1. **Rekoss Lens**

   If both observer and patient are completely emmetropic, a clear fundus image should be obtained without placing a corrective lens between them. However, in most cases, both observer's and patient's eyes have refractive errors and in order to obtain a clear fundus image, it is necessary to correct the combination of these refractive errors. Hyperopic eye is corrected by a plus lens while myopic eye is corrected by a minus lens.

   For example, consider a case where observer's eye is myopic and patient's eye is hyperopic:

   

   $$ (-3D) + (1.5D) + (-2D) = -4D $$

   Correction of
   Correction of
   Correction of
   Observer's Myopia
   Patient's Hyperopia
   Accommodation

   In this case, -4D Rekoss lens should be placed between two eyes in order to obtain a sharp fundus image. Power of Rekoss lens is determined by the extent of observer's and patient's refractive errors and the distance between ophthalmoscope and patient's eye, etc.

   Actually, focusing is done by rotating Rekoss Disc (2) while viewing patient's fundus until observer can get the sharpest focus of fundus image. In case of high myopia or hyperopia, minus or plus Auxiliary Lens should be added.

   Dioptric Indicator (3) directly shows the combined dioptric power of the Rekoss lens and Auxiliary Lens. Red figure represents minus power while green figure represents plus power. Ranges of powers covered are as shown below.

   **Position of Auxiliary Lens Selector**
   **Range of powers**

<table>
<thead>
<tr>
<th><strong>Lens Selector</strong></th>
<th><strong>Range</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>-120 to +110</td>
<td></td>
</tr>
<tr>
<td>+120 to +350</td>
<td></td>
</tr>
<tr>
<td>-130 to -360</td>
<td></td>
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</tbody>
</table>

2. **Filter Lever**

   (a) Positioning Filter Lever at F inserts 4000 K filter into the illumination path. This is used when observing fundus with illumination closer to natural light.

   (b) With Filter Lever at the middle position, no filter is inserted into the illumination path.

   (c) Positioning Filter Lever at P insert polarizing filter into the illumination path.

3. **Viewing Polarizing Filter**

   By rotating Viewing Polarizing Filter so that a white mark comes to the top and positioning Filter Lever at P, polarizing axis of observation becomes perpendicular to the polarizing axis of illumination. In this situation, a corneal reflex from the patient’s eye is minimized. In order to obtain optimum balance between brightness of visual field and amount of corneal reflex, Viewing Polarizing Filter may be rotated. When the Viewing Polarizing Filter is in click position, light coming into viewing aperture is not polarized.

4. **Aperture Dial**

   Rotating Aperture Dial (6) exposes apertures into the illumination path.

   (a) **Standard Aperture**
   This is used for ordinary fundus examination.

   (b) **Small Aperture**
   This is used when viewing fundus through a small pupil. Especially, it is useful when examining macula since the pupil tends to contract in response to bright light from ophthalmoscope.

   (c) **Red Free Filter Aperture**
   Viewing fundus with a red free filter makes the retinal blood vessels appear black against the gray background of the fundus. This is particularly valuable for detecting minute superficial hemorrhages.

   (d) **Concentric Scale Aperture**
   This is used for diagnosis of eccentric fixation. Direct a patient to look at the center of the concentric circles while viewing the fundus. If the eccentric fixation is present, patient’s fovea will not fall on the center of concentric circles.

   (e) **Slit Aperture**
   This is used for the estimation of the level of various areas of the retina.

5. **Battery Handle**

   In order to turn on the switch, push green button and rotate switch. Switch also functions as a rheostat and controls brightness. BX-A-13 (C cell Battery handle) is used with 2 pcs. of C cell alkaline batteries (3V) and BX-A-13A (AA cell Battery Handle) is used with 2 pcs. of AA cell alkaline batteries (3V). Use halogen bulb L-3003 (volts). When changing batteries, loosen bottom lid and remove old batteries. Insert new batteries with minus sides facing bottom lid.
6. Cord Handle
Used with transformer. Use halogen bulb L-29(4 volts) and set secondary voltage of transformer (lower than 4 volts).

7. Rechargeable Battery Handle
In order to turn on the switch, push green button and rotate switch. Switch also functions as a rheostat and controls brightness. Use Halogen bulb L-29 (4 volts.) When battery dose not accept recharge any longer, change battery. Order code number for rechargeable battery is 1000RS for BXo-RC and RP-B for BXu-RP.

8. Connection of Head and Handle
When removing head from handle, rotate head counterclockwise while pressing head towards handle. When attaching head to handle, adjust three cuts in the head to three projections on the handle and rotate head clockwise while lightly pressing head towards handle.

9. Changing Bulb
Use halogen bulb L-30 (3 volts) for battery handle, halogen bulb L-29(4 volts) for rechargeable battery handle and cord handle.
When changing bulb, remove head from handle and pull out old bulb. Adjust projection on the base of new bulb to one of the three cuts in the head and insert a new bulb. Then rotate bulb and adjust projection to the cut in the inner part of head and insert it further.

10. Aperture Shutter
When not in use, shut Viewing Aperture (1) by means of Aperture Shutter (5) and prevent dust from infiltrating instrument head.

How to View Patient's Fundus
1. When examining patient's right eye, hold ophthalmoscope with your right hand and observe with your right eye. For examination of left eye, use your left hand and left eye.
2. Put your index finger on the edge of Reikoss Disc (2) so that you can rotate it any time and hold ophthalmoscope with remaining four fingers. (Fig. 1)
3. Place ophthalmoscope on the side of your nose and fix it where you can look out through viewing aperture as shown in Fig. 2.
4. Look through viewing aperture and rotate Reikoss disc so that you can clearly see the object placed at a distance. By doing this, your refractive error will be corrected.
5. Seat the patient with his face toward dark side of the room and direct him to look at the object placed at a distance. This procedure is necessary for fixing the patient's eye and relaxing his accommodation. Fixing the patient's eye is essential to ophthalmoscopy since it is almost impossible to obtain a fundus image when the patient's eye is constantly moving.
6. When examining right eye, stand at the patient's right side. Hold ophthalmoscope close to your right eye and direct the light beam into patient's pupil at a distance of about 15 cm from the patient's eye. You will then be able to see red reflex in the patient's pupil. (Fig. 3)
7. Move slowly toward this red reflex while holding ophthalmoscope close to your eye. Always keep the light beam in the patient's pupil while approaching the patient. When the ophthalmoscope is close enough to the patient's eye (2 to 3 cm), you will get the fundus image. (Fig. 4)
8. If the fundus image is not in sharp focus, rotate Reikoss disc and bring image into sharpest focus. When it is impossible to get the sharpest image within the range of powers of Reikoss lenses, add minus or plus auxiliary lens by moving Auxiliary Lens Selector (4) and rotate Reikoss disc again.
9. When examining various areas of fundus, hold ophthalmoscope close to your eye and move it together with your head around patient's pupil, always keeping the same distance from the pupil. The light beam should always stay in the patient's pupil while moving. To stabilize ophthalmoscope, put your middle finger on the patient's cheek as shown in Fig. 4 and it will become easier to move ophthalmoscope.
10. If the reflection from the patient's cornea disturbs fundus image, approach the patient as close as possible and direct the light beam through lower portion of the pupil while viewing fundus through upper portion of the pupil. If corneal reflection still disturbs observation, move Filter Lever to position F. Then, rotate Viewing Polarizing Filter so that its white mark comes to the top. At this position, corneal reflex is minimized. If you want to obtain brighter visual field, you can do so by rotating Viewing Polarizing Filter but corneal reflex increases as you rotate it.
PLUG-IN RECHARGEABLE BATTERY HANDLE RP

1. Two kinds of charger are available. 120 volts or 220 volts. Make sure that voltage indicated on the charger fits the voltage of your receptacle. When charging battery, press and move button (1) of charger (4) so that plug (2) comes out. (Fig. 1)

2. Turn off switch (3) and insert plug (2) into receptacle. (Fig. 2)

3. Be sure to turn off switch (3) when charging. Charge will be completed in about 15 hours. After charge is completed, take plug out from receptacle and press and move button to pull back plug. (Fig. 1) Leaving plug of charger in receptacle after completing charge may shorten the life of battery.

4. Fully charged battery will last for about 40 minutes in continuous operation when L-29 is used. After discharging completely, be sure to turn off switch.

3. Voltage of battery is 4 volts. Use following bulbs.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Bulb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halogen Ophthalmoscope BX-e</td>
<td>L-29</td>
</tr>
<tr>
<td>Streak Retinoscope RX</td>
<td>L-27</td>
</tr>
<tr>
<td>Spot Retinoscope</td>
<td>L-32</td>
</tr>
</tbody>
</table>

4. Life of battery is 300 to 1000 cycles of discharge depending upon the condition of charging, discharging etc. If it becomes unable to charge battery, exchange battery after unscrewing and removing charger (4). When placing order for new battery, please specify "Neitz Rechargeable Battery RP-B".

5. Do not throw used battery into fire.

Use of otoscope

1. Attaching/detaching Otoscope head to the handle.

   Screw the otoscope head to FO Adapter with the bulb inserted. Attach it to the handle, with adjusting the three projections in the handle to three cuts in the FO Adapter, rotate FO Adapter to clockwise while pressing it to handle.

2. Specula

   The Otoscope Specula is in 2 sizes. Select either one, which suits to the hole of the patient’s ear.

   For attaching the Specula, adjust sticking inside of the Specula to a ditch in the tip of the Otoscope, rotate it clockwise softly.

3. Loupe

   Loupe in the Otoscope Head can magnify the observed area.

   To install the Loupe is by swinging in and out in front of the scope.

4. Bulb

   The bulb for the Otoscope is model L-69. 3V.

   For exchange the bulb, detach the Otoscope head from FO Adapter by rotating it counter-clockwise. Remove the light bulb, which burnt out, insert the new bulb.

   The bulb is heated while it lights up. So it is recommended to exchange the bulb, after it cooled down.

Use of Laryngoscope

1. Attaching/detaching Laryngoscope head

   Attach Laryngoscope to the handle, with adjusting the three projections in the handle to three cuts in the FO Adapter, rotate FO Adapter to clockwise while pressing it to handle.

2. Bulb

   The bulb for the Laryngoscope is model L-06. 3V.

   The bulb is fixed to the tip of Laryngoscope by screwing