TCS-900 User Manual

$C\epsilon$ 1282

OPTICARE

Envision the Possibilities

📖 Please read this manual before use.

This device is manufactured in accordance with GB9706.1Medical electrical equipment general requirements for safety, and must be connected the power plug to a grounded outlet.

In order to ensure use the product safely, and prevent damage to operator and other people, or cause a loss of other devices, warning labels are indicate on the machine as well as in the manual, please pay attention and read the accompanying documents carefully.

ISO 9001/13485 certification—R&D, Manufacture and service of the products by Our company have passed ISO 9001/13485 certification. IEC standards also apply in this manual. There is no materials in direct contact with the patient therefore no unacceptable risk.

The safety precautions and operating procedures must be thoroughly understood before using the device. And please safekeeping this manual. There is no user maintenance part of this unit except for replacing printer paper. If you encounter any problems or have questions about the device, please contact MSOC local authorized distributor or contact with our customer service department directly.

This manual is meanwhile as a training reference manual, in order to ensure best operating performance of the new machine, please read carefully and operating accord to process in this manual. Please reserve this manual for reference for communicate with other users in the future. If addition copy needed or have questions about this device, please contact our company or authorized distributors.

Information contained in this manual has been confirmed when publish. Product specifications are subject to change without prior notice. The rights of change the product which contains in this manual is reserved by our company, and without prior notice. Sold products does not involve in this change.

Contents

1 Introduction

The consultation unit mod. TCS900 is used to support the ophthalmic diagnostic instruments such as Auto Ref/keratometer, vision tester, auto chart projector,and split lamp etc. It can be installed in hospitals, optical shops, ophthalmologist's offices, medical centers and in all places where eye diagnostic tests are performed.The consultation unit consists of main table with rotating retractable tray, electric phoropter arm,motorized chair can go up and down, soft lighting and operation control with both remote control and panel.

1.1 Product features and using range

a) Electric shock protection type: Class I external power supply device

b) Electric shock protection level: B type

c) Applied part: none

d) Power supply type: single phase, net power supply: 220V~, 50Hz

e) Not a AP or APG type device

f) Mode of operation: Continuous operation

g) This machine is a impermanence installation device

1.2 Classification

The ophthalmic unit consist of main body, chair and arm for projector arm.

The ophthalmic unit consist of mechanical system, electronic system, software and cabinet by function.

Storage and transport environment conditions::

Temperature : -20℃ - +55℃

Humidity: 10 - 90%

Air pressure: 700hPa - 1060hPa

Working environment：

Temperature：10℃ - 35℃

Humidity：30 -75%

Air pressure：800hPa - 1060hPa

Power

a) input：220V～ 50Hz

b) output：110VA

1.3 Main performance index

1. Product size

    Unit size：950×1080×1630mm

2. Main technical index

    Travel range of the lifting arm:：300mm

    Lifting arm rotation range: 4°-90°

    Motorized hair lifting range:150mm

3. General technical requirement

    a) the unit shall be placed stable and steady, no obviously shaking and tilting.

    b) the hanging arm shall be firmly installed without looseness.

    c) the auto chart projector arm is installed firmly;

    d) the electrical chair is placed stably and steadily.

4. The noise of the whole unit should not be greater than 55dB (A) under the working conditions.

5. The surface temperature rise of the unit shall not exceed 5℃ under working conditions

6. The safety requirements of the unit shall meet the requirements in GB9706.1.

7. Working environment test should comply with the GB/T14710-1993 climate environment II mechanical environment testIIrequirements.

2 Safety Precautions

2.1 Identity

In this manual, words used to indicate the security alert degree or level are defined as follows

⚠ **attention**	Attention: indicates a potentially dangerous situation, such as can't be avoided, may result in slight or moderate injury or property damage.

Under certain conditions, even if the conditions for attention are also likely to lead to serious damage. So safety precautions must be strictly abide by the moment.

2.2 Safety precautions before use

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> ● The safety precautions and operating procedures must be thoroughly understood before using the device. Use of the device for unintended purpose may cause malfunction or adverse incident.
> ● Do not open the cover and touch the parts inside the unit. It may cause electric shock or malfunction of the unit.

- Install the device in an environment that meets the following conditions：
    Temperature:+10 - +35°C
    Humidity: 30-75%
    Pressure: 760hPa - 1060hPa
    In a clean room
    A place free from vibration and shock
    ---failure to meet the installation condition requirement may affect the function of the unit. If the unit is impacted,it may be damaged.
- Avoid storage of the unit in places where it is exposed to rain, water, toxic gases, or liquids. The unit may corrode or malfunction.
- Avoid install the unit on ventilate path. The temperature change on the unit surface will cause vapor condensation and cause adverse impact.
- Be sure to use a wall outlet which meets the power specification requirements.
    If the line voltage is too high or too low, the device may not operate properly. Malfunction or fire may result
- Connect the power plug to a grounded outlet to avoid electric shock. Unit malfunction or electric leakage may cause electricity shock or fire.
- Do not overload the electrical outlet. Or else it may cause fire.
- Fully insert the power plug into the outlet. Imperfect connection may cause fire.
- Do not use any power cord other than that equipped, or it may cause unit malfunction or fire.
- Do not place heavy objects on the power cord.
    A damaged power cord may cause fire or electric shock.
- Before connecting the unit, turn off the switch. Disconnect the unit from the power cord or it may cause unit malfunction.
- Make sure to turn off the switch when moving the unit, disconnect the power, remove the lifting arm to avoid impact or shock, or it may cause injury or damage the unit.
- For transportation use the the specialized packing material to protect the unit. Impact or shock during transportation may cause injury or damage of the unit.
- When installing and operating the device, please follow below instructions about EMC (electromagnetic compatibility):
    1. Do not use the device simultaneously with other electronic equipment to avoid electromagnetic interference with the operation of the device.
    2. Do not use the device in the same room with other equipment such as life-support equipment, other equipment that has major affects on the life of the patient and results of treatment, or other measurement or treatment equipment that involves small electric current.
    3. Do not use the device simultaneously with portable and mobile radio frequency communication systems because it may have an adverse effect on operation of the device.
    4. Do not use cables and accessories that are not specified for the device because that may increase the emission of electromagnetic waves from the device or the system and decrease the resistance of the device to electromagnetic disturbance.
    5．If potential electromagnetic interference between equipment with other equipment, shielding measures should be taken or change the placement of this

equipment, in order to reduce the possibility of interference.

2.3 Precautions During Use

⚠ **CAUTION**
● When the device is not in use, please turn it off and put the dust cover over it. If the device is not covered for an extended period, it may accumulate dust. ● Perform the visual and operation checks before using the device. If any abnormality is found, do not use the device. ● Before each patient, always clean the patient's contact area (of the matching unit) using disinfectant alcohol. ● In the event of smoke or strange odors, immediately turn off the device and disconnect the power plug from the outlet. After you are positive that the smoke has stopped, contact Ningbo Ming Sing or your authorized distributor. ● Continued use of the device under such abnormal conditions may cause fire or electricity shock. In the event of a fire, use a dry powder extinguisher to put out the fire. ● Hard or sharp objects such as ball-point pen may scratch the surface of the chair and table top. ● Do not use the control panel with wet hand. Water leakage into the PCB may cause malfunction of the unit. ● This instrument must be operated by the trained or qualified people, or after their instruction.

2.4 After Use

⚠ C AUTION

● When the device is not in use, please unplug and disconnect the power.
 If the device is not covered for an extended period, the accumulation of water may cause short circuit or fire.
● Do not unplug the unit violently, it may damage the metal cable core and cause electricity shock, circuit short or fire.
● Transport and storage environment
    Condition:
    Temperature:-20 - +55°C
    Humidity: 10-90%
    Pressure: 700 hPa -1060 hPa
    Dust free, and no direct exposure to sunlight
● For transportation use the the specialized packing material to protect the unit. Impact or shock during transportation may cause injury or damage of the unit.

2.5 Maintenance and Check

⚠ **Caution**

- Never use solvent or strong cleaner on any part of the unit, or it may damage the device.
- Never use organic solvents such as paint thinner to clean the exterior part of the device, it may ruin the surface of the device.
- Any repair and maintenance of the device must be conducted by personnel or distributors who are trained by Ningbo Ming Sing Optical R&D CO., Ltd, able to operate or experienced with the device.
- Calibration of the device must be conducted by Ningbo Ming Sing Optical R&D CO., Ltd technician or other authorized personnel.
- When the device is sent back to our company for repair or maintenance, please use clean cloth to clean the unit(especially area contact with patient) with alcohol.

2.6 Disposal

⚠ CAUTION
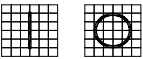
- Follow the local ordinances and recycling regulations regarding disposal or recycling of the components.
  It is recommended to commission the disposal to a designated industrial waste disposal contractor.

When disposing of packing material, follow the local ordinances and recycling regulations.

3. Equipment and Installation

3.1 Unit Major Parts

Consultation unit

NO.	Description
1	Chair Back Rest
2	Rotation handrail
3	Pedal
4	Chair Rotation lock

5	Electrical chair base
21	Lamp
22	Arm
23	Lifting column
24	Table rotation handle
25	Table top
26	Drawer
27	Table rotation mechanism
28	Control panel
29	Coaming
30	Rubber cushion
31	Adjustable Feet

3.2 Symbols

The following identifications applied on this device:

Symbol	Description
CE 1282.	Compliance with Medical Device Directive 93/42/EC
(umbrella symbol)	Moisture proof logo
(book symbol)	Read operator's manual
(person symbol)	Applied parts type B
(crossed-out bin symbol)	Electronic electrical equipment scrap disposal requirements
(factory symbol)	Manufacturer
EC REP	Authorized Representative of EU
(factory symbol)	Production date
(warning triangle)	Warning mark, read operator's manual before use
SN	Serial Number
I O	"I" and "O" representative power Switch (ON) an (OFF) separately

∿	AC (Alternative current)
⊟	Fuse

3.3 Control Panel and Remote Control

Control Panel
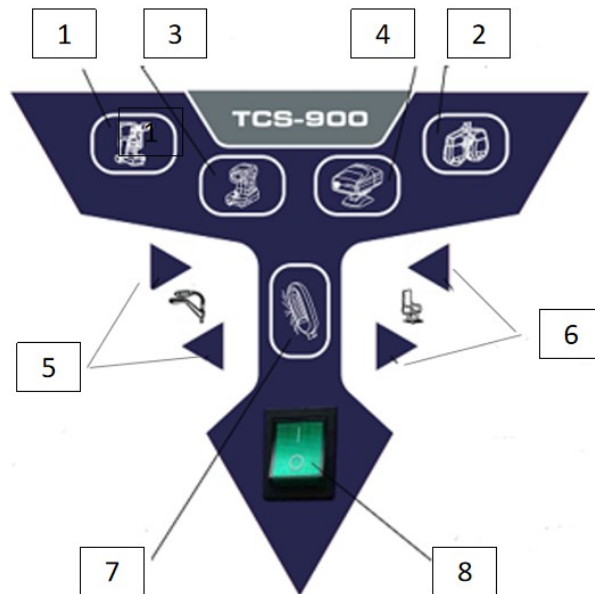
NO.	Description
1	**Slit Lamp Button:** Hold it 1s to switch on or off the slit lamp
2	**Refractor Head Button:** Hold it 1s to switch on or off the Refractor Head
3	**ARK Button:**Hold it 1s to switch on or off the ARK
4	**Projector Button:**Hold it 1s to switch on or off the Projector
5	Lifting Column Buttons - For mounting lifting column, hold the upper button 1s, if you want to stop it during mounting press again on the upper button. - For lowering the lifting column, hold the bottom button 1s, if you want to stop it during lowering press again on the bottom button.
6	Chair buttons - For mounting the chair hold the upper button until the good position - For lowering the chair hold the bottom button until the good position
7	**Lamp Button:**Hold it 1s to switch on or off the Lamp
8	**Switch "O"/ "I":**Press on "I" to switch on the TCS900 and press on "O" to switch off the TCS900.

Remote control
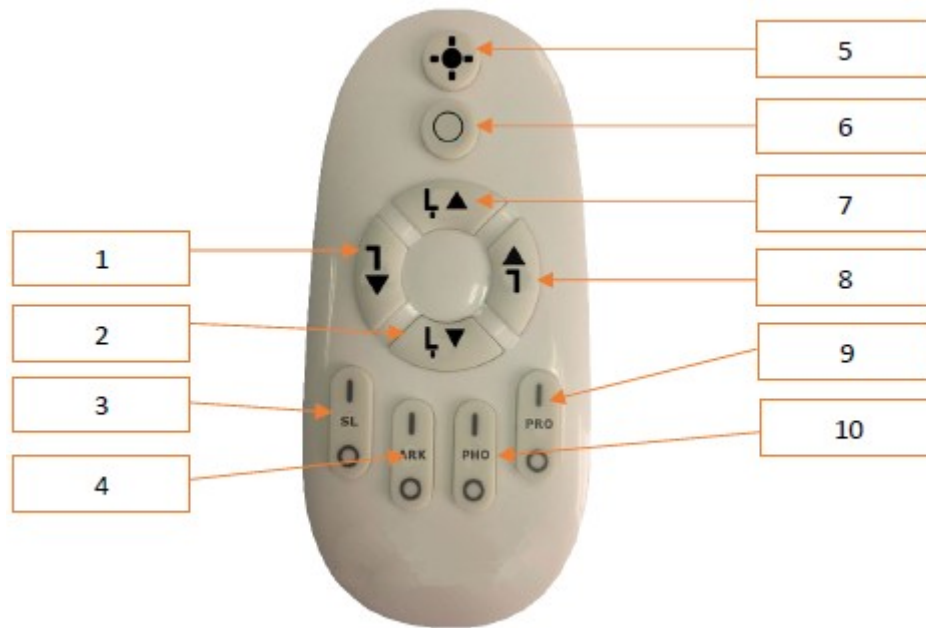
NO.	Description
1	Lifting Column down Buttons
2	Chair down button
3	Slit Lamp On/Off
4	ARK On/Off
5	Light On
6	Light Off
7	Chair up button
8	Lifting column up button
9	Projector On/Off
10	Phoropter On/Off

⚠ **CAUTION**

■ Both the control panel and remote control can be used to operate the unit.

3.4 Instruments Configuration on Consultation Unit
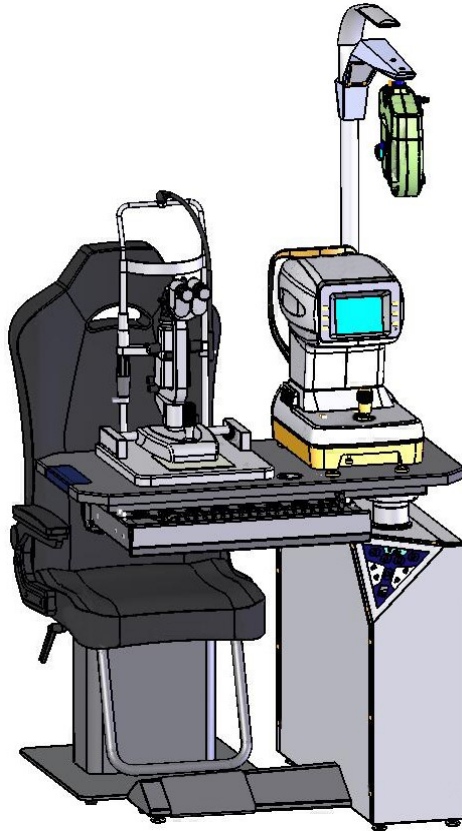
1. Auto phoropter: Located under the arm, you can fix it by one screw located under the phoropter support.
2. ARK: Located on one side.
3. Slit Lamp: Located on another side.

4 Installation

4.1 Preparation for Installation

When you open the package, First check if every part is there, move it to installation location, adjust the screw in the base and keep it in nearly position. Then remove the package on all area of the unit.

4.2 Install Table Top

(1) Put the table top component with cables into the hole of the rotation mechanical structure.
(2) Put the table top component together with the location hole of rotation mechanical structure.
(3) Tighten the 4 pcs of screws, after adjust the table in correct position, then fix all screws, see as the picture below:

Rotation mechanical   Table top adjust screws
M8 screws   Location hole   Table top
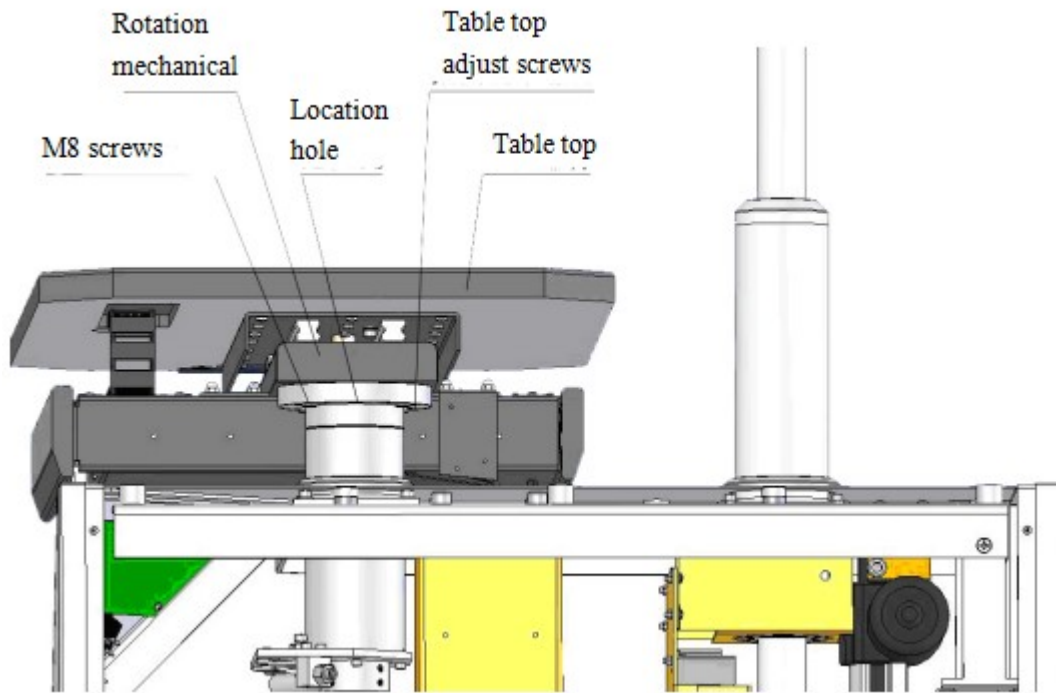
(4) Connect cable as shown in picture below:

Cable Joint

Special Connector

4.3 Install the Arm of Consultation Unit

(1) Please take the downside cover plate of the cross arm off as well as put the phoropter signal cable and lamp cable on the upright stick across the cross arm. Then put inside the slot hole of the arm component to the elongated slot of lifting poker, and carefully put the arm component into the lifting poker, please take care and do not rotated insert, otherwise, it will break the cables, See below pictures:
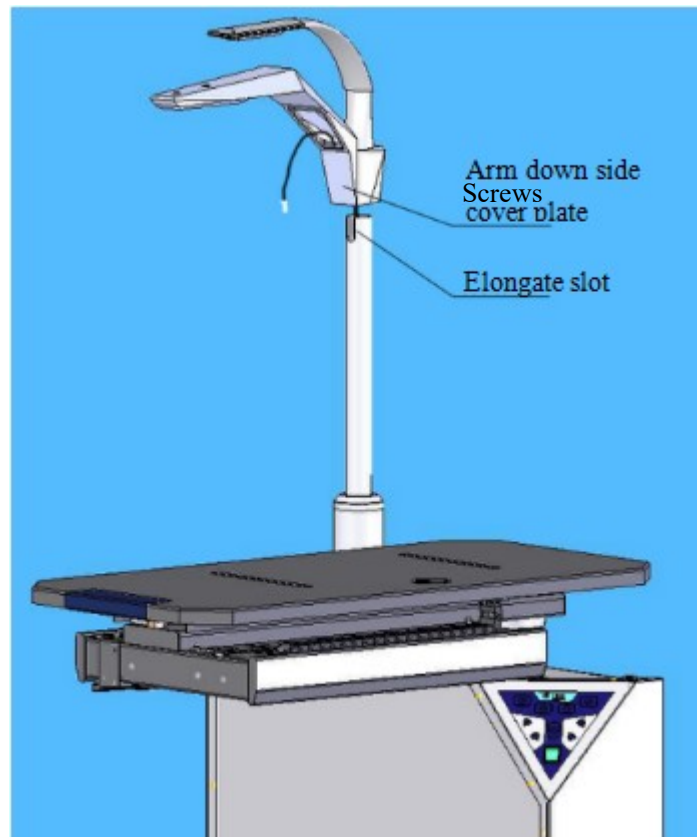
(2) After match the hole site, use 2 pcs of M6 stainless steel socket head cap screw to fix the arm component, shown as the below picture:
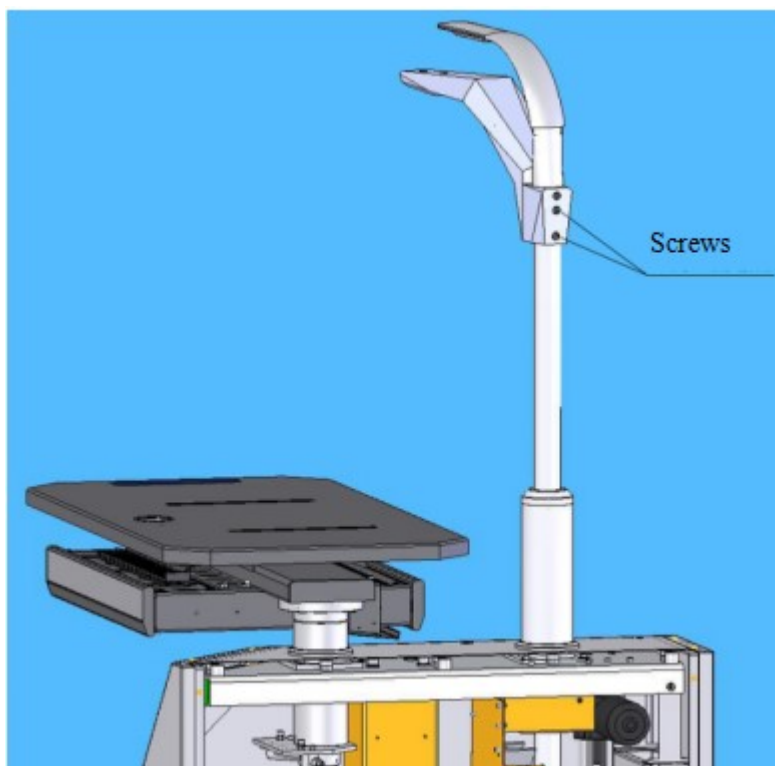
(3) Connect the light power cable, and settle all the cables well, close the cover plate on the arm and tighten the screws. See picture below:

Down side
cover plate

4.4 Install the Electric Chair

Hold the chair back up, tighten 2 M6 hex cap screw, and then tighten the 8 M6 cap screws on the 2 rotation arms. Then put the chair onto the electrical chair base, and fix it with 4 washers and screws.

Chair back

Rotation arm

Electrical chair base
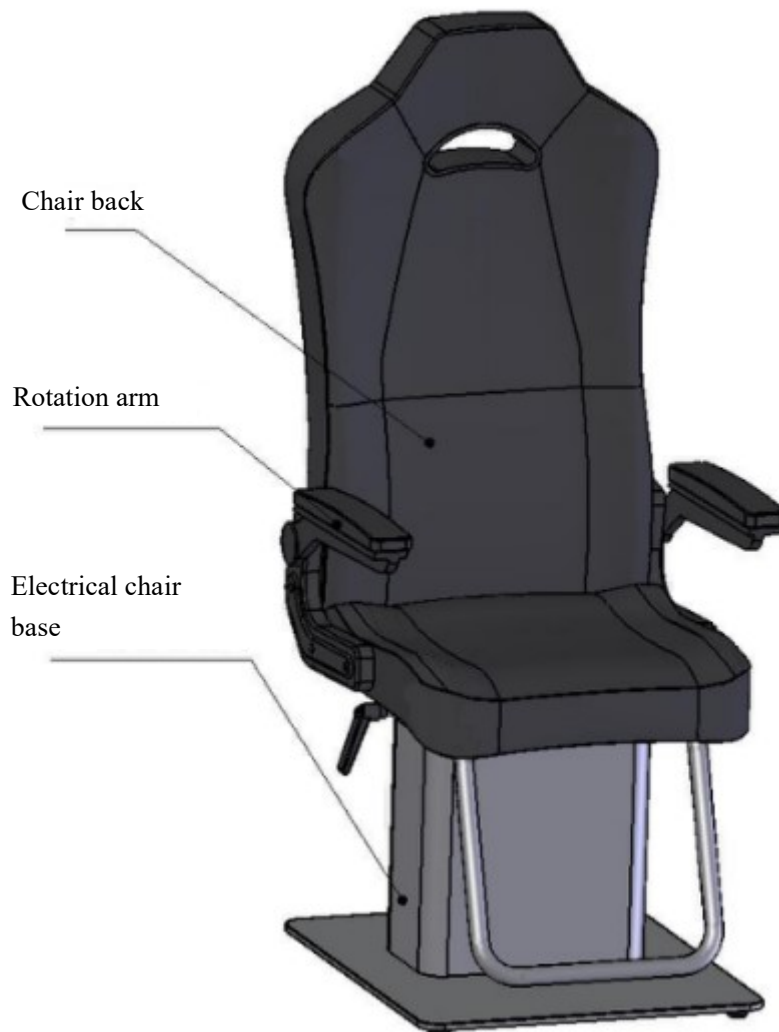
4.5 Install Base Cover and Power Connection

Firstly, install the base cover with the M3*6 pans head stainless steel screws, then connect the power of each part of the unit as shown as below:
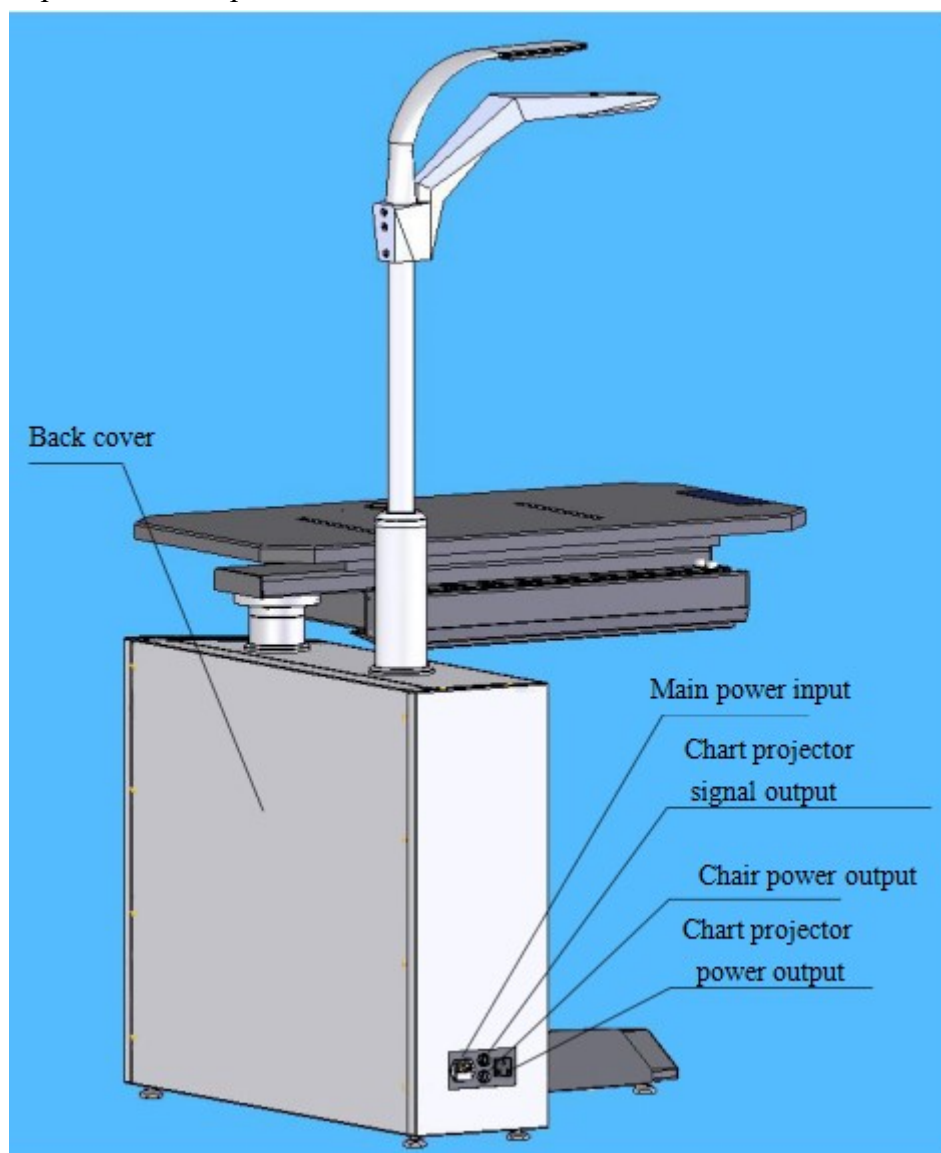
5 Dimension and Other

5.1 Dimension and Contraindication

·Dimension：950×1080×1630 mm   net weight 220kg

5.2 Power

·Input：220V～   50Hz   110VA

5.3 Contraindication

·None

6 Using the Ophthalmic unit

(1) When using the unit, turn on the main power switch on the control panel. The green indicator lights up means the power is connected. After using the unit, please remember to switch off the main power.

(2) Hold 3 seconds of the lighting button on the control panel or remote control to turn on the lamp. Hold the button 3 seconds again to turn the lamp off.

(3) Press one time the arm up/down button on the control panel or remote control, the lifting arm will go up or down. When it reaches desired position, press the same arm up/down button again and it will stop moving. During the arm movement, if no up/down button is pressed again, it will stop moving when reaches limit position.

(4) Hold the chair up/down button on the control panel or remote control, the chair will keep moving up or or down. When it reaches desired position, release the button and the chair will stop moving. If only press one time of the chair up/down button, the chair will only move up or down in one motion stop immediately.

(5) Hold 3 seconds the phoropter button on the control panel or remote control, the phoropter will power on. After using the phoropter, hold 3 seconds the phoropter button again on the control panel or remote control, the phoropter will power off.

(6) Hold 3 seconds the projector button on the control panel or remote control, the projector will power on. After using the projector, hold 3 seconds the projector button again on the control panel or remote control, the projector will power off.

(7) Hold 3 seconds the ARK button on the control panel or remote control, the ARK will power on. After using the ARK, hold 3 seconds the ARK button again on the control panel or remote control, the ARK will power off.

(8) Hold 3 seconds the split lamp button on the control panel or remote control, the split lamp will power on. After using the split lamp, hold 3 seconds the split lamp button again on the control panel or remote control, the split lamp will power off.

(9) How to set remote control: the TCS-900 remote control is with auto targeting function. If the remote control of the unit is broken or lost after, after receive a new remote control,

the user will need to set the remote control so that it can match his unit. Then user can use the new remote control. One remote control can only match with and control one TCS-900 unit.To set a new remote control:

① Press the "illumination" and "chair up" buttons on the control panel at the same time, and turn on the power.

② Keep pressing these 2 buttons for 5 seconds and release it, then turn off the power.

③ Turn on the power again, then put batteries in the remote control. The indicator on the remote control will start to blink slowly and it will go into setting autocratically. It takes about 5 seconds to finish auto targeting, then the indicator will turn out. By now the setting of the function for each key on the remote control is finished.

⚠ **CAUTION**

■ Make sure there is only one machine plugged when setting the remote control.

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④ If the remote setting is failed, the indicator on the remote control will turn out in around 10 seconds. At this time, turn off the power of the unit, remove the batteries from the remote control, and repeat steps①, ② and ③.

⑤ If setting still fails, there may be some problems with the remote control or the press board, please replace the part and try again.

7 Using Life

The using life of the unit is 8 years.。

8 Disclaimer

Manufacturer takes responsibility of the product safety, reliability and performance if the following conditions possess:

（1）Installation accord with operator's manual

（2）Operation and maintenance accord with operator's manual and service manual

Manufacturer disclaims all responsibility if problems caused by changes without permission, changed products is beyond the scope of manufacturers committed to service.