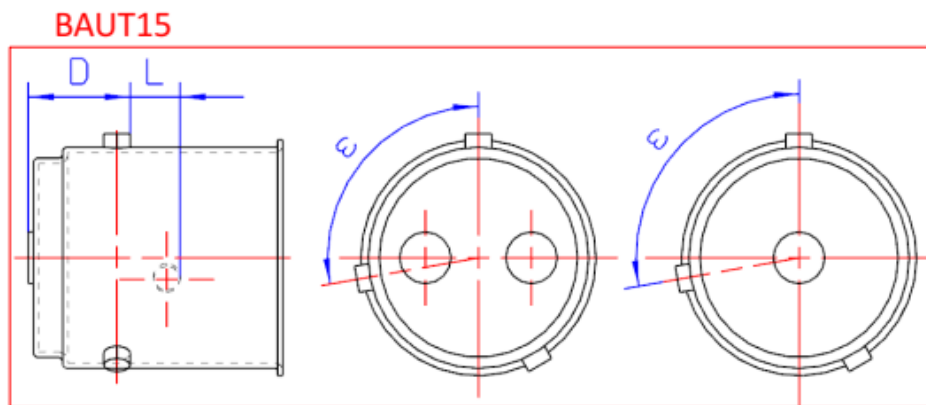
# Changes to R.E.5 (see TFSR-03-03)

- Introduction of Group 4: “***LED substitute light source categories<sup>1</sup> only for use in lamps approved with filament light source(s) of its counterpart light source category***”; with list of counterpart filament category
- A new sheet for each new substitute category (starting with “PY21W/LED”)
  - Specifying essential electrical and photometric characteristics (based on equivalence principle)
  - Referring to a “special” cap/connector/interface in IEC 60061
  - Specifying dedicated minimum and maximum current for “normal operation” and “failure”

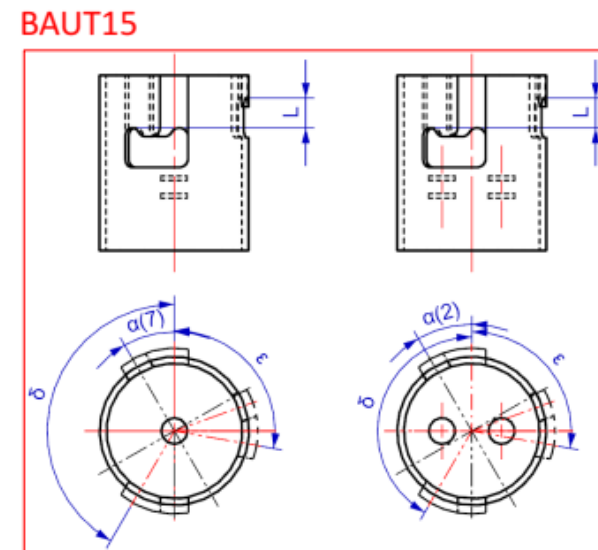
# Mechanical “interlock” for PY21W/LED with a an additional pin

## BAUT15

- Preventing insertion of an PY21W/LED in existing (“filament only”) holders
- Allowing the insertion of PY21W in the substitute-holder



Substitute-Cap



Substitute-Holder



# Changes to R-LSD (see TFSR-03-04)

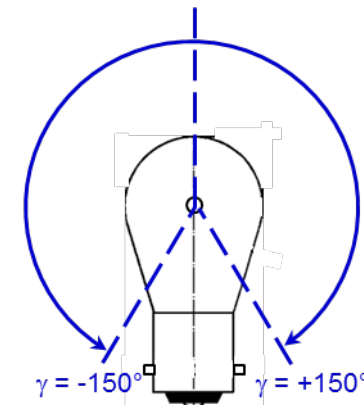
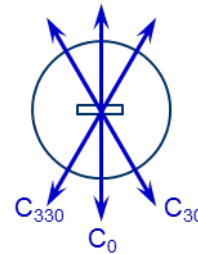
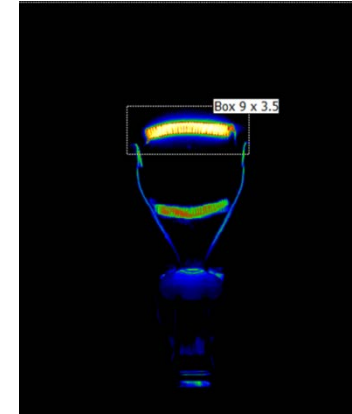
- Adding option of additional approval with LED substitute
- Additional photometric and colorimetric testing during type-approval with LED substitute
- COP testing only with filament light source
- Light source marking visible when installed (only for LED substitutes)

# Changes to R48, R53, R74 and R86 (see TFSR-03-05)

- Optional allowance of lamps that have been approved for LED substitutes
- The use of lamps approved for and equipped with LED substitute light source(s), is allowed exclusively in the case when a the statement in the communication sheet is present and positive.
- both at the type approval and in the conformity of production, the presence of the marking on the lamps related to the use of LED substitute light source(s) shall be checked.

# Guidance Document on Equivalence (see TFSR-03-06)

- Geometric
  - Light center length
- Mechanical
  - Cap/interlock
- Photometric
  - Luminous flux
  - Colour
  - Near-field characteristics
  - Far-field characteristics
- Electrical
  - Connector
  - Power consumption



## Step 2: LED retrofits

- No detailed discussion yet;