NIDEK

LENSMETER

Model LM-350

OPERATOR'S MANUAL

CE

NIDEK CO., LTD.

⚠ BEFORE USE, READ THIS MANUAL.

This manual contains information necessary for correct and effective operation of NIDEK Lensmeter Model LM-350, and provides procedures for operation, cautions, specification, and procedures for maintenance.
In this manual, IEC 61010-1is applied.
For correct use, it is necessary that this manual, in particular the operating procedures, be thoroughly understood before using this instrument.
Keep the manual handy to verify use.
There are no user-serviceable parts inside the instrument except lamps. If you find any problem or question about the instrument during the operation, please contact your authorized distributor.
The LM-350 is calibrated with reference wavelength of 587.56 nm.

Table of Contents

§1 INTRODUCTION

1.1 Outline

The measurement of lens power is a most important function in the handling of ophthalmic lenses, from fabrication to the final inspection of the completed prescription.
The design and manufacturing quality of the instrument assure a long life and accurate interpretation of lenses wherever used. With its easy adjustments, it is adaptable to all requirements.
The instrument is shipped completely assembled and ready for use. After removing the instrument from its shipping carton, place it on a desk or table and plug the cord into a standard electrical socket.

1.2 Indications for Use

This equipment is designed to measure vertex powers and prismatic effects of spectacle and contact lens, to orientate and mark uncut lenses, and to verify the correct mounting of lenses in spectacles frames.

1.3 Classifications

[Conformity directive in CE Marking]
Council Directive 73/23/EEC (Low Voltage Directive)

[Form of protection against electric shock] Class I
The LM-350 is classified as a Class I equipment.
The class I equipment is an equipment in which the protection against electric shock does not rely on basic insulation only, but which includes an additional safety precaution that provides for a connection of accessible conductive parts to the protective (earth) conductor in the fixed wiring of the installation. Therefore, accessible conductive parts cannot become activated in the event of failure in the basic insulation.

[Degree of protection against liquid entry] IP20
The LM-350 is classified as a ordinary equipment (IP20), which is provided with an enclosure not completely water proof.
Avoid water splash on the equipment.

[Method(s) of sterilization or disinfection recommended by the manufacturer]
The LM-350 does not have any part to be sterilized or be disinfected.

[Degree of protection against flammability]
The LM-350 is classified as an equipment not suitable to be used in a potentially flammable environment.
Do not use near flammable materials.

[Operation mode]

The LM-350 is classified as an equipment which operates continuously.

1.4 Symbol Information

This symbol shows that the reference of operator's manual is necessary for the part before use.

This symbol on the main switch indicates that the power is ON.

This symbol on the main switch indicates that the power is OFF.

This symbol indicates that the alternating current should be applied to the instrument.

§2 SAFETY

Signal Words are used to designate a degree or level of safety alerting, whose definitions are as follows. In this manual, only ⚠**CAUTION** is used.

⚠**DANGER:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠**WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠**CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage.

2.1 Operation

⚠CAUTION

- Never disassemble or touch the inside of the instrument.
  This may result in an electric shock or instrument malfunction.

- Do not touch the lamp access cover since it is hot while a lamp is illuminated.
  If not, you may get burned.

- Never yank the power cord to disconnect from wall outlet but hold the plug while disconnecting.
  This can weaken the metal core of the cord and may result in a short circuit or an electric shock.

- Do not place the instrument on the power cord.
  The sheath of the cord becomes ragged and may cause an electric shock or a short circuit.

- If the metal core of the power cord is exposed, power turns on and off by shaking the cord, or cord/plug gets so heated that one cannot hold it, it means that the cord is damaged. Immediately replace the cord.
  This may cause an electric shock or a fire.

- Do not use the instrument for other than the intended purpose.
  NIDEK will not be responsible for accidents or malfunction caused by carelessness.

- In the event of a malfunction, do not touch the inside of the instrument, but unplug the power cord and contact your authorized distributor.

2.2 Storage

NOTE

- Do not store the instrument in a place where it may get wet or where poisonous gas or liquid is stored.
- Avoid storing the instrument in an area with excessive heat, humidity, or dust.
  To preserve the appearance or internal parts of the instrument, avoid direct exposure to sunlight.

2.3 Transference

⚠CAUTION

- Never trail the power cable during the transference.
  The instrument may fall down and cable may break when it is stepped on or pulled.
- In transference, hold the instrument surely with both hands, and take care not to bump onto other instruments, walls and others.
  Careless transference may cause injury or malfunction.

2.4 Installation

⚠CAUTION

- Do not install the instrument near water.
  If water gets into the internal structure, there is the possibility of electrical shock or instrument malfunction.
- Install the instrument in a stable and level place where vibration or shock does not occur.
  The instrument may not perform observation correctly or may malfunction.
  Also, if the instrument is tripped over because of any accidental shock, it may result in possible injury.

NOTE

- Install the instrument in the following conditions.
  A low dust environment
  A low light interference environment
  A vibration and shock free environment

- Install the instrument in the environment whose condition can be set to the following.
  Use the instrument under the following temperature and humidity.
  Use environment Temperature : 10 - 40 ℃
  Humidity : 30 - 85% (non-condensing)

2.5 Wiring

⚠CAUTION

- Be sure to use the wall outlet which meets the requirements of power specification.
  If the line voltage is too high or too low, the instrument may not give full performance.
  Malfunction or a fire also may occur.

- Be sure to use a power outlet equipped with a grounding terminal.
  Otherwise, this may cause electric shock when it breaks or power leaks.

- Be sure to securely plug in the power cord.
  Insecure connections may cause a fire.

2.6 After Use

⚠CAUTION

- If the instrument is not be used for a long time, disconnect the power cord from the wall outlet.
  This may cause a fire.

NOTE

- If the instrument will not be used during an extended period of time, turn off the main switch and put the dust cover over the instrument.

2.7 Maintenance and Checks

⚠CAUTION

- As the illumination lamp can get quite hot, replace it when it is cool. Otherwise, it may cause an injury.

NOTE

- Disassembling for service is not permitted except at NIDEK or authorized distributor.
- Never use an organic solvent such as paint thinner to wipe the exterior. This may ruin the surface.

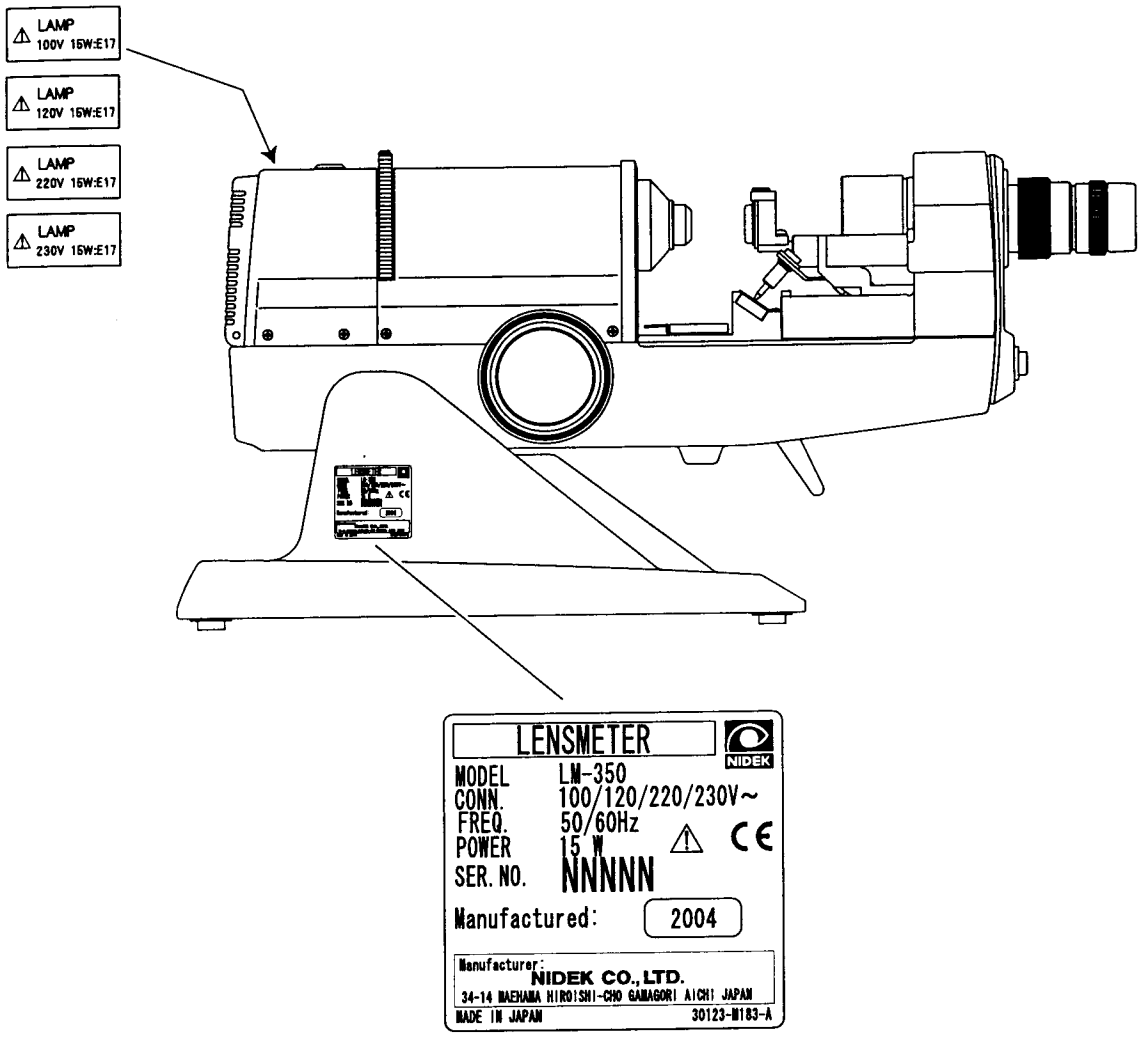
2.8 Disposal

NOTE

- Follow local governing ordinances and recycling plans regarding disposal or recycling of device components.
- When disposing packing materials, sort them by the materials and follow local governing ordinances and recycling plans.

2.9 Labels

The following labels provide safety information about each part.



§3 CONFIGURATION

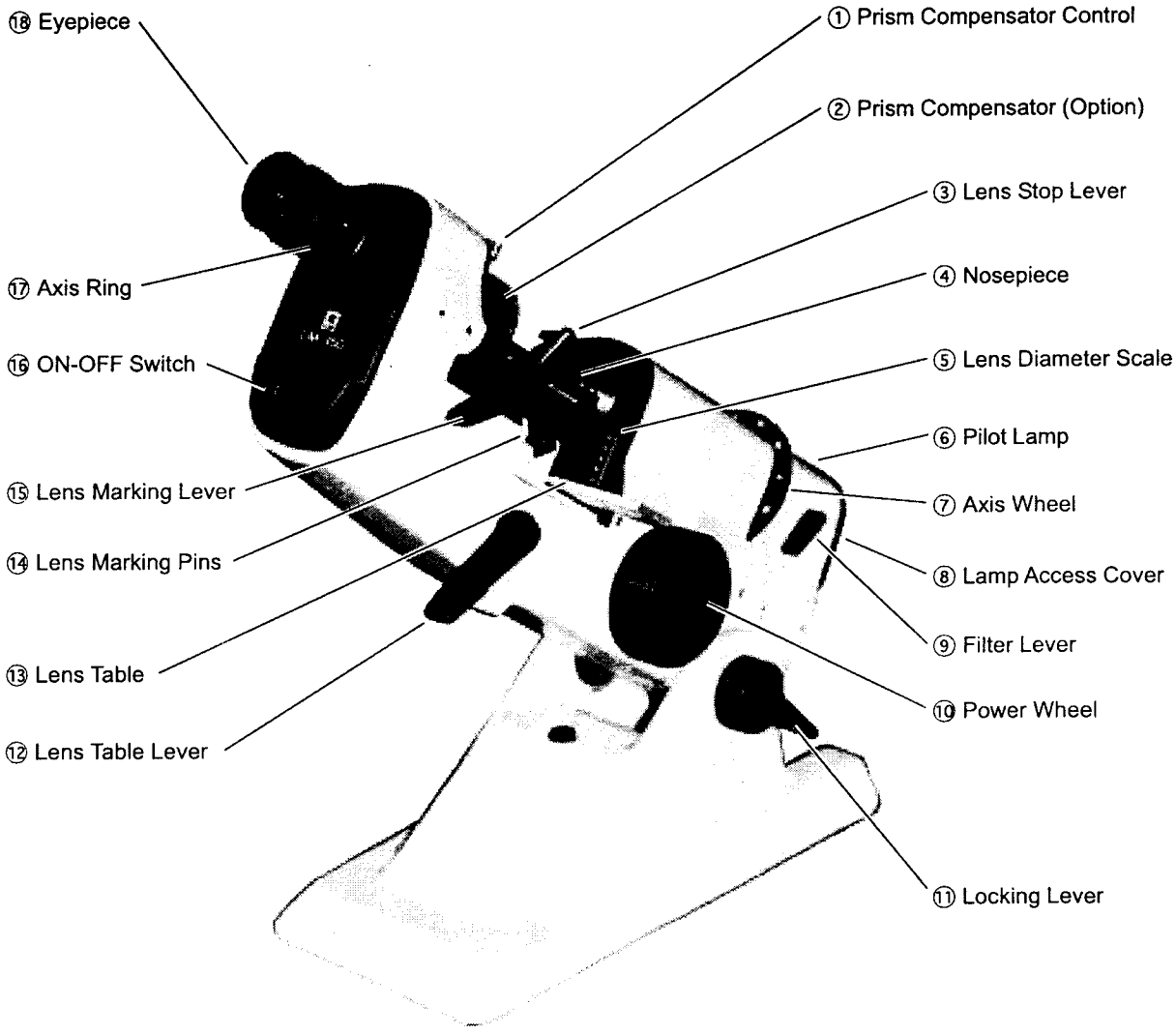


Fig.1 DESCRIPTION OF PARTS

① Prism Compensator Control

By moving this knob for left or right, direction of moving target is changed and by rotating the knob, moving volume is also changed.

② Prism Compensator (Option)

It is used whenever a prism of more than 5 diopters is induced at the point of reference of the lens examined.

③ Lens Stop Lever

The nonscratch lens stop on the end of a spring loaded arm serves to hold the lens against the nosepiece. This lever provides for finger release and retraction of this arm by simple 45° rotation.

④ Nosepiece

This is basic point of measurement, therefore special plastic material is used not to give any scratches on lens, nor to be distorted. When measuring contact lens, replace this for nosepiece of contact lens (Option).

⑤ Lens Diameter Scale

By touching lens edge to the lens table, diameter of lens can be read.

⑥ Pilot Lamp

This will be lit while the power switch is ON.

⑦ Axis Wheel

It is calibrated at 5° intervals from 0° to 180° with the number at 30° intervals, and controls the rotation of the target for determination of the axis.

⑧ Lamp Access Cover

To replace lamp pull down lamp house cover, unscrew lamp and replace. Return cover to original position.

⑨ Filter Lever

It permits removal of the green filter from the optical path.

⑩ Power Wheel

The power wheels are placed on both sides of the instrument for bilateral operation.

⑪ Locking Lever

⑫ Lens Table Lever

Lens table moves up and down by this lever.

⑬ Lens Table

It is moved up or down by turning the lever.

⑭ Lens Marking Pins

⑮ Lens Marking Lever

Controlling by this lever provides a simple and accurate means of spotting the optical centre of a lens (center pin) and its 180° line (3 pins).

⑯ ON-OFF Switch

⑰ Axis Ring

By rotating this ring, angle of target can be changed.

⑱ Eyepiece

The eyepiece is mounted in a screw type focussing mechanism with a range from +5 diopters to -5 diopters to compensate for different individual requirements.

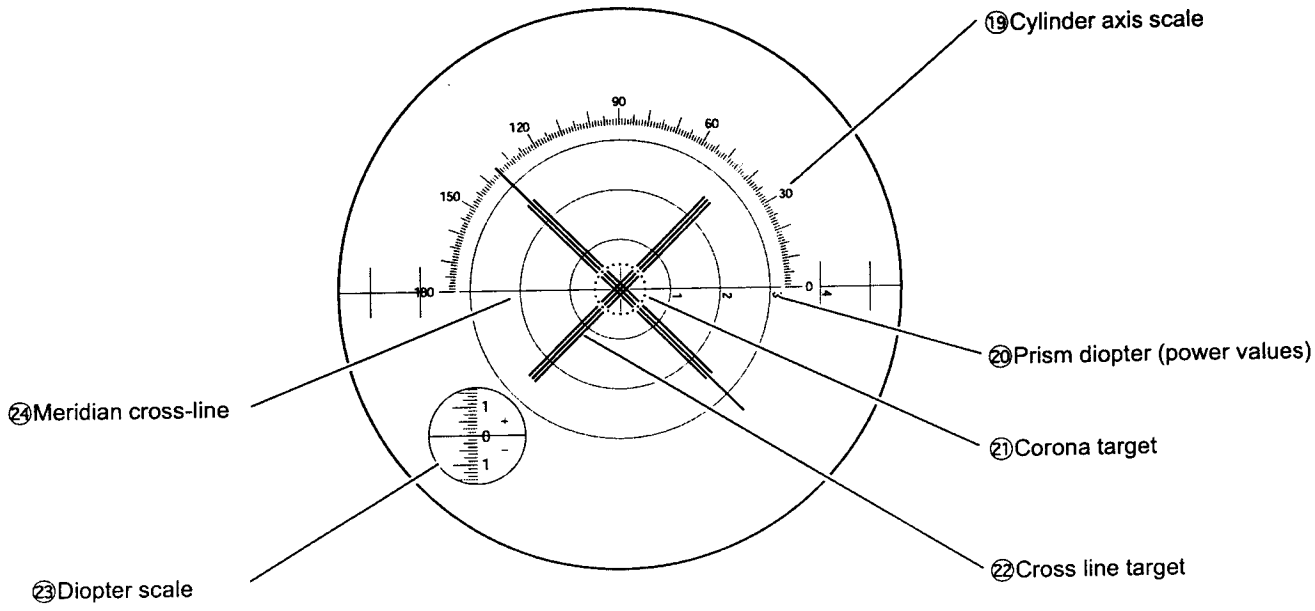


Fig.2 GRATICULE IN FOCUS

⑲Cylinder axis scale

This scale shows the cylinder axis angle.

⑳Prism Diopter (power values)

㉑Corona target

㉒Cross line target

㉓Diopter scale

The diopter power of lens is indicated by the diopter.

㉔Meridian cross-line

§4 OPERATING PROCEDURES

4.1 Preparations Before Measurement

1. Place the instrument on a table or desk and tilt it to provide the operator with a comfortable operating posture for looking into the eyepiece.

2. Plug the cord into the electrical socket and turn the instrument on using the on-off switch (Fig.1, No.16).

3. Looking through the eyepiece, make sure that the target is in the center without inserting a lens. If not, adjust the target by the P.C. (Fig.1, No.2).

4. The green filter should normally be in place to permit more comfortable, as well as more accurate, reading of the target, by depressing the filter lever (Fig.1, No.9). It should only be swung away if more illumination is needed when measuring dark lenses.

5. Looking through the eyepiece, set the internal reading scale on zero using the power wheel.

6. Look at the graticule line. Each individual must adjust the eyepiece for his eye, otherwise the reading he takes will be erroneous. Hold a piece of white paper at an angle between the nosepiece and the P.C. so as to reflect light into the telescope. Turn the eyepiece clockwise until the graticule lines are in sharp focus. If they are not critically sharp, blur the lines by turning the eyepiece counterclockwise, then turn clockwise slowly until the 1 prism diopter circle on the graticule is critically in focus. Come to critically sharp focus with a clockwise rotation and stop. Make a note of the eyepiece scale setting.

4.2 Inserting and Centering Lens

1. Place the lens with its concave side against the nosepiece (Fig.1, No.4). The lens mounted in a frame should be placed with its lower side against the lens table (Fig.1, No.13).

2. Release the lens stop lever (Fig.1, No.3) gently to hold the lens.

3. Looking into the eyepiece rotate the power wheel (Fig.1, No.10) until the target appears sharply in focus and slide the lens until centering is achieved (Fig.3).

4. The diameter of the lens is measured on the scale (Fig.1, No.5). Range of the scale is from 30mm to 90mm and step is 2mm.

4.3 Measuring the Power of Sphere Lens

1. **Focus the target by turning the power wheel. If all of the lines and corona of the target come into focus at the same time, the lens is a simple sphere (Fig.4).**

2. **Read the power of the lens in the circle which can be seen at the lower left. The red portion indicates minus and the black plus.**

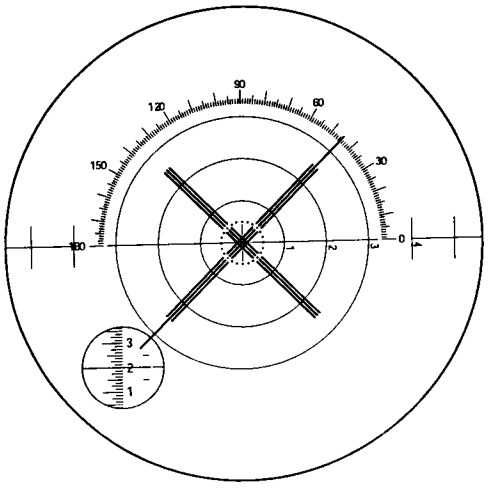


Fig. 3 TARGET IN FOCUS
1. Sphere Target
2. Center of Graticule and Target Center
3. Cylinder Target
4. Meridian Cross-Line

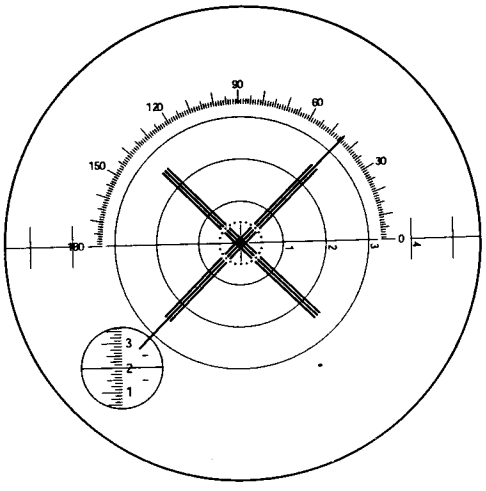


Fig. 4 SPHERE POWER IN FOCUS
Line Target and Corona Target in Focus

4.4 Measuring the Power and Axis of Cylinder Lens

1. If the corona target image can not be sharply defined like corona but in focus like cylinders in a circle, the lens has cylinder power.

2. Rotate the power wheel so that the corona target will be in focus like cylinders in a circle.

3. Rotate the axis wheel so that the shorter line target (Sphere target) will come to the same direction as the elongated corona target, and focus it (Fig.5).

4. Take a power reading.

5. Focus the longer line target (cylinder target) by rotating the power wheel, and rotate the axis ring (Fig.1, No.2) so that the meridian cross-line will align to the longer line target. (Fig.6)

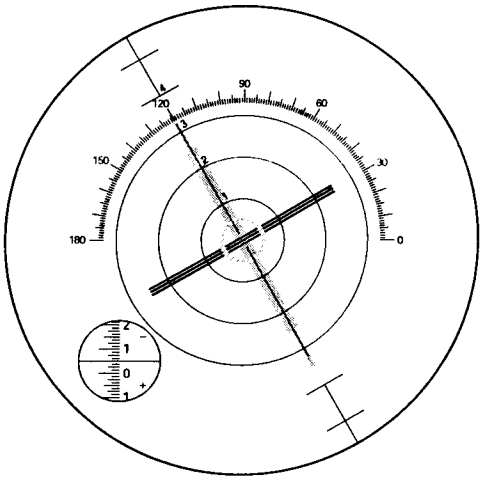


Fig. 5 SPHERO CYLINDER LENS
Sphere Target in Focus

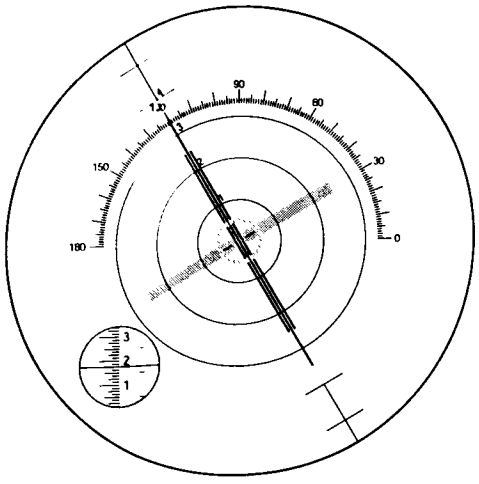


Fig. 6 SPHERO CYLINDER LENS
Cylinder Target in Focus

6. Take a power reading and axis reading.

7. The cylinder power of a lens may be written and/or measured in either plus.or minus cylinder form.

a. To measure the cylinder in minus cylinder form, bring the shorter line target into sharp focus. Rotate the power wheel to determine in which direction it must be turned to bring the longer line target into focus. If the operator has to introduce a more minus (or less plus) reading, the target is properly oriented.

b. If the operator has to rotate the power wheel to higher plus (or less minus) reading to bring the longer line target into focus, the target is oriented to read in plus cylinder form. Rotate the target (axis wheel) 90 ° and refocus to be sure the shorter line target again comes into sharp focus.

c. The scale reading is now the sphere power of the prescription and should be recorded. Move the power wheel toward the more minus (or less plus) until the longer line target is in sharp focus and record the reading.

d. The difference between the two readings is the power of the cylinder and the axis of the cylinder is read directly through the eyepiece or from the axis wheel.

The following are examples:

	Prescription No.		
	1	2	3
1st scale reading	-2.75D	+3.00D	+0.75D
2nd scale reading	-4.75D	+1.50D	-0.75D
Direction of power wheel movement	-	-	-
Difference in scale readings	-2.00D	-1.50D	-1.50D
Axis reading	145°	180°	75°

	Sphere	Cylinder	Axis
Prescription No. 1	-2.75D	-2.00D	145°
2	+3.00D	-1.50D	180°
3	+0.75D	-1.50D	75°

e. If the operator wishes to read the prescription in plus cylinder form, rotate the power wheel and the axis wheel to bring the shorter line target into sharp focus as described for minus cylinders. Rotate the power wheel until the longer line target is in focus and determine in which direction the operator has had to go. If the operator added more plus power (or less minus) the shorter line target is oriented. If the operator added minus power, rotate the target 90° and focus critically again on the shorter line target. Record this power which is the sphere power of the prescription. Now move the power wheel to add more plus (or less minus) until the longer line target is sharp. The difference between the first and second scale reading is the power of the cylinder in plus cylinder form and its axis as indicated on the axis wheel.

The following are examples:

	Prescription No.		
	1	2	3
1st scale reading	-4.75D	+1.50D	-0.75D
2nd scale reading	-2.75D	+3.00D	+0.75D
Direction of power wheel movement	+	+	+
Difference in scale readings	+2.00D	+1.50D	+1.50D
Axis reading	55°	90°	165°

	Sphere	Cylinder	Axis
Prescription No. 1	-4.75D	+2.00D	55°
2	+1.50D	+1.50D	90°
3	-0.75D	+1.50D	165°

It may be of interest to note that in the foregoing examples we have used identical prescriptions merely exchanging the minus cylinder form of the first three for the plus cylinder form in the last three. It is obvious then that any prescription may be transposed (plus to minus or minus to plus form) in the instrument, or one can use the following formula: To transpose a prescription, as written, to the opposite cylinder sine, algebraically add the sphere and cylinder powers to arrive at the new sphere power, change the sign of the cylinder (from plus to minus or minus to plus) and change the axis 90°, that is, $+1.00 - 2.00 \times 90^\circ = -1.00 + 2.00 \times 180^\circ$.

4.5 Measuring Bifocal Additions

The "true" value of the addition of a bifocal is the difference between the distance power of the lens and the power reading through the reading segment, with the segment surface against the nosepiece for both readings. That is, for fused bifocals and other "front surface" adds, the front (convex) surface of the lens; for ultex type lenses and "back surface" adds, the back (concave) surface.

To measure the true power of addition.

1. **Place segment surface of the lens against the nosepiece.**

2. **Measure the sphere power through the same distance portion to center of the lens to the segment.**

3. **Move the lens to bring the segment into position on the nosepiece and read the sphere power.**

4. **The true value of the addition is the difference between readings "2" and "3".**

In many cases the target viewed through the segment will be blurred or even out of the field. See instructions for the use of the P.C. on page 4-8 to bring the target into the center field.
A compromise method of reading bifocal additions is to read the distance prescription with the back surface of the lens against the nosepiece and then moving the lens so as to take a reading through the segment. In low power prescriptions, this approximation is satisfactory, but if there is any doubt, use the first method described.

4.6 Measuring Prism Power and Base

1. Place a dot on the lens at the "optical center" position (the point at which the prism power is to be measured).

2. Place the lens in the instrument with the center dot in the center of the nosepiece and 180° line coincident with the tips of the marking pins. This position may be checked by the lens marking device.

3. Bring the target into focus. Since there is prism power in the lens, the target will be decentered. (Fig.7) The target will always be displaced in the direction of the base of the prism. That is, it will be displaced up for prism base up; down for prism base down. It will be displaced right for prism base in right eye; out for left eye. It will be displaced left for prism base out in the right eye; in for left eye.

4. Rotate the axis ring until the meridian Cross-line bisects the center of the target.

5. The amount of the prism power in the lens is indicated by the displacement of the target center with reference to concentric circles of the graticule. Power of 1 to 4 prism diopters are indicated with numerical designation of each of the meridian cross-line. Power of 0.25 prism diopter can be estimated readily.

6. The position of the prism base can be read from the graticule at 1° interval. If the target will be displaced below the horizontal line, add 180° to the above reading. (Fig. 8)

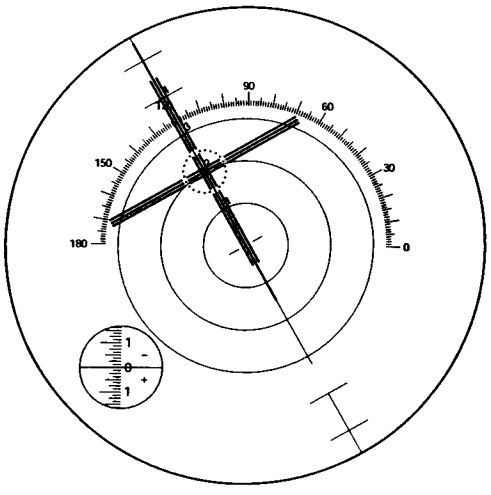


Fig. 7 DECENTERED TARGET

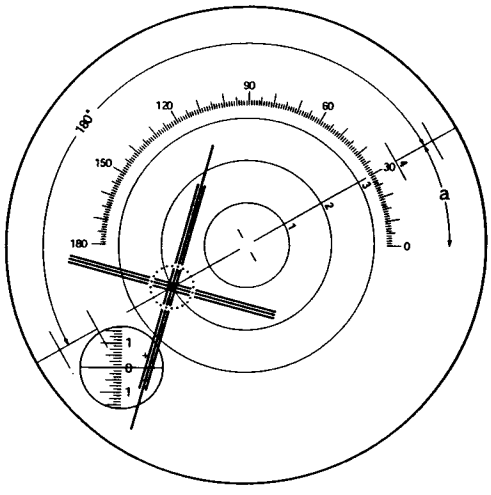


Fig. 8 MERIDIAN CROSS-LINE INTERSECTING TARGET CENTER

4.7 Measuring Prism Power of The Mounted Lens

1. Place the spectacle on the nosepiece with its lower side against the lens table.

2. Bring the geometrical center of the lens to be tested on the geometrical center of the nosepiece (the optical axis of the instrument). The center of the target will never coincide with the center of the graticule but will be displaced showing that there is prism power.

3. The amount of the prism power and the position of the prism base can be read from the graticule.

4.8 Decentering the Unmounted Lens

1. Rotate the axis ring to the required base direction.

2. With the lens in the setting position, move the lens to such a position that the center of the target comes to the required number of prism diopter and base direction.

3. Manipulate the lens making lever. The axis and three dots are automatically marked on the horizontal center line; the center dot coincides with the geometrical center of the frame, while the other dots should be on the horizontal center line when the lens is mounted in the frame for proper decentering.

4. Mark L or R on the top of the lens to indicate that whether it is for the left or right and place an arrow mark along the dots to indicate the nose side. (Fig. 9)

4.9 Manipulating the Prism Compensator

Whenever the P.C. is not in use, be sure the prism is set at ZERO. This zero reading should be checked frequently to avoid any accidental decentration of lenses.

1. **Place the lens under consideration against the nosepiece so that the point of reference on the lens is centered in the center of the nosepiece (on the instrument optical axis) and the 180° line coincides with the three making pins (center pin at point of reference).**

2. **Set the power wheel to the sphere power of the prescription. If there are more than 5 prism diopters at this point the target must be brought back into the field with the P.C. (Fig. 10) Rotate the P.C. control to bring the center of the target to coincide with the center of the graticule. Rotating the P.C. control about its own axis changes prism power. Rotating the P.C. control about the instrument optical axis changes the base direction. The red scale (0 - 15 prism diopters) signifies the base of the prism is "opposite" the base indicated on the prism axis scale. It is necessary, therefore, to add 180° to the reading indicated on the prism axis scale. The white scale signifies the prism base is as indicated on the prism axis scale.**

3. **Rotate the power wheel when necessary (in cylinder prescription) to focus the target and rotate the P.C. control until the target is exactly centered in the graticule. The prism power and base direction are read from the scales.**

4. **In the event of the prism to be measured is between 15 and 20 prism diopters, set the P.C. to the 15 prism diopter scale and rotate about the instrument optical axis until the target comes into the field. Continue this rotation until the target is at the nearest point to the center of the graticule. Focus the target. The actual prism power will be the prism reading on the graticule plus 15 prism diopters and base meridian must be read prism axis scale.**

5. **The P.C. can be of extreme importance in evaluating additions where the prescription is such that it moves the target either to the edge or out of the field when the addition is placed in the instrument at the proper reading level. The P.C. can, in such cases, bring the target back to the center of the field for accurate reading.**

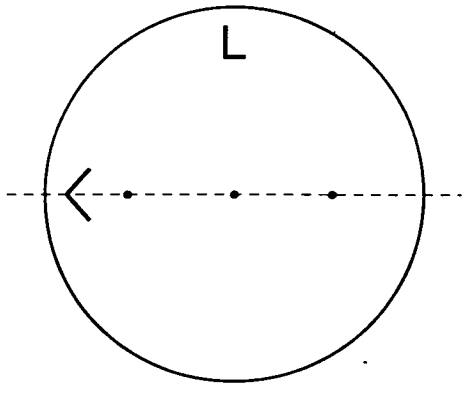


Fig. 9

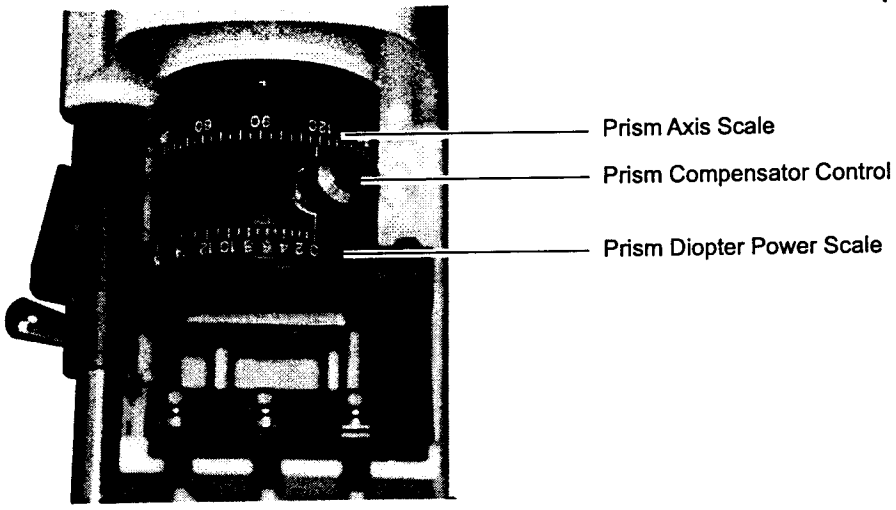


Fig. 10

4.10 Marking and Ink Well

1. **Clamp the lens, checking for centeration, and mark by depressing the lens marking lever. The center dot will be the optical center and the line of the three dots will indicate the 180° or "mounting line" of the lens.**

2. **When making many lenses, it also available to mark with the lens stop in return position.**

3. **Remove the ink pad from the well, when replacing the old one with the new one. Before inking, it is necessary to soak the pad in water to make it absorbent. Be certain to squeeze out excess water before replacing pad in well and applying ink.**

4.11 Measuring Vertical Imbalance of the Lens at Reading Level

1. **Mark the lens at the normal reading level and at proper reading.**

2. **Clamp the lens of "stronger" (absolute) power (either plus or minus) in the instrument and center the mark in the nosepiece.**

3. **Bring the target into focus and note the amount and direction (up or down) of the induced prism. (Disregard any lateral prism induced at this point.)**

4. **Repeat steps "2." and "3." above for the weaker lens.**

5. **If the induced prism in each lens is the same direction (up or down) the imbalance is the difference between the two values. If the induced prism is up in one lens, down in the other, the imbalance is the sum of the two values.**

4.12 Layout of Lenses for Edging

In the laboratory the instrument not only checks the accuracy of lenses against the prescription but at the same time permits marking the uncut lenses for edging as follows.

1. **Dot the segment center (if a bifocal) and clamp the lens in the instrument.**
2. **Set the power wheel at sphere power of prescription and the axis wheel at the prescription axis (if cylinder power is prescribed).**
3. **Rotate the lens until the shorter line target is sharp and unbroken.**
4. **Shift the lens until the shorter line target is centered in the graticule. If prism is required, decenter the shorter line target according to the prescription.**
5. **Rotate the power wheel to bring the longer line target into focus and shift the lens as necessary to bring the target into the center of the graticule. Check cylinder power and refocus the shorter line target to make sure the power and centering are correct.**
6. **With the lens marking device, dot the 180 ° line.**
7. **For single vision lenses, the edging line can be drawn using the three dots for reference.**
8. **If there is any decentration required in satisfying the prescription the "edging center" must be relocated accordingly.**
9. **For bifocal lenses place the three dots "on line" and check for segment location. Then draw edging line as in step "7.".**

4.13 Measuring Contact Lenses

When measuring a contact lens, the instrument may be easily readjusted to the vertical position after loosening the locking knob (Fig.1, No.11).
For measurement of contact lens, optional contact lens holder or nose piece for contact lens is necessary. Purchase it and measure the contact lens with the same measuring process of normal lens.

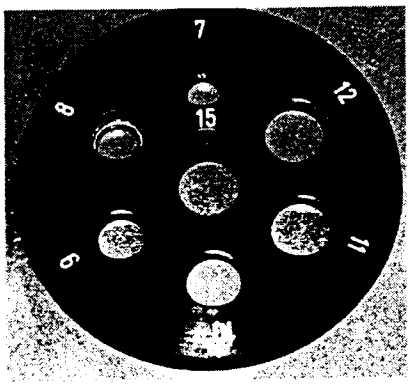


Fig.11

§5 MARKING

5.1 Changing Lamp

⚠CAUTION

- As the lamp can get quite hot, replace it when it is cool.
  Otherwise, it may cause an injury.

1. **Unplug the cord from the socket.**

2. **Pull down the lamp access cover. (Fig.1, No.15) (hinged on the bottom)**

3. **Unscrew the old lamp and replace it with a new one (100V/120V/220V/230Vac, 15W : E-17). (Fig.12)**

4. **Return the cover to the original position.**

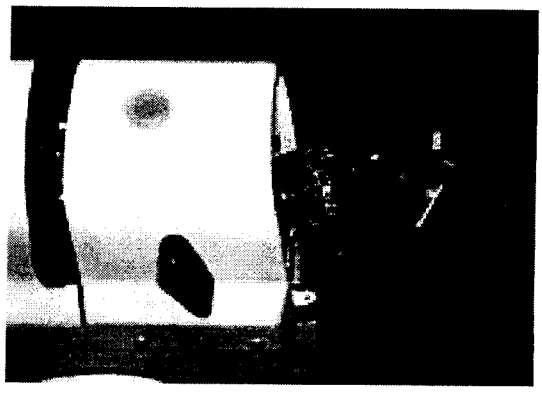


Fig.12

⚠CAUTION

- In replacement of the lamp, do not touch the inside of the instrument except the lamp.
  An electric shock may occur.

5.2 Cleaning Exterior

When the exterior parts of the instrument become dirty, wipe with a dry and soft cloth. For stubborn dirt, immerse the cloth in a neutral detergent, wring well and wipe. Finally wipe off with a dry and soft cloth.

NOTE

- Never use an organic solvent such as paint thinner to wipe the exterior. This may ruin the surface.

5.3 General Care

With careful and correct use, there will be no trouble with the instrument and it will last for years.
It is recommended that the instrument is covered with the dust cover supplied, when not in use.

§6 MAINTENANCE

CONTACT LENS HOLDER

When measuring a contact lens, the instrument may be easily readjusted to the vertical position after loosening the locking lever (Fig.1, No.11). The diameter of the nosepiece is 7mm. Or the contact lens holder (Fig.12) will be supplied as an optional accessory.

PRISM COMPENSATOR

It is used whenever a prism of more than 5 diopters is induced at the point of reference of the lens examined.

§7 SPECIFICATIONS

Eyepiece Focusing : 0 to ± 5 D

Vertex Power : Range: 0 to ± 25 D
Step: 0.125 D up to ± 3 D, 0.25 D Beyond ± 3 D
[Accuracy]

Values in diopters (D)

Measuring range		Accuracy
<0 ≧-5	>0 ≦+5	±0.06
<-5 ≧-10	>+5 ≦+10	±0.09
<-10 ≧-15	>+10 ≦+15	±0.12
<-15 ≧-20	>+15 ≦+20	±0.18
<-20	> +20	±0.25

Cylinder Axis : Range: 0 to 180°
Step: 1° (on reticle), 5° (on cylinder axis wheel)
[Accuracy]
± 1°

Prism Power : Range: 0 to 5 Δ
Step: 1 Δ
[Accuracy]

Values in prism diopters (Δ)

Measuring range	Accuracy
>0 ≦5	0.1
>5 ≦10	0.2

Prism Base Direction : Range: 0 to 360°
Step: 1° (on reticle), 5° (on cylinder axis wheel)

Lens Diameter : ϕ 7 to 90 mm

Instrument Tilt : 0 to 90° reely adjustable

Lamp : 110V/125V/220V/240V, 15 W (E-17)

Power Source : 100V/120V/220V/230Vac ± 10% , 50/60 Hz

Power Consumption : 15 W

Dimensions & Weight	: 160 (W) × 428 (D) × 212 (H) mm 5 kg
Environmental condition	: Temperature: 10 to 40 ℃ (In usage) -40 to 70 ℃ (In storage/ Transference) : Humidity: 30 - 85 % (Non-condensing)(In usage) 10 - 100 % (In storage/ Transference)
Standard Accessories	: Dust cover (1), Spare lamps (2)
Optional Accessories	: Contact lens holder (ϕ 7, 8, 9, 10, 12, 15 mm) Prism compensator

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DECLARATION OF CONFORMITY

Manufacturer's name NIDEK Co. Ltd.

Manufacturer's address 34-14 Maehama, Hiroishi-cho, Gamagori, Aichi 443-0038, Japan

European Representative NIDEK s.a.
Europarc, 13 rue Auguste Perret, 94042 Creteil, France

Identification of product Lensmeter

Model No. LM-350

Starting from this serial number 24672

We herewith declare that the above mentioned products meet the provisions of the following EC Council Directives and Standards. All supporting documentations are retained under the premises of the manufacturer.

DIRECTIVES

General applicable directives:

Low Voltage Directive: COUNCIL DIRECTIVE 73/23/EEC of 19 February 1973 relating to electrical equipment designed for use within certain voltage limit
EMC Directive: COUNCIL DIRECTIVE 89/336/EEC of 3 May 1989 relating to electromagnetic compatibility

Standards :

Harmonized Standards(published in the Official Journal of the European Communities)applicable to this product are :
IEC61010-1, ENISO9001

Date CE Mark was affixed : September 10, 1998

Place: Aichi, Japan

Date: July 1, 2003

Signed by

Yoshiaki Ohashi
Quality Executive Representative,
NIDEK Co., Ltd.