



CooperVision™ Focimeter



B1887

User Manual

Issue 1

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1 Introduction

This user manual describes the key features of the CooperVision Focimeter, designed and manufactured by Beck Optronic Solutions for the measurement of contact lenses. It contains a spare parts list and provides instructions for system operation, maintenance, and calibration.

The Focimeter is a precision optical instrument, so please:

- Handle with care
- Do not remove the covers
- Store in an appropriate, dust-free environment

2 Specifications

Spherical Power	Measurement range	+25.5D to -25.5D
	Increments	0.125D
Prismatic Power	Measurement range	0 ^Δ to 6 ^Δ
	Increments	1 ^Δ
Cylindrical Axis	Reading angle	0° to 180°
	Increments	5° on target rotation wheel
Acceptable lenses	Thickness	0.05 mm to 0.35 mm, 0.08 mm nominal
	Diameter	13.8 mm to 14.7 mm, 14.2 mm nominal
Target		Cross hairs with dotted circle, continuously rotatable target projection
Magnification of Target Projection		34x
Projection Screen		102 mm diameter
Power Source		100/115/220/240 V AC
Light Source		Green LED
Dimensions		550 mm (H) x 275 mm (W) x 400 mm (D)
Mass		7.55 kg

3 The Focimeter

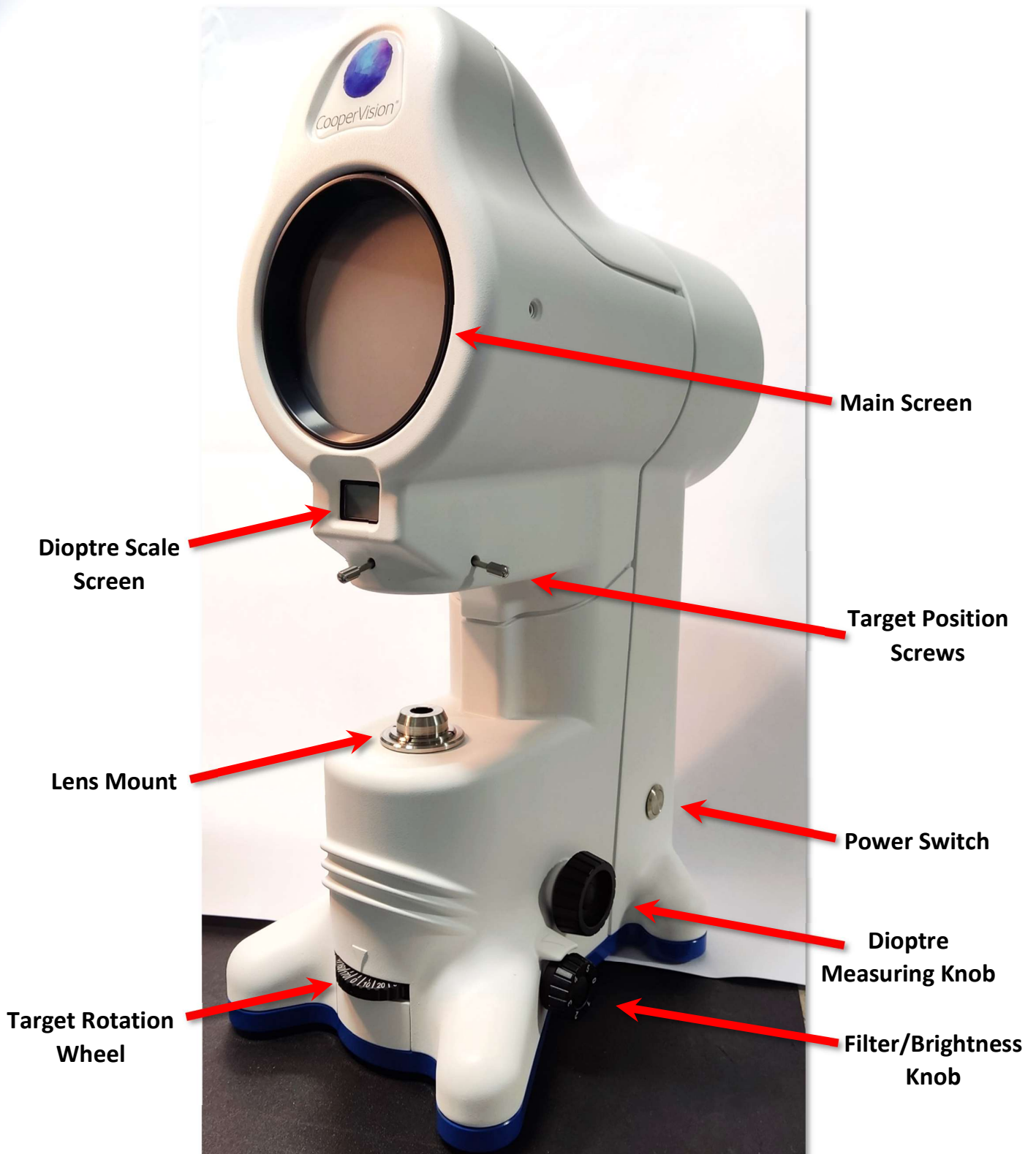


Figure A – CooperVision Focimeter

4 Preparation

4.1 Power on

- Connect the power cable to a wall outlet and turn on the power switch.



Figure B – On / Off Switch

- Check that the main screen and the dioptre scale screen are illuminated.

4.2 Changing Brightness

- Set the brightness of the Main Screen by rotating the filter knob between 5, which gives the brightest image, and 0, which gives the dimmest.



Figure C - Filter/Brightness Control Knob

4.3 Centring the target

- Focus the target on the screen by rotating the dioptre measuring knob and setting the dioptre scale to zero.



Figure D – Dioptre Measurement Control Knob



Figure E – Dioptre Scale

- If the target is not centred on the screen bring it to the centre using the two target positioning screws. An example of a well centred image is shown in *Figure H*.



Figure F – Target Positioning Screws

4.4 Mounting the lens for measurement

- Place the black plastic lens support on the aluminium lens mount.
- Place the lens for test on the black plastic lens support with the concave or planar side in contact (see *Figure G*).



Figure G – Mounting the Contact Lens

5 Measurement

- Before making a measurement ensure the target is centred on the screen using the target positioning screws (see Figure F).

5.1 Measurement of a Spherical Lens

- Mount the lens on the lens support (see Figure G).
- Focus the target on the screen by rotating the dioptre measuring knob until the target image is as sharp as possible (see Figure D – Dioptre Measurement Control).
- If the target is not on the centre of the screen bring it to the centre by moving the lens on the lens support and focus the image (see Figure H).

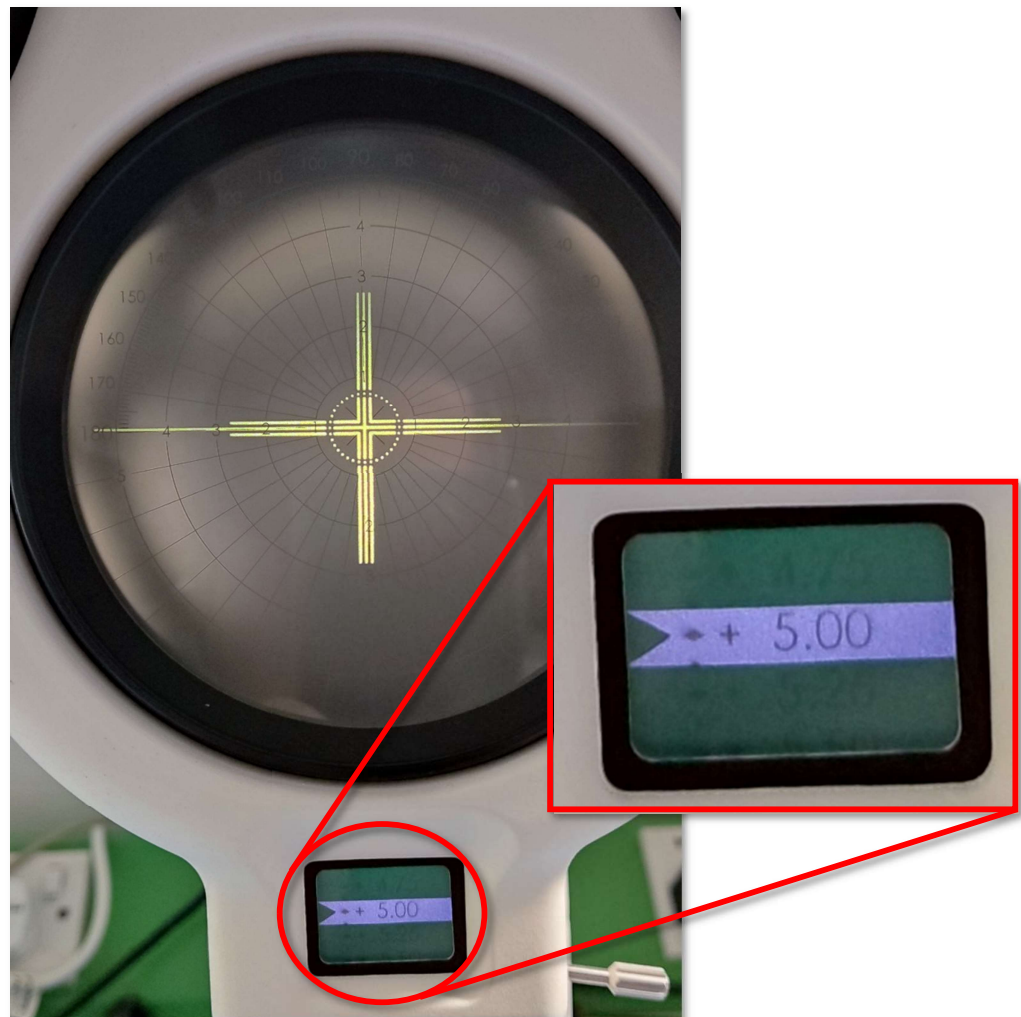


Figure H - Measurement of Spherical Lens Power

- Read the figure in the dioptre scale window (see Figure E – Dioptre Scale).

5.2 Measurement of a Cylindrical Lens

- Mount the lens on the lens support (see Figure G).
- Rotate the cylindrical lens until the short crossline is in good focus. The other line will produce an oval shaped pattern.

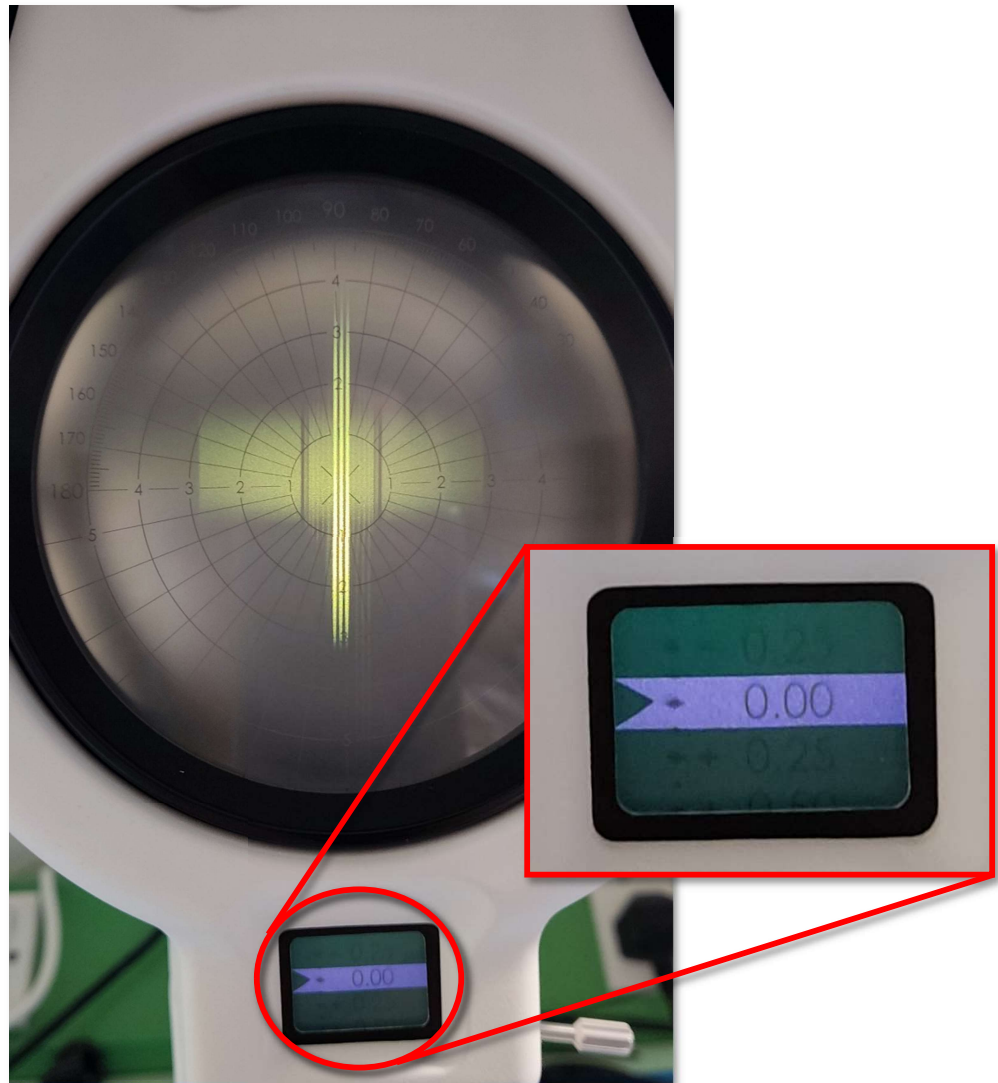


Figure I – Initial Image for Measurement of Cylindrical Lens Power

- Rotate the target rotation wheel (see Figure J – Target Rotation Wheel) to ensure the short crossline axis is in best focus at 0.00D.



Figure J – Target Rotation Wheel

- Rotate the dioptre measuring knob (see Figure D – Dioptre Measurement Control) until the longer crossline is in best focus.

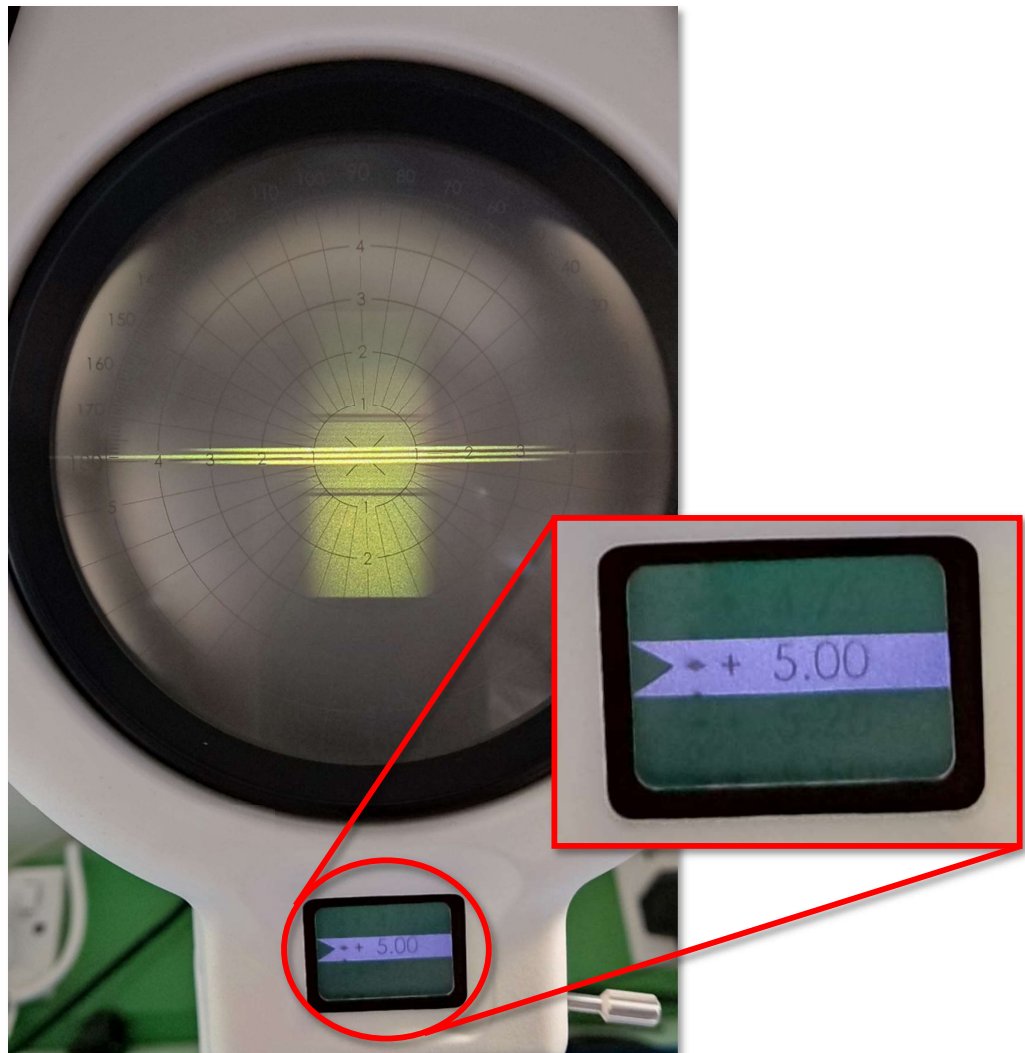


Figure K – Target Image for Measurement of Cylindrical Lens Power

- Read the figure in the dioptre scale window (see Figure E – Dioptre Scale).

5.3 Measurement of Prismatic Power

- Mount the lens on the lens support (see Figure G).
- Focus the target on the screen by rotating the dioptre measuring knob (see Figure D – Dioptre Measurement Control). The target will be off centre. This should be at 0.00D.
- The coaxial circles are marked on the screen at 1^Δ steps. Prism dioptre can be measured up to 6^Δ (see Figure M - Main Screen Scale).

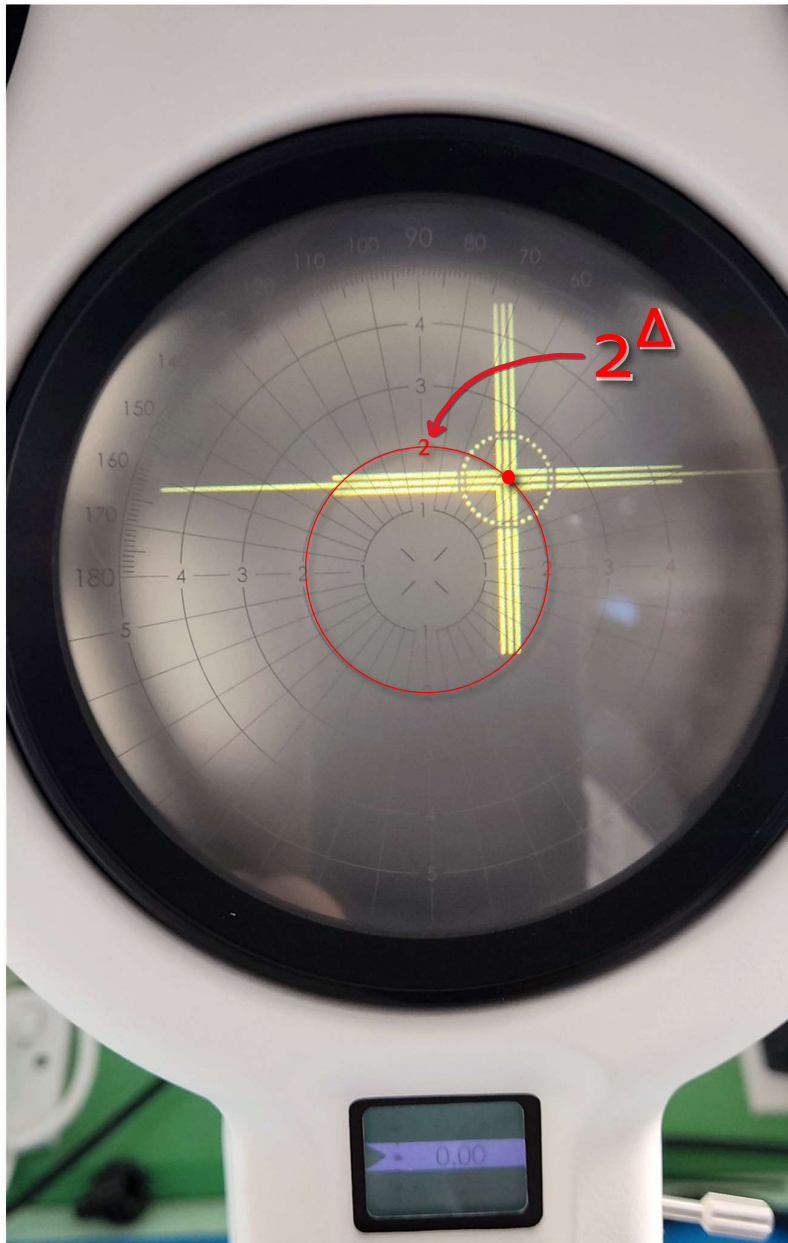


Figure L – Measurement of Prismatic Power

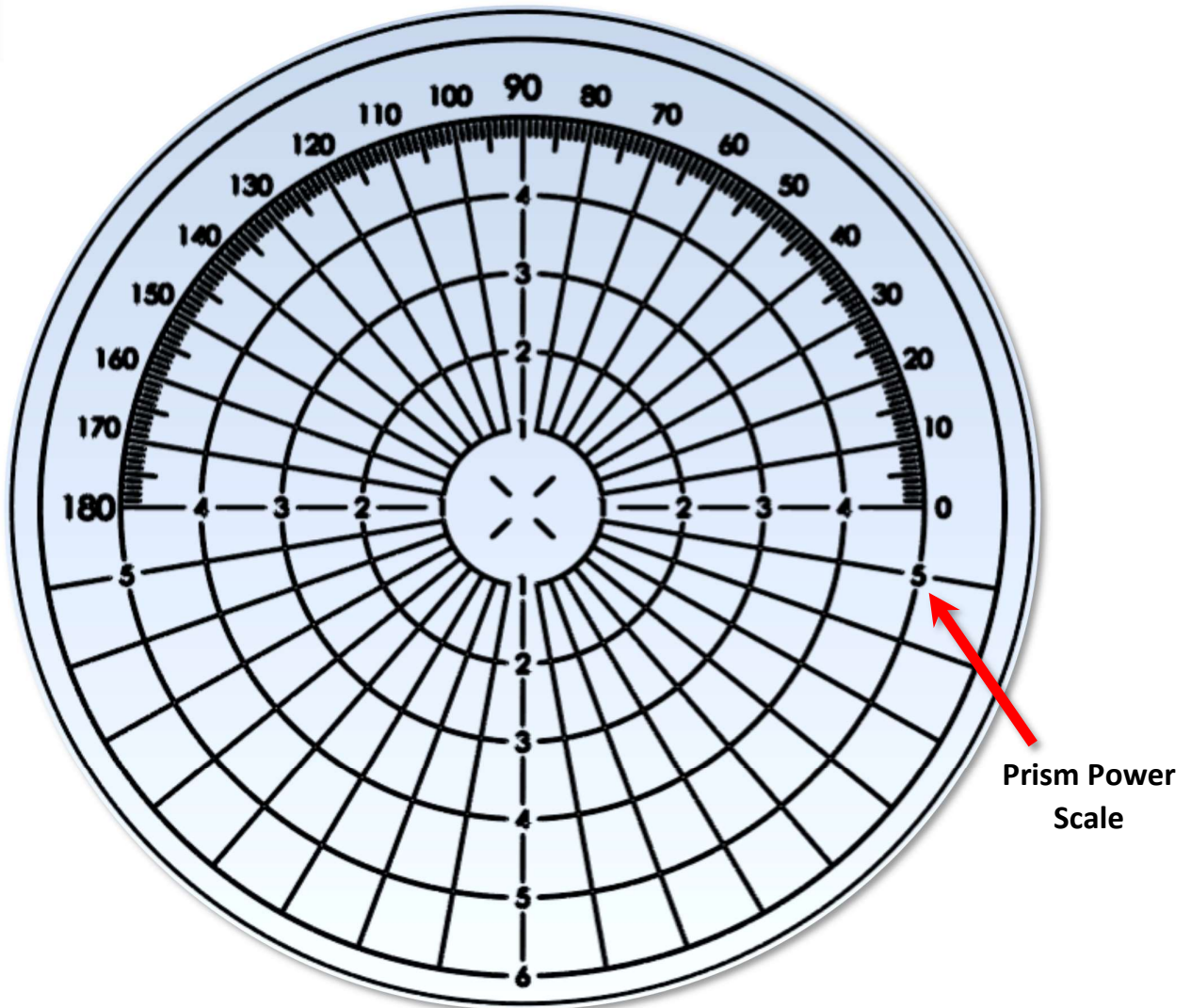


Figure M - Main Screen Scale

6 Calibration Test

- Using a set of calibrated test lenses (in accordance with *ISO 9342-1, Optics and optical instruments – Test lenses for calibration of focimeters – Parts 1: Test lenses for focimeters used for measuring spectacle lenses*), measure each spherical test lens at -25D, -20D, -15D, -10D, -5D, +5D, +10D, +15D, +20D and +25D, and the prisms at 2^Δ and 5^Δ (see sections 5.1 and 5.3).
- Each lens and prism should be measured three times independently (i.e. remounted between each measurement).
- For each test lens, calculate the average measurement and the deviation of that value from the calibrated value for that lens.
- For lenses, the deviation should not exceed that shown in the table below.

Lens power		Maximum permissible error
-5D	+5D	+/-0.06D
-10D	+10D	+/-0.09D
-15D	+15D	+/-0.12D
-20D	+20D	+/-0.18D
-25D	+25D	+/-0.25D

- For prisms, the deviation should not exceed that shown in the table below.

Prism power	Maximum permissible error
2 ^Δ	+/-0.25 ^Δ
5 ^Δ	+/-0.25 ^Δ

- For information and instruction on adjustment of the factory calibration setting, please refer to the Beck document reference B1887-CT-001.

7 Maintenance

- The outer casing should be cleaned as required with a damp cloth and a mild detergent solution.
- The upper lens should be cleaned as required with a cotton bud soaked in **isopropyl alcohol**.
- The main screen and dioptr screen should be cleaned as required with a lint free cloth (e.g., Greygate Polishing Cloth) soaked in **isopropyl alcohol**.
- In **no circumstances** should acetone be used to clean the Focimeter.
- If you have any issues with the performance of the Focimeter, please **contact Beck Optronic Solutions**, so that support can be given.

8 Spare parts

Fuse, 20 mm x 5 mm, 3A

- Ensure power is isolated prior to removal of Fuse.



Figure N – Location of Fuse



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