

Catalog

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Preface

Dear Users:

Thank you for choosing ML manual phoropter. We are deeply proud for your trust about this product. In order to let you have a overall understanding about this product, we make a instructions for you, which include the install of the phoropter, usage methods, usage notes, maintenance, transportation, storage and so on. It is an essential guide for your better using our product.

In order to let you have a better understanding of the knowledge of the instrument, please read carefully before using the instruction manual, we believe that it will be of great help for you to using the manual phoropter.

Before use it, we recommend that you carefully carry out the following works:

1. First carefully check if the equipment and packing list is consistent, and whether the use of manual, accessories are complete
2. Please read the random file and keep it properly.

This specification is accompanied by pictures of the effect diagram, the specific configuration will be prevailed by the packing list.

1. Outline

1. Equipment Introduction

Phoropter inspection instrument is commonly used in ophthalmology. It is mainly used for refraction, As a basic tool of ophthalmology and visual inspection workers, it plays an irreplaceable role. Phoropter we produce is an improvement to the conventional optometry instrument, and almost all lenses in the ordinary lens box are loaded into the runner system, So in the operation it provides a more effective, faster conversion lens may than the use of test frame optometry, Through simple knobs and we soon conversion and find the required lens, especially suitable for the complicated subjective optometry; and because all optometry instrument lenses are in a closed state, so the workers needn't worry about staining lenses, it use more conveniently with higher accurate rate.

2. Features

1. The new set up leveling mechanism.
2. Control of spherical powers: Capable of measurement for the fullest range of +16.75D~0~19.00D with the step of 0.25D. By turning the spherical power quick forwarding dial, necessary powers could be obtained quickly with increment of 3.00D.
3. Measurement of cylinder powers and axis: Cylinder powers could be obtained within the wider range of 0~-6.00D, with an increment of 0.25D. Also by employing application of cylinder auxiliary lens of -0.12D, they are counted with an 0.12 step. Whilst by employing the attached cylinder auxiliary lens of -2.00D, cylinder powers are capable for measurement within the wider range of 0~-8.00D. Cylinder axis angles are graded from 0~180° doubly with increment of 5° cylinder axis angle.
4. Cross cylinder: By turning the cylinder axis knob, the cross cylinder will be moved by the peculiar synchronized mechanism. The cross cylinder will be turned over by turning the cross cylinder knob lightly.
5. Rotary prism: Measurable range for 20Δ with 1Δ step is available.
6. Convergence system: By laying down the convergence lever inside, a correct near point measurement is capable.
7. Auxiliary lenses: By employing combinations of abundant auxiliary lenses and charts, various kinds of refractions are made.
 - “O” : Open aperture
 - “R” : Retinoscope lens +1.5D(Standard)
 - “P” : Polaroid (right eye: 135°, left eye: 45°)
 - *To be used for various polarizing test, for example heterophoria, Binocular balance, stereoscopic view, etc.
 - “RMW”&”WMV” : Vertical maddox (right eye: red, left eye: white)
 - *Can be used for heterophoria, measurement.
 - “RMH”&”WMH” : Horizontal maddox (right eye: red, left eye: white)
 - *Can be used for heterophoria, measurement.
 - “RL”&”GL” : Red, green lenses (right eye: red, left eye: green)
 - *Can be used for heterophoria, precise checking of spherical surface, measurement.
 - “⊕” : Test mark for P.D. Adjustment
 - “+.12D” : +0.12D sphere lens
 - *With the measurement step of 0.12D

“PH”	: Pin hole
“6ΔU or 10ΔI”	: Prism dispersion: (right eye: 6ΔBU, left eye: 10ΔBI) *Can be used for heterophoria, measurement.
“±0.50”	: ±0.50D fixed cross cylinder. *Can be used for near point measurement.
“OC”	: Occluder

3. Notes.

1. For your security and interests, please read the product specifications and all the information attached before you use the equipment. Any personal injury, property or other loss due to failure usage and operate the device in accordance with the product specification shall not be liable for Aiaugen Medical.

2. When holding the instrument, the holder of the instrument main body should be grabbed, or the left and the right part of the rear part of the instrument should be placed on the arm.

3. Do not place the front (lens) of the instrument to the lower part of the instrument, and do not push the lens to the side by force. Do not place your hand on the patient's window section

4. When the instrument is not used, the dust cover should be covered on the instrument.

5. Do not place instruments in wet or dusty places.

6. Free rotation of mechanical parts. But if you find that you can't rotate, don't force it.

7. All parts of the equipment can not be removed at will.

8. Do not touch the surface of the lens with a hand or a hard object

9. Environmental protection provisions: the system of equipment or components damaged or at the end of the service life, and random discarded may bring pollution to the environment, please recycle or scrap treatment according to local laws and regulations for recycling or scrap treatment

4. Part Name & Operation Steps

1. Patient's window: Patients have to peep from the back side.
2. Near point rod clamp screw: To insert the near point rod into the holder and tighten the near point rod.

3. P.D. Scale: To display the P.D.

4. Cross cylinder: To compensate cylinder powers, accurate detection of axis and power are made.

5. Cross cylinder knob: To change the cross cylinder axis and powers.

6. Vertex distance watching window: To confirm the distance between corneal vertex and refractor lens surface.

7. Rotary prism: To be used of measurement of heterophoria and binocular balance.

8. Rotary prism knob: Prism diopters can be changed by this knob.

9. Cylinder axis knob: Cylinder axis can be changed by this knob.

10. Cylinder power knob: Cylinder powers can be changed by this power knob.

11. Cylinder axis angles: This scale represents cylinder axis angles.

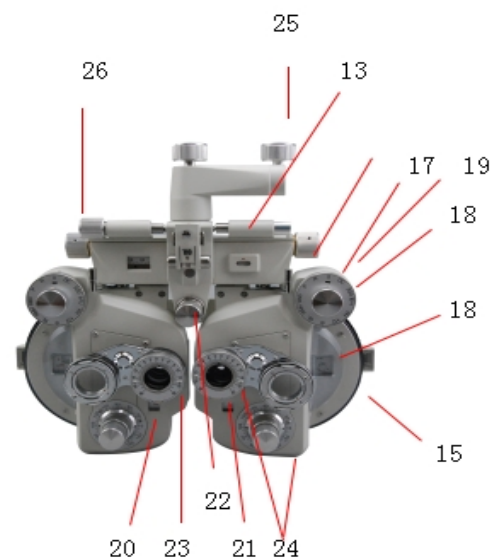
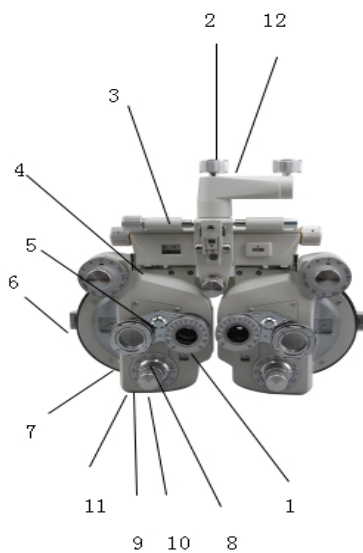
12. Near point rod holder: Insert the neat point rod here.

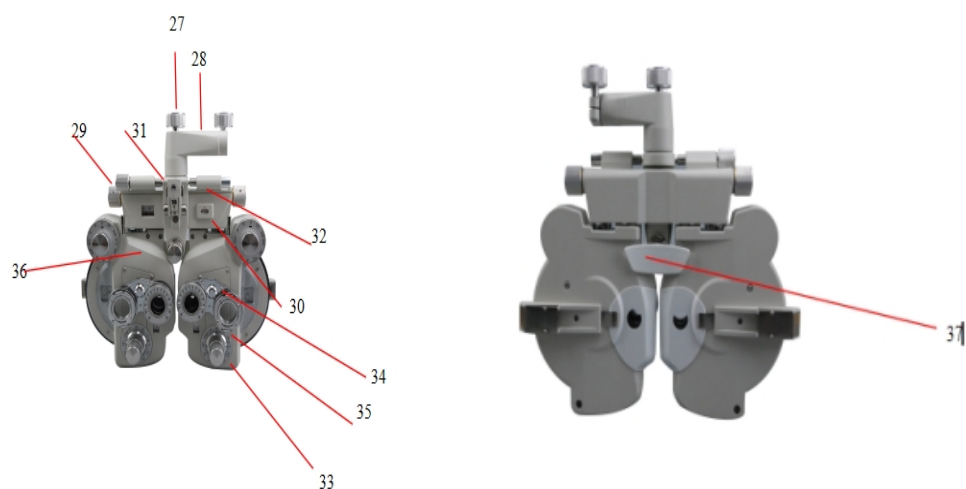
13. Level: This is to set up a standard of the horizontal adjustment.

14. Spherical disk: Sphere powers are changed with a step of 0.25D.

15. Sphere power scale: There diopters represent the sphere power scales.

16. Index: These dioptors represent auxiliary lenses inside the patient's window.
17. Auxiliary lens knob: Auxiliary lenses are changed by this knob.
18. Auxiliary lens scale: Descriptions of auxiliary lenses are represented.
19. Spherical power quick forwarding dial: Spherical lenses can be changed with 3.00D step's interval.
20. Cylinder power scale: Cylinder powers are shown here.
21. Set pin: Cylinder auxiliary lenses(-2.00D, -0.12D) as the standard accessories are set here by this set pin.
22. Forehead rest knob: To adjust the forehead back and forth position.
23. Cylinder axis reference scale angle: This scale represents the cylinder axis angle.
24. Cylinder axis indicator: This represents the cylinder axis angle.
25. Clamp knob: This knob fixes the refractor to the supporting shaft.
26. P.D. Adjustment knob: By this knob P.D. Can be adjusted to meet a certain patient's P.D.
27. Rotation adjustment knob: To change rotation of the body by loosening it and to fix it by fastening.
28. Mounting bracket: This is the fixing bracket of the body to a refractor until stand etc
29. Leveling adjustment knob: This is to adjust the horizontal leveling.
30. Convergence lever: This is to converge the body.
31. Yoke
32. Body support
33. Body
34. Turret: this will interchange the Cross Cylinder and Rotary Prisms.
35. Spherical Lens Display Cover: This will enlarge and display the Spherical Lens power.
36. Rotary Prism Indicator
37. Forehead-rest





5. Specification Relating

5.1 Components : Main body (Optical Lens set), Forehead-rest, Bracket, Ophthalmic Unit etc. Exclude Medical Absorbent Cotton.

5.2 Usage: The Phoropter is used for Ametropia checking.

5.3 Attention: This item is used by optometrists only. Please mind do not to touch the optical lens system during the use.

5.4 Specifications

5.4.1 Measurement

1. Sphere Range: +16.75D~-19.00D Step: 0.25D
 2. Cylinder Range: 0D~-6.00D (0.00~-8.00D with additional lens of -2.00 diopters) Step: 0.25D (when additional lens of +0.12D, Step: 0.12D)

3. Cylinder Axis: 0°~180°, 5° step

4. Cross Cylinder: $\pm 0.25D$

5. Rotary Prisms: 0~20, 1 step

5.4.2 P.D. Adjustment: 50~75mm

5.4.3 Forehead-rest Adjustment: 16mm

5.4.4 Corneal Vertex Distance: 12mm

5.4.5 Size: 338(L)*99(W)*292(H)mm

5.4.6 Weight: 5 kgs

5.4.7 Auxiliary Lenses: By employing combinations of abundant Auxiliary Lenses and Charts, various kinds of refractions are made.

“O” : Open aperture

“R” : Retinoscope lens +1.5D(Standard)

“P”	: Polaroid (right eye: 135°, left eye: 45°)
	*To be used for various polarizing test, for example heterophoria, Binocular balance, stereoscopic view, etc.
“RMW”&”WMV”	: Vertical maddox (right eye: red, left eye: white)
	*Can be used for heterophoria, measurement.
“RMH”&”WMH”	: Horizontal maddox (right eye: red, left eye: white)
	*Can be used for heterophoria, measurement.
“RL”&”GL”	: Red, green lenses (right eye: red, left eye: green)
	*Can be used for heterophoria, precise checking of spherical surface, measurement.
“⊕”	: Test mark for P.D. Adjustment
“+.12D”	: +0.12D sphere lens
	*With the measurement step of 0.12D
“PH”	: Pin hole
“6ΔU or 10ΔI”	: Prism dispersion: (right eye: 6ΔBU, left eye: 10ΔBI)
	*Can be used for heterophoria, measurement.
“±0.50”	: ±0.50D fixed cross cylinder.
	*Can be used for near point measurement.
“OC”	: Occluder

5.5 List of Standard Accessories

Auxiliary Cylinder-2.00D	2 pieces
Auxiliary Cylinder -0.12D	2 pieces
Inner Hexagon 2*2	1 piece
Near Point Rod Card	1 piece
Near Point Rod Holder	2 pieces
Board	1 piece
Dust Cover	1 piece

2. Operation Steps

6.0 Basic Operation Step

- Mount the Refractor on the ophthalmic stand arm;
- Set the Bracket (28) to the support shaft of the stand arm and fix it by the clamp knob (25);
- The fixing screw of the accessory should be screwed in the support shaft from the lower part of the Bracket (28).



- (1). Have the patient seat on the refraction chair exactly;
- (2). Set the P.D correctly: while seeing the P.D Scale, and adjust P.D. by turning the P.D. Adjustment Knob.
- (3). Set the Refractor in front of patients and adjust the height of the Refractor, the direction of the body and the horizontal level: By moving the support shaft up and down, adjust the height of the Refractor. By loosening the Rotation Adjustment Knob (27), to adjust the direction of the body. While seeing the Level (13) and adjust the horizontal Level (29) by turning the Leveling Adjustment Knob.
- (4). Set the corneal vertex distance as 12mm: Moving Forehead-rest to adjust cornea vertex.
- (5). Set Auxiliary Lens. If refracting the right eye, set the right eye be open as "O", the left eye be occluded as "OC". Align the position of the Auxiliary Lens Scale to the index by turning the Auxiliary Lens Knob.
- (6). Set the Sphere Power. While seeing the Sphere Power Scale (15) , turn the Spherical Disk (14). Sphere Power can be changed 3.00D step by turning the Spherical Power quick Forwarding Dial (19).
- (7). Set the Cylinder Axis. Align the Cylinder Axis Reference Scale (23) to the Cylinder Axis Indicator (24) by turning the Cylinder Axis Knob (9).
- (8). Set the Cylinder Power. While seeing the Cylinder Power Scale (20) , turn the Cylinder Power Knob (10).

6.1 Optometries Summary

Before refracting by this instrument, it is necessary to know that patient's PD, the spherical power based the data of visual examination, the cylinder power and axis found by an objective examination.

6.1.1 Refractometer Setting

- 1) Turn the P.D. Adjustment Knob with seeing the P.D. Scale, and set the P.D.

- 2) By adjusting the height of the support shaft, align the height of the patient's window to the height of patient's eyes;
- 3) By loosening the Rotation Adjustment Knob, adjust the direction of the body in parallel with patient's eyes;
- 4) By seeing the Level, adjust the Leveling Adjustment Knob so as to set in horizontal;
- 5) Confirm the center of the pupil be aligned in the patient's window by seeing from the front;
- 6) Adjust the Forehead-rest by the Forehead-rest Knob, and set the corneal vertex distance to 13.75mm. When the image patient's eye is at the center of vertex distance watching window, the corneal vertex distance is 13.75mm.
- 7) See from the front again and make adjustment of 2),3),4) be corrected;
- 8) Stand backward to re-confirm the balance of patient and the refractor;
- 9) Fix the refractor firmly.

6.1.2 Visual Acuity Examination

- 1) Turn the Auxiliary Lens Knob by seeing the Auxiliary Lens Scale and set the right eye be open as "O" and left eye be occluded as "OC".
- 2) Add the sphere power based data of inspected visual examination by turning the Spherical Disk. The sphere power can be changed 3.00D step by turning the Spherical Power Quick Forwarding Dial.
- 3) By turning the Cylinder Power Knob and Cylinder Axis Knob, add the cylinder power and axis found by objective examination.
- 4) By turning the Spherical Disk, add the S+0.75D so as to the foggy condition.
- 5) Align the 0.5 chart.
- 6) In case reading the 0.5 chart is completed, proceed to the next step 7). If reading the 0.5 chart is not completed, proceed with radiation test.

Radiation Test

- A) Align the radiation chart.
- B) By turning the Spherical Disk, add the S-0.25D step until the figure 1~12 on the radiation chart can be read out.
- C) In case any lines of the radiation chart is seen deeply, those lines are cylinder axis. If 2 O'clock direction is seen deeply, cylinder axis is $2 \times 30 = 60^\circ$. Align the Cylinder Axis Indicator to the cylinder axis by turning the Cylinder Axis Knob.
- D) By turning the Cylinder Power Knob, add the cylinder power until the deepness of the radiation chart become even color.
- 7) Align the 1.0 chart.
- 8) By turning the Spherical Disk, add S-0.25D step until 1.0 chart can be read out, and the fog condition is released.

6.1.3 Red Green Test

- 1) Align the red green chart.
- 2) Make sure which chart could be seen more clearly, the black ring on the red ground or the black ring on the green ground.
- 3) If the black ring on the red ground could be seen more clearly, add the S-0.25D by turning the Spherical Disk. If the black ring on the green ground could be seen more clearly, add the S+0.25D by turning the Spherical Disk.
- 4) Repeat step 2) and 3) until the black ring on the green ground can be seen a little bit better.

6.1.4 Cylinder Axis

- 1) Align the dots chart.
- 2) By turning the turret, set the Cross Cylinder to align patient's window.
- 3) Align the revolving axis of the Cross Cylinder to the Cylinder Axis Indicator and click.
- 4) Turn over the Cross Cylinder by turning the Cross Cylinder Knob and make sure which face is better.
- 5) Toward the red point on the clearly seen face direction, interlock the cylinder axis by 15° by the Cylinder Power Knob.

If the shade off though both face is similar, a precise cylinder axis will be determined. If the shade off though both face is not similar, return the cylinder axis 5° step until similar.

6.1.5 Cylinder Power

- 1). Align the dot chart.
 - 2). By turning the turret, set the Cross Cylinder to align patient's window.
 - 3) Align the "P" Mark on the Cross Cylinder to the Cylinder Axis Indicator and click.
 - 4) Turn over the cross cylinder by turning the cross cylinder knob and make sure which face is better.
 - 5) If the face aligned "P" mark to the red point is better, add the C-0.25D by turning the Cylinder Power Knob. If the face aligned "P" mark to the white point is better, reduce the C-0.25D by turning the Cylinder Power Knob.
- Note: If it would be necessary to add the C-0.25D or more, C/2 that is 0.25D S (equivalent spherical power) should be reduced.
- 6) If the both seeing aspect is similar, a precise cylinder power will be determined.

6.1.6 Sphere Power Measurement

- 1) Align the red green chart.
- 2) Make sure which chart can be seen more clearly, the black ring on the red ground or the black ring on the green ground.
- 3) When the black ring on the red ground is seen more clearly, add the S-0.25D by turning the spherical disk. When the black ring on the green ground is seen more clearly, add the S+0.25D by turning the spherical disk.
- 4) Repeat step 2) and 3) until average or in condition that the black ring on the red ground can be seen more clearly.

6.1.7 Power Check

- 1) Make sure the highest visual power by measuring the visual power in order from the 0.1 chart.
- 2) While aligning the highest visual power chart, add S+0.25D by turning the Spherical Disk.
- 3) If the visual power drops, turn the Spherical Disk back.

6.1.8 Left Eye Power Check

Turn the Auxiliary Lens Knob by seeing the Auxiliary Lens Scale and set the right eye be occluded as "O".

6.1.9 Both Eye Balance Test

- 1) Let the both eyes be fused with balance chart.
- 2) Set "P" polaroid on the both eyes by turning Auxiliary Lens Knob of left and right.
- 3) Turn the spherical disk of better looking eye and add +0.25D. If the seeing aspect becomes similar, it means both left and right eyes are fused for the balanced looking.

6.1.10 Stereoscopic View Test

- 1) Align the accurate stereoscopic view chart.
- 2) By the turning the auxiliary lens knob, set the auxiliary lenses of left and right to polaroid“P”.
- 3) Check the stereoscopic view test by the accurate stereoscopic view chart.

If the stereoscopic view is unavailable perform the binocular function examination.

6.1.11 Near point measurement

[Procedure]

- (1) Train the both batteries on inside by the convergence lever.
- (2) Lay down the near point rod which is set in near point holder.
- (3) Align the cross lines table of the near point card.
- (4) If the patient is above 50 years old, add the S+1.00D by turning the spherical disk.
- (5) Set the near point card to the nearest distance(the near distance of the patient).
- (6) Set the ± 0.50 cross cylinder in both auxiliary lenses by turning auxiliary Lens knob.
- (7) By turning the spherical disk, add the S+0.25D each until the vertical and horizontal lines of the cross lines table seems at quite same density.

6.1.12 Distance correction of corneal vertex point

This instrument is designed that correct distance between the lens and the corneal vertex is 12.00mm.

If the corneal vertex distance is not same as appointed, correct the power by applying the distance correction table.

The corneal vertex distance can be confirmed by seeing the vertex distance watching Window.

When the image of corneal is on the long line of the corneal vertex distance, it is the appointed distance. (This has scales at interval of 2mm)

Example 1

When the measured value is +8.00D by this instrument and the corneal vertex distance is 3mm longer. the correction value should become +0.1 9D from the correction table and the revised value should be: $(+8.00D) + (+0.1 9D) = (+8.1 9D)$

Example 2

When measured value is -11.00D by this instrument and corneal vertex distance is 4mm longer. the correction value should become +0.46D from the correction table and the revised value should be: $(-11.00D) + (+0.46D) = (-10.54D)$

Example 3 (When desired to have the fitting of a glasses be 12mm)

When measured value is -5.00D by this instrument and the corneal vertex distance is 3mm longer, the appointed distance is 1.75mm longer.

Total difference of the distance is $3mm + 1.75mm = 4.75mm$.

The revised value is: $(-5.00D) + (+0.1 2D) = (-4.88D)$

Distance Correction Table

Plus

POWER	DISTANCE 1	DISTANCE 2	DISTANCE 3	DISTANCE 4	DISTANCE 5
+1.00	0.001	0.002	0.003	0.004	0.005
+2.00	0.004	0.008	0.01	0.02	0.03
+3.00	0.01	0.02	0.03	0.04	0.05
+4.00	0.02	0.03	0.05	0.07	0.08
+5.00	0.03	0.05	0.07	0.11	0.12
+6.00	0.04	0.07	0.10	0.16	0.18
+7.00	0.05	0.10	0.14	0.21	0.25
+8.00	0.06	0.13	0.19	0.27	0.33
+9.00	0.08	0.16	0.24	0.34	0.42
+10.00	0.10	0.20	0.30	0.42	0.52
+11.00	0.12	0.25	0.37	0.51	0.64
+12.00	0.15	0.30	0.45	0.61	0.77
+13.00	0.18	0.35	0.53	0.72	0.91
+14.00	0.21	0.41	0.62	0.84	1.06
+15.00	0.24	0.47	0.71	0.97	1.22
+16.00	0.27	0.53	0.81	1.11	1.39
+17.00	0.30	0.60	0.92	1.26	1.58
+18.00	0.33	0.67	1.03	1.41	1.78
+19.00	0.37	0.75	1.15	1.57	1.99
+20.00	0.41	0.83	1.28	1.74	2.22

Minus

POWER	DISTANCE 1	DISTANCE 2	DISTANCE 3	DISTANCE 4	DISTANCE 5
-1.00	0.001	0.002	0.003	0.004	0.005
-2.00	0.01	0.001	0.02	0.02	0.02
-3.00	0.01	0.02	0.03	0.04	0.04
-4.00	0.02	0.03	0.05	0.06	0.08
-5.00	0.03	0.05	0.07	0.10	0.12
-6.00	0.04	0.07	0.10	0.15	0.17
-7.00	0.05	0.10	0.14	0.20	0.24
-8.00	0.06	0.13	0.19	0.25	0.31
-9.00	0.08	0.16	0.24	0.31	0.39
-10.00	0.10	0.20	0.30	0.38	0.48
-11.00	0.12	0.24	0.36	0.46	0.57
-12.00	0.14	0.28	0.42	0.55	0.67
-13.00	0.16	0.33	0.48	0.64	0.78
-14.00	0.19	0.38	0.55	0.74	0.90
-15.00	0.22	0.43	0.63	0.85	1.03
-16.00	0.25	0.49	0.72	0.96	1.17
-17.00	0.28	0.55	0.81	1.08	1.32
-18.00	0.31	0.62	0.91	1.21	1.48
-19.00	0.35	0.69	1.02	1.34	1.65
-20.00	0.39	0.77	1.13	1.48	1.82

3.Repairs & Maintenance

In order to obtain a better use effect and longer service life, it is very necessary to have a good environment without interference and correct maintenance methods.

7.0 Maintenance and Clean

7.1 Cautions

- 1) Objective lens must be in a dry, clean status, can not use a hard object or finger touch lens, avoid damage to the objective lens. If the objective lens is dirty, must be strictly in accordance with our manufacturer instruction of training cleaning methods.
- 2) Should keep it clean, dry condition, as far as possible to use in air conditioning for daily use.
- 3) Should inform our manufacturer or ask professional maintenance personnel to repair if equipment damage.
- 4) Should use medical alcohol cotton to wipe and clean the jaw bracket, or use personal forehead on paper.
- 5) Preventive inspection: (1) check the lens mirror whether there is dust or there is any evidence scratch hard objects, so as not to affect the inspection results or lead to diagnostic errors; (2) leaned forehead part, must be in before each examination was cleaned with alcohol and use customer personal disposable forehead on paper, prevent the skin of a patient cross infection, after use, then clean until the next use.

Design or Specification, please refer to the actual products, won't make a note any more if any change.

7.2 Clean

7.2.1 Cleaning Endoscope as follows:

- 1) Make up all the scales as 0 and or“O”as open.
- 2) Make the P.D at its max 75mm.
- 3) Remove the face shield.

Place the following scales described as under and clean up in order:

- I、 Cylinder lenses: .25, .50, .75, 1.00, 1.25, 2.50, 3.75, 5.00
- II、 Make the cylinder lens diopter as 0.
- III、 Weaker spherical lenses: (Turn the spherical disk.)
+1.75, +1.50, +1.25, +1.00, +.75, +.50, +.25, . -25, -.50, -.75, -1.00
- IV、 Return the spherical diopter as 0.
- V、 Stronger spherical lenses: (Turn the spherical power quick forwarding dial. 1
+3.00, +6.00, +9.00, +12.00, +15.00, -18.00, -15.00, -12.00, -9.00,
-6.00, -3.00
- VI、 Return the spherical lens diopter as 0.

VII、Auxiliary lens:

right eye“R”, “P”, “RMV”, “RMH”, “RI”, “O”, “+ 12”, “6AU”, “4- 50”.

left eye“R”, “P”, “WMV”, “WMH”, “GI”, “O”, “+ 12”, “1 o△I”, “±. 50”.

If the dust is glued to the lens or reflecting lens, can use soft cotton wipe gently.

Note: Do not use your fingers or other hard objects to clean

7.2.2 Protection Measures

- 1) Cover the instrument by the dust cover, when not in use
- 2) Keep away the instrument from dusty place and or moisture conditions.
- 3) Wipe out the stain of the forehead rest and the face shield by alcoholic dipped cloth
- 4) Wipe out the stain of the body by the cylicon cloth(customer provide themselves) .
- 5) Stains on the cover glass should be wiped out by alcoholic dipped cloth.

Note: Do not use any corrosive cleaning agents to clean, so as not to damage the surface!

4. Transportation and Storage

1. Can be transported by conventional traffic transport for packed full of optometry instrument, should pay attention to moistureproof, sunscreen, anti inversion, avoid strenuous vibration and mechanical collision while transportation.
 2. Can be stored in the relative humidity $\leq 85\%$; ambient temperature: $0^{\circ}\text{C} - 40^{\circ}\text{C}$; atmospheric pressure range: 500hPa~1060hPa No corrosive gas and maintains indoor good ventilation.
 3. Instruments should be removed with a fixed bracket on the instrument screws, separate handling if need short distance transportation or moving. Or if instrument need to be transported by long distance handling, should be reloaded into the original packaging and then carry.
 - 4.If you do not use the instrument for a long time, please use the dust cover to cover it, so as to prevent the dust.
- Meanwhile, pay attention to moisture, sunscreen, anti inversion.

5. Warranty statement

Statement: Our manufacturer can supply the required specified maintenance equipment accessories.

1. We can provide a life time of equipment maintenance and free consultation.
2. In compliance with the premise of the use, free warranty for one year from the date of purchase, and the transportation fee will be on yours if the damage caused by your party.
3. Warranty period, the following conditions will charge maintenance:
 - © No following the instructions of the use, maintenance, storage to cause the damage.
 - © Personally dismantling or modification cause the damage without our manufacturer authority.
 - © The accident, or wrong use, or irresistible natural factors, which cause the damage of instrument.

Design or Specification, please refer to the actual products, won't make a note any more if any change.



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