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Instruction Manual for

## Auto-L-Check

(Equipment for Dimensional Measurements of Auto Bulbs)

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## Thank You!

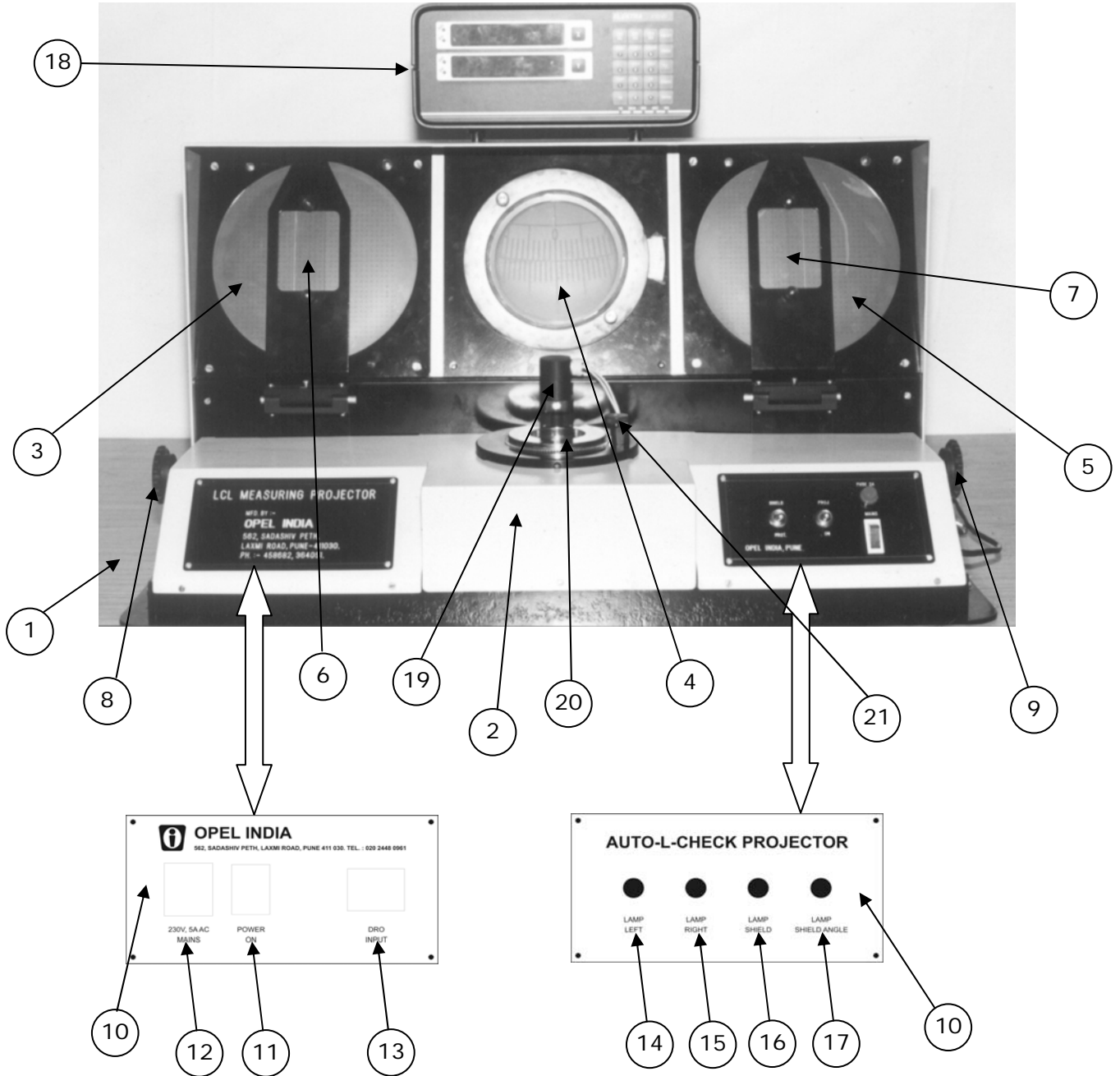
Dear Customer, first of all, we would like to thank you on having procured our equipment for LCL and dimensional measurements of Automobile Bulbs. We are sure that this highly sophisticated equipment will enhance your product standard in every respect and assure you of our best attention at all times.

This equipment is used for taking dimensional measurements of auto bulbs under AIS 034 standard.

## Technical Specifications

Number of screens	:	3.
Screen size	:	200mm (clear aperture) fine ground glass screen with cross hair marking.
Screen rotation	:	360 <sup>0</sup> .
Angular accuracy	:	2' on vernier scale.
Bulb holder	:	Maximum 50mm dia.
Power supply	:	230V AC, 5A single phase (stabilizer or UPS may be attached if there is problem in power supply).
DRO unit	:	2 scales for X and Y measurements with display counter.
Projection	:	Contour projection on left and right screens. Episcopic projection on center screen with 12V, 55W H3 bulbs.
Projection accuracy	:	0.02%.

# Diagram / Photograph



## List of parts

1. Mounting / working table
2. Main projection unit
3. Y-axis screen – vertical measurements
4. Shield angle measuring screen
5. X-axis screen – horizontal measurements
6. Cursor plate Y-axis
7. Cursor plate X-axis
8. Knob for Y cursor
9. Knob for X cursor
10. Control panel
11. On-Off switch with indicator
12. Mains input with 5A fuse
13. Input for DRO unit
14. Switch for left projection
15. Switch for right projection
16. Switch for shield projection
17. Switch for protractor projection
18. DRO counter unit
19. Protractor lamp unit
20. Bulb testing compartment (Automobile bulb under testing)
21. Knob for protractor movement

# Unpacking

Following parts are included in the package you have received.

- a. Main Projector.
- b. Dust Cover
- c. Operating Manual
- d. Manufacturer's Certificate
- e. \*Holders for bulbs :
  1. Master Gauge for initialization of Projector
  2. R2 category bulbs
  3. H1 category bulbs
  4. H3 category bulbs
  5. H4 category bulbs
  6. S1, S2 category bulbs
  7. HS1 category bulbs
  8. H7 category bulbs
  9. H8, H8A category bulbs
  10. H11, H11A category bulbs
  11. P21W category bulbs
  12. P21/4W category bulbs
  13. P21/5W category bulbs

\*Names in this list contains only the bulb holders you have ordered / received.

# Installation

After unpacking the contents, our technical personnel will install the Projector for you at your premises. Following are some basic requirements to be met before you install the Projector.

- a. Power supply : 230V AC, 5Amp mains power supply
- b. UPS or stabilized supply is not required or necessary. But it is advisable if there is any kind of irregularity or fluctuations in the power supply.
- c. Approximately 8' X 8' minimum empty space, preferably separate room for installation of Projector. It would be ideal if the room or space has minimum ambient light.

The projection system requires two nos of H3 bulbs rating 12V, 55W. You can keep spare of these bulbs if required. No other kind of spares required.

The equipment is mounted on a table 1 and is kept parallel to the flooring. It is required so to avoid distortions in the images.

## Using the equipment

See that there are three screens mounted vertically (slightly slanted) from left to right, namely,

1. Y-axis – for vertical projection leftmost screen,
2. Shield projection – center screen and
3. X-axis – for horizontal projection rightmost screen.

X and Y cursor plates are held properly in front of the screens. X and Y DRO scale wires are to be fitted to the respective ports behind the DRO counter [18]. Power supply for DRO unit is to be picked from the main control panel where separate plug point [13] has been provided. Attach the cord provided with the DRO to this point. Attach mains supply cord in the mains supply [12].

By inserting the mains cord and switching on the mains supply [11], a small fan at the front of the projection unit gets started. This fan is provided for extra security of the projection bulbs. This fan should run continuously throughout the examination process. This helps to take out hot air inside the equipment. Let the fan run for at least 15 minutes further to cool down the projection unit.

### **Initialization :**

For every first use, always insert Master Gauge inside the bulb testing compartment [20]. This is just to make sure that everything is working and in its proper place. You will see an image with 3 steps on left [3] and right [5] screens. The middle step is aligned to the cross hair cursor on both the screens.

Master Gauge calibration certificate is attached at the end of this manual.

### **Testing of bulb :**

Put the lamp (bulb) under test in proper holder and place the holder with the bulb inside the compartment. Most of the bulbs will require its respective holder to hold the bulb.

Certificate of calibration for all the holders is attached at the end of this manual.

Turn the switches **14** and **15** on provided at the right hand control panel.

When put inside the bulb testing compartment, each bulb will produce an image (shadow) on left and right screens. Each holder is precisely adjusted such that '**LCL**' of each bulb should appear at the **vertical line of cross hair** cursor on the screen irrespective of the bulb size, model or different LCL's. Also, each bulb with its holder will sit only at the particular position inside the compartment because of a small pin fitted to each holder.

To measure the LCL, rotate the knob for X-axis cursor **9** till it matches the vertical line at the cross hair marking on the screen. Make zero the respective DRO axis reading on the counter. Each bulb may not show its particular filament at LCL. So move the cursor plate **6** or **7** slowly by rotating the knob forward or backward **only in the direction** of the filament under testing. Here, you get the reading of 'LCL' on DRO counter.

**Important : Kindly note that, the reading you get at this point is 10 times higher than the actual reading. Because the X and Y screens are 10 times magnified images and their respective cursors move directly over the screen.**

To measure shield angle, switch on button **16**. You should see an image of shield from top on the center screen. Rotate the screen with parallel line markings with the knob provided at bottom right corner of center screen. Match respective lines to the shield lines. To focus the shield, use a small bar or knurled portion of the bulb compartment by rotating it to right or left. This feature is useful especially for the bulbs which does not carry black coating at the top of the glass shell (such as R2). These angular readings are absolute.

For the bulbs having black coating at the top of the glass shell (such as HS1), use protractor reading instead. Turn on switch **17** for protractor readings. Put the bulb inside the compartment and rotate or adjust the image of shield on right screen by turning knob **21**. The rotation angle can be seen at the center screen.

Left screen is used to measure shift between two filaments, dimensions of Omega filament lateral shift of filaments from bulb center etc.

## Precautions

Please follow the instructions and procedures laid down in standards books to test the specimen. We do not undertake any kind of responsibility of tests. The equipment is factory-set for standard test. Please consult with our technical personnel for any changes or queries relating our product's specifications.

It is not advisable to open or service any of our products as warranty voids if the equipment is found open. There are no serviceable parts inside our equipment. Only highly technical individual is supposed to open the equipment for servicing.

Please call us on 020 – 2546 4051 or fax us on 020 – 2445 8682 for any complaints, clarification or troubleshooting.

Spares and other fitments are available with us with special order only. Kindly communicate with us well in advance for making any further changes to your equipment.

We once again thank you for choosing our product. We at Opel, assure you of best quality products.

# Certificate

This is to certify that

**The equipment Auto-L-Check is designed, developed and manufactured by Opel India, Pune.**

This equipment is used to take dimensional measurements of Automobile Bulbs listed as under.

<b>LCL</b>	<b>Tolerance</b>	<b>Bulbs</b>
18.0 mm	+0.0 / -0.0	H3 category bulbs
25.0 mm	+0.1 / -0.1	H7 category bulbs H8, H8A category bulbs H11, H11A category bulbs
25.0 mm	+0.15 / -0.15	H1 category
28.5 mm	+0.35 / -0.35	R2 category bulbs
28.5 mm	+0.35 / -0.25	H4 category bulbs
28.5 mm	+0.45 / -0.25	HS1 category bulbs
31.8 mm	+0.3 / -0.3	P21W category bulbs P21/4W category bulbs P21/5W category bulbs
32.7 mm	+0.35 / -0.35	S1, S2 category bulbs

Further, this is to certify that

**Measurements of all the holders of respective bulbs strictly comply the LCL measurements stated in their respective standards (Base is AIS-034) with 0.02% error.**