

# Laser Lancaster Test Guide

Part Number: 501000

## Guide

The Laser Lancaster Test is used to evaluate the alignment of the eyes and their movements both individually and in tandem. Test results provide a measure of horizontal, vertical and cyclo-deviation simultaneously for pediatric and adult patients.

Any difference or deviation between the examiner's and the patient's positioning of the lasers indicates the deviation direction and magnitude of the measured eye from the normal axis. By swapping the lasers, between the patient and examiner, the other eye may be examined.

The main difference between the Hess Screen Test and the Lancaster Test is that the laser used with the Hess Test projects

a single dot to measure coordination of the two eyes in terms of position. The Laser Lancaster test projects a line and so the comparison involves position in three dimensions.

This kit provides red and green line generating lasers, which project a 4-6inch line at 1 meter. The Line generating lasers require two AAA batteries each. Screen measures approx. 60x60 inches (140 x140 cm) is mounted on roller for convenient storage. Mark- ings on screen are not readily visible to patient to avoid ocular clues. Other red/green glasses from Good-Lite listed below can also be used. Score sheets are a replica of the grid on the screen. A clamp-on chin rest is also included to avoid head movement during the test.

Test is CEMarked.

## Contents:

Laser Lancaster Test Kit includes:

- 506700** - Roll-up Lancaster Screen
- 501100** - Lancaster Red and Green Laser
- 705011** - Heavy Duty Chin Rest with Screw Clamp
- 955100** - Reversible Red/Green Anaglyph Glasses
- 461200** - Butterfly Anaglyph Glasses
- 501900** - Lancaster Score Sheets Guide

## Recommended additions

**464400** - 500 Heavy Duty Chin Rest Papers Red and Green pens for scoring

AAA batteries, two each, as need. Rechargeable AAA batteries can also be employed

## Storage:

The Laser Lancaster Screen should be stored rolled up. Avoid excessive heat.

The batteries should be removed from the Line Generators if stored for an extended period.

Red/Green frames should be stored to avoid scratches.

## Precautions

Lasers and Children do NOT mix. Children should never be left alone with the Laser Pointers visible nor accessible.

DO NOT CLEAN LASER LANCASTER SCREEN WITH ALCOHOL. Use Windex or similar glass cleaner.

## Test Environment

Test is conducted in low light with the chin rest one meter from the screen. The patient wears any corrective eyewear appropriate at the one meter distance. The patient is positioned using the chin rest and wears red/green Anaglyph glasses to insure separation of each eye. The patient's normal gaze should be at the height of the center of the screen. Be sure the red filter is covering the right eye, for convention. The patient uses one line-generating laser and the examiner uses the other laser. The patient is then asked to super- impose one image upon the projected image from the examiner.

The use of the chin rest is highly recommended to insure that deviation due to ocular motility is measured rather than head movement.

## Pre-Test Considerations

Be sure to hang the screen at a height above the floor such that the patient's normal gaze can be adjusted to be at the height of the center of the screen.

Pre-screening of the patient's acuity, color vision and visual field is suggested before the Laser Lancaster Test to insure the validity of the test results.

## Testing Procedure

The examiner projects one of the line generators to a selected position and asks the patient to match this position. Results at each point are noted using a color pen matching the color of the laser held by the patient. The red marks then correspond to the patient's right eye etc.

It is recommended that the examiner start out with selection of positions that are on the center line, horizontally to insure that the 'matching' guides are understood. By the conclusion of the test, the eight cardinal points should be covered. The examiner should hold the laser steady at each point while the patient super- imposes their pointer as best they can.

Swap lasers with the patient and repeat the test for the other eye. Use separate sheets for OD and OS.

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Score Sheet Sample:


## Lancaster Screen Score Sheet

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Patient Name: \_\_\_\_\_

Date: \_\_\_\_\_

Test Administrator: \_\_\_\_\_



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800-362-3860, [orders@good-lite.com](mailto:orders@good-lite.com), [good-lite.com](http://good-lite.com)

### Sample test sequence:

Patient is seated one meter away from the screen with eye level at the horizontal '0' line and centered with the screen at the vertical '0' line. Patient wears the red/green frames.

Examiner holds and points with the green laser. The patient points with the red laser in the dominant hand. This sequence tests the right eye (red on right). Verify that the patient can see both laser lines.

Examiner points to the center column with the center of the laser line at upper 56 cm. Ask the patient to match the red line where they see the green line. Note on the score sheet for OD where the patient points the red line.

Examiner points to the center column with the center of the laser line at upper 32 cm. Ask the patient to match the red line where they see the green line. Note on the score sheet for OD where the patient points the red line.

Examiner points to the center column with the center of the laser line at upper 16 cm. Ask the patient to match the red line where they see the green line. Note on the score sheet for OD where the patient points the red line.

Repeat, pointing at the center upper 0 cm line. Mark patient selection.

Repeat, pointing at the center lower 16 cm line. Mark patient selection.

Repeat, pointing at the center lower 32 cm line. Mark patient selection.

Repeat, pointing at the center lower 56 cm line. Mark patient selection.

Now repeat the sequence starting at the upper 56 cm line working down the 56 cm right side line stopping at the upper 32, 16, and 0 horizontal lines and then the lower 16, 32 and 56 cm lines.

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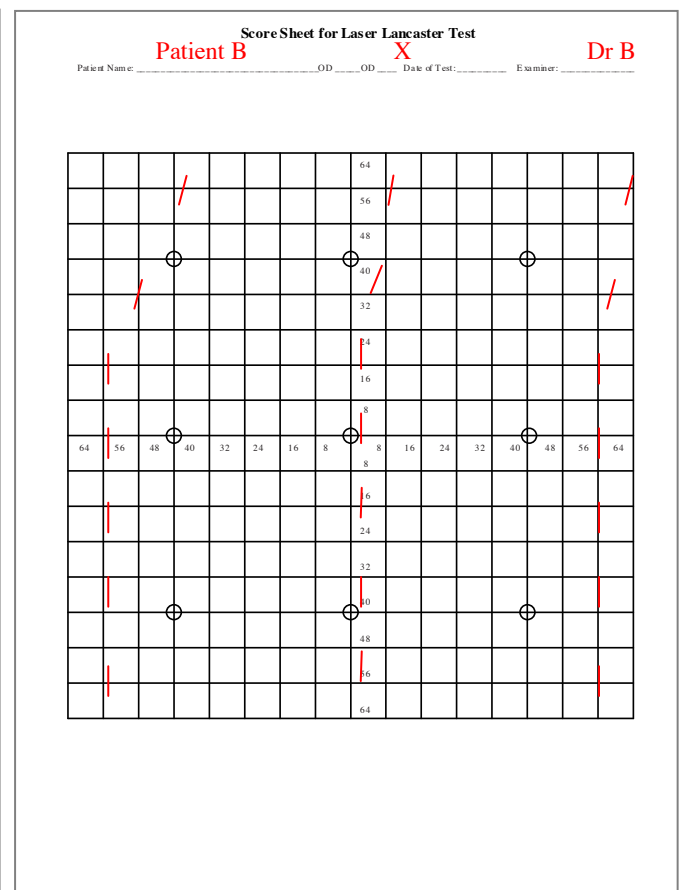
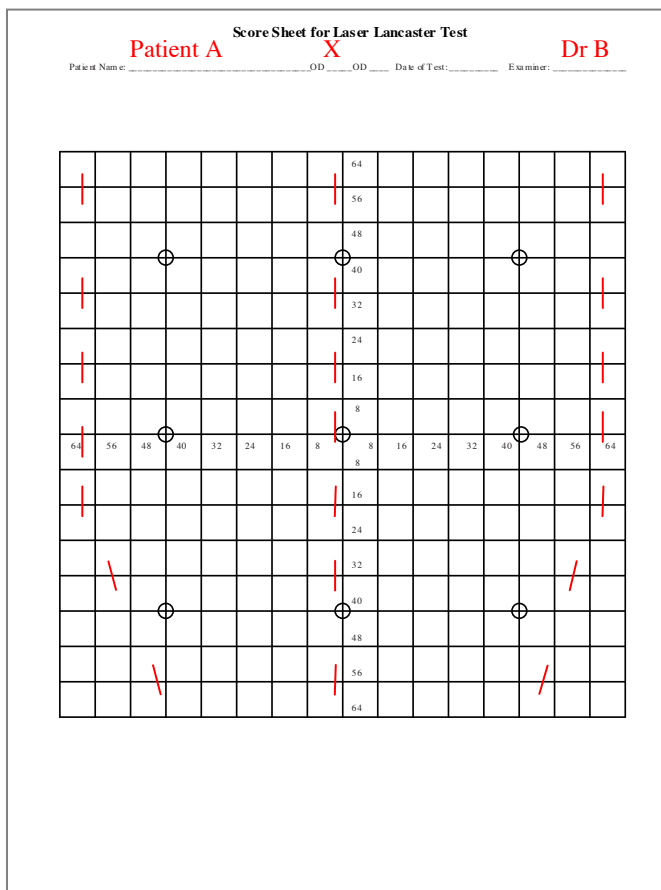
Finally, repeat the sequence starting at the upper 56 cm line working down the 56 cm left side line stopping at the upper 32, 16, and 0 horizontal lines and then the lower 16, 32 and 56 cm lines.

Swap lasers with the patient to test the left eye where the patient is pointing the red laser to test the left eye. Start a new score sheet marked for the left eye And repeat the sequence.

## Scoring Examples:

The following example shows eye turn on down gaze.

Turn right on up gaze.



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## Replacement Parts:

Replacement parts can be ordered from Good-Lite as follows:

**577500** - Lancaster Screen, Unmounted, Folding Version

**506700** - Roll-up Lancaster Screen

**500800** - Lancaster Red Line Laser Generator

**500900** - Lancaster Green Line Laser Generator

**705011** - Heavy Duty Chin Rest with Screw Clamp

**955100** - Reversible Red/Green Anaglyph Glasses

**461200** - Butterfly Anaglyph Glasses

## Supplies:

**501900** - Lancaster Score Sheets

**464400** - 500 Heavy Duty Chin Rest Papers

## Battery Replacement:

Batteries in the Laser Lancaster line generators can be replaced easily. Remove the black cap at the back (with the switch) end of the laser. (see photo 1) . If necessary, an unsharp (similar to a butter knife) knife can be wedged between the aluminum tube and the black end cap and used to pry the end cap out of the tube. (see photo 2).

Carefully pull out the wiring, foam piece and battery pack (see photo 3). Slide the cover off the battery pack, if necessary. Do not place undue stress on the wires.

Replace AAA Alkaline batteries and repack (see photo 3). Be careful that you have all the wires tucked back into the tube before inserting the plastic end cap (see photo 4).

We recommend aligning the switch such that the up direction corresponds to the up direction of the laser line (see photo 5).



Photo 1

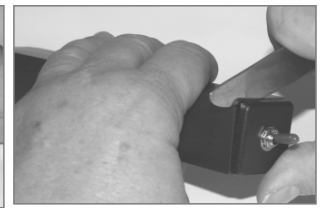


Photo 2

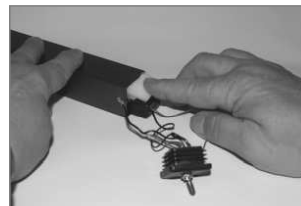


Photo 3

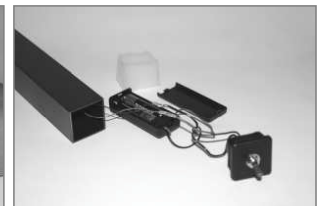


Photo 4



Photo 5

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## Web References:

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J Fr Ophtalmol. 1978 Nov;1(11):667-70.

[Article in French]

- Larmande A.
- Poletti J.

Lancaster's test has many technical inconveniences : Its interpretation is sometimes difficult or impossible. The information it gives is often incomplete. It is of no value in cases with binocular motor lesions. It should always be combined with other oculomotor examinations.

PMID: 155087 [PubMed - indexed for MEDLINE]

Hess-Lancaster test for the examination of ocular motility. [Article in Italian] AMIDEI B.MeSH Terms Oculomotor Muscles/physiology Ann Ottalmol Clin Ocul. 1956 May;82(5):207-15

The Lancaster red-green test before and after occlusion in the evaluation of incomitant strabismus by Jeong-Min Hwang, David L. Guyton Journal of American Association for Pediatric Ophthalmology and Strabismus (Vol. 3, Issue 3)

Diagnosis and Management of Ocular Motility Disorders (second edition), Joyce Mein & Roger Trimble Clin Exp Optom 1991; 74